15 -ാം കേരള നിയമസഭ

12 -ാം സമ്മേളനം

നക്ഷത്ര ചിഹ്നം ഇല്ലാത്ത ചോദ്യം നം. 734 **08-10-2024 - ൽ മറുപടിയ്ക്ക്**

എനർജി സ്റ്റോറേജ് സിസ്റ്റം സ്ഥാപിക്കുന്ന നടപടി

ചോദ്യം		ഉത്തരം	
ശ്രീ. എം. വിൻസെന്റ്		**ശ്രീ . കെ . കൃഷ്ണൻകുട്ടി (വൈദ്യുതി വകുപ്പ് മന്ത്രി)**	
(എ)	അനർട്ടിന്റെ ഹെഡ് ഓഫീസിൽ ബാറ്ററി എനർജി സ്റ്റോറേജ് സിസ്റ്റം സ്ഥാപിക്കുന്നതിന് എത്ര പ്രാവശ്യം ഇ–ടെണ്ടർ ക്ഷണിച്ചുവെന്നും ടെൻഡറുകൾ ക്യാൻസൽ ചെയ്യാനുണ്ടായ സാഹചര്യങ്ങൾ എന്തെല്ലാമെന്നും വിശദീകരിക്കാമോ;	(എ)	അനെർട്ടിന്റെ ഹെഡ് ഓഫീസിൽ ബാറ്ററി എനർജി സ്റ്റോറേജ് സിസ്റ്റം സ്ഥാപിക്കുന്നതിന് 2 പ്രാവശ്യം ഇ–ടെണ്ടർ ക്ഷണിച്ചു. ആദ്യ ടെൻഡറിൽ ഒരു ബിഡ്ഡർ മാത്രമേ യോഗ്യത നേടിയുള്ളൂ. ആയതിനാൽ റീടെണ്ടർ നടപടികൾ സ്വീകരിക്കേണ്ടി വന്നു.
(ബി)	ടെൻഡറിൽ പങ്കെടുത്ത കമ്പനികളുടെ പേരും, ഓരോ കമ്പനിയും ക്വാട്ട് ചെയ്ത തുകയും ലഭ്യമാക്കാമോ; ടെൻഡർ ലഭിച്ച കമ്പനിയ്ക്ക് നൽകിയ ഉത്തരവിന്റെ പകർപ്പ് ലഭ്യമാക്കാമോ; നിലവിലെ പ്രവർത്തന പുരോഗതി അറിയിക്കാമോ;	(ബി)	ടെൻഡറിൽ പങ്കെടുത്ത കമ്പനികളുടെ പേരും, ഓരോ കമ്പനിയും ക്വാട്ട് ചെയ്ത തുകയും ചുവടെ പറയുന്ന പ്രകാരമാണ്. M/s Hykon India Ltd., - (not qualified for opening financial bid) M/s POM Systems and Services Pvt. Ltd. - 1,49,38,800/- രൂപ (inc Tax) M/s Solar Systems - 1,52,22,000/- രൂപ (Inc Tax) ടെൻഡർ ലഭിച്ച കമ്പനിയ്ക്ക് നൽകിയ ഉത്തരവിന്റെ പകർപ്പ് **അനുബന്ധം (1)** ആയി ചേർക്കുന്നു. നിലവിൽ പ്രവൃത്തി ആരംഭിച്ചിട്ടില്ല.
(സി)	പ്രസ്തുത ടെൻഡറുമായി ബന്ധപ്പെട്ട ഇ–ടെൻഡർ നോട്ട് ഫയലിന്റെയും, കരസ്പോണ്ടൻസ് ഫയലിന്റെയും പകർപ്പുകൾ ലഭ്യമാക്കാമോ ;	(സി)	പ്രസ്തുത ടെൻഡറുമായി ബന്ധപ്പെട്ട ഇ–ടെൻഡർ നോട്ട് ഫയലിന്റെയും, കരസ്പോണ്ടൻസ് ഫയലിന്റെയും പകർപ്പുകൾ **അനുബന്ധം (2)** ആയി ചേർക്കുന്നു.
(ഡി)	പി. എം. കുസും പദ്ധതിയുമായി ബന്ധപ്പെട്ട് ഇ-ടെൻഡർ ക്ഷണിച്ചതിന്റെ അടിസ്ഥാനത്തിൽ റൂഫ് ടോപ്പ് പവർ പ്ലാന്റിനും, ഗ്രൗണ്ട് മൗണ്ടഡ് പവർ പ്ലാന്റിനും വിവിധ കപ്പാസിറ്റിയിൽ വിവിധ കമ്പനികൾ ക്വാട്ട് ചെയ്ത തുകയുടെ ഇ–ഫയലിന്റെ പകർപ്പ് ലഭ്യമാക്കാമോ?	(ഡി)	**പി. എം. കുസും** പദ്ധതിയുമായി ബന്ധപ്പെട്ട് ഇ-ടെൻഡർ ക്ഷണിച്ചതിന്റെ അടിസ്ഥാനത്തിൽ റൂഫ്ടോപ്പ് പവർ പ്ലാന്റിനും, ഗ്രൗണ്ട് മൗണ്ടഡ് പവർ പ്ലാന്റിനും വിവിധ കപ്പാസിറ്റിയിൽ വിവിധ കമ്പനികൾ ക്വാട്ട് ചെയ്ത തുകയുമായി ബന്ധപ്പെട്ട ഇ-ഫയലിന്റെ പകർപ്പ് **അനുബന്ധം (3)** ആയി ചേർക്കുന്നു.

സെക്ഷൻ ഓഫീസർ

അനെർട്ട്
ANERT
Agency for New and renewable Energy Research and Technology
നവീനവും പുനരുപയോഗയോഗ്യവുമായ ഊർജ്ജ ഗവേഷണങ്ങൾക്കും സാങ്കേതിക വിദ്യകൾക്കുമുള്ള ഏജൻസി
DEPARTMENT OF POWER, GOVERNMENT OF KERALA
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No. ANERT-TECH/41/2024-PE1(RTS) 26-06-2024

To

M/s POM Systems & Services Pvt Ltd.
No.75, 6th Main, 3rd Phase, Peenya Industrial Area
Bangalore, Karnataka – 560058

WORK ORDER

Sir,

Sub: ANERT – Work Order for the Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram - reg

Ref:
1. Tender ID: 2024_ANERT_664557_2 published on Kerala Tenders portal
2. Your Bid No. 1875604 dtd 30/05/2024

Attention is invited to the references cited. Your bid for the Pilot Implementation of Battery Energy Storage System (BESS) at ANERT HQ, Thiruvananthapuram is accepted. You are requested to carry out the work at the sites as detailed below subject to the following terms and conditions.

SN	ITEM	Total
1	Battery Energy Storage System – 100kW / 150 kWh	**1,20,00,000**
	TOTAL	**1,20,00,000/-**
Rupees One Crore Twenty Lakh only		

A tripartite agreement has to be executed by you in the prescribed form (enclosed as Annexure - I) on Kerala Stamp paper as per the Kerala Government order - G.O.(P) No.113/2019/TD dtd 24/07/2019 (One rupee for every Rs 1000 or part thereof on the contract amount, subject to a minimum of rupees 200 and a maximum of rupees one lakh) within 7 days of the receipt of this work order for the fulfilment of the contract along with a security deposit of **Rs. 6,00,000/- (Rupees Six Lakh only)** being the 5% of contract value of **Rs. 1,20,00,000/-** on Demand Draft/Bank Guarantee/NEFT transfer in favour of CEO, ANERT. You must pay all expenses incidental to the execution of the above agreement.

1. SCOPE OF WORKS

The Scope of Supply & Work includes all Design & Engineering, Procurement &

Supply of equipment and materials, Testing at Manufacturers works, Multi – level inspections, Packing and Forwarding, Unloading and Storage at site, Associated Civil works, services, permits, licences, installation and incidentals, insurance at all stages(Pre commissioning), Erection, Testing and Commissioning of containerised Battery Energy Storage System and performance demonstration with associated equipment and materials on turnkey basis at ANERT HQ, Thiruvananthapuram, Kerala.

i. The system proposed must have provision to include minimum three sources of power – Solar, Utility power & Backup DG. The BESS system must have provision to manage the input source based on availability and must also be able to schedule based on ToD and should have scheduling capabilities.
ii. The system shall consist of a 100 kW Bi-Directional PCS along with Provision for connecting the existing Solar and 150 kWh Lithium Battery Storage System, which shall provide uninterrupted power to the output even at failure of 30% of the battery modules. The total system shall be designed for mobile or stationary use in a modular container divided into battery room and PCS room with all requisite fire protecting equipment and Air conditioner-based cooling.
iii. The proposed system must have a Power monitoring System (PMS) with to monitor and control all the functions of BESS.
iv. The system will replace the existing Diesel Generator which is powering the ANERT building on black outs and Power cuts. The same is currently connected to the AMF panel, which need to be decommissioned and connected to the new PCU. The output of the PCU is to be connected to this AMF panel, which will act as the primary source of powering the building.
v. The PCU part adopts advanced modular digital control technology, which optimizes the control performance, improves the reliability of the system, and realizes uninterrupted switching between modes such as grid-connected discharge, grid-connected charging, and system off-grid operation. The PCU system should have a wide DC input range, which can better suit the charging and discharging requirements of different battery combinations. Under the same power output, the diversity of battery pack connections is increased, and the number of parallel battery packs is reduced. It can better manage the battery, improve the life of the battery and the economic benefits of the energy storage system.
vi. The abandoned building near the electrical room can be used to house the BESS system. The requisite civil works for accommodating the system inside the building is under your scope.
vii. The bidder is required to take necessary approvals from the Electrical

Inspectorate, including Scheme approval, Sanction for energisation etc and Approvals from KSEBL as per norms to commission the system.

viii. All associated civil and electrical works are under the scope of the bidder.

ix. Any other work required for the successful commissioning of the power plant which are not mentioned explicitly and are required as per prevailing laws & regulations in the country.

2. **SCHEDULE OF SUPPLY, INSTALLATION & COMMISSIONING:**

i. The items should be delivered and installed at the ANERT Campus as specified by ANERT, under prior intimation and supervision of ANERT personnel.

ii. If the successful bidder fails to deliver the materials within the days mentioned below, the order stands cancelled and ANERT will award the work to the next bidder and penalty as decided by ANERT will be levied.

SN	Capacity of BESS	Material Delivery (Days)	Completion Period (Days)
1	100 kW / 150 kWh	45	75

iii. The agency shall submit the timeline for completion along with the agreement and security deposit. This timeline must be followed and no extension of time for completing the installation will be granted. Although, time extension may be granted for things beyond the control of your agency.

iv. The detailed Bill of Materials along with datasheets & Test certificates of components as per tender must be provided well in advance and must be approved by ANERT before material despatch. The Factory Acceptance Tests as per tender / as laid by the Ministry of Power must be complied. ANERT reserves the right to reject the materials if they are not in compliance with the requirements of the tender. In case the successful bidder delivers the materials without BoM approval, they may have to take back the materials at their own cost and no time extension without penalty will be provided for completion of works.

v. The Supply, Installation and Commissioning of the Battery Energy Storage System must be completed within the timeline mentioned above. This is the time for handing over the system to ANERT with Grid connectivity.

vi. In case of no valid reason, extension of time of completion that can be granted at a time shall be 25% of the original time. The maximum extension that can be granted for a work shall be limited to half the original time of completion.

vii. When the contract period has to be extended wholly or partly due to default on the part of the bidder, the Agreement Authority may sanction extension of time after imposing fine as mentioned below;

Period	Rate of Fine
	1% of the PAC subject to a minimum of Rs. 1000/- and

First Extension	maximum of Rs. 50,000/-.
Second Extension	2% of the PAC subject to a minimum of Rs. 2000/- and maximum of Rs. 1,00,000/-

viii. Penalty for delay in supply and installation will be imposed at 0.5 % per week up to a maximum 10%. In case of delay in supply and installation, CEO, ANERT may cancel the contract and take recourse to other action as deemed appropriate.

3. **INSTALLATION**

i. The Design and Manufacturing of the whole system must be in such a manner that it meets all the requirements as per the Design, Fabrication and Construction requirements as per tender. The BESS use cases mentioned in the tender shall be completely showcased and working at all stages.

ii. The installation work of the Battery Energy Storage System must be incompliance with the Technical Requirements and Standards as mentioned in the Tender. The basic technical requirements are as below:

Item Description	Requirement
Battery Technology	Any battery technology with totally Maintenance Free suitable for operation in site-specific climatic conditions can be used with sufficient HVAC system in place and accessible from outside.
Rated No of Cycles (Minimum)	4000 cycles at rated energy capacity at 80%; Depth of Discharge (DoD) at 25°C and C/1 Rate of Discharge
Nameplate watt rating*, AC (A)	100 kW, continuous. The same shall comprise of two units of 50 kW each, for N+1 redundancy, with capability of extending up to 200kW in the future.
Nameplate watt-hour rating, ac (B)	150 kWh at 100 kW net ac output at the beginning of life and not less than 80% of this capacity at any point of time up to End of Battery Life. The battery Ah shall be 51.2V, 100 AH capacity and shall have provision to expand up to 225 kWhr. without any major hardware changes in the future.
System AC-DC-AC efficiency*:	> 90%
Use case requirements	Peak Management Voltage Support Frequency Regulation (demonstration only) Intermittent Resource Support
Peak Management	Yes Morning and evening (preference to evening)

	No. of days per year: up to 365 In the Peak Management Use Case scenario, power generated during the early and midday periods shall be stored in the BESS and released later in the day, during peak demand. In this case, the BESS shall be discharged in the Peak Limiting profile in the late afternoon. To the extent that the total energy dispatched does not exceed the nameplate watt-hour rating, the BESS may be further discharged in Constant Power Mode after Part 01 (Solar PV Plant) is no more generating. One discharge cycle per day is envisaged in this use case.
VAR compensation /voltage support (VC/VS)	Yes
Intermittent resource support (IRS)	Yes This use case is envisaged to be employed during the day, primarily to support variations in Solar PV generation. The days for operation in this use case shall be determined in consultation with the ANERT/KSEBL.
Black Start Capability	Yes
Ventilation System inside the Container	Should be such as to maintain minimum and maximum Temperature as recommended by the manufacturer for optimum performance of the batteries on continuous basis.
Grid Charging	Allowed with the discretion of grid operator. If the BESS is charged through the grid, the energy consumed shall be considered part of the Auxiliary power and shall be metered.
Over Loading Capacity	(105%) : continuous operation (105%~120%) :10min (120%) : stop operation

iii. The vendor is to bear the fee for KSEBL feasibility, Registration, and all other expenses along with additional costs for cabling works, earthing, mounting structure modifications, Electrical panel modification, access ladders, pathway facility in case required are also under the scope of the vendor. The scope of enhancing load, phase conversion wherever necessary is also under the scope.

iv. Any other work required for the successful commissioning of the power plant which are not mentioned in this document and are required as per prevailing

laws & regulations in the country.

4. **COMMISSIONING AND FUNCTIONAL GUARANTEE TEST PROCEDURE**

i. The Contractor shall develop and submit to the ANERT for its review and approval a comprehensive SAT plan that shall demonstrate to the ANERT that the BESS will perform as specified in the tender. The ANERT shall have the right to request reasonable changes to the test plan.

ii. The Contractor shall develop and perform SAT procedures to ensure that the BESS will perform as designed and that the system meets the performance criteria specified in the detailed specifications in the tender. The SAT plan shall include procedures to test operating scenarios described in the specification. These procedures may involve special requirements and/or witnessing by the local independent system operator. To the extent achievable, all use cases and operating modes described in the specification shall be tested.

iii. After the Contractor has determined that the BESS is fully operational, the Contractor shall conduct the SAT, witnessed by the ANERT and/or the ANERT's representative. The tests shall include, as a minimum, the following:

- Verification of sensors, metering, and alarms
- Verification of all control functions, including automatic, local, and remote control
- Verification that the performance criteria in the specification can be met or exceeded
- Demonstration of all of the intended uses
- Demonstration of interface protection circuits and functions and control interfaces
- Tests shall demonstrate that the BESS capabilities, efficiencies, response, and features are as proposed by the Contractor.

iv. Testing shall include, as a minimum, measurement of harmonic content and power factor at full and partial power levels for both charge and discharge.

v. Operation of all control, protective relaying, and instrumentation circuits shall be demonstrated by direct test, if feasible, or by simulating operating states for all parameters that cannot be directly tested. Automatic, local, and remote operation shall be demonstrated.

vi. The SAT shall also specifically address discovery of problems or failures that may have occurred during or as a result of shipment.

vii. The Contractor shall perform any required modifications and repairs

identified by the testing, before acceptance by the ANERT.

viii. The ANERT will not accept the BESS for commissioning until all acceptance tests have been successfully completed and all provisions of the contract have been met.

ix. Functional Guarantee - Actual Operating Experience

Since it may not be possible, due to system constraints, to test all facets of the BESS function as part of the performance verification tests specified in the preceding sections the actual operating experience of the BESS during the performance guarantee period after initial startup shall be deemed an extension of the performance verification tests. Actual operating experience will be documented through Contractor-furnished records, and other system monitoring equipment and associated BESS performance. Documented failure or malfunctions of any BESS component during the performance guarantee period shall be deemed a failure of the system commissioning test. The Contractor shall, at no cost to the ANERT, make the necessary repairs, replacements, modifications, or adjustments to prevent the same failure or malfunction from occurring again. The replacement of certain BESS components in response to a system failure may necessitate, at the discretion of the ANERT, the duplication of certain performance verification tests, which shall be performed at the Contractor's expense.

5. **PAYMENT**

A. No advance payment will be given. All the documents submitted should be certified by the concerned personnel of ANERT.

B. The terms of payment shall be:

i. Upon delivery of materials at the site, 60 % of the contract value against that site will be released as first part payment. The supplier shall submit the invoice for the materials (including serial numbers and FAT reports, and other relevant documents) duly certified by the concerned personnel along with a report regarding the supply of materials.

ii. On completion of the installation of BESS system and filing application for connectivity, 10% of the contract value shall be released as second part payment. The supplier shall submit the invoice and all documents related including the Project Completion Report to the completion of the work certified by the concerned ANERT personnel for the release of the amount. The PCR submitted will be used for conducting the pre-commissioning tests. Proof of the completion report submitted to the electrical inspectorate shall be submitted.

iii. After the Inspection and Approval of the Electrical Inspectorate, date of Energisation to the Grid by the DISCOM will be considered as the official Date of

Commissioning (CoD) of the project and this will be treated as the commissioning of the system.

iv. After CoD, 5% of the contract value will be released upon proving the Key Performance Indexes. All documents related to the Commissioning of the system along with including commissioning report and functionality tests shall be submitted for the release of the amount.

v. The next 5% of the contract value will be released after completing programming and evaluating the performance of all the systems for a period of one Month. All documents related to the performance reports and complete logs of energy usage, energy fed to grid etc shall be submitted for the release of the amount.

vi. The balance 15% shall be retained as performance security and will be released in parts - 2% after each year of warranty, with the balance 1% at the end of the last year. The performance reports and availability as per tender must be submitted and CEO ANERT on its discretion will impose fine/penalty in case availability of at least 90% is not maintained.

vii. The security deposit of 3% furnished along with the contract agreement shall be released on successful completion of supply, installation, and commissioning.

c. Income tax, contribution to workers' welfare fund and other statutory deductions shall be made from the payment as per prevailing norms.

6. **WARRANTY**

i. The Contractor shall provide a warranty for the entire BESS and its constituent equipment.

ii. At a minimum, the Contractor shall provide an unconditional, 7 (Seven) - year parts and labour warranty on all BESS equipment except battery (unit or racks). For the battery storage, 10-year warranty is to provided and the warranty shall cover parts warranty including battery nominal capacity ratings in order to meet the End of battery Life condition described in the tender.

iii. Warranty replacement shall be required for individual unit batteries that degrade in performance to the point at which the BESS cannot meet the requirements specified in this specification up to the End of Battery Life and/or for unit batteries that materially degrade the availability, reliability, safety, or functionality of the BESS.

iv. The warranty shall guarantee the availability of battery replacements delivered to the site within 2 weeks of notification during the battery warranty period. This period, shall, however, not be considered part of the Accountable Outage period for assessing BESS availability.

v. ANERT, in its discretion may or may not opt for additional 3-year AMC post 7-year warranty at the rate quoted by the contractor in the tender. The vendor is to be undertake the AMC post warranty at the rate quoted, for which additional work order will be issued.

7. SERVICE AND MAINTENANCE

i. The Contractor shall supply all labour, equipment, and materials needed to maintain the BESS performance and safe operation, including all maintenance required to satisfy the warranty terms and conditions.
ii. The Contractor shall list all maintenance activities to be carried out under the maintenance contract. For each maintenance item, the list shall include a description of the item, the expected frequency (maintenance interval), the time required to perform the maintenance, any anticipated parts replacement, and any potential problems in carrying out the maintenance.
iii. Any faulty system or components should be replaced/ repaired within 5 days of fault reporting. The servicing should be carried out at the site of installation.
iv. Any Delay in servicing beyond 5 days of fault reporting would attract penalty at the rate of at the rate fixed by CEO, ANERT and further actions will be initiated against the agency.
v. A designated contact Telephone Number and address should be submitted for reporting faults during the warranty period.

8. INSURANCE

i. The power plant must be insured at every stage of operation – from Material dispatch, storage, completion of installation and till 10 years after commissioning. The insurance for the system till commissioning of the plant must be borne by the contractor.
ii. The insurance coverage on handing over of the system must include all conditions of **Standard Fire and Special Perils Policy (Material Damage)** . The insurance premium for the 7-years of warranty is to be paid by your agency. The amount for insurance premium after commissioning will be borne by ANERT at actuals on reimbursement basis.
iii. On handing over of the system, the original insurance policy is to be handed over to the authorised person at ANERT.

Not Withstanding the terms and conditions stipulated above, it is to be noted that the conditions in the tender document shall prevail.

Yours faithfully

CEO ANERT

File No. ANERT-TECH/41/2024-PE1(RTS)

കേരള സർക്കാർ

GOVERNMENT OF KERALA

Agency for New and renewable Energy Research & Technology

AGENCY FOR NEW AND RENEWABLE ENERGY RESEARCH & TECHNOLOGY

ROOF TOP SOLAR ANERT

SUBJECT

Main Category	:
Sub Category	:
Description	: Battery Energy Storage System - Pilot Installation

OTHER DETAILS

Language	: English
Remarks	:
Previous References	:
Later References	:

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Note # 1

NOTE

Sub:- Battery Energy Storage Systems - Pilot Implementation at ANERT HQ

i. Under the Solar City Thiruvananthapuram, ANERT has nearly completed implementation of Grid connected Solar Power plants of approximate capacity of 16 MW. Although this much capacity of Renewable Energy is fed to the grid, the RE component during non-sunny hours is very low and to attain the tag of Solar City, it is necessary to move ahead with Battery Energy Storage Systems to enable Round-the-Clock RE Power.

ii. The Central Government as well as many other State Governments have already implemented BESS systems and KSEBL have also awarded works for a utility scale BESS at one of their sub stations. But within city limits, it is necessary to have modular type BESS which could serve distributed Energy Storage option.

iii. In this context, it is proposed to do a Pilot installation of 100 kW + 150 kWh BESS at ANERT HQ. The battery can be chaged from the existing Solar Power Plants and the system could replace the requirement of existing DG, which can be kept as an additional source for the BESS, in case of continuous rainy or black out. The output of BESS may be provided to the existing AMF panel and operation schedule for Peak hours may be done from the BESS.

iv. The system could also serve various other use cases including Peak Load management (PM), VAR compensation / Voltage Support (VC/VS), Frequency regulation (FR), Intermittent resource support (IRS) etc. This will serve as a model / demo which could completely solve the Peak Load scenario within the city area.

v. Draft tender document incorporating the technical specifications followed by SECI / MNRE for BESS is prepared and attached.

For guidance and orders.

26/02/2024 02:24 PM

VINAY P
PE1(RTS) ANERT

Note # 2

Kindly advise from which H/a the expenditure can be met.

26/02/2024 03:47 PM

KALA K.G.
TH(T2) ANERT

Note # 3

This may be considered as a pilot under R & D and can be met from head of account 08

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27/02/2024 10:19 AM **ANEESH S PRASAD**
CTM ANERT

Note # 4
Approved

27/02/2024 10:27 AM **NARENDRA NATH VELURI I F S**
CEO ANERT

Note # 5

i. The EoI for the Pilot Implementation of BESS at ANERT HQ, Thiruvananthapuram was published in the Kerala tenders portal and there are 5 bidders - M/s Centretec, M/s Hykon India Ltd, M/s POM Systems and Services Pvt Ltd, M/s Solar Systems and M/s Solgen Energy India Pvt Ltd. The bids are attached in the reference section. The bidders were called for a technical presentation on 05/04/2024.
ii. Among the bidders, M/s Solar Systems and M/s POM Systems and Services have quoted for the OEM - Sicon Chat Union Electric Co. Ltd - GRES 150-50. Both bidders have submitted the authorization letter from the OEM, whereas no MoU executed between the bidder and OEM was submitted. Further, most of the OEM test certificates initially provided was for import and use in the European Union, whereas the IECEE certification were not provided. Upon clarification, they have submitted certification issued in the name of "Hebei Ecube New Energy Technology Co., Ltd" was provided along with a statement that the proposed BESS system is both the same and the main shareholders of both OEMs are one and the same and also, SCU Power in the process of acquisition of the Ecube. It is to be decided whether, the change in OEM can be considered, also, whether the authorization and MoU need to be collected from the current OEM. The system proposed is a container based modular solution with dedicated HVAC system in place.
iii. M/s Solgen Energy is the lead bidder in the Consortium formed between Deye Inverter Technolgy - OEM, Solgen Energy and Festa Solar. They have proposed two solutions as per the EoI - GE-F60 & MS-G230, the first one is a DC coupled solution, which is not a container-based solution, whereas the later proposed model is an AC coupled and is also a container-based solution. Both the solutions cater the requirements as per ANERT tender, whereas the model GE-F60 is not a container-based solution but can be transported as per requirement. The later model is 100 kW / 150 kWh, as a single unit and as per tender, we had asked for two units of 50 kW each. The proposed system will cater the requirement, so need to finalise whether to accept or not. The proposed systems have all

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the component level certifications, and also, the OEM has offered full support on any sort of customization required from their end.

iv. M/s Hykon India Ltd, in their initial bid had proposed a full UPS based system functioning on DC high voltage and during the presentation that had proposed their BESS system is under testing phase and is having all required certification in the component level. Further, they requested being an OEM of Lithium batteries based in Kerala, an opportunity may be provided to them for the proposed BESS system.

v. M/s Centretec has not submitted any Authorization nor MoU with any OEM and their bid is not considered.

vi. In the tender, the details of similar container-based installation done in India was called for, whereas none are having a commercially working model for the proposed systems. M/s Solgen and M/s Hykon are having similar systems functioning in the country, but container based. Further, none of the bidders are having all the requisite certifications as mentioned in the guidelines issued by Ministry of Power for Battery Energy Storage Systems.

vii. In this context, the following are put up for consideration and decisions:

   a. Whether the bid submitted by M/s Hykon India, need to be considered as they are the only battery manufacturers based in India (Kerala) who has submitted bids. The BESS system proposed is still under laboratory testing phase and not a commercial product, but this being a pilot installation, no BESS system of this lower capacity is installed anywhere.

   b. Whether the bid submitted by M/s Solgen India Pvt Ltd (lead bidder of the consortium) be accepted? Out of the two models proposed, one is not a container-based solution, whereas the second solutions proposed is a single unit of 100 kW, both models meet all the other requirements.

   c. Whether the bid submitted by M/s POM Power Systems and M/s Solar Systems can be admitted for financial bid opening? The certificate issued to another OEM with similar model number is submitted along with a joint statement by the two OEMs.

For guidance and further orders.

08/04/2024 01:13 PM **VINAY P**
PE1(RTS) ANERT

Note # 6

Since this is a pilot project, the bids submitted by M/s Hykon India Ltd, M/s POM Systems and Services Pvt Ltd, M/s Solar Systems and M/s Solgen Energy India Pvt Ltd may be considered for opening financial bid.

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08/04/2024 04:15 PM **KALA K.G.**
TH(T2) ANERT

Note # 7

Since this is a pilot project for substituting Generator at ANERT HQ, we may go with the recommendation of ACTM.

For perusal

08/04/2024 04:41 PM **ANEESH S PRASAD**
CTM ANERT

Note # 8

I was not a party to the presentations and so I am not aware of what was presented. I was not informed of the dates also. Better to have a repeat of presentations so that I can have a first hand idea to take a decision. It is not fair enough to allow all bids to be opened. An online presentation shall be called on 15th April at 3.30 pm giving 10 mins for each bidder to showcase the actual product and its working at its working site along with tender conditions.

08/04/2024 05:13 PM **NARENDRA NATH VELURI I F S**
CEO ANERT

Note # 9

09/04/2024 10:50 AM **ANEESH S PRASAD**
CTM ANERT

Note # 10

09/04/2024 11:22 AM **KALA K.G.**
TH(T2) ANERT

Note # 11

i. The online presentation was scheduled on 15/04/2024 and was chaired by CEO ANERT and the Minutes of the meeting is attached. As per the live demonstration of the actual product, only M/s POM Power systems were able to present a product which caters all the requirements as per MoP norms.
ii. M/s Hykon India Ltd showed an R&D product which is still in its earlier development stages, M/s Solgen Energy as well as M/s Solar Energy Systems were unable to showcase any live installations nor actual product

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quoted for the work. Since the future of RE is along with BESS which could offer RTC power, CEO insisted on creating a replicable model in the State on Pilot basis, and the importance of ANERT taking up the initiative.

iii. M/s POM Power Systems was the only bidder to demonstrate the product being quoted and qualifies for financial opening. They have also assured submission of all required test report as per standards applicable in India will be provided before delivery of materials in case work is awarded. Draft evaluation sheet prepared based on the presentation is attached.

iv. Based on the evaluation done, only a single bidder is eligible for financial opening. It is to be decided whether, the financial bid of the sole qualified bidder can be opened.

For guidance and orders.

14/05/2024 07:13 PM **VINAY P**
PE1(RTS) ANERT

Note # 12

Kindly note the following

1.Administrative sanction of current year plan programme is not yet received.

2.M/s POM Power Systems was the only bidder to demonstrate the product **Price comparison is not possible if we open the financial bid of the firm. As per store purchase rule, we may go for re-tender.**

15/05/2024 12:16 PM **KALA K.G.**
TH(T2) ANERT

Note # 13

For perusal

15/05/2024 02:45 PM **ANEESH S PRASAD**
CTM ANERT

Note # 14

15/05/2024 04:10 PM **MUHAMMED HARIS M**
CFO ANERT

Note # 15

As per Single Bid Circular No. 2508/B2/2013/SPD dated 28.10.2013 ,if one and only one bid is received at the closing time & date of open tender such tender are not acceptable in the first instance and go for re-tendering.

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For decision.

16/05/2024 04:19 PM **BANDEESH P**
AO ANERT

Note # 16

16/05/2024 04:40 PM **MUHAMMED HARIS M**
CFO ANERT

Note # 17

Considering Note 12 and 15 , We have time for re- tender. AS not yet received and MCC still in force. We may go for re-tender immediately so that we could finalise work order by the time MCC is over.

17/05/2024 09:31 AM **ANEESH S PRASAD**
CTM ANERT

Note # 18

This was based on last year AS and tender is a valid one as it is a continuing process. Also, there was competetion and three had their own products but ony one suited our requirement as per tender conditions. Also, under such cases where technology is relatively new there might not be many vendors available all the times. There should be some way in such circumstances or else we will be indulged only in tendering and retendering.
Might comment why we should not open the financial bid as it technically doesnt fall under single bid category.
We can think of whether or not to retender after explanation of all who commented on the file

17/05/2024 02:10 PM **NARENDRA NATH VELURI I F S**
CEO ANERT

Note # 19

17/05/2024 02:58 PM **ANEESH S PRASAD**
CTM ANERT

Note # 20

Sir,

1. This project was based on Administrative Sanction GO(Rt) 212/2023/power Dt 28.11.2023. Even though we had completed the tender, we could not complete the tender evaluation before31.03.2024. If we had issued work order in the previous FY, the claim could have been included in e-LAMS.

2. Kindly see the AG-Audit observation of Thazhethudukki Project. In that project, there was only one bid qualified for financial bid opening . We had opened the bid and issued work order.The AG observation is that ANERT has not explored the possibility of obtaining competitive rate by retendering the work.

17/05/2024 04:56 PM **KALA K.G.**
TH(T2) ANERT

Note # 21

":In view of CVC guidelines and various rulings of the honorable Supreme Court and all state High Courts all the purchasing officers are directed that single bid/single tender shall be accepted only after re-tendering and subject to a detailed Justification in Support of Acceptance" Abstract from circular dated 28.10.2013 by Stores Purchase Department.

In this tender, even though 4 bids were received only one is qualified for price bid opening. ACTM has quoted the observation by accountant general in the note above w.r.to thazhe thudukki tender.

A re-tender process may be completed before MCC ceases . Hence it is suggested go for re-tender and this may enable us to award the work even if it is single bid.

18/05/2024 10:07 AM **ANEESH S PRASAD**
CTM ANERT

Note # 22

Proceed with retendering

18/05/2024 10:22 AM **NARENDRA NATH VELURI I F S**
CEO ANERT

Note # 23

18/05/2024 10:23 AM **ANEESH S PRASAD**
CTM ANERT

Note # 24

Draft document for retender is prepared and attached. For orders.

18/05/2024 01:28 PM **VINAY P**
PE1(RTS) ANERT

Note # 25

Draft re-tender document may be approved.

18/05/2024 03:43 PM **KALA K.G.**
TH(T2) ANERT

Note # 26

May be approved

18/05/2024 03:45 PM **ANEESH S PRASAD**
CTM ANERT

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Note # 27

Approve. Should have gone with lesser time of a week or 10 days instead of two weeks

18/05/2024 03:55 PM **NARENDRA NATH VELURI I F S**
CEO ANERT

Note # 28

i. The retender was published in the Kerala tenders portal and there are 3 bidders - M/s Hykon India Ltd, M/s POM Systems and Services Pvt Ltd and M/s Solar Systems. The bids are attached in the reference section.
ii. Among the bidders, M/s Hykon India is an OEM of BESS and the other two bidders are EPCs and they have proposed BESS of make SCU Electric. M/s Hykon had proposed the same system as in the last tender, which was rejected during evaluation of previous tender. It may be decided whether, the bid need to be considered again.
iii. The bidders - M/s POM Power and M/s Solar Systems have submitted all relevant certifications for SCU Electric BESS apart from IS/IEC 61727: 2004, which may be called for after a later stage. This will require testing of the equipment in Indian conditions and will take more time. Hence, it may be called for from selected bidders before award of works and the financial bids of the bidders may be opened.
iv. Draft evaluation sheet is prepared and attached.

For guidance and orders.

06/06/2024 07:52 PM **VINAY P**
PE1(RTS) ANERT

Note # 29

Draft evaluation sheet may be approved. Systems which meet all BESS requirements as per tender may be considered for opening financial bid.

07/06/2024 10:35 AM **KALA K.G.**
TH(T2) ANERT

Note # 30

May be approved

07/06/2024 11:09 AM **ANEESH S PRASAD**
CTM ANERT

Note # 31

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07/06/2024 01:20 PM **ANEESH S PRASAD**
CFO ANERT

Note # 32

Approved

07/06/2024 02:20 PM **NARENDRA NATH VELURI I F S**
CEO ANERT

Note # 33

07/06/2024 03:02 PM **ANEESH S PRASAD**
CFO ANERT

Note # 34

07/06/2024 03:13 PM **KALA K.G.**
TH(T2) ANERT

Note # 35

i. The financial bids of the two qualified bidders were opened and M/s POM Power Systems and Services have Quoted Rs. 1,49,38,800/- and M/s Solar Systems have quoted Rs. 1,52,22,000/-; The L1 bidder is M/s POM Power System and Services. The L1 amount is seen exorbitant and is very high compared to the estimated cost of the work.
ii. The bidder may be called for a negotiation and explore the possibility of reducing the rates and if not, we may think of a retender as well.

For guidance and orders.

10/06/2024 06:35 PM **VINAY P**
PE1(RTS) ANERT

Note # 36

The rate is very high compared to the estimated cost. Kindly advise.

11/06/2024 11:25 AM **KALA K.G.**
TH(T2) ANERT

Note # 37

Note 35 may be agreed to

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11/06/2024 11:53 AM **ANEESH S PRASAD**
CTM ANERT

Note # 38

Commenting on the bidding trends, Girishkumar Kadam, senior vice president & group head – Corporate Ratings, ICRA, said "Based on the average battery cost of $140/kWh seen in 2023 along with associated taxes/duties and cost of the balance of plant, the capital cost is expected to be in the range of $220-230/kWh."
Based on this kindly comment on where does this stand

11/06/2024 03:09 PM **NARENDRA NATH VELURI I F S**
CEO ANERT

Note # 39

The estimate has been prepared on par with the above rate.The L1 rate is very high compared to the estimated cost.

13/06/2024 01:57 PM **KALA K.G.**
TH(T2) ANERT

Note # 40

Pls see the note above.

13/06/2024 02:46 PM **ANEESH S PRASAD**
CTM ANERT

Note # 41

Get the split of the amount quoted from L1 and then after analysis if needed negotiation may be called for

13/06/2024 04:11 PM **NARENDRA NATH VELURI I F S**
CEO ANERT

Note # 42

13/06/2024 04:30 PM **ANEESH S PRASAD**
CTM ANERT

Note # 43

13/06/2024 04:34 PM **KALA K.G.**
TH(T2) ANERT

Note # 44

In the financial bid, the rate for the Proposed system, Transportation cost, Cost

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for Civil & Electrical works, BoS, I&C charges, Insurance, Warranty and AMC charges were quoted in the financial bid. The component wise split up cost of the Proposed system was called for and the agency have forwarded the same and is attached.

20/06/2024 03:18 PM **VINAY P**
PE1(RTS) ANERT

Note # 45

May see

20/06/2024 04:58 PM **KALA K.G.**
TH(T2) ANERT

Note # 46

Pls see

20/06/2024 05:00 PM **ANEESH S PRASAD**
CTM ANERT

Note # 47

What should I see. You are the technical people and you have to tell where you feel it can be negotiated and reduced. Then what is the purpose of files being routed through you. Take time in seeing files and put some suggestions so that I can take a call on it

20/06/2024 05:10 PM **NARENDRA NATH VELURI I F S**
CEO ANERT

Note # 48

20/06/2024 05:11 PM **ANEESH S PRASAD**
CTM ANERT

Note # 49

i. The rates quoted by the L1 bidder for the 100kW / 150 kWh BESS system is as below:

ii.

SN	Description	Total
1	Total Cost of Basic System	90,00,000
2	Transportation Charges	60,000
3	Civil & associated Electrical works	8,00,000
4	Balance of System	1,20,000
5	Installation and Commissioning Charges	2,00,000

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6	Insurance	4,80,000
7	Warranty Charges for 7 years	12,00,000
8	AMC Charges for 3 years post warranty	6,00,000
9	Any site-specific additional expense required for the successful commissioning of the plant	2,00,000
	Total Amount without GST	**1,26,60,000**
	GST @ 18%	**22,78,800**
	Grand Total	**1,49,38,800**

iii. The rate quoted for Warranty, Civil & associated Electrical works are also on the higher end. The agency has informed the cost for warranty can be reduced to Rs. 4,00,000/- considering the warranty for the basic system for 7 years is already included in the basic cost, whereas the additional rate for 3-year warranty for battery. The rate for civil and electrical works are also reduced to Rs. 4,00,000/- and the cost for BoS and transportation, they are ready to absorb in the cost. The revised rate submitted by the vendor is also attached - Rs. 1,33,10,400/- incl GST.

iv. The Battery unit of the system is having warranty of 10 years and the overall system warranty of 7 years. The AMC amount quoted post warranty is given as Rs. 6,00,000/- (2,00,000/- per year) for 3 years. Also, the Insurance amount for 10 years - Rs. 4,80,000/- seem to be on the higher end. These two amount to Rs. 10,80,000/-, which can be considered at a later stage if needed and insurance can be made on reimbursement mode at actuals.

v. Accordingly, the final rate excluding the additional AMC cost and insurance is Rs. 1,02,00,000/- (Rs. 1,20,36,000/- incl GST). It may be decided whether further negotiation need to be done or not, considering the project is on pilot basis.

25/06/2024 02:38 PM

VINAY P
PE1(RTS) ANERT

Note # 50

The technical team negotiated with the EPC and arrived the above rate. Since we have re-tendered the work, and it is a pilot one, may be approved.

25/06/2024 04:31 PM

KALA K.G.
TH(T2) ANERT

Note # 51

This may approved

25/06/2024 04:39 PM

ANEESH S PRASAD
CTM ANERT

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Note # 52

Approved.

25/06/2024 05:33 PM **NARENDRA NATH VELURI I F S**
CEO ANERT

Note # 53

25/06/2024 05:39 PM **ANEESH S PRASAD**
CTM ANERT

Note # 54

Draft work order to be issued to M/s POM Power is prepared and attached.

26/06/2024 11:01 AM **VINAY P**
PE1(RTS) ANERT

Note # 55

Draft work order may be approved.

26/06/2024 11:09 AM **KALA K.G.**
TH(T2) ANERT

Note # 56

May be approved

26/06/2024 11:13 AM **ANEESH S PRASAD**
CTM ANERT

Note # 57

Approved

26/06/2024 12:59 PM **NARENDRA NATH VELURI I F S**
CEO ANERT

Note # 58

26/06/2024 01:20 PM **ANEESH S PRASAD**
CTM ANERT

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http://www.spd.kerala.gov.in/docs/go/2508_b2_2013_spd.pdf

221/C4/B
29/11/13

GOVERNMENT OF KERALA

Stores Purchase (B) Department

CIRCULAR

No.2508/B2/2013/SPD Dated, Thiruvananthapuram, 28.10.2013.

Sub:- Stores Purchase Department- Acceptance of single bid - guidelines issued - reg.

Many instances have come to the notice of the Government as to whether the purchasing authority can accept a single bid ie, when , one and only one bid is received at the closing time & date of open tender. In such a situation the following guidelines are to be observed by all purchasing officers, in the best interest of public procurement.

i. In general, single bid or tenders are not acceptable in the first instance.

ii. If there is only one bid even after re-tendering, there is need for detailed justification to accept the single tender or single bid with the approval from the competent authority.

iii. There should be no negotiation with the bidder at all. However, in cases where a decision is taken to go for re-tendering due to the unreasonableness of the quoted rates, but the requirements are urgent and a re-tender for the

...2

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Kerala Tenders

eTendering System Government of Kerala

Tender Summary Reports

Print

Organisation Chain :	ANERT
Tender ID :	2024_ANERT_664557_2
Tender Ref No :	ANERT-TECH/41/2024-PE1(RTS)
Tender Title :	Re-Invitation of Expression of Interest (EoI) for the Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram

Bids List

S.No	Bid Number	Bidder Name	Submitted Date	Status	Remarks	Status Updated On
1	1876385	HYKON INDIA LIMITED	31-May-2024 01:23 PM	Admitted-Fee/PreQual/Technical		31-May-2024 04:01 PM
2	1875604	POM SYSTEMS AND SERVICES PVT LTD	30-May-2024 05:37 PM	Admitted-Fee/PreQual/Technical		31-May-2024 04:01 PM
3	1876120	SOLAR SYSTEMS	29-May-2024 03:10 PM	Admitted-Fee/PreQual/Technical		31-May-2024 04:01 PM

Technical Bid Opening Summary

Type :	**Technical**
Summary :	**Bids are opened for technical evaluation**
Updated By :	**Vinay P**
Updated On :	**31-May-2024 04:01 PM**
Document :	None

Tendering Inviting Authority

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eTendering System Government of Kerala
Created By: Vinay P
Created Date/Time: 07-Jun-2024 04:56 PM
Tender Title: Re-Invitation of Expression of Interest (EoI) for the Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram
Tender ID: 2024_ANERT_664557_2

Tender Inviting Authority: CEO, ANERT

Name of Work: Re-Invitation of Expression of Interest (EoI) for the Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram

ANERT Ref No: ANERT-TECH/41/2024-PE1(RTS)

SCHEDULE OF WORK / ITEM(S)

Sl.No	Description of Work / Item(s)	No.of Qty	POM SYSTEMS AND SERVICES PVT LTD(GSTN-NA)--1875604		SOLAR SYSTEMS(GSTN-NA)--1876120		L1 Rate With Tax	L1 Bidder With Tax
			Rate Without Tax	Rate With Tax	Rate Without Tax	Rate With Tax		
1.00	Re-Invitation of Expression of Interest (EoI) for the Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram The rate quoted should be inclusive of all scopes following all the specifications mentioned as per the tender.							
1.01	Rate for BESS system at ANERT HQ, Thiruvananthapuram, Kerala	100	**12660000**	**14938800**	**12900000**	**15222000**	**14938800**	**POM SYSTEMS AND SERVICES PVT LTD**
	Total in Figures		**12660000**	**14938800**	**12900000**	**15222000**		

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Projects (ANERT) <projects@anert.in>

ANERT - Tender ID: - 2024_ANERT_664557_2 - Component wise Split up Cost - reg

GM Pompower <gm@pompower.in> Wed, Jun 12, 2024 at 9:20 AM
To: ANERT Projects <projects@anert.in>
Cc: Chief Technical Manager ANERT <ctm@anert.in>, Kala KG <kala@anert.in>, "I.B.Rao" <ibrao@pompower.in>

Dear Sir,

Please find the below split-up prices. Conversion rate calculated is at Rs.85/-

Description	USD	Qty	INR	Total
Power Management System and aligned hardwares for 100 kW PCS and 150 kWHr LI-Ion Batteries extendable up to 200 kW/225 kW with it's operational fees, handling charges and license	8000	1	680000.00	680000.00
50 kW PCS Modules	6500	2	552500.00	1105000.00
100 kW MPPT	2800	1	238000.00	238000.00
100 kW STS	2500	1	212500.00	212500.00
100 kW Isolation Transformer	4300	1	365500.00	365500.00
Switchgear and cabling expandable up to 200 kW / 225 kWHr	2000	1	170000.00	170000.00
HVAC and Fire Unit	2500	1	212500.00	212500.00
Structural design of the container extendabkle up to 200 kW	4800	1	408000.00	408000.00
Cabinet with MS stand to withstand 5 ton weight	1400	1	119000.00	119000.00
Special Transporation of Lithium Battery based ESS	6800	1	578000.00	578000.00
51.2 V 100 Ah Battery Modules with PMS Hardware	1725	30	146625.00	4398750.00
Incidential Charges	6000	1	510000.00	510000.00
Total Cost				8997250.00

Regards,

K.G. Balasankar Menon
General Manager
POM Systems & Services Pvt.Ltd
[Quoted text hidden]

Validate Print Help

Item Wise BoQ

Tender Inviting Authority: CEO, ANERT

Name of Work: Re-Invitation of Expression of Interest (EoI) for the Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram

ANERT Ref No: ANERT-TECH/41/2024-PE1(RTS)

Name of the Bidder/ Bidding Firm / Company :	SOLAR SYSTEMS

(This BOQ template must not be modified/replaced by the bidder and the same

NUMBER #	TEXT #	NUMBER #	NUMBER #	NUMBER
Sl. No.	Item Description	Capacity (kW)	Basic Rate Rs. P	Transportation Charges Rs. P
1	2	4	7	16
1	Re-Invitation of Expression of Interest (EoI) for the Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram The rate quoted should be inclusive of all scopes following all the specifications mentioned as per the tender.			
1.01	Rate for BESS system at ANERT HQ, Thiruvananthapuram, Kerala	100	**9000000.00**	**100000.00**
Total in Figures				
Quoted Rate in Words				

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THE QUALITY CHOICE
FOR YOUR
POWER NEEDS

POM Systems & Services Pvt. Ltd.

Ref: POM/07/2024/KGB/Q-012
Date: 22/05/2024

To,
CTO,
ANERT
Law College Road, Vikas Bhavan. PO,
Thiruvananthapuram - 695 033, Kerala

Attn: Mr.Aneesh S Prasad
Ref:- ANERT-TECH/41/2024-PE1(RTS)

Sub: - Price Negotiation on Expression of Interest (EoI) for the Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram

Dear Sir/Madam ,
Greetings from POM POWER....!!

This clarifications are in the reference to above cited subject, we thankful for your valued inquiry on us, we hereby pleased to submit you our best revised Techno-Commercial offer.

We are willing to reduce the **total price to Rs.1,33,00,000 all inclusive**.
The break-up is as follows;

Sl No	Capacity	Quoted Price	Final Price
1	Basic Price	9000000	**9000000**
2	Transportation Charges	60000	**Absorbed**
3	Civil & Associated Electrical works	800000	**400000**
4	Balance of System	120000	**Absorbed**
5	Installation and Commissioning Charges	200000	**200000**
6	Insurance (from Materiel dispatch till 10 years warranty period)	480000	**480000**
7	Warranty Charges for 7 years	1200000	**400000**
8	AMC Charges for 3 years post warranty	600000	**600000**
9	Any site specific aditional expense required for the successful commissioning of the plant	200000	**200000**

Marketing Office: No-2, D-01, 1st Floor, Solus Jain Heights, 1st Cross JC Road Opposite to Bangalore Stock Exchange, Bengaluru-560027. Ph.+91 9663370222, E-Mail: info@pompower.in
Registered Office & Factory: No-75, 6th Main 3rd Phase, Peenya Industrial Area, Karnataka, Bengaluru-560058. Ph.080-28372296 / +91 9844034106, E-mail: pompower@pompower.in

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List of Correspondences

Receipt No. / Issue No.	Subject	Type	Marked As	Attached On	Issued On	Pages	Remarks
I/19690/2024	Work order	Issue			03/10/2024 12:42 PM	245-253	
I/19569/2024	Evaluation	Issue			03/10/2024 12:32 PM	244-244	
I/19450/2024	Retender document	Issue			03/10/2024 12:31 PM	161-243	
89771/2024/RTS ANERT	Revised Price	Receipt		25/06/2024 01:11 PM		159-160	File
89626/2024/RTS ANERT	Splitup cost	Receipt		20/06/2024 03:15 PM		158-158	File
89358/2024/RTS ANERT	Financial Bid	Receipt		10/06/2024 06:30 PM		152-157	File
89248/2024/RTS ANERT	Retender Status	Receipt		06/06/2024 07:37 PM		151-151	File
88555/2024/T2 ANERT	AG AUDIT	Receipt		17/05/2024 03:49 PM		150-150	REFERENCE
88493/2024/ACCOUNTS ANERT	Single Bid - Circular	Receipt		16/05/2024 04:08 PM		147-149	Single Bid - Circular
88403/2024/RTS ANERT	Meeting Minutes	Receipt		14/05/2024 06:55 PM		145-146	File
87370/2024/RTS ANERT	Guidelines for BESS	Receipt		08/04/2024 11:24 AM		85-144	File
I/19085/2024	Tender Document	Issue			27/02/2024 01:08 PM	1-84	

AGENCY FOR NEW & RENEWABLE ENERGY RESEARCH AND TECHNOLOGY (ANERT)
Department of Power, Government of Kerala
Thiruvananthapuram, Kerala – 695 033;
www.anert.gov.in , projects@anert.in

E-EOI DOCUMENT

Expression of Interest (EoI) for the Selection of Agency for Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram

Ref. No.: ANERT-TECH/41/2024-PE1(RTS)

PART – 1: GENERAL CONDITIONS

Date of Publishing of Bids : - **27/02/2024**

Last Date of Submission of Bids : - **06/03/2024**

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EOI NOTICE

EoIs in two cover system with Earnest Money Deposit (EMD) are invited from reputed Consultant Agencies / Consultants, with relevant experience in Government and Management Consultancy services in the ***Expression of Interest (EoI) for the Selection of Agency for Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram***. The e-EoI documents can be downloaded from the e-EoIing website of Govt. of Kerala – www.etenders.kerala.gov.in. The EoI form will not be available in any other form.

Thiruvananthapuram CEO

27/02/2024

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ABSTRACT

Ref. No.	**ANERT-TECH/41/2024-PE1(RTS)**
Name of Work	**Expression of Interest (EoI) for the Selection of Agency for Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram**
Download of EoI Form	http://www.etenders.kerala.gov.in
Last date of submission of bids	07/03/2024 @ 1.00 PM
Date and Time of opening the bids	07/03/2024 @ 2.00 PM
Cost of EoI form	**Rs. 1,18,000/- (Including GST)**
Period of Warranty	7 Years from the date of Commercial operation
Availability of EoI Forms	Website http://www.etenders.kerala.gov.in
Place of opening of EoI	Office of CEO, ANERT Law College Road, Vikas Bhavan. PO, Thiruvananthapuram - 695 033, Kerala

Thiruvananthapuram
27/02/2024

Sd/-
CEO

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GENERAL TERMS AND CONDITIONS FOR E-PROCUREMENT

This e-EoI is being published by ANERT inviting Expression of Interest (EoI) for the Selection of Agency for Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram. The EoI is invited in two cover system through e-procurement portal of Government of Kerala (www.etenders.kerala.gov.in). The Prospective bidders willing to participate in this EoI shall necessarily register themselves with above mentioned e-procurement portal.

The EoI timeline is available in the critical date section of this EoI published in www.etenders.kerala.gov.in

1. ONLINE BIDDER REGISTRATION PROCESS:

1.1 Bidders should have a Class III or above Digital Signature Certificate (DSC) to be procured from any Registration Authorities (RA) under the Certifying Agency of India. Details of RAs will be available on www.cca.gov.in. Once, the DSC is obtained, bidders have to register on www.etenders.kerala.gov.in website for participating in this EoI. Website registration is a one-time process without any registration fees. However, bidders have to procure DSC at their own cost.

1.2 Bidders may contact e-Procurement support desk of Kerala State IT Mission over telephone at 0471- 2577088, 2577188, 2577388 or 0484 – 2336006, 2332262 - through email: helpeEoI@gmail.com/eEoIshelp@kerala.gov.in for assistance in this regard

2. ONLINE PROCESS:

The EoI process shall consist of the following stages:

i. Downloading of EoI document: The EoI document will be available for free download on www.etenders.kerala.gov.in. However, EoI document fees shall be payable at the time of bid submission as stipulated in this EoI document.

ii. Pre-bid meeting: (will be updated in ANERT website – www.anert.gov.in)

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iii. Publishing of Corrigendum: All corrigenda shall be published on www.etenders.kerala.gov.in and shall not be available elsewhere.

iv. Bid submission: Bidders have to submit their bids along with supporting documents to support their eligibility, as required in this EoI document on www.etenders.kerala.gov.in. No manual submission of bid is allowed and manual bids shall not be accepted under any circumstances.

v. In case bidder encounters any technical issues pertaining to e-Procurement system while acting on the EoI, computer screen shot of the error message with date & time stamp on the web-browser along with the query shall be e-mailed by the bidder to the help desk **(helpetenders@gmail.com/ etendershelp@kerala.gov.in)**, for resolution of the problem. At the same time, problem must be intimated to the concerned EoI Inviting Authority via email.

vi. The time taken to ascertain, evaluate and suggest a solution for the problem reported by bidder may vary from case to case. Hence bidders are advised to submit the bid **at least 2 working days before the due date** and time of bid submission to avoid any last-minute issues that may come up.

vii. Opening of Bid and Bidder short-listing: The single cover bids will be opened, evaluated and shortlisted as per the eligibility. Failure to submit the required documents online will attract disqualification. Price bids of the eligible bidder's will open the same day of opening and the work will be awarded.

3. DOCUMENTS COMPRISING BID:

3.1 (a) The First Stage - Pre- Qualification cum Technical Bid with Commercial terms

Technical proposal shall contain the scanned copies of the following documents which every bidder has to upload:

Cover 1 shall contain, Part-I (this document in PDF form)/scanned copies of:

i. EoI documents downloaded (signed with office seal)

ii. Summary of Bid qualification requirement (Annexure A)

iii. Undertaking of the agency in the prescribed format (Annexure B) on Govt. of Kerala stamp paper worth Rs.200/-

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iv. Power of Attorney for the authorised signatory to sign the documents on behalf on the Consultancy firm
v. Copy of Registration Certificate of the bidder firm
vi. Copy of GST Certificate
vii. Copy of PAN card / TAN
viii. Documents proving Previous Experience and Pre Qualification
ix. Declaration by the bidder (format as in Annexure – D)
x. Declaration of relationship with ANERT employee (format as in Annexure - E)
xi. Undertaking for No Blacklisting & No Banning (Annexure - F)

3.2 The department doesn't take any responsibility for any technical snag or failure that has taken place during document upload.

4. DOCUMENT FEES

4.1 The Bidder shall pay a fee of Rs. 50,000/-. MSMEs, MSEs or NSIC registered agencies are exempted from payment of this fee.

4.2 Online Payment modes: The fees can be paid in through e-Payment facility provided by the e-Procurement system. Bidders can make payment only via Internet banking facility.

State Bank of India Multi Option Payment System (SBI MOPS Gateway): Bidders are required to avail Internet Banking Facility in any of below banks for making EoI remittances in eProcurement System.

A) Internet Banking Options (Retail)			
1	Allahabad Bank	32	Kotak Mahindra Bank
2	Axis Bank	33	Lakshmi Vilas Bank
3	Andhra Bank	34	Mehsana Urban Co-op Bank
4	Bandan Bank	35	NKGSB Co-operative Bank
5	Bank of Bahrain and Kuwait	36	Oriental Bank of Commerce
6	Bank of Baroda	37	Punjab and Maharashtra Cooperative Bank
7	Bank of India	38	Punjab National Bank
8	Bank of Maharashtra	39	Punjab and Sind Bank

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9	Bassein Catholic Co-operative Bank	40	RBL Bank
10	BNP Paribas	41	Saraswat Cooperative Bank
11	Canara Bank	42	ShamraoVithal Cooperative Bank
12	Catholic Syrian Bank	43	South Indian Bank
13	Central Bank of India	44	Standard Chartered Bank
14	City Union Bank	45	State Bank of India
15	Corporation Bank	46	Syndicate Bank
16	Cosmos Bank	47	Tamilnad Mercantile Bank
17	DCB Bank	48	Tamilnadu Cooperative Bank
18	Dena Bank	49	The Kalyan Janata Sahakari Bank
19	Deutsche Bank	50	TJSB Bank
20	Dhanalaxmi Bank	51	UCO Bank
21	Federal Bank	52	Union Bank of India
22	HDFC Bank	53	United Bank of India
23	ICICI Bank	54	Vijaya Bank
24	IDBI Bank	55	YES Bank
25	Indian Bank		
26	Indian Overseas Bank		
27	IndusInd Bank		
28	Jammu & Kashmir Bank		
29	Janata Sahakari Bank		
30	Karnataka Bank		
31	Karur Vysya Bank		
B) Internet Banking Options (Corporate)			
1	Bank of Baroda	21	Laxmi Vilas Bank
2	Bank of India	22	Oriental Bank of Commerce
3	Bank of Maharashtra	23	Punjab & Maharashtra Coop Bank
4	BNP Paribas	24	Punjab & Sind Bank
5	Canara Bank	25	Punjab National Bank
6	Catholic Syrian Bank	26	RBL Bank

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7	City Union Bank	27	Shamrao Vitthal Co-operative Bank
8	Corporation Bank	28	South Indian Bank
9	Cosmos Bank	29	State Bank of India
10	Deutsche Bank	30	Syndicate Bank
11	Development Credit Bank	31	UCO Bank
12	Dhanalaxmi Bank	32	Union Bank of India
13	Federal Bank	33	UPPCL
14	HDFC Bank	34	Vijaya Bank
15	ICICI Bank	35	Axis Bank
16	Indian Overseas Bank		
17	Janta Sahakari Bank		
18	Jammu & Kashmir Bank		
19	Karur Vysya Bank		
20	Kotak Bank		

During the online bid submission process, bidder shall select ***SBI MOPS*** option and submit the page, to view the ***Terms and Conditions*** page. On further submitting the same, the e-Procurement system will re-direct the bidder to MOPS Gateway, where two options namely ***SBI*** and ***Other Banks***** will be shown. Here, Bidder may proceed as per below:

a) *SBI Account Holders* shall click ***SBI*** option to with its Net Banking Facility., where bidder can enter their internet banking credentials and transfer the EoI Fee and EMD amount.

b) *Other Bank Account Holders* may click ***Other Banks*** optionto view the bank selection page. Here, bidders can select from any of the 54 Banks to proceed with its Net Banking Facility, for remitting EoI payments.

**Transaction Charges for Other Banks vide SBI Letter No. LHO/TVM/AC/2016-17/47 – 1% of transaction value subject to a minimum of Rs. 50/- and maximum of Rs. 150/-*

** Bidders who are using Other Banks option under SBI MOPS Payment Gateway, are advised by SBI to make online payment 72 hours in advance before EoI closing time.*

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5. SUBMISSION PROCESS:

5.1 For submission of bids, all interested bidders have to register online as explained above in this document. After registration, bidders shall submit their Technical bid online on www.etenders.kerala.gov.in along with online payment of fees. They are also required to fill the form available in the ANERT website.

5.2 For page-by-page instructions on bid submission process, please visit www.etenders.kerala.gov.in and click "Bidders Manual Kit" link on the home page.

5.3 It is necessary to click on "Freeze bid" link/ icon to complete the process of bid submission otherwise the bid will not get submitted online and the same shall not be available for viewing/ opening during bid opening process.

6. BID VALIDITY

6.1 The bid will be valid for a period of 6 months from the date of opening of bids

7. DEVIATIONS

7.1 The offers with Deviations in Commercial terms and Technical Terms of the EoI Document are liable for rejection.

8. BLACK LIST

8.1 All the intending bidders shall agree that in the event of the documents furnished with the offer being found to be bogus or the documents contain false particulars, they shall be blacklisted for future EoIs/ association with ANERT

9. BIDDER'S LOCATION

9.1 The bidders are requested to furnish the exact location of their registered office with detailed postal address and pin code, telephone and fax nos. etc. in their EoIs to arrange inspection by ANERT, if considered necessary.

9.2 All communication shall be made to the registered email of the bidder in the e-tender systems and ANERT shall not be responsible for non-receipt or delay of any such communication.

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10. CORRUPT AND FRAUDULENT PRACTICES

ANERT requires compliance with its policy in regard to corrupt and fraudulent/prohibited practices as set forth in this proposal. In further pursuance of this policy, the selected service Provider(s) shall permit ANERT or its representatives to inspect the accounts, records and other documents relating to the submission of the Proposal and execution of the contract, in case of award, and to have the records inspected by ANERT.

11. CONFLICT OF INTEREST

i. The service Provider(s) is required to provide professional, objective, and impartial services, at all times holding ANERT‟s interests paramount, strictly avoiding conflicts with other assignments or its own corporate interests, and acting without any consideration for future work. The consultant has an obligation to disclose to ANERT any situation of actual or potential conflict that impacts its capacity to serve the best interest of ANERT. Failure to disclose such situations may lead to the disqualification of the supplier or the termination of its Contract and/or sanctions by the Government.

ii. Relationship with the ANERT staff: a service Provider (including its subsidiaries /partners) that has a close business or family relationship with a professional staff of the ANERT who are directly or indirectly involved in any part of the preparation of the Terms of Reference for the assignment, the selection process for the Contract, or the supervision of the Contract, may not be awarded a Contract, unless the conflict stemming from this relationship has been resolved in a manner acceptable to ANERT throughout the selection process and the execution of the Contract. Any other types of conflicting relationships as indicated in the EOI

12. CONFIDENTIALITY

i. From the time the Proposals are opened to the time the Contract is awarded, the agency (ies) should not contact any of the officials of ANERT on any matter related

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to its Technical Proposal. Information relating to the evaluation of Proposals and award recommendations shall not be disclosed to the agency (ies) who submitted the Proposals or to any other party not officially concerned with the process, until the publication of the Contract award information.

ii. Any attempt by the agency (ies) or anyone on behalf of the bidders to influence improperly ANERT in the evaluation of the Proposals or Contract award decisions may result in the rejection of its Proposal and may be subject to the application of prevailing Government sanctions procedures.

iii. Notwithstanding the above provisions, from the time of the Proposals‟ opening to the time of Contract award publication, if a agency (ies) intends to contact ANERT on any matter related to the selection process, it should do so only in writing.

iv. The Bids should be submitted only through the e-EoI portal www.etenders.kerala.gov.in. Agency (ies) shall upload all the necessary documents in the e EoI portal before the last date & time for online submission. Proposal received after the submission deadline will be treated as non-responsive and will be excluded from further evaluation process.

v. Proposals must be direct, concise, and complete. ANERT will evaluate bidder's proposal based on its clarity and the directness of its response to the requirements of the project as outlined in this EoI document. Bidders shall furnish the required information on their technical and financial proposals in the enclosed formats only. Any deviations in format or if the proper information is not provided properly, the EoI will be liable for rejection. EoI Evaluation committee may seek clarification, if required, while evaluating the proposal.

vi. The technical bid opening date, time and the address are as stated in the EoI document.

13. APPLICABLE LAW

This EoI shall be governed by the laws and procedures established by Government of Kerala, within the frame work of applicable legislation and enactment made from time to time concerning such commercial dealings. Any default in the terms and conditions of the document by the service provider will lead to rejection of work order.

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14. AMENDMENT OF EOI DOCUMENT

At any time prior to the deadline for submission of the EoI, ANERT may for any reason, modify the EoI document. The amendment document/ corrigendum shall be notified through the website www.etenders.kerala.gov.in and such amendments shall be binding on all the bidders.

15. GOVERNMENT OF KERALA – CORRUPT AND FRAUDULENT PRACTICES

ANERT follows the policy of the Government of Kerala for anti-corruption and fraudulent practices to maintain sound procurement principles of open competition, economy and efficiency, transparency, and fairness. ANERT requires the agency (ies) to observe the following Government manuals (amended from time-to-time) during the selection process and in execution of such contracts The Kerala Financial Code (KFC), 2008 (7th Edition, 1st Edition was in 1963), The Stores Purchase Manual (SPM), 2013.

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AGENCY FOR NEW & RENEWABLE ENERGY RESEARCH AND TECHNOLOGY (ANERT)
Department of Power, Government of Kerala
Thiruvananthapuram, Kerala – 695 033;
www.anert.gov.in , projects@anert.in

E-EOI DOCUMENT

Expression of Interest (EoI) for the Selection of Agency for Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram

Ref. No.: ANERT-TECH/41/2024-PE1(RTS)

PART – 2: REGISTRATION PROCEDURE

Date of Publishing of Bids : - 27/02/2024

Last Date of Submission of Bids : - 06/03/2024

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SELECTION OF AGENCY

16. GENERAL

16.1 This Expression of Interest is being invited by ANERT from competent and eligible agencies/firms who fulfil the eligibility criteria prescribed in this document for the Pilot implementation of Battery Energy Storage System (ESS) with PCU for powering the full load of ANERT HQ.

16.2 The applicant should not have any pending litigation with ANERT or any other Government agency within the Country.

16.3 ANERT will not have any liability to any prospective Consultancy Company / Firm/ Consortium / Entity or person under any laws (including without limitation the law of contract, tort), the principles of equity, restitution or unjust enrichment or otherwise for any loss, expense or damage which may arise from or be incurred or suffered in connection with anything contained in this EoI document, any matter deemed to form part of this EoI document, the award of the Assignment, the information and any other information supplied by or on behalf of ANERT or its employees, any consultants or otherwise arising in any way from the selection process. ANERT will also not be liable in any manner whether resulting from negligence or otherwise however caused arising from reliance of any Applicant upon any statements contained in this RFP.

17. INTRODUCTION

ANERT is planning to implement a 100 kW Battery Energy Storage System (BESS) on pilot mode, which would function as a reference / demo installation for all the stakeholders in the State. INDIA is moving aggressively towards Renewable Energy and for enabling Round the Clock (RTC) from Renewables, some sort of Energy Storage System is necessary. The city of Thiruvananthapuram is being developed as Solar City, and mere Solarisation through On Grid systems may help us in attaining the tag, for RTC to be ensured, BESS is an essential component.

In this context, a working Pilot installation in the Solar City is proposed at ANERT HQ,

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The system must be capable of providing complete back up to the HQ building, replacing the current Diesel generator, Charge the BESS from the existing Solar Power plants and must also have the feature of exporting from the storage at Peak Hours if required, with prior permission from KSEBL or concerned authorities.

18. SCOPE OF WORK

The Scope of Supply & Work includes all design & engineering, procurement & supply of equipment and materials, testing at manufacturers works, multi – level inspections, packing and forwarding, supply, receipt, unloading and storage at site, associated civil works, services, permits, licences, installation and incidentals, insurance at all stages, erection, testing and commissioning of Hybrid Battery Energy Storage System and performance demonstration with associated equipment and materials on turnkey basis at ANERT HQ, Thiruvananthapuram, Kerala.

i. The system proposed must have provision to include minimum three sources of power – Solar, Utility power & Backup DG. The PCU of the BESS system must have provision to manage the input source based on availability and must also be able to schedule based on ToD.

ii. The system will replace the existing Diesel Generator which is powering the ANERT building on black outs and Power cuts. The same is currently connected to the AMF panel, which need to be decommissioned and connected to the new PCU. The output of the PCU is to be connected to this AMF panel, which will act as the primary source of powering the building.

iii. The system shall consist of a 100 kW Bi-Directional PCS + Provision for connecting existing Solar through a Static Transfer Switch and 150 kWh Lithium Battery Storage System, which shall not provide uninterrupted power to the output even at failure of 30% of the battery modules. The total system shall be designed for mobile or stationary use in a modular container divided into battery room and PCS room with all requisite fire protecting equipment and Air conditioner-based cooling.

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iv. The PCU part adopts advanced modular digital control technology, which optimizes the control performance, improves the reliability of the system, and realizes uninterrupted switching between modes such as grid-connected discharge, grid-connected charging, and system off-grid operation. The PCU system has a wide DC input range, which can better suit the charging and discharging requirements of different battery combinations. Under the same power output, the diversity of battery pack connections is increased, and the number of parallel battery packs is reduced. It can better manage the battery, improve the life of the battery and the economic benefits of the energy storage system.

v. The abandoned building near the electrical room can be used to house the BESS system. The requisite civil works for accommodating the system inside the building is under the scope of the bidder.

vi. The bidder is required to take necessary approvals from the Electrical Inspectorate and KSEBL as per norms to commission the system.

vii. All associated civil and electrical works are under the scope of the bidder.

19. QUALIFICATION CRITERIA

19.1.1 An undertaking in Rs.200/- Kerala stamp paper as per the format given in Annexure IC must be submitted along with e-EoI document.

19.1.2 Power of Attorney for signing the documents has to be provided by the bidder. The documents signed by this authority only will be accepted for Expression of Interest and other documents submitted under this project. If the agency desires to change this authority fresh PoA has to be submitted.

19.2 Eligibility Requirement

19.2.1 The detail of eligibility requirements is provided in the table below. The bidders are required to furnish the required supporting documents along with the Technical Bid.

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S. No.	Criteria	Documents Required
1.1	The Applicant should be a Legal Entity continuously operational since last 10 Years. i.e., Legal Entity of the firm i.e., • Sole Proprietorship Private Limited • Public Sector Undertaking • Limited Company • Partnership firm • LLP	a) In case of Company – Copy of Registration / Incorporation Certificate issued by MCA b) In case of LLP – Copy of Deed of Partnership along with registration certificate issued by MCA c) In case of Partnership – Copy of Deed of Partnership d) In case of Sole Proprietor – Duly notarized Undertaking from Sole proprietor
1.2	Bidder must have GST Registration	Copy of GST registration certificate with GSTIN.
1.3	The Bidder must have valid PAN Number	Copy of Pan Card
1.4	The bidder should have undertaken and completed at least one installation of BESS system within the Country	Copies of Work order and Completion Certificates to be submitted
1.5	If the bidder is not an OEM of BESS, authorization certificate along with a copy of agreement between bidder and OEM regarding service and maintenance support must be submitted. Further, at least two service engineers of the bidder, must have completed factory training to ensure timely rectification of complaints at the site.	Copy of MoU between OEM and bidder along with authorisation for bidding in the tender. Copy of successful training completion by service engineers along with their EPF / ESIC details.
1.6	The bidder should have a dedicated office in Thiruvananthapuram and personnel with Graduate Engineering degree with prior experience in Solar / BESS / UPS to attend any complaints. In case, the bidder is not having a dedicated office, an undertaking to open	Details of office in Thiruvananthapuram and profile of Engineer available at office.

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	an office within 30 days of award of work to be submitted.	
1.5	The Applicant entity should have a Minimum Average Annual Turnover of Rs. 5 Crores in any of the three out of the last five financial years	Audited Statements of the Last 5 Financial years and Certificate as per Format
1.6	The bidder should be having unblemished record and must not be blacklisted or declared ineligible for corrupt & fraudulent practices by "any state/ central government" department/ company / entity" as on date of bid opening.	The bidder shall provide an Undertaking as per the format provided as Format A.

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CONDITIONS OF CONTRACT

20. GENERAL CONDITIONS

20.1 The bids should be submitted online at www.etenders.kerala.gov.in

20.2 The EoI should be as per the prescribed form which should be downloaded from the e-tender website. The cost of EoI forms if any, should be paid online, and once paid will not be refunded. EoI forms are not transferable. EoIs that are not in the prescribed form are liable to be rejected.

20.3 Intending bidders should submit their EoIs on or before the due date and time mentioned in the document. Late EoI will not be accepted.

20.4 EoIs subject to conditions will not be considered. They are liable to be rejected on that sole ground.

20.5 The final acceptance/rejection of the bids rests entirely with CEO, ANERT who do not bind themselves to accept the lowest or any EoI.

20.6 In case the contractor becomes insolvent or goes into liquidation, or makes or proposes to make any assignment for the benefit of his creditors or proposes any composition with his creditors for the settlement of his debts, carries on his business or the contract under inspection or behalf of or his creditors or in case any receiving order(s) for the administration of his estate are made against him or in case the contractor shall commit any act of insolvency or in case in which under any clause or clauses any act of insolvency or in case in which under any clause(s) of this contract the contractor shall have rendered himself liable to damages amounting to the whole of his security deposits, the contract shall, thereupon, after notice given by the Purchasing Officer to the contractor, be determined and ANERT may complete the contract in such time and manner and by such persons as ANERT shall think fit. But such determination of the contract shall be without any prejudice to any right or remedy of ANERT against the contractor or his sureties in respect of any breach of contract committed by the contractor. All expenses and damages caused to ANERT by any breach of contract by the contractor shall be paid by the contractor to ANERT and may be

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recovered from him under the provisions of the Revenue Recovery Act in force in the State.

20.7 In case the contractor fails to supply and deliver any of the said articles/services and things within the time provided for delivery of the same, or in case the contractor commits any breach of any of the covenants, stipulations and agreements herein contained, and on his part to be observed and performed, then and in any such case, it shall be lawful for ANERT (if they shall think fit to do so) to arrange for the purchase of the said articles and things from elsewhere of on behalf of ANERT by an order in writing under *the* hand of the CEO put an end to this contract and in case ANERT shall have incurred sustained or been put to any costs, damages or expenses by reason of such purchase or by reason of this contract having been so put an end to or in case any difference in price, compensation, loss, costs, damages, expenses or other moneys shall then or any time during the continuance of this contract be payable by the contractor to ANERT under and by virtue of this contract, it shall be lawful for ANERT from and out of any moneys for the time being payable or owing to the contractor from ANERT under or by virtue of this contract or otherwise to pay and reimburse to ANERT all such costs, damages and expenses they may have sustained, incurred or been put to by reason of the purchase made elsewhere or by reason of this contract having been so put an end to as aforesaid and also all such difference in price, compensation, loss, costs, damages, expenses and other moneys as shall for the time being payable by the contractor aforesaid.

20.8 Any sum of money due and payable to the contractor (including security deposit returnable to him) under this contract may be appropriated by the CEO or any other person authorised by ANERT and set off against any claim of ANERT for the payment of a sum of money arising out of or under any other contract made by the contractor with ANERT or any other person authorised by ANERT. Any sum of money due and payable to the successful tenderer from ANERT shall be adjusted against any sum of money due to ANERT from him under any other contracts.

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20.9 Every notice hereby required or authorised to be given may be either given to the contractor personally or left at his residence or last known place of abode or business, or may be handed over to his agent personally, or may be addressed to the contractor by post at his usual or last known place of abode or business and if so addressed and posted, shall be deemed to have been served on the contractor on the date on which in the ordinary course of post, a letter so addressed and posted would reach his place of abode or business.

20.10 **Conditions in the technical document, technical specifications and special conditions of this EoI document would override these General Conditions, wherever applicable.**

20.11 **ANERT, by notice sent to the successful, may terminate the contract, in whole or in part, at any time for its convenience. The notice of termination shall specify that termination is for ANERT's convenience, the extent to which performance of the Supplier under the contract is terminated, and the date upon which such termination becomes effective.**

20.12 **The EoI shall be opened at the time and date announced in the Kerala Tenders portal, and the date for opening of price bid will be updated in the portal in due course after evaluation of the technical bids.**

20.13 **In case any difference or dispute arises in connection with the contract, all legal proceedings relating to the matter shall be instituted in the Court within whose jurisdiction the CEO, ANERT voluntarily resides.**

20.14 **The Courts situated at the place where the headquarters of ANERT is situated viz, Thiruvananthapuram alone will have jurisdiction to entertain civil suits and all other legal pertaining to this contract.**

21. SELECTION PROCESS FOR BIDDER

There are two bid-opening events:

a) Pre-Qualification cum Technical Bid

b) Commercial Bid

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The Commercial Bids of only those bidders will be opened who score equal to or more than qualifying marks in Technical Bid as decided by ANERT.

21.1 PRE-QUALIFICATION PROCESS

a. The Bidders Pre-Qualification Proposal will be evaluated as per the requirements specified in the document and adopting the pre-qualification criteria spelt out. The Bidder is required to submit all required documentation in support of the pre-qualification criteria specified.
b. The Bidder shall meet all the mandatory compliance requirements. Failure in meeting the mandatory compliance requirements will result in disqualification of the Bidder.
c. An undertaking in Rs.200/- Kerala stamp paper as per the format given in Annexure B must be submitted online

21.2 Pre-Qualification Criteria

#	Criteria	Documents Required
1.1	The Applicant should be a Legal Entity continuously operational since last 10 Years. Consortium is not allowed to bid for this engagement i.e., Legal Entity of the firm i.e., • Sole Proprietorship Private Limited • Public Sector Undertaking • Limited Company • Partnership firm • LLP	a. In case of Company – Copy of Registration/ Incorporation Certificate issued by MCA b. In case of LLP – Copy of Deed of Partnership along with registration certificate issued by MCA c. In case of Partnership – Copy of Deed of Partnership d. In case of Sole Proprietor – Duly notarized Undertaking from Sole proprietor
1.2	Bidder must have GST Registration	Copy of GST registration certificate with GSTIN.
1.3	The Bidder must have valid PAN Number	Copy of PAN Card
1.4	The bidder should have undertaken and completed at least one installation of BESS system within the Country	Copies of Work order and Completion Certificates to be submitted

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1.5	If the bidder is not an OEM of BESS, authorization certificate along with a copy of agreement between bidder and OEM regarding service and maintenance support must be submitted. Further, at least two service engineers of the bidder, must have completed factory training to ensure timely rectification of complaints at the site.	Copy of MoU between OEM and bidder along with authorisation for bidding in the tender. Copy of successful training completion by service engineers along with their EPF / ESIC details.
1.6	The bidder should have a dedicated office in Thiruvananthapuram and personnel with Graduate Engineering degree with prior experience in Solar / BESS / UPS to attend any complaints. In case, the bidder is not having a dedicated office, an undertaking to open an office within 30 days of award of work to be submitted.	Details of office in Thiruvananthapuram and profile of Engineer available at office.
1.7	The bidder should be having unblemished record and must not be blacklisted or declared ineligible for corrupt & fraudulent practices by "any state/ central government" department/ company / entity" as on date of bid opening.	The bidder shall provide an Undertaking as per the format provided as Format A.

21.3 TECHNICAL QUALIFICATION

a. ANERT will review the Technical bids to determine whether the technical bids are substantially responsive. Bids that are not substantially responsive are liable to be disqualified at ANERT's discretion.
b. The bidder's technical solutions proposed in the bid document will be evaluated as per the requirements specified in this document
c. Each Technical Bid will be assigned a technical score out of a maximum of 100 marks. Only the bidders who get an aggregate Technical score of 50% or more will qualify for commercial evaluation stage. Failing to secure minimum marks shall lead to technical rejection of the Bid and Bidder

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21.4 Commercial Qualification

The Bidders shall quote for the entire scope of contract on an "overall responsibility" basis such that the total contract value covers all obligations of the Bidder mentioned in or to be reasonably inferred from the Bidding documents in respect of providing the services. The Financial Bid shall be submitted in the format given as in the e-portal.

Prices quoted by the Bidder shall remain firm during the entire contract period and shall not be subject to variation on any account except change in applicable tax rates. A Bid submitted with an adjustable price quotation will be treated as non-responsive and rejected.

22. EVALUATION PROCESS

ANERT shall evaluate the responses and scrutinize the supporting documentary evidence. Inability to submit the requisite supporting documents, may lead to rejection. The decision of ANERT in the evaluation of proposals shall be final. No correspondence will be entertained outside the process of evaluation. Each of the responses/Proposals shall be evaluated as per the criteria and requirements specified in this tender document.

An Evaluation Committee will be constituted to evaluate the technical and financial proposals and recommend award of the works. The proposals will be evaluated in three stages.

22.1 Stage 1: - Pre-Qualification Cum Technical Bid

a. Each of the Pre-Qualification condition mentioned in Section24.1 is MANDATORY. In case the Bidder does not meet any one of the conditions, the bidder will be disqualified.
b. Response to the Pre-Qualification Requirements shall be evaluated in accordance with the requirements specified in this document; A checklist has to be created with proper page-wise indexing of all supporting documents
c. ANERT will review the technical bids of the short-listed bidders to determine whether the technical bids are substantially responsive. Bids that are not substantially responsive are liable to be disqualified.

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22.2 Stage 2: - Commercial Bid

a. The bid should include all taxes, duties, fees, levies, works contract tax and other charges as may be applicable in relation to the activities proposed to be carried out.
b. The taxes quoted in the offer should be as per the prevailing tax rates. Any subsequent increase in the tax rates or introduction of new tax will not be paid by ANERT. Similarly, if any benefits arising due to downward revision in tax rates, or any exemptions availed by the Bidders organization should be passed on to ANERT.

23 SPECIAL CONDITIONS

23.1 Each bidder should submit only one (1) bid. Any bidder who submits/participates in more than one bid for the work shall be disqualified.

23.2 If the due date for opening the EoI happens to be declared holiday, then the EoI will be received and opened on the very next day, for which no prior intimation will be given.

23.3 **During the EoI evaluation, ANERT may seek more clarifications/details from any or all of the bidders, if felt necessary.**

23.4 The ownership of all documents, reports, projects etc. being created as part of the assignment will vest with ANERT.

23.5 Any information furnished by the Bidder, if found to be incorrect at any stage, would render them being declared as ineligible.

23.6 Incomplete proposals may be summarily rejected. ANERT reserves the right to reject any or all the bid without assigning any reason thereof**.**

24. PAYMENT TERMS

24.1 No advance payment will be given. All the documents submitted should be certified by the concerned personnel of ANERT.

24.2 The terms of payment shall be:

i. Upon delivery of materials at the site, 60 % of the contract value against that site will be released as first part payment. The supplier shall submit the invoice for the materials (including serial numbers and delivery chalan) duly certified by

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the concerned District Office along with a report regarding the supply of materials.

ii. On completion of the installation of BESS system and filing application for connectivity, 20% of the contract value shall be released as second part payment. The supplier shall submit the invoice for the materials supplied and all documents related including the Project Completion Report to the completion of the work certified by the district office shall be submitted for the release of the amount. The PCR submitted will be used for conducting the pre-commissioning tests. Proof of the completion report submitted to the electrical inspectorate shall be submitted.

iii. After the Inspection and Approval of the Electrical Inspectorate, date of Energisation to the Grid by the DISCOM will be considered as the official Date of Commissioning (CoD) of the project and this will be treated as the commissioning of the system.

iv. On commissioning of the grid connected system, 10% of the remaining contract value will be released after proving the Key Performance Indexes. All documents related to the completion of the work including commissioning report shall be submitted for the release of the amount.

v. The balance 10% shall be retained as performance security and will be released in parts - 2% after 1 year of operation, 3% after 3 years of operation, 2% after 5 years of operation, 3% after 7 years of operation of warranty.

vi. The security deposit of 3% furnished along with the contract agreement shall be released on successful completion of supply, installation, and commissioning.

25. RIGHTS TO ACCEPT/REJECT ANY OR ALL PROPOSALS

ANERT reserves the right to accept or reject any proposal, and to annul the EoI process and reject all Bids at any time prior to award of Contract, without thereby incurring any liability to the affected Bidders or any obligation to inform the affected Bidders of the grounds for ANERT's action.

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26. FAILURE TO AGREE WITH THE TERMS & CONDITIONS /CONTRACT

Failure of the Bidder to agree with the Terms & Conditions of the EoI shall constitute sufficient grounds for the annulment of the award of contract. The contract may be awarded to the next most responsive bid among other bidders.

27. PERFORMANCE SECURITY

The successful bidder has to remit an amount @ 3% of the total amount quoted by the bidder per annum as performance security deposit in terms of e-Bank Guarantee/Deposit having validity for 3 years from the date of agreement. The bank guarantee/deposit will be released/refunded to the successful bidder after completion of the contract period after deducting the penalties if any.

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TECHNICAL SPECIFICATIONS

GRID BASED BATTERY ENERGY STORAGE SYSTEM

The Scope of Work covered under this specification shall be but not limited to the following.

28. INITIAL DESIGN AND FABRICATION

For the initial design and fabrication of the equipment, the Contractor shall

- Design, fabricate, and assemble a fully functional, transportable BESS that meets the requirements delineated herein. This shall include a control system that provides standard input/output channels and appropriate control actions for all required operational and protective features.
- Fully document the design and expected performance of the BESS by means of documents, drawings, reports, data, and other submittals, as required herein.
- Perform factory acceptance testing of the BESS.
- Conduct design review meetings during initial design and fabrication, in Consultation with the ANERT with special reference to the geographical/climatic conditions of the Project site.
- Obtain site-specific data in preparation for developing installation implementation plans.
- Develop site installation/construction drawings, specifications, and calculations.
- Supply any special equipment and tools required for maintenance of the BESS.
- Supply an initial complement of spare parts (at a to-be-determined level).
- Provide warranty for the entire BESS and its constituent equipment.

29. TRANSPORTATION AND SITE SETUP

Interconnection of the BESS with the grid is at the point of common connection (PCC). The Contractor shall be responsible for all equipment and installation activities up to the system side of the PCC. The Contractor will be responsible for completing the necessary work for interconnection point.

For installation/interconnection, the Contractor shall

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- Develop drawings, specifications, and calculations for Contractor's scope of installation equipment and services (that is, up to the BESS side of the PCC).
- Obtain all permits necessary to transport the BESS to the site.
- Ship the BESS to the project site.
- Assemble BESS components on site to produce a functional system (as required).
- Perform start-up testing and SAT of the BESS.
- Provide on-site Contractor representative during installation and/or interconnection activities by the ANERT and during start-up and SAT of the BESS by Contractor.
- Obtain permits necessary to prepare the site and to install and interconnect the BESS to the grid.
- Provide a complete set of as-built drawings.
- Provide a training class for ANERT's technicians and maintenance personnel.

30. OPERATION AND MAINTENANCE

The operation and maintenance (O&M) of the BESS on comprehensive basis to the Contractor on turnkey for the 10 (Ten) years. The rates quoted by bidder for Comprehensive O&M of the Plant Facilities on yearly basis for 10 years shall be inclusive of the replacement costs if any.

31. DEFINITIONS

- PCC - Point of common connection – MSB Panel at ANERT HQ
- Utility - Kerala State Electricity Board Limited (KSEBL)
- Unit battery - A unit battery is the minimum field-replaceable stored energy component or assembly. It may consist of one or more electrochemical cells, electrically interconnected in any series and/or series-parallel configuration. A unit battery has one (and not more than one) set of positive and negative terminals, by which it is interconnected with the rest of the storage system.
- BESS - Transportable, containerized energy storage system based on commercially available electrochemical storage solutions, capable of receiving, it and / or balancing it.

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32. BESS INTERCONNECTION

The BESS will be interconnected with the KSEBL grid at PCC. It is expected that the PCC will be at the MSB panel at ANERT HQ. However, the same must be finalized by the Contractor after consultation with the KSEBL.

33. GRID CHARACTERISTICS

The BESS shall be capable of continuous operation under variable voltage, frequency and phase imbalance conditions at the PCC, as described in the Table below. Information on available fault current and other characteristics of the KSEBL grid will be provided by the KSEBL. The Contractor shall confirm, for each KSEBL site, that this information has been received and understood during the site-specific engineering phase.

Codes and Standards

IEC 62477 IEC 62477	Secondary cells and batteries for renewable energy storage for On-grid applications: Non-chemistry Specific (applicable to all secondary battery types) OR Safety requirements for power electronic converter systems and equipment
IEC 61000	Electro Magnetic Compatibility of Lithium-Ion Battery Energy Storage System.
IEC 62485-2	Safety requirements for secondary batteries and battery installations – to meet requirements on safety aspects associated with the erection, use, inspection, maintenance, and disposal: Non-chemistry Specific (applicable to all secondary battery types)
IEC 61508 IEC 62620 / IEC 62619	Functional Safety of Electrical/Electronic/Programmable Electronic Safety- related Systems: Applicable for all Battery Energy Storage Systems OR Secondary cells and batteries containing alkaline or other non-acid electrolytes – Safety requirements for secondary lithium cells and batteries, for use in industrial applications
IEC 61850/ DNP3	Communications networks and management systems. (It shall be ensured that PV Plant SCADA and the BESS control system communicate with each other over the protocol and the combined parameters are accessible over a common HMI.)

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34. TECHNICAL SPECIFICATION OF BATTERY ENERGY STORAGE SYSTEM

34.1 Procurement-Specific Ratings and Requirements

Item Description	Requirement
Battery Technology	Any battery technology with totally Maintenance Free suitable for operation in site-specific climatic conditions can be used.
Rated No of Cycles (Minimum)	4000 cycles at rated energy capacity at 80%; Depth of Discharge (DoD) at 25°C and C/1 Rate of Discharge
Nameplate watt rating*, AC (A) Nameplate watt-hour rating, ac (B)	100 kW, continuous 150 kWh at 100 kW net ac output at the beginning of life and not less than 80% of this capacity at any point of time up to End of Battery Life
System AC-DC-AC efficiency*:	> 90%
Use case requirements	Peak Management Voltage Support Frequency Regulation (demonstration only) Intermittent Resource Support
Peak Management	Yes Morning and evening (preference to evening) No. of days per year: up to 365 In the Peak Management Use Case scenario, power generated during the early and midday periods shall be stored in the BESS and released later in the day, during peak demand. In this case, the BESS shall be discharged in the Peak Limiting profile in the late afternoon. To the extent that the total energy dispatched does not exceed the nameplate watt-hour rating, the BESS may be further discharged in Constant Power Mode after Part 01 (Solar PV Plant) is no more generating. One discharge cycle per day is envisaged in this use case.
VAR compensation /voltage support	Yes

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Item Description	Requirement
(VC/VS)	
Intermittent resource support (IRS)	Yes This use case is envisaged to be employed during the day, primarily to support variations in Solar PV generation. The days for operation in this use case shall be determined in consultation with the ANERT/KSEBL.
Black Start Capability	Yes
Ventilation System inside the Container	Should be such as to maintain minimum and maximum Temperature as recommended by the manufacturer for optimum performance of the batteries on continuous basis.
Grid Charging	Allowed with the discretion of grid operator. If the BESS is charged through the grid, the energy consumed shall be considered part of the Auxiliary power and shall be metered.

34.2 Additional Information and Requirements for Frequency Regulation Use Case

This Clause provides information regarding the anticipated energy dispatch under the frequency regulation use case, as described in Clause 35.4. However, the same may be altered as per Control Strategy proposed so as to allow minimum Energy Imbalances.

Table 3: Additional Information and Requirements for Frequency Regulation Use Case	
Item Description: Frequency Regulation Use Case	Requirement
Maximum BESS power level for frequency regulation	Discharging: 50% of nameplate watt rating Charging: 50% of nameplate watt rating

34.3 Additional Information and Requirements for Intermittent Resource Support Use Case

This section provides information regarding the anticipated energy dispatch under the intermittent resource support use case, as described in Clause 35.5.

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Table 4: Additional Information and Requirements for Intermittent Resource Support Use Case	
Item Description: Intermittent Resource Support Use Case	Requirement
Voltage flicker compensation:	Yes Compensate for all changes in intermittent resource output power level that exceed 10% per second and in which the new power level remains for at least 5 seconds. The Maximum system Power level for Voltage flicker compensation during discharging and discharging to be determined during detailed system design in terms of % of nameplate watt and VAR rating.
Ramp rate control: period of operation	To be specified in design
Ramp rate control (Power level of the BESS shall decrease at a linear rate)	75 kW/min Maximum BESS power level for charging and discharging to be determined at the time of detailed system design in terms of % of nameplate watt and VAR rating.
Intermittent resource generation following daily schedule and combined power output. Intermittent resource generation following: period of operation	Suggested Scheme (to be finalized during detailed design stage): Charging during morning up to noon and other off-peak periods Begin discharging in load following mode in the afternoon (coinciding with Peak Demand in the evening) Conclude discharging at 08:00 PM Combined Power output of Intermittent resources (Part 01 and Part 02) and BESS to be at unity power factor. Maximum BESS power level for charging and discharging to be determined at the

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	time of detailed system design in terms of % of nameplate watt and VAR rating
Warranties	Seven (7) year parts and labour warranty for the entire BESS and its constituent equipment. 10-year warranty for Battery

34.4 Frequency Regulation

The BESS shall be capable of both charging and discharging, at the power level or levels specified in Table above, in response to an external signal (such as an automatic generation control signal). FR may occur for as much as 24 hours per day and for as much as 365 days per year. FR operation would not be simultaneous with any other real power discharge or charge, but it may occur simultaneously with supply of reactive power.

34.5 Intermittent Resource Support

The BESS will support the integration of solar PV plant into the grid by either eliminating or reducing undesirable voltage and power fluctuations on the KSEBL line or by firming the power delivered by the resource (that is, augmenting the power produced so that an expected output may reliably be achieved).

34.6 Nameplate Ratings

34.6.1 Overall System Real Power and Energy Ratings

During discharge, the BESS shall be rated to supply at the PCC the continuous net ac real power and ac energy output specified in *Table 2: Supply-Specific Ratings and Requirements* above. These ratings shall be referred to in all project documentation, including this specification, as the nameplate watt rating and the nameplate watt-hour rating. All nameplate ratings shall be achievable over the End of Battery life, as specified in this tender document. The nameplate watt rating and nameplate watt-hour rating shall be achievable during discharge for the full range of stated environmental conditions, provided that the battery is fully charged and the HVAC system (if incorporated in the BESS) has stabilized. In any case, the BESS shall be capable of being discharged at reduced power levels from that specified above. However, in no case will the energy discharged from the battery be greater than the nameplate watt-hour rating.

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The Contractor shall clearly state in its O&M manual as well as during design review the expected efficiencies of the major subsystems (battery, PCS) as well as the expected losses from auxiliaries.

Note: There may be specific requirements regarding the attainable power level during charging, which the Contractor may need to identify in co-ordination with the grid operator/ANERT. However, unless otherwise specified in those sections, the real power level attainable during charging shall be at the Contractor's discretion, so long as the other charging requirements in this specification are met.

34.2.1 Overall System Reactive Power Rating

In accordance with the VAR-related control modes identified in Clause 23, the BESS shall be capable of dispatching both leading and lagging reactive power at the PCC, up to the rated VAR capacity specified in Table-2, regardless of whether the battery is being simultaneously discharged or charged. This rating shall be referred to in all project documentation, including this specification, as the nameplate VAR rating. The BESS shall be capable of simultaneously producing real and reactive power as long as no nameplate rating is exceeded. That is, the combination of operation at full nameplate watt rating and full nameplate VAR rating shall not exceed the nameplate VA rating.

35 BESS Use Cases

The BESS shall be capable of operating over its entire life in one or more of the use cases described in this section to meet the system requirements specified in Table-2, and further detailed in the tender document.

The possible use cases supported by this technical specification include the following:

- Peak management (PM)
- VAR compensation /voltage support (VC/VS)
- Frequency regulation (FR)
- Intermittent resource support (IRS)

The use cases should not be interpreted as either operating modes or control functions. The requirements for the BESS control functions that are required to operate

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the BESS in a manner that supports these use cases as mentioned in this document. While Use cases describe what the BESS will be used for, whereas control functions describe how the equipment will be operated to achieve those uses. Mapping of the control functions to the use cases is provided in Clause 38.

The purpose for defining and describing the use cases is to provide the Contractor with essential information needed to ensure that the BESS will have the desired life and performance characteristics. In particular, the requirements listed in this section should support Contractor's efforts to accomplish the following:

- Determine other BESS subsystem performance capabilities
- Understand the various combinations of uses that the KSEBL may exercise

The operation of the BESS at the KSEBL site may also include some combination of the above use cases. The possible (or required) combinations are described in Clause 37.

Each use case description in the following subsections includes a capability requirement for a number of cycles and days per year of operation in that use case. On days of the year in which a particular use case is not being used, the BESS shall be considered available for operation in some other use case, so long as the nameplate ratings specified elsewhere are not exceeded. Simultaneous operation in two or more of the real power use cases (PM, FR, IRS) is not required, but it may be optionally provided at the discretion of the Contractor, so long as no nameplate rating is exceeded. In accordance with Clause 37, simultaneous operation in the VC/VS use case together with one of the other use cases is a required capability.

Important Note: The various use cases described below represent a wide range of battery and PCS capabilities. The BESS shall be designed to accommodate the most stringent of the intended operation scenarios so that any of the scenarios can be exercised without exception. The use cases described in this Clause 37 presuppose the provision of a suitably designed control system, as outlined in Clause 40 of this specification. Accordingly, the descriptions of the use cases must be read and understood in conjunction with the description of the control functions specified in Clause 40.

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35.1 Peak Management (PM)

In the PM use case, the BESS is controlled to reduce peak power demand on the KSEBL feeder to which the BESS is connected. The BESS would be discharged at any power level up to the maximum power level specified as the nameplate watt rating. The BESS shall support operation in this application for up to the number of times per year specified, if any, in Table-2. In this Use case, each daily operation is expected to consist of one discharge and charge cycle, in either a variable or a constant power output, as described below.

In that event that two discharges are required in a day, the maximum number of days per year that the system would operate with two daily discharges is one-half the number of days in single-daily-discharge mode. In the case of two discharges in a single day, it may be desirable for the KSEBL to charge the battery between the two discharges (opportunity charging) and the BESS shall permit such operation. For example, a morning and afternoon peak may be shaved, with a partial (or complete) recharge taking place during the day between the morning and evening peaks.

Note: Specification of the number of days per year for the two-daily-discharges scenario at half those for the single-daily-discharge mode assumes that opportunity charging between daily cycles would fully restore battery capacity, so that each of the two discharges in the day would take place at the full nameplate watt-hour rating. If each discharge were less than the nameplate watt-hour rating, the PM operation in a two-daily-discharges scenario could potentially occur on more days per year.

Two different power dispatch profiles during discharge are specified, as described in the following two subsections.

i. Constant Power

The BESS is discharged at a single, constant power level for a specified duration. The dispatch power level may be any value less than or equal to the nameplate watt rating. The duration of the constant power discharge may be any period of time (up to six hours), so long as the total energy dispatched to the load does not exceed the nameplate energy rating of the BESS or exceed any other operational or safety limits.

ii. Peak Limiting

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The BESS is discharged at a varying power level proportional to the amount by which the actual load on the KSEBL feeder or substation transformer exceeds a desired value. The dispatch of power from the BESS in this case would mirror the shape of the KSEBL load (which may be, generally, sinusoidal in shape). The duration of this discharge may be several hours, so long as the total energy dispatched to the load does not exceed the nameplate energy rating of the BESS or any other operational or safety limits. As an example, with the BESS installed at a distribution substation, the load on the secondary winding of the substation transformer would be monitored and sent to the control system. The KSEBL operator would enter a set point, and the BESS would operate so as to prevent or reduce overloading of the transformer by serving some (or all) of its entire peak load.

Actual discharge profiles may vary with respect to overall shape, number of peaks and valleys per day, ramp rate, and overall duration of discharge, including possible standby time between successive peaks. The Contractor shall specify all operational and warranty-specific limitations on the use of the battery for the two different power dispatch profiles.

35.2 VAR Compensation/Voltage Support (VC/VS)

The BESS shall be capable of supporting voltage on the KSEBL feeder to which it is connected by the injection or absorption of both real and reactive power (VARs). This operation shall be possible during real power discharge or charge and during standby. The operation may be dynamic (continuously varying reactive/real power output) or static (operation at a fixed power factor).

In this use, it shall be possible for the KSEBL to determine the priority of operation and/or the level of reactive power support desired, including different levels for leading and lagging VARs, as well as precedence of reactive power over real power or real power over reactive power. Specifically, it shall be possible to give either real power or reactive power the higher priority, so long as the nameplate VA rating (see Clause 71.6.271.6.2) is not exceeded. In this use, the BESS shall be capable of responding to both real-time and pre-programmed control signals (see Clause 74).

i. VAR Compensation Option

The intent of VAR Compensation is that the BESS be capable of carrying out the basic functions of a synchronous generator having the option to include injection voltage

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control/reactive power consumption and limitation of active power when the effect of the reactive power is not sufficient. It uses a progressive curve, whereby the higher the deviation is from the target voltage, the greater is the effort to correct the deviation. It may be necessary to automatically disable over frequency or under frequency protection during operation in VC/VS mode. The Contractor shall coordinate this with the KSEBL.

35.3 Frequency Regulation (FR)

The BESS shall be capable of both charging and discharging, at the power level or levels specified in Table-2, in response to an external signal (such as an automatic generation control signal). FR may occur for as much as 24 hours per day and for as much as 365 days per year. FR operation would not be simultaneous with any other real power discharge or charge, but it may occur simultaneously with supply of reactive power.

35.4 Intermittent Resource Support

The BESS will support the integration of solar PV plant into the grid by either eliminating or reducing undesirable voltage and power fluctuations on the KSEBL feeder or by firming the power delivered by the resource (that is, augmenting the power produced so that an expected output may reliably be achieved).

In IRS use, the BESS shall respond to one of two classes of controlling signals: (1) the voltage at the electrical connection point or PCC and (2) the output power level of the intermittent resource (or some other power level signal). Several scenarios are possible, as described in the following paragraphs.

i. Voltage Flicker

In a voltage flicker control scenario, the BESS shall be dispatched to control rapid but small (such as 2% to 5%), potentially frequent changes in voltage on the utility feeder that produce voltage flicker at other customer loads on the feeder. The flicker standard to be implemented shall be determined during detailed design stage in consonance with the regulation of the jurisdiction having authority.

The control signal is the power output level of the solar PV plant. Drops in power shall be compensated by a discharge of the BESS, whereas increases in power shall be compensated by a charge of the BESS in accordance with a specified scheme (to be finalized during detailed design stage). The BESS shall respond instantaneously for each

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qualifying power level change and then immediately begin a ramp to zero power with a specific ramp rate.

Depending on a number of factors—including the size of the intermittent resource compared to the native feeder load, the impedance of the feeder, and the location of the BESS and the intermittent resource relative to one another—voltage flicker may be improved by the BESS providing either real or reactive power or both in response to either variations in the voltage at the electrical connection point or variations in the output power level of an intermittent resource. The output of the BESS (either discharge or charge) shall be instantaneous in response to a change in the monitored quantity, followed by a ramp to zero over a settable period of time.

ii. Ramp Rate Control

In a ramp-rate-control scenario, the BESS shall be dispatched to limit the rate of power change up or down (ramp rate) from the intermittent resource so that large step changes in power output are smoothed over time to produce a controlled ramp (up or down). Ramp rate control is effectively the same as voltage flicker control from the point of view of power in or out of the storage system except that the goal, for example, is to limit the operation of automatic voltage regulators and tap changers on the feeder or at the substation that are caused by relatively larger changes in output of the intermittent resource.

The control signal is the power output level of solar PV plant. Drops in power shall be compensated by a discharge of the BESS, whereas increases in power shall be compensated by a charge of the BESS in accordance with a specified scheme (to be finalized during detailed design stage). The BESS shall respond instantaneously for each qualifying power level change and then immediately begin a ramp to zero power with a specific ramp rate.

The BESS shall be dispatched in response to variations in power at the point of concern, whether it is the feeder at the electrical connection point or the output terminals of the intermittent resource. The output of the BESS (either discharge or charge) shall be instantaneous in response to a change in the monitored quantity, followed by a ramp to zero over a settable period of time. The maximum output (either discharge or charge) of the BESS shall be specified in the detail design Scheme.

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iii. Generation-Following

In the generation-following scenario, the BESS shall be dispatched to follow the output power from the intermittent resource(s) part of the Plant Facilities to compensate for its variability. The output from the BESS shall be controlled to produce a resultant power output level from the same. The desired level of the resultant power shall be settable. The BESS shall charge the battery with energy from the renewable sources, as determined in consultation with the Owner. The BESS shall discharge the battery so that the output of solar PV plant plus battery is a constant (see Table -2). During the recharge operation, the charging power level should be such that the net output of the array is kept more or less constant (that is, array power momentary dropouts should be compensated to the extent possible during recharge).

In the most general case, both discharge and charge operations will occur depending on the maximum power output capability of the solar PV plant relative to the battery storage system capability, the desired power set point, the window of operation of the storage, and the variations in output of the resource. Actual discharge profiles in the IRS use case may vary with respect to overall shape, number of peaks and valleys per day, ramp rate, and overall duration of discharge, including possible standby time between successive discharges or charges. The Contractor should specify all operational and warranty-specific limitations on the use of the battery for different dispatch profiles.

35.5 Combination Use Case Requirements

On days of the year in which a particular use is not active, the BESS shall be considered available for other uses, so long as the nameplate ratings specified elsewhere (see Clauses 37) are not exceeded. Simultaneous operation in two or more of the real power use cases (PM, FR, IRS) is not required but may be optionally provided at the discretion of the Contractor, so long as no nameplate rating is exceeded. In accordance with Section simultaneous provision of VAR support (VC/VS) with other use cases is a required capability. The BESS shall be capable of operating in several combinations of use cases, like Peak Limiting plus Frequency Regulation, Peak Limiting plus Voltage Flicker, Peak Limiting plus Ramp Rate Control. On any given day of the year, only one of these two dispatch profiles would be executed.

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35.6 Charging Requirements

The control system shall allow the KSEBL to initiate a specified or programmed charge cycle. The Contractor shall work with each KSEBL to ensure that the KSEBL's requirements are met to the full capability of the BESS and that the battery is properly charged manner describe all charging requirements and shall guide the user in ensuring that charging of the battery is properly carried out.

36 DESIGN, FABRICATION, AND CONSTRUCTION REQUIREMENTS OF BESS

36.1 General

The methods and materials specified in this technical specification are intended to represent minimum requirements. Reliance thereon shall not diminish the responsibility for meeting performance and other requirements stated in this technical specification.

The design of the BESS shall incorporate the principle of modularity, with a view to reducing life-cycle costs and ease of replenishment of storage capacity while facilitating ease of maintenance, space requirements, and reliability. The design should also facilitate rapid and easy replacement of the unit batteries without significant downtime. Specifically, the BESS should be designed so that battery replacement is not necessitated within the first five years of operation considering the remoteness of the project sites. Overall, the design philosophy shall be to minimize and optimize all costs to the ANERT, not simply initial capital costs or low maintenance costs.

Life-cycle costs include the following: initial system cost, unit battery replacement cost, periodic equipment upgrades, maintenance costs, auxiliary system energy consumption, charging energy costs (that is, costs due to overall battery and PCS losses), and any other contributors to life-cycle energy cost.

36.2 System-Level Design and Performance Requirements

36.2.1 The major equipment items shall include a battery, battery management system (BMS), PCS, output/isolation transformer, and SCADA which is to be integrated with the solar plant SCADA system defined elsewhere in this document. Additional equipment shall include HVAC, wiring, connectors, protective devices, grounding, junction boxes and enclosures, instrumentation, enclosures, and all other items needed for a fully functional, grid-interactive BESS to meet

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the requirements set forth in this specification. All systems and components of systems—including electrical storage unit, switching devices in the PCS, components of monitoring and control systems, and components of auxiliary systems— must use proven and previously demonstrated technology. Electrochemical cells, PCS switching devices, and control system hardware and software must be commercially available and in use for other markets. Electrochemical cells must be replaceable (in small orders) with a maximum six-week lead time under normal business conditions. Designs using experimental or otherwise undocumented components are not permitted.

36.2.2 The BESS shall be characterized using language and methods consistent with IEEE 1679, "Recommended Practice for the Characterization and Evaluation of Emerging Energy Storage Technologies in Stationary Applications."

36.2.3 The BESS shall be IEEE 1547 (Standard for Interconnecting Distributed Resources with Electric Power Systems)-compliant, where possible.

36.2.4 The prudent design of the BESS should include careful consideration of resonance and Ferro-resonance.

36.3 Containerization and Transportability

36.3.1 The BESS shall be containerized, using either standard International Organization for Standardization (ISO) 668 shipping containers or custom-designed power equipment centres. The container or containers shall be designed to be drop-shipped onto a properly prepared pad or foundation (such as compacted soil, concrete pad or platform, and so on). When fully installed, all BESS components—including battery racks all auxiliaries, such as HVAC and fire suppression systems, step-up transformers to match grid, ac switchgear, and so on—and tools shall be enclosed in (or on) the containers, even if certain components must be separately shipped and installed at the site.

36.3.2 Containers shall be designed and constructed to meet IP54 and NEMA 3R requirements, which protect the equipment inside from harmful effects resulting from the ingress of water, dirt, dust, and wind. The design and installation of Containers shall meet relevant regulatory requirements for occupational safety and health under national and state legislations.

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36.3.3 All containers and packaging of separately shipped components shall be suitable for land or sea transport, including offering suitable protection of the equipment inside against damage from weather and vibration or shock from transportation.

36.3.4 The containers and their contents shall be designed to be easily prepared for transport, shipped, connected and operated at site. The Contractor shall ensure that all required bracing and shipping stabilization equipment to enable transport is either kept at hand or brought to the site in a timely manner before transport.

36.4 Additional transportability requirements and/or clarifications

36.4.1 In designing for transportability of the lithium-ion batteries, the Contractor shall follow the relevant guidelines (Sub-section 38.3) set forth in the United Nations document "Recommendations on the Transport of Dangerous Goods—Manual of Tests and Criteria" (ST/SG/AC.10/11/Rev.5), with specific reference to obtaining UN38.3 and UN3480 certifications at the battery module and/or container level.

36.4.2 The BESS container or containers shall be of a size and weight to be capable of being transported to project sites with due consideration for the load bearing restrictions imposed by bridges, if any, and rarefied atmospheric conditions in the region.73.4.3 Containers shall incorporate standard lugs or other means for lifting by crane or shall be properly palletized for movement with forklift trucks, or both.

36.5 Design Life and Life-Cycle Costs

36.5.1 End of battery life - End of battery life is that point in time when the BESS can no longer meet the power and/or energy discharge requirements of this Specification due to age or non-repairable malfunction of the battery subsystem, and/or non-replaceable components. When the system is no longer able to provide these requirements, the system has reached its end of life. Battery End of life shall be not less than 10 years from the date of Commissioning.

36.5.2 It shall be the responsibility of the Contractor to make periodic replacements/replenishments of unit batteries, if and when required, up to the End of Battery Life as described above. Outage time as a result of replacement

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will also be counted as an "Accountable BESS Outage" for the purpose of computing BESS Availability.

36.6 Reliability, Availability, and Operability of the BESS

The BESS shall be designed for high reliability, defined in the following terms:

Starting reliability: (99% starting reliability means that the unit shall start in 99 of 100 attempts)

Mean-time-to-repair- The time taken from the time of notification of a need for repair to the time of completion of repairs (that is, inclusive of time for arrival of spare parts and repair personnel at the location of the BESS)

Availability

Availability is the percentage of hours that the BESS is available during the year. The availability guarantee shall begin upon facility commissioning. Annual availability shall be calculated as follows:

$$[1 - \left(\frac{\sum Accountable\ BESS\ Outage\ duration\ in\ hours}{8760}\right)\ ] \times 100$$

Where:

Accountable BESS outages are outages caused or necessitated by the BESS equipment that result in reduced capacity or loss of essential function of the BESS. These outages may be initiated by failure of components, loss of battery capacity (to the extent that End of Battery Life is not reached), operation of protective devices, alarms, or manual action. Such outages include both forced outages due to equipment problems and scheduled outages for BESS maintenance.

Accountable BESS outage duration is the elapsed time of accountable BESS outages from the instant the BESS experiences reduced capacity or is out of service to the instant it is returned to service or full capacity. If the BESS experiences reduced capacity but is determined by the ANERT to be available for service even if the ANERT elects not to immediately return the equipment to full capacity, such time will be discounted from the outage duration.

- The Procurement specific nameplate ratings shall be as defined in Clause 37 above. The BESS shall be considered to be under an accountable outage if any of those ratings

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cannot be met. The BESS shall also be considered to be under an accountable outage if a scheduled (or required) charge cycle cannot be completed.

- The data required for assessment of the availability of the BESS shall be collected through the Plant's integrated SCADA system.

36.6.1 It shall be possible to fully remove, repair, and replace in the field any failed or poorly performing component within a day, assuming that spare parts, test equipment, and maintenance personnel are on the site. This capability shall be demonstrated in the factory acceptance test (FAT) for unit batteries and other key components.

36.6.2 The BESS shall be capable of unattended operation, with provision of remote monitoring and control.

36.7 Planned Maintenance Outage

Up to 5 weeks each year will be permitted for a planned outage to perform any required maintenance. The Contractor shall provide a guarantee for the maximum length of time required for this type of maintenance operation.

36.8 Battery Subsystem Design Requirements

36.8.1 Electrochemical Cells

Only cells that are commercially available or for which suitable (not necessarily identical) replacement cells can be supplied on short notice will be allowed. *For both premature cell failures and end-of-battery-life replacement, the Contractor shall guarantee cell availability and the length of down time (hours or days) required to replace cells.* The cells may be supplied as separate, individual units or as group of cells combined into modules. The cells shall meet the seismic requirements for the planned location of the BESS. Cell and module design shall accommodate the anticipated vibrations and shocks associated with the transportation of the BESS and shall resist deterioration due to vibrations resulting from the same. Associated hardware and paraphernalia should also be able to withstand the rigors of transportation. The transport plan shall be shared with the ANERT and approved prior to dispatch.

36.8.2 Labelling of the cells or unit batteries shall include manufacturer's name, cell type, nameplate rating, and date of manufacture, in fully legible characters. All cells shall

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be traceable to the point of origin for purpose of addressing safety issues.

36.8.3 Electrochemical Storage System

36.8.3.1 The storage system may consist of one or more-unit batteries. If the storage system consists of more than one unit battery, these may be electrically interconnected in any desirable series and parallel configuration to achieve the overall system storage and power rating requirements.

36.8.3.2 Each electrically series-connected string of unit batteries shall include a means of disconnecting the string from the rest of the system and of providing over-current protection (during a fault). The means of disconnect shall provide for a physical interruption of the string electrical circuit, which shall be visible to anyone servicing the individual unit batteries in the string and shall be capable of being locked or secured in an open position.

36.8.3.3 If the disconnect means consists of removal of a unit battery, the storage system shall be designed to allow maintenance personnel to determine that there is no current flowing in the string and provisions to ensure that the PCS is off before the unit battery is removed. Procedures for maintenance and/or field replacement of unit batteries shall neither require nor recommend removal of the unit battery without first ensuring that no current is flowing in the string circuit.

36.8.3.4 Over-current protection, whether on the ac or dc side, in paralleled unit battery strings shall be sized and coordinated so that currents from other strings do not contribute to a fault in any unit battery string.

36.8.3.5 Where appropriate, dc wiring shall be braced for available fault currents. Protection shall include a dc breaker, fuse, or other current-limiting device on the battery bus. This protection shall be coordinated with the PCS capabilities and battery string protection and shall take into account switching or other transients and the inductance/resistance (L/R) ratio at the relevant areas of the dc system. The Contractor shall produce a fault analysis and protection coordination study for the battery dc subsystem during final design. *The ANERT reserves the right to withhold permission to ship the BESS until the fault analysis has been satisfactorily completed.*

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36.8.3.6 Cells, wiring, switch gear, and all dc electrical components shall be insulated for the maximum expected voltages plus a suitable factor of safety.

36.8.3.7 The battery system shall include a system to detect and alarm excessive ground leakage current levels. Ground fault detection shall be enabled for the container or, if more than one electrical series string is installed in the container, for each series string. The detection/trip level shall be field adjustable. The Contractor shall have overall responsibility for the safety of the electrical design and installation of the battery, as well as all aspects of the BESS.

36.8.3.8 The battery system shall include a monitoring/alarm system and/or prescribed maintenance procedures to detect abnormal unit battery conditions and notify proper personnel of their occurrence.

36.8.3.9 Abnormal conditions shall include but not be limited to (1) weak unit batteries that could reasonably be expected to fail to provide rated capacity upon full discharge, (2) high- resistance or open-unit batteries, (3) high-resistance or open external unit battery connections, (4) unit batteries with temperatures exceeding operating thresholds, and (5) internally shorted unit batteries. Unit battery monitoring, whether automatic or manual, should be specified to alert the proper personnel in a timely manner that an abnormal unit battery condition exists or may exist. All alarms shall be part of the control system and shall include remote display or annunciation capability.

36.8.3.10 The unit batteries shall be racked or shall be housed in stackable modules. The unit batteries or cells shall be arranged and installed to permit easy access for equipment and personnel. The moveable units shall be arranged and installed to permit easy access for equipment and personnel to carry out unit removal and replacement activities. For all systems, it shall be possible to remove and replace a prematurely failed unit battery or cell (as appropriate), when system performance specifications cannot be met. The lengths and widths of all aisles and spaces into which personnel may enter in the field for operations and/or routine or unscheduled maintenance

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purposes, as well as egress routes from these aisles and spaces, shall conform to applicable codes and standards. All racks and metallic conductive members of stackable modules shall be grounded to earth. Racks shall meet the seismic load and road vibration requirements and shall include means to restrain cell movement during seismic events and transport. The Contractor shall furnish analyses and/or other data that show that the rack and cell designs are designed to meet all potential seismic and transport vibration requirements.

36.8.3.11 The design of all modules and racks shall specifically account for the anticipated vibrations and shocks associated with the periodic transportation of the BESS.

36.8.3.12 Cell/Battery Auxiliary Systems

The cells and battery system shall be supplied with all required and/or recommended accessories. This includes inter-cell connectors and monitoring devices for cell temperature and cell voltage, if required.

36.9 Power Conditioning System Design Requirements

39.1 General

39.1.1 The PCS is the interface between the DC battery system and the AC system and provides for charging and discharging of the battery. The PCS may consist of one or more parallel units. Paralleling may be at the DC or AC terminals. Line-commutated systems or systems that require the presence of utility voltage or current to develop an AC output are not acceptable. The PCS circuit topology shall be voltage source (that is, the PCS at its AC terminals shall appear to the grid as a voltage source rather than as a current source and, at its DC terminals, shall be capable of reversing current flow in the battery without reversing the polarity of the DC bus).

39.1.2 All load-carrying cables within the PCS subsystem shall have a suitable load factor of safety. The PCS shall preferably be air-cooled suitable for the site climatic conditions, with final rejection of waste heat to the ambient air. The air-handling systems shall include filtering that is adequate to keep dust from

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the interior of the PCS system.

39.1.3 The PCS shall be housed within one or more appropriate weatherproof and dustproof enclosures, with provisions to prevent moisture condensation and to prevent the entrance of water, airborne salt or dust, rodents, insects, and/or similar materials or pests into air intake/exhaust ports.

39.1.4 **Power Conditioning System Rating**

The PCS shall be capable of delivering Real power as specified in Table-2. This rating shall be referred to in all project documentation, including this specification, as the nameplate VA rating. To account for losses in the PCS, the DC input power to the PCS will be higher than the rated PCS output power. The available DC input power will be the BESS nameplate watt rating divided by the PCS full load efficiency (as specified in the datasheet) during discharge.

39.1.5 Power Conditioning System Protection and Control

The PCS, in conjunction with the control system, shall be capable of completely automatic, unattended operation, including self-protection, synchronizing and paralleling with the grid, and disconnect. The control of the PCS shall be integrated with the overall BESS controls. The PCS shall include all necessary self-protective and self-diagnostic features to protect itself from damage in the event of component failure or the excursion of operating parameters beyond a safe or expected range. This includes excursions due to internal or external causes. The self-protective features shall prevent the PCS from being operated in a manner that may be unsafe or damaging. Faults due to malfunctions within the PCS, including commutation failures, shall be cleared by the PCS over-current protection device(s).

36.10 Power Conditioning System AC Interface with AC bus

36.10.1 The BESS must meet applicable harmonic current and voltage specifications in accordance with applicable standards. Harmonic suppression may be included with the PCS or at the BESS AC system level. However, the Contractor shall design the BESS electrical system to preclude unacceptable harmonic levels in the BESS auxiliary power system.

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36.10.2 In addition to interconnection standards specified in this document, there may be specific requirements for interconnection, which need to be ascertained by the Contractor in coordination with the distribution utility at each site. The PCS transformer may be used to aid in harmonic cancellation and may include tertiary windings to supply BESS auxiliary power requirements. The transformer must be dry type. The PCS shall include provisions for disconnect on both its AC and DC terminals for maintenance work. Conductor separation must be clearly visible. The detailed maintenance procedure shall be addressed in the O&M manual.

36.10.3 Electromagnetic Interference

The PCS shall not produce electromagnetic interference (EMI) that will cause mis-operation of instrumentation, communications, or similar electronic equipment within the BESS.

36.10.4 Islanding

The PCS design shall include provisions to limit run-on and islanding as per applicable standards upon the loss of grid. This capability shall be demonstrated to the ANERT's satisfaction during the FAT.

36.11 AC System

The BESS AC system includes all switch gear, bus work, cable, connectors, transformers, and protective relaying required for connecting the BESS at the PCC. The Contractor shall design, procure, ship, and assemble on-site all ac interconnection equipment on the BESS side of the PCC. On-site assembly of Contractor supplied equipment shall be coordinated with the utility. The Contractor shall design, fabricate, ship and install all cabling required for connecting the BESS to the PCC. The BESS AC system shall include potential transformers, current transformers, and any other metering equipment so that the performance monitoring and documentation requirements of this specification can be met. Metering accuracy shall meet applicable standards.

36.12 Protection and Control

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36.12.1 The power system (PCS), AC and DC switchgear/protective devices) shall be designed to provide safe, reliable operation with minimum interruption. Reliable operation shall be supported by a sensitive and properly coordinated protection system. The protection system shall be capable of monitoring significant operating parameters and sensing all abnormal operations or fault conditions. It shall isolate the faulted circuits or components without causing damage to other circuits and components of the system. The protection system shall also provide adequate indications and/or alarms for identification of the faulted circuits, components, and abnormal conditions, allowing preventive action and rapid restoration of service.

36.12.2 The grid may have its own protective schemes at the point of common connection (PCC) that will be the responsibility of the Contractor to be fulfil.

36.12.3 Integration of the protective relaying and metering into the BESS controls shall not circumvent normal protective relaying. Protection shall not be interlocked with the position of any isolating/interrupting devices.

36.12.4 The BESS shall provide breaker failure protection for the primary interrupting device (that is, breaker, high-voltage interconnect, low-voltage interconnect) that is responsible for disconnecting the BESS and/or high-voltage ground sources from the distribution system.

36.12.5 The BESS shall be capable of interrupting line-to-line fault currents and line-to-ground fault currents available at the PCC and flowing in the Contractor's equipment in either direction for faults on either side of the PCC. Faults due to malfunctions within the BESS shall be cleared by the BESS protective devices.

36.12.6 The BESS must have low-voltage ride-through capabilities according to extant technical guidelines on connectivity.

36.12.7 BESS and high-voltage ground sources should be disconnected from the distribution system and the system operators must be notified if any of the following occur:

- The BESS local interconnection protection system fails
- The interrupting device fails.
- The dc supply is lost

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- The signal channel fails

The BESS interconnection protection must be capable of distinguishing between external faults on the distribution system and internal faults within the facility. The automatic reconnection scheme must be disabled for faults occurring within the facility.

The BESS shall include provisions to protect against transient voltage surges from switching, lightning, and similar causes, in accordance with applicable standards. The overall PCS design shall also limit surges on the dc bus to twice the normal maximum DC bus voltage.

36.13 Auxiliary Power

The BESS shall include an auxiliary power system (separate or same as the Solar Plant auxiliary system) derived from the utility AC bus, the PCS transformer low-side bus, PCS transformer tertiary winding, or similar means with metering. The auxiliary power system shall include all step-down transformers, breakers, fuses, motor starters, relaying, panels, enclosures, junction boxes, conduits, raceways, wiring, and similar equipment, as required for the BESS operation. The auxiliary power system shall include separate potential transformers and current transformers, so that auxiliary power consumption can be measured and electronically recorded in real time, independently of operation of the PCS or of net power flows to and from the battery. The auxiliary power system and/or control system design shall provide for whatever emergency power is necessary for an orderly system shutdown during abnormal conditions such as a loss of grid power. The auxiliary power system and/or control system design shall also provide for the capability to restart automatically after BESS shutdowns of several days.

37 CONTROL AND COMMUNICATION

37.1 Control System General Requirements

The control system shall be designed to provide for automatic, unattended operation. The control system design shall provide for local manual operation and remote operation or dispatch from a remotely located computer. The control system shall be programmable for establishing or adjusting all parameters, set points, algorithms, limits, and so on that are required for effective operation as described in this specification. The

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control system shall be designed to prevent externally supplied, control panel or local signals from causing the BESS to operate in an unsafe manner or in a manner that may damage the BESS.

37.2 Control Functions and Protocols

37.2.1 To the extent possible, all BESS control functions, and operating modes shall be in accordance with standard functionalities for smart distributed resources, as documented in the IEC 61850-90-7.

37.2.2 The communication protocol for the BESS shall be according to IEEE 1815-2010, Standard for Electric Power Communications—Distributed Network Protocol (DNP3), as further developed in DNP3 Application Note AN2011-001, DNP3 Profile for Basic Photovoltaic Generation and Storage or IEC 61850.

37.2.3 If data points and/or control functions outside the standard point definitions in DNP3 AN2011- 001/IEC 61850 are created by the Contractor, the Contractor shall maintain a systematic log of the same for the purpose of maintaining/facilitating interoperability with future standards/protocols for distributed energy resources

37.3 Additional Control System Functions

37.3.1 Shutdown/Startup/Standby

The start and stop controls shall be as per DNP3 AN2011-001 standard specifications or IEC 61850. The control system shall use these controls for an orderly and safe shutdown, even in the absence of grid power. The control system shall also use these controls for an orderly startup sequence, which shall provide for a safe system reset from any standby or operating condition so that the unit goes through a normal startup sequence in the same way it would when being powered up after loss of power or being in a shutdown state. The control system shall include provisions for a standby state (that is, BESS but not charging or discharging), which shall be the end result of a normal startup sequence. It shall also be possible to enter the standby state from any of the other operating states except connect/disconnect.

37.3.2 Initiation of Shutdown

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The control system shall initiate shutdown under the following conditions and shall remain in the shutdown state until a reset signal, either local or remote, is initiated. An appropriate alarm shall be set.

- Emergency trip switch.
- Loss of the low-voltage AC or utility grid voltage.
- An AC circuit breaker trip (either side of transformer).
- Door interlock: Initiate shutdown when the door is opened (with appropriate provision for maintenance work). Interlocks shall be self-resetting.
- Smoke/fire alarm.
- Control logic trouble.
- A DC ground fault (field-adjustable setting).
- Remote disable (no reset required).
- grid system faults (balanced and unbalanced; line-to-ground, line-to-line, and three- phase).
- Abnormal frequency
- Abnormal voltage
- Islanding condition.
- Protection or control scheme failures, including the following:
  - Failure of local interconnection protection system
  - Failure of critical breaker trip coil or interrupting device
  - Loss of DC supply

37.3.3 Reset Alarms

For all system-generated alarms, the control system shall provide for the resetting of those alarms. This function is intended for alarms that, after they are set (for example, by a fault condition, as listed above and elsewhere in this specification), must be cleared by operator intervention to allow normal operation to be restored.

37.3.4 Modify Storage Settings

The control system shall provide for modification of various set points and fixed operation/control settings associated with the various control functions.

37.3.5 Event/History Logging

The control system shall provide for the automatic logging of the following information:

- All errors or failures
- All startup and shutdown actions
- All control actions

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- All responses to control actions
- All limit violations, including returns within limits

37.3.6 Status Reporting

The control system shall provide for reading and reporting of various BESS-supplied status information in accordance with the data collection and reporting requirements specified in this technical specification.

37.3.7 Time Synchronization

The control system shall provide for synchronization of its real-time clock with a standard time source.

37.3.8 Change Operational Mode

The control system shall support the mechanisms inherent in DNP3 AN2011-001 for activating/deactivating control functions. The control functions are expected to be executed by command from a remote host but may also be scheduled according to the DNP3 standard.

37.3.9 Perform Self Diagnostics

The control system shall provide for self-diagnostic functions.

37.4 Control System Hardware Requirements

All local control and monitoring system components shall be housed in appropriate controlled environment enclosures either as separate arrangement or in conjunction with Solar Plant SCADA system.

37.5 Control System Self-Protection and Self-Diagnostic Features

37.5.1 The BESS shall include appropriate self-protective and self-diagnostic features to protect itself and the battery from damage in the event of BESS component failure or from parameters beyond the BESS's safe operating range due to internal or external causes. The self-protective features shall not allow local or remote signals to cause the BESS to be operated in a manner that may be unsafe or damaging to the BESS. All protective operations resulting in a shutdown shall be carried out in an orderly and safe manner, even in the absence of utility power.

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37.5.2 Temperature sensors shall be incorporated in critical components within the BESS. The BESS shall alarm and go to standby/fault mode when an over-temperature condition is detected.

37.5.3 The BESS shall alarm upon detection of a DC ground fault. The alarm trip level shall be field adjustable.

37.5.4 Door interlock switches shall be provided for all BESS container doors. The BESS shall alarm and go to shutdown mode when an BESS door is opened. Doors shall be fitted with provisions for external locks.

37.5.5 The BESS shall alarm and go to shutdown mode upon detection of smoke.

37.5.6 Surge-protection devices shall be provided at the input and output terminals of the BESS.

37.6 Control Panel

- The BESS shall include a LCD touch display, which is easily accessible, on or within the BESS container. As a minimum, the following operator controls shall be located on the control panel:
- T rip/reset for the BESS AC circuit breaker or contactor.
- Trip/reset for DC circuit breaker(s)/contactor(s).
- PCS on/off.
- Reset toggle or push button. When reset is initiated, the control system shall resume control and proceed to the appropriate operating mode.
- Reset cut-out selector switch to disable remote or local reset signals.
- A selector switch to manually set the operating state (that is, the shutdown, disconnect, or operate state) and to have the control system set the operating state automatically.
- A selector switch to manually set the operating mode and to have the control system set the operating mode automatically.
- The control panel or console shall also include meters, indicators, and displays.

37.7 Performance Monitoring and Data Acquisition

37.7.1 The BESS shall include a (Data Acquisition System) DAS to provide continuous monitoring and display of key operational parameters, as well as permanent

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archival of all measured parameters. The DAS shall include sensors, transducers, wiring, signal isolation and conditioning circuitry, and data acquisition and analysis hardware and software as required to perform the functions described in this section. The DAS shall be of standard commercial manufacture and shall use hardened components suitable for operation in the climatic conditions prevailing at site.

37.7.2 The DAS shall measure operational data, as described in this Clause, and shall record all data points to fixed and removable non-volatile memory. The DAS shall be capable of making all monitored data and events available through the DNP3 / IEC 61850 communication interface and shall permit display of current values and recent historical trends on a local screen for all recorded points. In addition, the DAS shall provide panel meter displays of certain operational parameters, as prescribed below.

37.7.3 Provision of monitoring and event data via the communication interface shall adhere to DNP3 AN2011-001 / IEC 61850 to the extent possible and capture at least the following data points:

- Frequency at the AC bus
- AC real power
- Power factor
- Real energy delivered
- Real energy received
- Auxiliary power
- Auxiliary energy
- DC power
- DC voltage
- DC current
- Phase A voltage
- Phase A angle
- Phase B voltage
- Phase B angle
- Phase C voltage
- Phase C angle
- Battery state of charge
- Battery string currents
- Battery temperature

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37.7.4 Digital displays, on the BESS Control Panel, shall be no less than 1 in. (2.54 cm) high and shall update at least once per second. The DAS shall be integrated with the Solar PV SCADA described elsewhere in this Technical Specification either as addendum or within an overall Energy Management System Interface. The DAS shall, at a minimum, provide remote data inquiry from personal computer- based platforms and data file export capabilities in ASCII format on independent media (such as a universal serial bus drive) that are readable on personal computer-based systems.

37.7.5 The DAS shall continuously measure or calculate the data points identified in 40.7.2 and shall make them available via the communication network as specified. All measured parameters shall also be permanently archived in all modes of operation. For continuously varying quantities, the Contractor shall propose for ANERT's review and approval an approach to data archiving that is suitable for each quantity measured. The final approach will be decided during product design.

37.7.6 The DAS shall provide unsolicited message capability for reporting critical alarms. The Contractor and the ANERT will agree on a list of alarms that are reported the instant they are detected. However, a minimum of following parameters shall be displayed on BESS local control panel, console, or SCADA computer:

- Main temperature Alarm (on system temperature exceeding a predetermined threshold)
- Smoke/fire Alarm (on system detection of smoke/fire)
- DC leakage current (battery leakage current to ground exceeding a predetermined threshold)
- Breaker status (connect/disconnect switch)
- AC voltage OK (system ac voltage exceeding a predetermined threshold)
- Battery temperature alarm (battery temperature exceeding a predetermined threshold)
- Synchronization error shutdown
- PCS fault
- Weak Unit Battery Alarm
- AC system fault

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- Control logic problem (problem with the BESS control logic)
- DC fuse blown
- Container door open (BESS container door opening)

37.7.7 The BESS shall include provisions for determining and storing in non-volatile memory the sequence of abnormal events, trips, and/or alarms that cause the BESS to go the disconnect or shutdown state. It is preferable that this function be implemented separately from the normal operations data acquisition function of the DAS so that failures in the latter (hardware/software failures or power interruptions) will not prevent the permanent logging of abnormal event sequences. The BESS shall include provisions to transmit, at a minimum, the data displayed on the panel meters and the alarm/status indicators to the remote computer.

38 GROUNDING

A suitable equipment grounding system shall be designed and installed for the BESS. This system shall be designed to be tied to an existing site grounding system. The system also shall be adequate for the detection and clearing of ground faults. All exposed non-current-carrying metal parts shall be solidly grounded. Particular attention shall be given to prevention of corrosion at the connection of dissimilar materials such as aluminium and steel.

39 WIRING

39.1 All wiring shall be continuous for each wiring run; splices are not acceptable.

39.2 Wiring that may be exposed to mechanical damage shall be placed in conduit or armoured.

39.3 Wires shall have identifying labels or markings on both ends. The labels or markings shall be permanent and durable. Stick-on labels will not be allowed. All field wiring between separate equipment items supplied by the Contractor shall be color-coded according to appropriate standards.

39.4 In general, and where practicable, control and instrumentation wiring shall be separated from power and high-voltage wiring by use of separate compartments

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or enclosures or by use of separate wireways and appropriate barrier strips within a common enclosure.

39.5 BESS and PCS control and instrumentation system wiring shall be bundled, laced, and otherwise laid in an orderly manner. Wires shall be of sufficient length to preclude mechanical stress on terminals. Wiring around hinged panels or doors shall be extra flexible and shall include loops to prevent mechanical stress or fatigue on the wires.

39.6 Insulation and jackets shall be flame retardant and self-extinguishing.

39.7 Wiring to terminal blocks shall be arranged as marked on wiring diagrams. Terminal groupings shall be in accordance with external circuit requirements.

39.8 Raceway and cable systems shall not block access to equipment by personnel. There shall be no exposed current-carrying or voltage-bearing parts.

40 CIVIL/STRUCTURAL

40.1 General Requirements

40.1.1 Soil bearing stresses shall not exceed the allowable stresses for the soil parameters, as determined by the Contractor. A minimum safety factor of 1.5 shall be provided against uplift, sliding, and overturning loads. Soil stresses shall be calculated using unfactored loads.

40.1.2 All structures and foundation designs must include suitable evidence to show that their design is commensurate with a minimum of 25-year life.

40.1.3 Unless specifically stated otherwise, the design of all structures, equipment, and foundations shall be based on applicable portions of IS codes, these specifications, and industry standards.

40.1.4 All components shall be painted, coated, or otherwise protected in a manner commensurate with at least 25-year design life. Particular attention shall be given to prevention of corrosion at the connections between dissimilar materials such as aluminium and steel, and steel and concrete.

40.1.5 All structures and foundations shall be designed to resist dead, live, wind, and seismic loads.

40.2 Requirements for Contractor Installation

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40.2.1 The Contractor shall be responsible for obtaining all required permits and ensuring that all inspections by local authorities are completed as required.

40.2.2 Calculations based on applicable standards shall be supplied to show that the design of the entire BESS will withstand wind speed and/or gusts and other loads specific to the site and that the design meets all applicable structural and transportation codes.

40.2.3 Excavation spoils shall be disposed of as directed by the ANERT.

40.2.4 All reinforced concrete work shall be in accordance with relevant Indian Standards. All other materials and installation requirements shall be subject to ANERT approval.

41 MECHANICAL

41.1 All exposed surfaces of ferrous parts shall be thoroughly cleaned, primed, and painted or otherwise suitably protected to survive outdoor conditions for at least 25-year design life of the system.

41.2 Outdoor enclosures shall be weatherproof and capable of surviving intact under the site environmental conditions specified. Outdoor enclosures shall be equipped to prevent condensation.

41.3 Components mounted inside enclosures shall be clearly identified with suitable permanent designations that also shall serve to identify the items on drawings provided.

41.4 The site temperatures and the effect of temperature on component life shall be considered in developing the thermal design for all components, including the battery and PCS. Irrespective of the heat-removal system design the final rejection of all waste heat from the BESS shall be to the ambient air. Air-handling systems shall include filters to prevent dust intrusion into the BESS.

41.5 The BESS shall include an HVAC or ventilation system designed to maintain battery temperatures at levels acceptable to the Contractor's normal battery warranty conditions, conducive to acceptable battery life, and as required to maintain battery capacity for all seasons/climatic conditions at the site. The air handling/distribution system shall be designed to promote temperature

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uniformity within the battery.

42 OTHER DESIGN REQUIREMENTS

42.1 Noise Levels

The Contractor shall provide for and maintain noise mitigation devices like Noise mufflers at site, if required.

42.2 Fire Protection

The Contractor shall design and install a fire protection system that conforms to good engineering practice. The fire protection system design and associated alarms shall take into account that the BESS will be unattended. If required by the type of fire protection system provided, the Contractor shall calculate and take into account the heat content of the battery cell materials in designing an appropriate fire protection system. Separate fire protection systems may be used in the battery, PCS, and control areas.

42.3 Toxic Materials

If any toxic substance can be emitted from the equipment during a failure, fire, or emergency or protective operation, description of the toxic nature of the substances as well as treatment for exposure to it shall be included in the O&M manual. Their treatment and disposal shall be in accordance with the New Hazardous Waste Management Rules 2016 notified by the Government of India.

42.4 Spare Parts and Equipment

The Contractor shall evaluate the design with regard to expected failure rates, modes, and effects; overall BESS reliability; and planned mode of servicing. Based on this evaluation, the Contractor shall recommend and furnish an initial complement of spare parts that are not readily available. For example, these spare parts may include spare unit batteries and a small rectifier to maintain the unit batteries, as well as fuses, printed circuit boards, and switching devices (gate turnoff thyristors [GTOs], silicon-controlled rectifiers [SCRs], insulated gate bipolar transistors [IGBTs], and so on).

43 MAINTENANCE AND REPAIR

43.1 The Contractor shall supply all labour, equipment, and materials needed to

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maintain the BESS performance and safe operation, including all maintenance required to satisfy the warranty terms and conditions.

43.2 The Contractor shall list all maintenance activities to be carried out under the maintenance contract. For each maintenance item, the list shall include a description of the item, the expected frequency (maintenance interval), the time required to perform the maintenance, any anticipated parts replacement, and any potential problems in carrying out the maintenance.

44 FACTORY ACCEPTANCE TESTING OF BESS

44.1 The Contractor shall develop and submit to the ANERT for its review and approval a comprehensive FAT plan that shall demonstrate that the BESS will meet the requirements of the specification. The ANERT shall have the right to request reasonable changes to the test plan.

44.2 Where full-scale testing of larger systems at the factory may be difficult or impossible due to the large system, the FAT shall be carried out at a subsystem or module level and shall consist of tests of 100% of the subsystems or modules that comprise the complete BESS, to the extent possible. In the FAT plan, the Contractor shall clearly state what is being tested and shall fully explain any features or functions of the fully assembled BESS that would not be fully tested in the reduced-scale testing proposed. In such a case, the SAT plan shall further describe how the tests that could not be carried out in the factory will instead be carried out at the site.

44.3 After the Contractor determines that the BESS is fully operational, the Contractor shall conduct a FAT, witnessed by the ANERT and/or the ANERT's representative. The FAT shall consist of the Contractor demonstrating to the ANERT that the BESS is fully operational and performs as specified. This includes but is not limited to the following:

- Visual inspection of all provided equipment, including dimensions and overall design.
- Verification of proper mechanical construction such as electrical connection torques.

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- Verification of sensors, metering, and alarms.
- Verification of all control functions, including remote control and monitoring, and communications interfaces.
- Verification of BESS performance at full and partial power and energy ratings.
- Verification of maintenance and replacement features for unit batteries and other key components.
- Verification of compliance with specifications.

44.4 During the FAT, the BESS shall meet the following:

- Be operated and function as specified and designed in all the operating states, use cases, and duty cycles specified herein
- Meet the power and energy requirements specified herein
- Be demonstrated to meet the safety and response to catastrophic failure requirements specified herein
- Have the efficiencies, response capabilities, and other features specified herein and/or proposed by the Contractor

44.5 Operation of all control, protective relaying, and instrumentation circuits shall be demonstrated by direct test, if feasible, or by simulating operating states for all parameters that cannot be directly tested. Automatic, local (control console), and remote operation of the controls shall be demonstrated. ANERT's site. If this is not possible for the full BESS at the manufacturing facility, independent laboratory certification of operation of critical components and subsystems in the battery, PCS, and control systems shall be submitted at the time of the FAT. The Contractor shall submit to the ANERT for approval, 90 days before the FAT, a list of components and subsystems for which independent lab testing certification will be sought.

44.6 The Contractor shall perform any and all system modifications required during start-up and testing. The testing may be suspended as a result of a BESS malfunction and resumed only on rectification of problem items. Such suspension and resumption will occur at the sole discretion of the ANERT.

44.7 The BESS will not be accepted for shipment until all FATs have been successfully

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completed. In addition, the ANERT will verify that all provisions of the contract have been met, including verification of all required submittals, any spare parts delivery, and any required system modifications.

45 COMMISSIONING AND FUNCTIONAL GUARANTEE TEST PROCEDURE

45.1 The Contractor shall develop and submit to the ANERT for its review and approval a comprehensive SAT plan that shall demonstrate to the ANERT that the BESS will perform as specified at the ANERT's site. The ANERT shall have the right to request reasonable changes to the test plan.

45.2 The Contractor shall develop and perform SAT procedures to ensure that the BESS will perform as designed and that the system meets the performance criteria specified elsewhere in these specifications. The SAT plan shall include procedures to test operating scenarios described in the specification. These procedures may involve special requirements and/or witnessing by the local independent system operator. To the extent achievable, all use cases and operating modes described in the specification shall be tested.

45.3 After the Contractor has determined that the BESS is fully operational, the Contractor shall conduct the SAT, witnessed by the ANERT and/or the ANERT's representative. The tests shall include, as a minimum, the following:

- Verification of sensors, metering, and alarms
- Verification of all control functions, including automatic, local, and remote control
- Verification that the performance criteria in the specification can be met or exceeded
- Demonstration of all of the intended uses
- Demonstration of interface protection circuits and functions and control interfaces

45.4 Tests shall demonstrate that the BESS capabilities, efficiencies, response, and features are as proposed by the Contractor.

45.5 Testing shall include, as a minimum, measurement of harmonic content and power factor at full and partial power levels for both charge and discharge.

45.6 Operation of all control, protective relaying, and instrumentation circuits shall be

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demonstrated by direct test, if feasible, or by simulating operating states for all parameters that cannot be directly tested. Automatic, local, and remote operation shall be demonstrated.

45.7 The SAT shall also specifically address discovery of problems or failures that may have occurred during or as a result of shipment.

45.8 The Contractor shall perform any required modifications and repairs identified by the testing, before acceptance by the ANERT.

45.9 The ANERT will not accept the BESS for commissioning until all acceptance tests have been successfully completed and all provisions of the contract have been met.

45.10 Functional Guarantee - Actual Operating Experience

Since it may not be possible, due to system constraints, to test all facets of the BESS function as part of the performance verification tests specified in the preceding sections the actual operating experience of the BESS during the performance guarantee period after initial startup shall be deemed an extension of the performance verification tests. The performance guarantee period shall not be construed as a substitute for the warranty requirements, as specified in the subsequent Clause. Actual operating experience will be documented through Contractor-furnished records, and other system monitoring equipment and associated BESS performance. Documented failure or malfunctions of any BESS component during the performance guarantee period shall be deemed a failure of the system commissioning test. The Contractor shall, at no cost to the ANERT, make the necessary repairs, replacements, modifications, or adjustments to prevent the same failure or malfunction from occurring again. The replacement of certain BESS components in response to a system failure may necessitate, at the discretion of the ANERT, the duplication of certain performance verification tests, which shall be performed at the Contractor's expense.

46 Warranty

46.1 The Contractor shall provide a warranty for the entire BESS and its constituent equipment.

46.2 At a minimum, the Contractor shall provide an unconditional, 7 (Seven) -year parts

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and labour warranty on all BESS equipment except battery (unit or racks). An additional 3-year AMC must be provided by the bidder for the whole unit and the rate for the same is to be quoted separately. For the battery storage, 10-year warranty is to provided and the warranty shall cover parts warranty including battery nominal capacity ratings in order to meet the End of battery Life condition described in this specification.

46.3 Warranty replacement shall be required for individual unit batteries that degrade in performance to the point at which the BESS cannot meet the requirements specified in this specification up to the End of Battery Life and/or for unit batteries that materially degrade the availability, reliability, safety, or functionality of the BESS.

46.4 The warranty shall guarantee the availability of battery replacements delivered to the site within 2 weeks of notification during the battery warranty period. This period, shall, however, not be considered part of the Accountable Outage period for assessing BESS availability.

46.5 Additional warranty requirements are as follows:

- The warranty shall specify the terms and conditions of the warranty, including operating conditions requirements, procedures that must be followed, and all maintenance requirements. The warranty terms shall be easy to understand and shall be clearly stated.
- The warranty shall provide an explicit statement as to the warranted cycle life and the warranted calendar life of the battery.
- The warranty shall include a simple and easy to understand proration formula, if any, to be used in crediting the ANERT for unused life or capacity of equipment replaced or repaired.
- The warranty shall specify guaranteed battery replacement costs. The ANERT shall be provided the option to secure the guaranteed replacement cost at the time of the initial supply agreement.
- The warranty shall specify the scope of service associated with software updates.
- The warranty shall specify the scope of service included in replacement or repair of the equipment.

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- The warranty shall specify all labour, materials, shipping charges, and other ANERT expenses not included in the warranty.
- The warranty shall specify the estimated time to complete the repairs/replacement required to restore the BESS to the warranted performance level. The time shall be given as the number of working days from the time of ANERT's notice to the Contractor that the BESS has failed to meet the performance requirements.

47 Documentation and Submittals

a. The Contractor shall furnish complete documentation that will be used for determination of contract compliance, as well as O&M of the BESS.
b. Review and acceptance of submittals shall not encumber the ANERT or the KSEBL with responsibility for the adequacy or safety of the Contractor's design.
c. Titles shall clearly indicate the function of the document, the ANERT and location of the facility.
d. At a minimum, Contractor's documentation shall consist of the following:
    - Construction and installation drawings
    - Construction materials submittal
    - Equipment drawings and specifications
    - Operation and maintenance manual
    - Maintenance schedule
    - Critical path method project schedule
    - Master test plan and procedures
    - Quality assurance manual
    - Software documentation
    - Study reports
    - Test reports
    - Training manual

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FORMAT FOR COVERING LETTER

(This letter to be submitted on the official letter head of the bidder, signed by the authorised signatory.)

Sir,

I/We hereby e-tender to render the services under annexed terms and conditions of contract, the whole of the articles referred to and described in the attached specification and quantity decided by the Agency for New & Renewable Energy Research and Technology (ANERT), at the rates quoted against each item.

I am/We are remitting herewith the required amount of Rs. ..... towards the registration Fee by electronic payment vide transaction No ..... dtd.....

Yours faithfully,

Place:
Date:

Signature
Name
Designation

(Office Seal)

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ANNEXURE A – SUMMARY OF BID QUALIFICATION REQUIREMENTS

(To be filled in by the bidder in Letter Head)

1.	Name of the applicant and address with email, phone etc.	
2.	Main area of Business	
3.	Registered Office in Kerala	
4.	Details of Power of Attorney	
5.	Proof for Experience	

Documentary evidence for the bid qualification requirements are submitted along with this document and the details furnished above are true and correct.

Signature
of authorised signatory

Name
Designation

Date:

(Office seal)

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ANNEXURE B – AGREEMENT

(To be provided on Rs.200 Non-Judicial Kerala Stamp paper)

Subject: Selection of Consultant for Setting up the Project Management Unit (PMU) for Kerala Green Hydrogen Mission

With reference to the RFP Document for the captioned Project, I/we, I …….. (Name, Designation) authorised signatory of …….. (Name and full address of the bidder) having examined all relevant documents and understood their contents hereby undertake that the Proposal is unconditional and unqualified.

1. I/We confirm that I/we have examined the terms and conditions published in the EOI and accordingly submitting the Application. The proposal is unconditional and unqualified.
2. All information provided in the Proposal is true and correct and all documents accompanying such Proposal are true copies of their respective originals.
3. This statement is made for the express purpose of appointment Providing PMU services in terms of providing Consultancy and Technical Services
4. I/We shall make available to ANERT any additional information it may deem necessary or require for supplementing or authenticating the Proposal.
5. I/We acknowledge the right of the ANERT to reject our application without assigning any reason or otherwise and hereby waive our right to challenge the same on any account whatsoever.
6. I/We certify that in the last three years, I/we have neither failed to perform on any contract, as evidenced by imposition of a penalty by an arbitral or judicial Court or a judicial pronouncement or arbitration award against us, nor have been expelled from any project or contract nor have had any contract terminated for breach on our part.
7. I/We declare that:

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1. I/We have examined and have no reservations to the EOI Documents, including any Addendum thereto, issued by the ANERT;
2. I/We do not have any conflict of interest in accordance with provisions of the EOI Document;
3. I/We have not directly or indirectly or through an agent engaged or indulged in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice, as defined in the EOI document, in respect of any tender or request for proposal issued by or any agreement entered into with the ANERT or any other public sector enterprise or any Government, Central or State; and
4. I/We hereby certify that we have taken steps to ensure that in conformity with the provisions of this EOI, no person acting for us or on our behalf will engage in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice.

8. I / We understand that you may cancel the Selection Process at any time and that ANERT is neither bound to accept any Proposal that you may receive nor to select the Consultant, without incurring any liability to the Applicants in accordance with the EOI document.
9. I / We certify that in regard to matters other than security and integrity of the country, we or any of our Associates have not been convicted by a Court of Law or indicted or adverse orders passed by a regulatory authority which would cast a doubt on our ability to undertake the Consultancy for the Project or which relates to a grave offence that outrages the moral sense of the community.
10. I / We further certify that in regard to matters relating to security and integrity of the country, we have not been charge-sheeted by any agency of the Government or convicted by a Court of Law for any offence committed by us or by any of our Associates.
11. I / We hereby irrevocably waive any right or remedy which we may have at any stage at law or howsoever otherwise arising to challenge or question any decision taken by the ANERT (and/ or the Government of Kerala / India) in connection

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with the selection of Consultant or in connection with the Selection Process itself in respect of the above mentioned Project.

12. I / We agree and understand that the proposal is subject to the provisions of the EOI document. In no case, shall I/we have any claim or right of whatsoever nature if the Consultancy for the Project is not awarded to me/us or our proposal is not opened or rejected.
13. I / We agree to keep this offer valid for (120) days from the date of opening of technical bid.
14. I/We have studied EOI and all other documents carefully. We understand that we shall have no claim, right or title arising out of any documents or information provided to us by the ANERT or in respect of any matter arising out of or concerning or relating to the Selection Process including the award of Consultancy.
15. The Technical Proposals and Financial Proposals are being submitted in separate Covers available in the etenders portal.
16. I/We agree and undertake to abide by all the terms and conditions of the EOI Document. In witness thereof, I/we submit this Proposal under and in accordance with the terms of the EOI Document.

Signed by Sri	Signed by Sri . . . . .
(Date)	(Date) . . . .
in the presence of witnesses	in the presence of witnesses
1.	1.
2.	2.

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ANNEXURE C – POWER OF ATTORNEY

(On Stamp Paper of requisite Stamp value)

Know all men by these presents, we, ... (name of Firm and address of the registered office) do hereby constitute,.....nominate, appoint and authorise Mr / Ms..... son/daughter/wife and presently residing at ....., who is presently employed with us and holding the position of.....as our true and lawful attorney (Hereinafter referred to as the —Authorized Representative) to do in our name and on our behalf, all such acts, deeds and things as are necessary or required in connection with or incidental to submission of our Proposal for and selection as the Consultant for _____

including but not limited to signing and submission of all applications, proposals and other documents and writings, participating in pre-bid and other conferences and providing information/ responses to the ANERT, representing us in all matters before the ANERT, signing and execution of all contracts and undertakings consequent to acceptance of our proposal and generally dealing with the Authority in all matters in connection with or relating to or arising out of our Proposal for the said Project and/or upon award thereof to us till the entering into of the Agreement with the ANERT.

AND, we do hereby agree to ratify and confirm all acts, deeds and things lawfully done or caused to be done by our said Authorised Representative pursuant to and in exercise of the powers conferred by this Power of Attorney and that all acts, deeds and things done by our said Authorised Representative in exercise of the powers hereby conferred shall and shall always be deemed to have been done by us.

IN WITNESS WHEREOF WE, ... THE ABOVE - NAMED AUTHORISED REPRESENTATIVE HAVE EXECUTED THIS POWER OF ATTORNEY ON THIS DAY OF ....., 2023

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For

(Signature, name, designation and address)

Witnesses:

1.

2.

Notarized

Accepted (Signature, name, designation and address of the Attorney)

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ANNEXURE D – DECLARATION BY THE BIDDER

e-EoI Notification No: ....., dtd ..... for Expression of Interest (EoI) for the Selection of Agency for Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram

To

The CEO

ANERT

We, the undersigned, declare that:

1. We have examined and have no reservations to the Bidding Document, including Addenda No.: ..... (if any)
2. We offer to supply in conformity with the Bidding Document and in accordance with the delivery schedule
3. Our Bid shall be valid for a period of 4 months from the date fixed as deadline for the submission of EoIs in accordance with the Bidding Document, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;
4. If our Bid is accepted, we commit to submit a Security Deposit in the amount of 3 percent of the Contract Price for the due performance of the Contract;
5. We are not participating, as Bidders, in more than one Bid in this bidding process;
6. Our firm, its affiliates or subsidiaries, including any subcontractors or suppliers for any part of the Contract, has not been declared ineligible by the ANERT or Government of Kerala;
7. We understand that this Bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal Contract is prepared and executed.
8. Our firm has obtained the certifications from MNRE or NABL approved Test laboratories that the goods and services are satisfying the technical criteria specified in the bid.

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Signature

Date

Name

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ANNEXURE E – DECLARATION OF RELATIONSHIP WITH ANERT EMPLOYEE

(to be signed and submitted by the bidder along with the bid)

EoI Notification No.: ……..

Expression of Interest (EoI) for the Selection of Agency for Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram

To

The CEO

ANERT

Name of the ANERT employee with Designation:

Name of the bidder related to the employee:

This is to put on record that Shri/Smt …….. currently working as …….. in ANERT is related to ……., who is the bidder in the bid. We are aware of the Anti-corruption policy of ANERT and will observe the highest standards during the execution of contract and shall retain from corrupt, fraudulent, collusive or coercive practices on competing for the contract.

Signature

Date

Name

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ANNEXURE F – UNDERTAKING FOR NO BLACKLISTING & NO BANNING

(To be provided on Rs.200 Non-Judicial Stamp paper. In Case of JV the following format is to be provided by Each Member of the Joint Venture on their respective letterhead, signed by respective authorized Signatory along with Authorized Signatory for which POA is attached with Bid))

Undertaking for No Blacklisting & No Banning

To

The CEO
ANERT

Sub: Expression of Interest (EoI) for the Selection of Agency for Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram

I / We hereby declare that presently our Company/Limited Liability Partnership/ Partnership Firm/ Sole Proprietorship is having unblemished record and is not declared ineligible for corrupt/fraudulent practices by any State/Central Government/PSU on the date of Bid Submission.

I / We further declare that presently our Company/Limited Liability Partnership/ Partnership Firm/ Sole Proprietorship is not blacklisted and not declared ineligible for reasons other than corrupt/fraudulent practices by any State/Central Government/PSU on the date of Bid Submission.

If this declaration is found to be incorrect then without prejudice to any other action that may be taken, our security may be forfeited in full and the EoI if any to the extent accepted may be cancelled.

(Signature & Seal of Authorized Signatory for which POA attached)

Name of Authorized Signatory:

Designation:

Date:

Place:

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ANNEXURE G – CERTIFICATE OF FINANCIAL QUALIFICATION

(On Letterhead of the respective entity for which the below details are provided.)

Financial Qualification Certificate

(Rupees in Crores)

S/N	Financial parameters	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23
1.	**Net Worth**					
a)	Paid up Capital					
b)	Free Reserves and Surplus*					
c)	Misc expenses to the extent not written off					
	Net Worth (a+b-c)					
2.	**Annual Turnover ****					

** Free Reserve and Surplus shall be Exclusive of Revaluation Reserve, written back of Depreciation Provision and Amalgamation.*

*** Annual total Income/ turnover as incorporated in the Profit and Loss Account excluding non-recurring income, i.e., sale of fixed asset etc.*

It is certified that all the figures are based on audited accounts read with auditors report and Notes to Accounts etc.

(Signature & Seal of Authorized Signatory

Name of Authorized Signatory:

Designation:

Date:

Place:

Certifying Chartered Accountant:

Name of Firm:

UDIN No:

Date:

Place:

Note:

1. *In addition to above certificate from Chartered Accountant, Bidder is required to submit Firm's Annual Audit Report, Balance sheet, Profit & Loss and Income Tax Returns / CA certificate for last Five years i.e., F.Y: 2017-18, 2018-19, 2019-20, 2020-21 & 2021-22.*

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No. 23/16/2020-R&R Part (1)
Government of India
Ministry of Power
***

Shram Shakti Bhawan, Rafi Marg,
New Delhi, 11th March, 2022

To

1. Secretary, MNRE, New Delhi.
2. The Chairperson, CEA, R K Puram, New Delhi.
3. ACS/Principal Secretaries/Secretaries (Power/Energy) of all State Governments/UTs.
4. Secretaries of All State Electricity Regulatory Commissions/JERCs.
5. CMD/MDs of all Gencos/Discoms/Transcos.
6. Secretary, Central Electricity Regulatory Commission (CERC), New Delhi.
7. CMD/MDs of all CPSUs under administrative control of Ministry of Power & MNRE.
8. DG, Association of Power Producers(APP), New Delhi.
9. President, FICCI / President, CII, New Delhi
10. CMD, IEX LTD New Delhi & MD/CEO, PXIL , Mumbai
11. Chairman, Indian Wind Power Association, New Delhi
12. Director General, National Solar Energy Federation of India (NSEFI), New Delhi.
13. DG, Solar Power Developers Association, New Delhi
14. CMD/MD, SECI, New Delhi

Sub: Guidelines for Procurement and Utilization of Battery Energy Storage Systems as part of Generation, Transmission and Distribution assets, along with Ancillary Services – Reg

Sir/Madam,

I am directed to forward herewith the resolution dated 10-03-2022 regarding **Guidelines for Procurement and Utilization of Battery Energy Storage Systems as part of Generation, Transmission and Distribution assets, along with Ancillary Services** for information and necessary action please.

2. This issues with the approval of Competent Authority.

Encl:- As above

Yours faithfully,

(Debranjan Chattopadhyay)
Deputy Secretary tothe Govt. of India
Tele No. 23715250

Copy for information to:

1. PS to Hon'ble Minister of Power& NRE, APS to Hon'ble MoSP, Sr. PPS to Secretary, MoP.
2. All Additional Secretaries, Ministry of Power.
3. All Joint Secretaries/Economic Adviser/CE, Ministry of Power.

Copy to: Technical Director, NIC Cell for uploading on MOP's website under "New Notices"

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रजिस्ट्री सं. डी.एल.- 33004/99 REGD. No. D. L.-33004/99

भारत का राजपत्र
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असाधारण
EXTRAORDINARY

भाग I—खण्ड 1
PART I—Section 1

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PUBLISHED BY AUTHORITY

सं. 64] नई दिल्ली, बृहस्पतिवार, मार्च 10, 2022/फाल्गुन 19, 1943
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विद्युत मंत्रालय

संकल्प

नई दिल्ली, 10 मार्च, 2022

सं. 23/16/2020-आर एंड आर भाग (1).—

उत्पादन, पारेषण और वितरण परिसंपत्तियों के हिस्से के रूप में सहायक सेवाओं सहित बैटरी ऊर्जा भंडारण प्रणालियों के क्रय और उपयोग के लिए दिशानिर्देश

खंड ।: पृष्ठभूमि और परिचय

क. प्रस्तावना

1. पृष्ठभूमि

क. भारत में नवीकरणीय ऊर्जा का विकास देश के ऊर्जा क्षेत्र की प्रमुख सफलताओं में से एक रहा है।आज, सौर और पवन ऊर्जा, पारंपरिक ऊर्जा स्रोतों की भांति देश के ऊर्जा मिक्स का अभिन्न अंग बन गए हैं। भारत ने वर्ष 2030 तक नवीकरणीय ऊर्जा के माध्यम से 500 गीगावॉट गैर-जीवाश्म ऊर्जा क्षमता संस्थापित करने और देश की ऊर्जा आवश्यकताओं के 50% भाग की पूर्ति करने के महत्वाकांक्षी लक्ष्य के दौरान पहले ही 150 गीगावॉट नवीकरणीय ऊर्जा क्षमता की प्राप्ति कर ली है। भारत के ऊर्जा मिक्स में नवीकरणीय ऊर्जा की हिस्सेदारी में उल्लेखनीय वृद्धि होने के साथ, तथा वर्ष 2030 तक लक्षित ऊर्जा मिक्स को देखते हुए, देश की अनुमानित ऊर्जा मांग को पूरा करने के लिए संसाधनों के इष्टतम उपयोग और सही संसाधन मिक्स के चयन की योजना बनाना उचित है।

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ख. प्रौद्योगिकी और विनिर्माण में हुई विभिन्न वैश्विक प्रगतियों के फलस्वरूप, नवीकरणीय ऊर्जा, वार्षिक ऊर्जा आवश्यकताओं के लिए सर्वाधिक वहनीय और स्वच्छ स्रोत बन गई है। प्रारंभिक उत्पादन क्षमताओं को अब तक ग्रिड से सफलतापूर्वक जोड़ा जा चुका है, लेकिन ऊर्जा मिक्स में नवीकरणीय ऊर्जा की बढ़तेप्रवेश के चलते, आपूर्ति-मांग में विसंगति होने के कारण, आगे क्षमता अभिवृद्धि में समस्याओं का सामना करना पड़ सकता है, जहाँ नवीकरणीय ऊर्जा स्रोतों से विद्युत उत्पादन मुख्य रूप से निम्न मांग अवधि के दौरान किया जाता है और अनिश्चित प्रकृति का होना इसकी एक विशेषता है। कुछ यूटिलिटीज ने पहले से ही अपने ग्रिड में नवीकरणीय ऊर्जा के एकीकरण के प्रभावों को अनुभव करना शुरू कर दिया है और विद्युत में कटौती के लिए बाध्य हैं। इस संदर्भ में, केंद्रीय विद्युत प्राधिकरण (सीईए) ने जनवरी, 2020 की "वर्ष 2029-30 के लिए इष्टतम उत्पादन क्षमता मिक्स" शीर्षक की अपनी रिपोर्ट में ताप विद्युत आधारित उत्पादन के ऊर्जा भंडारण प्रौद्योगिकी से अनुपूरित नवीकरणीय ऊर्जा उत्पादन के साथ प्रतिस्थापन की मुख्य कठिनाइयों की परिकल्पना की है। इस संबंध में, उपर्युक्त रिपोर्ट का एक अंश निम्नवत पुनः प्रस्तुत है:

"यह सौर पैनलों की लागत में गिरावट और बैटरी ऊर्जा भंडारण प्रणालियों जैसे नए प्रौद्योगिकी विकल्पों से संभव हुआ है। वास्तव में, लागत अनुमानों में कमी निकट भविष्य में वित्तीय रूप से व्यवहार्य बनाने हेतु बैटरी ऊर्जा भंडारण प्रौद्योगिकी के लिए अत्यंत महत्वाकांक्षी है। इस संदर्भ में, इष्टतम उत्पादन क्षमता मिक्स की आयोजना का महत्व बहुत बढ़ जाता है, ताकि भावी उत्पादन क्षमता मिक्स किफायती होने के साथ-साथ पर्यावरण अनुकूल भी हो, इष्टतम उत्पादन मिक्स की प्राप्ति हेतु प्रणालियों और नीतियों को सक्षम बनाने के लिए 10-12 वर्षों का समय पर्याप्त है।"

ग. उपर्युक्त के अलावा, सहायक सेवाएँ पूरी दुनिया में विद्युत पारिस्थितिकी तंत्र का एक अभिन्न अंग रही हैं। विद्युत आपूर्ति प्रणाली में आवृत्ति और वोल्टेज नियंत्रण की बुनियादी सेवाएं अंतर्निहित हैं और इन बुनियादी सेवाओं के प्रावधान को सक्षम बनाने के लिए, विश्वसनीय और कुशल ग्रिड परिचालन के अनुपूरण लिए विशिष्ट सहायता सेवाओं की आवश्यकता होती है। ये समर्थन सेवाएं जो 'मूल्य वर्धित सेवाओं' के रूप में कार्य करती हैं, उन्हें 'सहायक सेवाओं' के रूप में जाना जाता है। सहायक सेवाओं में भार-उत्पादन संतुलन (फ्रीक्वेंसी नियंत्रण) बनाए रखने, वोल्टेज और प्रतिक्रियाशील विद्युत सपोर्ट बनाए रखने और उत्पादन एवं पारेषण रिजर्व को बनाए रखने के लिए सहायक सेवाएं शामिल हैं। प्रारंभिक कदम के रूप में, केंद्रीय विद्युत विनियामक आयोग (सीईआरसी) ने वर्ष 2013 में "भारतीय विद्युत बाजार में सहायक सेवाओं की शुरूआत" पर एक स्टाफ पेपर जारी किया था। स्टाफ पेपर में सहायक सेवाओं के प्रकारों जैसे कि वास्तविक विद्युत सहायक सेवाएं या फ्रीक्वेंसी सपोर्ट सहायक सेवाएं/लोड फॉलोइंग एवं वोल्टेज या प्रतिक्रियाशील विद्युत सहायक सेवाएं व ब्लैक स्टार्ट सहायक सेवाओं के विषय में चर्चा की गई थी। यह परिकल्पना की गई थी कि अधिशेष क्षमता (अर्थात् उस क्षमता के लाभार्थियों द्वारा या तो बिना मांग वाली अधिशेष क्षमता या वैसे उत्पादक जो बाजार में अपनी विद्युत क्षमता का विक्रय नहीं कर सके और/या अधिशेष कैप्टिव क्षमता) वाले उत्पादकों को एक अलग बाजार खंड में विद्युत एक्सचेंज में बोली लगाने की अनुमति दी जा सकती है।

घ. उपर्युक्त के अनुसरण में, सीईआरसी द्वारा अगस्त, 2015 में सहायक सेवा परिचालन संबंधी विनियम जारी किए गए। पणधारियों के साथ परामर्श के पश्चात, सीईआरसी ने निर्णय लिया कि वर्तमान आवश्यकता को पूरा करने के लिए, अंतर-राज्यीय स्तर पर उत्पादक स्टेशनों में उपलब्ध डिस्पैच नहीं की गई अधिशेष क्षमता के उपयोग के माध्यम से तृतीयक आवृत्ति नियंत्रण, जिसका प्रशुल्क सीईआरसी द्वारा निर्धारित किया/अपनाया जाता है, को रिजर्व रेगुलेशन एंसिलरी सर्विस (आरआरएएस) के रूप में प्रस्तुत किया जा सकता है। योग्यता क्रम प्रेषण के लिए आरआरएएस प्रदाता की परिवर्तनीय लागत पर विचार किया जाता है। संकुलन प्रबंधन को सुविधाजनक बनाने के लिए, आरआरएएस के प्रेषण के दौरान पारेषण बाधाओं (अंत:क्षेत्रीय और अंतर्क्षेत्रीय दोनों) पर विचार किया जाता है। आरआरएएस प्रदाताओं को प्रोत्साहन के रूप में मार्क-अप के साथ निश्चित प्रभारों और परिवर्तनीय प्रभारों दोनों का भुगतान किया जाता है। फलस्वरूप अभ्यर्पित ऊर्जा के अनुपात में नियत शुल्क, मूल लाभार्थी(यों) को वापस किए जाते हैं। इसलिए, वर्तमान में, भारत में सहायक सेवाएं उन संसाधनों द्वारा प्रदान की जाती हैं जो गतिमान हैं और पहले से ही एक निश्चित मेगावाट स्तर पर निर्धारित किए गए हैं, जिसमें उतार-चढ़ाव को नियमित करने के लिए हेडरूम और लेगरूम मार्जिन (रिजर्व के रूप में) दोनों उपलब्ध हैं। जबकि, निर्धारित

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मेगावाट का निर्णय, बाजार प्रतिभागियों द्वारा किया जाता है, वहीं सिस्टम ऑपरेटर, फ़्रीक्वेंसी नियंत्रण के लिए सहायक सेवाओं के रूप में उत्पादन मार्जिन के केवल हेडरूम और लेगरूम का उपयोग करता है।

ङ. उत्पादन क्षमता के अनुरूप मांग बढ़ने से,वर्तमान सहायक प्रणाली को बदला जा रहा है, नई सहायक प्रणाली को उत्पादन और पारेषण मिक्स को इष्टतम करने के लिएऊर्जा भंडारण प्रणालियों (ईएसएस) को मौजूदा और भावी आरई क्षमता के साथ एकीकृत करना आवश्यक है। प्रशुल्क-आधारित बोली प्रणाली के माध्यम से नई नवीकरणीय ऊर्जा क्षमता स्थापित करने संबंधी दिशानिर्देश पहले से ही अस्तित्व में हैं। ऊर्जा मिक्स में भंडारण घटक की वृद्धि करने के संबंध में, विद्युत मंत्रालय ने अप्रैल, 2021 में केविप्रा से व्यावसायिक मामले के रूप में भंडारण के उपयोग और सहायक सेवाओं के लिए की पहचान करने संबंधी एक रिपोर्ट प्रस्तुत करने का अनुरोध किया था। यह रिपोर्ट, अपेक्षित भंडारण क्षमता प्रदान करने के लिए व्यावसायिक रूप से प्रयुक्त समाधान के रूप में पंप्ड हाइड्रो भंडारण प्रणाली (पीएसपी) और बैटरी ऊर्जा भंडारण प्रणाली (बीईएसएस) को चिन्हित करती है। केविप्रा द्वारा किए गए अध्ययन से पता चला है कि योजना मॉडल द्वारा वर्ष 2027-28 के बाद से बैटरी ऊर्जा भंडारण प्रणाली का चयन किया गया है और 27,000 मेगावाट/108,000 मेगावाट (4-घंटे भंडारण) की बैटरी ऊर्जा भंडारण क्षमता के वर्ष 2029-30 में संस्थापित क्षमता का हिस्सा होना अनुमानित है। यह वर्ष 2029-30 में संस्थापित क्षमता के एक घटक के रूप में परिकल्पित पंप्ड हाइड्रो भंडारण प्रणाली के 10,151 मेगावाट तक अतिरिक्त है।

च. मौजूदा पंप्ड हाइड्रो स्टोरेज प्लांट्स से प्राप्त उपलब्ध सीमित समर्थन और नए पंप्ड हाइड्रो स्टोरेज संयंत्रों के लिए लंबी विकासात्मक अवधि के कारण, भारतीय विद्युत व्यवस्था के लिए संसाधन पर्याप्तता के विभिन्न स्रोतों में से एक के रूप में बैटरी ऊर्जा भंडारण प्रणाली (बीईएसएस) की परिस्थितियों पर विचार किया जाना चाहिए। यह तथ्य सामने आया है कि नवीकरणीय ऊर्जा के साथ-साथ स्टोरेज/बीईएस से संसाधन पर्याप्तता सुनिश्चित करने के अलावा उत्पादन में अपेक्षित सुविधा प्राप्त हो सकती है।

2. उद्देश्य

इन दिशानिर्देशों के विशिष्ट उद्देश्य निम्नवत हैं:

क. परिवर्तनशीलता/विद्युत आपूर्ति में एकरूपता/विद्युत उत्पादन में वृद्धि/किसीविशिष्ट आरई परियोजना या आरई परियोजनाओं के पोर्टफोलियो से आपूर्ति की अवधि में विस्तार पर ध्यान देने,मौजूदा आरई परियोजनाओं के संवर्द्धन और/या ग्रिड के लिए सहायक, ग्रिड सहायता और स्थिति के अनुरूप सेवाएँ प्रदान करने के लिएविशिष्ट आरई विद्युत परियोजनाओं के हिस्से के रूप में अथवा पृथक रूप से बीईएसएस की खरीद को सुविधा प्रदान करना।

ख. पारेषण और वितरण नेटवर्क के इष्टतम उपयोग के लिए बीईएसएस की खरीद को सुविधा प्रदान करना।

ग. अंतर-राज्यीय/अंत:राज्यीय विद्युत के क्रय-विक्रय हेतु क्रय प्रक्रिया में पारदर्शिता और निष्पक्षता सुनिश्चित करने के लिए/तथा समूहक/व्यापार लाइसेंसधारियों/कार्यान्वयन एजेंसी के रूप में किसी मध्यवर्ती क्रेता के लिए फ्रेमवर्क प्रदान करना।

घ. प्रक्रियाओं में मानकीकरण और एकरूपता और ऊर्जा भंडारण और भंडारण क्षमता क्रय में शामिल, विभिन्न पणधारियों के बीच एक जोखिम-साझाकरण फ्रेमवर्क प्रदान करना, जिससे प्रतिस्पर्धा को प्रोत्साहित किया जा सके और परियोजनाओं की बैंकेबिलिटी को बढ़ाया जा सके।

ख. दिशानिर्देशों का प्रयोजन

1. दिशानिर्देशों की प्रयोज्यता

ये दिशानिर्देश, विद्युत अधिनियम, 2003 की धारा 63 के प्रावधानों के अंतर्गत "निर्माण-स्वामित्व-प्रचालन" या "निर्माण-स्वामित्व-प्रचालन-अंतरण" आधार पर स्थापित की जाने वाली ग्रिड से जुड़ी परियोजनाओं से, प्रतिस्पर्धी बोली के माध्यम से,'क्रेताओं' द्वारा बीईएसएस से ऊर्जा की खरीद के लिए जारी किए जा रहे हैं, जिसमें न्यूनतम परियोजना आकार और बोली क्षमता आवश्यकताएँ निम्नवत हैं:

(i) अंत:-राज्यीय परियोजनाओं के लिए: 1 मेगावाट की न्यूनतम बोली क्षमता के साथ एक साइट पर प्रयोज्यता के आधार पर उपयुक्त ऊर्जा रेटिंग सहित 1 मेगावाट और उससे अधिक की विद्युत रेटिंग का न्यूनतम विशिष्ट परियोजना आकार; तथा

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(ii) अंतर-राज्यीय परियोजनाओं के लिए: मौजूदा सीईआरसी विनियमों/विस्तृत प्रक्रिया द्वारा निर्दिष्ट न्यूनतम वोल्टेज स्तर पर 50 मेगावाट की न्यूनतम बोली क्षमता के साथ एक साइट पर प्रयोज्यता के आधार पर उपयुक्त ऊर्जा रेटिंग सहित 50 मेगावाट और उससे अधिक की न्यूनतम विशिष्ट परियोजना क्षमता।

2. इन दिशानिर्देशों के प्रावधान बीईएसएसडी/क्रेता/मध्यवर्तीक्रेता/अंतिम क्रेता/कार्यान्वयन एजेंसी और क्रेता के अधिकृत प्रतिनिधि पर बाध्यकारी होंगे। इन दिशानिर्देशों से किसी भी प्रकार केप्रस्तावित परिवर्तन की स्थिति में अपनाई जाने वाली प्रक्रिया, इन दिशानिर्देशों के खंड क, भाग V में निर्दिष्ट है।

3. **व्यावसायिक मामले**

ऊर्जा की आपूर्ति और ग्रिड रखरखाव में बीईएसएस के उपयोग के संबंध में निम्नलिखित व्यावसायिक मामलों की पहचान की गई है:

(i) बीईएसएस से आरई आपूर्ति: इस मामले में, बीईएसएस को आरई परियोजना के हिस्से के रूप में शामिल किया गया है, और आरई और बीईएसएस परिसंपत्तियों का स्वामित्व उत्पादक के पास है। इन परियोजनाओं का उपयोग क्रेताओं की व्यस्ततम विद्युत और निश्चित प्रेषण योग्य आरई आवश्यकताओं को पूरा करने के लिए भी किया जा सकता है।

(ii) पारेषण अवसंरचना के साथ बीईएसएस: इस मॉडल का उद्देश्य पारेषण परिसंपति के उपयोग को अधिकतम करना, पारेषण प्रणाली के उपयोग की अवधि बढ़ाना और ग्रिड स्थिरता को सुदृढ़ करना है। ये प्रणालियां पारेषण क्षमता के इष्टतम उपयोग और नेटवर्क संकुलन को कम करके पारेषण अवसंरचना के बड़े पैमाने पर अनुकूलन को सक्षम बनाएगी। फलस्वरुप, निकासी और पारेषण अवसंरचना के संवर्धन की आवश्यकता काफी कम हो जाती है।

(iii) सहायक सेवाओं/संतुलन सेवाओं और लचीले प्रचालनों के लिए भंडारण: तेज रैंप दर के साथ बीईएसएस, इंटरचेंज प्रवाह के हर पल के प्रबंधन के लिए विशेष रूप से उपयुक्त है। प्रणालीप्रचालक (उदाहरण के लिए आरएलडीसी/एनएलडीसी और एसएलडीसी) भार और उत्पादन में अंतर्निहित अनिश्चितता/भिन्नताओं के प्रबंध के लिए आवृत्ति नियंत्रण और संतुलन सेवाओं के लिए बीईएसएस का उपयोग कर सकते हैं।

(iv) वितरण के लिए भंडारण: इस मॉडल का उद्देश्य भंडारण परिसंपत्ति के उपयोग को अधिकतम करना और डिस्कॉम प्रचालनों को सुदृढ़ करना है। भार केंद्रों पर जुड़ने से, डिस्कॉम द्वारा अपने व्यस्ततमकालीन भार, ग्रिड लचीलेपन के प्रबंधन, पोर्टफोलियो प्रबंधन और लचीले प्रचालन के लिए उसका उपयोग उपयुक्त रूप से किया जा सकता है। बीईएसएस का उपयोग डिस्कॉमों के लिए प्रमुख उपभोक्ताओं के हिस्से के रूप में इलेक्ट्रिक मोबिलिटी सेगमेंट के बड़े पैमाने पर विस्तार को सुविधा प्रदान करने के लिए भी किया जा सकता है। बीईएसएस का उपयोग डिस्कॉमों द्वारा परिसंपत्ति स्थानांतरण प्राप्त करने के लिए इष्टतम साधन के रूप में भी किया जा सकता है, फलस्वरूप परिसंपत्ति की सक्रियता बढ़ेगी।

(v) आर्बिट्रेज प्रचालन के लिए स्टैंडअलोन बीईएसएस जिसका उपयोग व्यापारिक प्रचालन सहित विकासकर्ता/—स्वामी अथवा पट्टाधारी द्वारा किया जा सकता है।

(vi) बीईएसएस विकासकर्ता/स्वामी किसी विशेष अवधि के लिए भंडारण स्थान का विक्रय कर सकता है। इस स्थिति में वह प्रभार प्राप्त करेगा।

(vii) कोई अन्य व्यवसाय मॉडल जैसा कि क्रेता/मध्यवर्ती क्रेता/लाभग्राहियों/उत्पादकों द्वारा उपयुक्त पाया जाए।

(viii) उपर्युक्त क्रम सं. (i) से (vii) पर वर्णित व्यापारिक मामलों के साथ-साथ बीईएसएस विकासकर्ता द्वारा किसी निश्चित घटक को भी व्यापारिक क्षमता के रूप में उपयोग हेतु निर्धारित किया जा सकता है। इस घटक को मौजूदा विनियमों के अनुसार विद्युत बाजार में ट्रेड किया जा सकता है।

4. ये दिशानिर्देश उपर्युक्तक्रमांक (ii) से (vii) द्वारा चिन्हित व्यावसायिक मामलों के लिए लागू होंगे। उपर्युक्त क्रमांक (i) के लिए अर्थात उन प्रणालियों के मामले में जिनमें बीईएसएस के साथ एक एकल परियोजना (सह-स्थित या बहु-स्थित) के रूप में आरई उत्पादन स्टेशन शामिल हैं, सौर, पवन और हाइब्रिड विद्युत परियोजनाओं से विद्युत के

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क्रय के लिए जारी संबंधित मानक बोली दिशानिर्देश अथवा विद्युत मंत्रालय द्वारा एकीकृत मानक बोली दिशानिर्देशलागू होंगे।

5. बीईएसएस को आरई और गैर-आरई विद्युत के संयोजन के माध्यम से आरई विद्युत अथवा गैर-आरई विद्युत द्वारा चार्ज किया जाए, तथापि जब यह आरई विद्युत की आपूर्ति करना चाहता है, तो असे केवल आरई विद्युत द्वारा चार्ज करने की आवश्यकता होगी।

खंड-II: परिभाषाएं

इन दिशानिर्देशों में प्रयुक्त शब्दों के निम्नलिखित अभिप्राय होंगे:

1. **"अधिनियम"** से दिनंतर संशोधनों तथा उनके जारी किए गए स्पष्टीकरणों सहित, विद्युत अधिनियम, 2003 अभिप्रेत होगा।

2. **"समायोजित इक्विटी"** से भारतीय रुपये में वित्त पोषित और चालू माह के पहले दिन ("संदर्भ तिथि"), नीचे निर्धारित तरीके से समायोजितइक्विटी अभिप्रेत होगी, जो मूल्यह्रास और थोक मूल्य सूचकांक (डब्ल्यूपीआई) में भिन्नताओं के कारण और नियत तारीख के महीने के पहले दिन (वित्तीय समापन की प्राप्ति की तारीख) और संदर्भ तिथि के बीच आने वाली किसी संदर्भ तिथि के लिए इसके मान में परिवर्तन को प्रतिबिंबित करेगी।

   क. वाणिज्यिक प्रचालन तिथि (सीओडी) को या उससे पहले, समायोजित इक्विटी भारतीय रुपये में वित्त पोषित व्यय की गई इक्विटी कीराशि के बराबर होगी और परियोजना पर खर्च की जाएगी, जो नियुक्त तिथि और संदर्भ तिथि के माह के पहले दिन के बीच डब्ल्यूपीआई में होने वाले बदलाव के आधे की सीमा तक संशोधित होगी;

   ख. सीओडी के अनुसार समायोजित इक्विटी के बराबर राशि को आधार ("आधार समायोजित इक्विटी")माना जाएगा;

   ग. सीओडी के बाद, सीओडी के बाद प्रत्येक महीने की शुरुआत में 0.333% (शून्य बिंदु तीन तीन तीन प्रतिशत) कम करते हुए [किसी वर्ष की प्रति तिमाही 1% (एक प्रतिशत) की कमी] यहां समायोजित इक्विटी बेस एडजस्टेड इक्विटी के बराबर राशि होगी, और इस प्रकार प्राप्त राशि को सीओडी और संदर्भ तिथि के बीच डब्ल्यूपीआई में होने वाले भिन्नता की सीमा तक संशोधित किया जाएगा;

   संदेह से बचने के लिए, समायोजित इक्विटी कीसमाप्ति की स्थिति में, अंतरण तिथि से ठीक पहले की संदर्भ तिथि के अनुसार गणना की जाएगी; बशर्ते कि समायोजित इक्विटी में उस अवधिके बराबर अवधि में कोई कमी, यदि कोई हो, के लिए नहीं की जाएगीजिसके लिए बीईएसपीए अवधि आगे बढ़ाई गई है, बल्कि डब्ल्यूपीआई के कारण संशोधन करना जारी रखा जाएगा।

3. किसी कंपनी के संबंध में **"संबद्ध"** से वह व्यक्ति अभिप्रेत होगा जो ऐसी कंपनी को नियंत्रित करता है, उसके द्वारा नियंत्रित किया जाता है, या उसके सामान्य नियंत्रणाधीन है।

4. **"वार्षिक उपलब्धता"** आरएफएस में परिभाषित अनुसार होगी।

5. **"उपयुक्त आयोग"** का वही अभिप्राय होगा जो अधिनियम में परिभाषित है।

6. क्रेता का **"अधिकृत प्रतिनिधि"**: ऐसे मामलों में, जहां बैटरी ऊर्जा भंडारण क्रय करार (बीईएसपीए) पर हस्ताक्षर करने वाली एजेंसी और निविदा/बोली प्रक्रिया कराने वाली एजेंसी अलग-अलग हैं, तो निविदा/बोली प्रक्रिया कराने वाली एजेंसी को 'क्रेता' का अधिकृत प्रतिनिधि माना जाएगा और इन दिशानिर्देशों के अनुसार, बोली लगाने के चरण के दौरान 'क्रेता' पर लगाई गई सभी बाध्यताओं को पूरा करने के लिए क्रेता की ओर से जिम्मेदार होगा।

7. **"बैटरी ऊर्जा भंडारण प्रणाली विकासकर्ता"** या **"बीईएसएसडी"** या **"विकासकर्ता"** से इन दिशानिर्देशों के अंतर्गतविद्युत की आपूर्ति के लिए बीईएसएस सुविधा का स्वामित्व/प्रचालन करने वाली कंपनी अभिप्रेत होगी।

8. **"बैटरी ऊर्जा भंडारण क्रय करार"** अथवा **"बीईएसपीए"** से अभिप्राय बीएएसएस क्षमता के क्रय के लिए मध्यवर्ती क्रेता अथवा अंतिम क्रेता (जैसा लागू हो) द्वारा बीईएसएसडी के साथ किए गए करार से है।

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9. **"बैटरी ऊर्जा भंडारण प्रणाली"** या **"बीईएसएस"** या **"परियोजना"** से ऐसी प्रणाली (प्रणालियां)/परियोजनाएं अभिप्रेत हैं जो इलेक्ट्रोकेमिकल बैटरी(लेड एसिड, ली-आयन, सॉलिड स्टेट बैटरी, फ्लो बैटरी, आदि) जैसी विधियों और प्रौद्योगिकियों का उपयोग करती हैं, एक ऐसी सुविधा प्रदान करती हैं जिसमें रासायनिक ऊर्जा भंडारित की जा सके और भंडारित ऊर्जा को विद्युत के रूप में वितरित करती हैं, जिसमें सहायक सुविधाएं (उदाहरण के लिए ग्रिड सहायता) शामिल हैं, किन्तु ये इस तक ही सीमित नहीं होतीं। ऐसी प्रणालियां आरई उत्पादक स्टेशनों के साथ सह-स्थित हो सकती हैं, स्टैंड-अलोन आधार पर प्रचालित की जा सकती हैं।

10. **"बोलीकर्ता एजेंसी"** इन दिशानिर्देशों के अंतर्गत निविदा दस्तावेज जारी करने वाले और चयन प्रक्रिया को कार्यान्वित करने वाले संगठन को संदर्भित करेगी।

11. **"नियंत्रण"** से प्रत्यक्ष या अप्रत्यक्ष रूप से, ऐसी कंपनी के 50% से अधिक वोटिंग शेयरों का स्वामित्व या सर्वाधिक निदेशकों को नियुक्त करने का अधिकार अभिप्रेत है।

12. **"देय ऋण"** से अंतरण तिथि को बकाया भारतीय रुपये में अभिव्यक्त निम्नलिखित राशियों का योग अभिप्रेत होगा:

    क. कुल परियोजना लागत ('मूलधन') के वित्तपोषण के लिए वित्तीय करारों के अंतर्गतवरिष्ठ ऋणदाताओं द्वारा प्रदान की गई ऋण की मूल राशि, किन्तु इसमें मूलधन का ऐसा कोई हिस्सा शामिल नहीं होगा जो अंतरण तिथि से 2 (दो) वर्ष पहले पुनर्भुगतान के लिए देय हो गया था;

    ख. अंतरण तिथि तक उपर्युक्त उप-खंड (क) में संदर्भित ऋण पर या उसके संबंध में वित्तपोषण करारों के अंतर्गत देय सभी अर्जित ब्याज, वित्तपोषण शुल्क और प्रभार, किन्तु इसमें: (i) अंतरण तिथि से 2 (दो) वर्ष पहले देय हुआ कोई ब्याज, शुल्क अथवा प्रभार, (ii) किसी वरिष्ठ ऋणदाता को वित्तपोषण करारों के अंतर्गत भुगतानयोग्य कोई दंड ब्याज अथवा प्रभार, (iii) क्रेता की चूक के कारण उत्पन्न किसी ऐसे प्रभार को छोड़कर, ऋण केत्वरित पुनर्भुगतान के संबंध मेंकोई पूर्व-भुगतान प्रभार, और (iv)वित्तीय पैकेज में शामिल और कुल परियोजना लागत के वित्तपोषण के लिए इक्विटी निवेशकों अथवा उनसे संबद्ध कंपनियों द्वारा संवितरित कोई गौण ऋण शामिल नहीं होगा।

    परंतु यदि सम्पूर्ण देय ऋण अथवा उसका कोई हिस्सा वरिष्ठ ऋणदाताओं और/अथवा रियायतग्राही के विकल्प पर इक्विटी में परिवर्तनीय है, तो इस करार के उद्देश्य के लिए इसे यदि ऐसा परिवर्तन नहीं किया गया हो तो भी देय ऋण नहीं माना जाएगा और इसके मूल का निपटान इस प्रकार किया जाएगा कि जैसे ऐसा परिवर्तन कर दिया गया था। परंतु यह भी कि सीओडी को अथवा उसके बाद देय ऋण, किसी भी स्थिति में कुल परियोजना लागत के 80% (अस्सी प्रतिशत) से अधिक नहीं होगा।

13. **"अंतिम क्रेता"** से मध्यवर्ती क्रेताअथवा बैटरी भंडारण प्रणालीविकासकर्ता,जैसा भी मामला हो,से ऊर्जा का अंतिम क्रेता अभिप्रेत है; और इसमें,जैसा लागू हो, वितरण लाइसेंसधारी, थोक उपभोक्ता आदिशामिल होंगे।

14. **"वित्तीय परिसमापन" अथवा"परियोजना वित्तपोषण व्यवस्था"** से 100% परियोजना लागत के लिए बैटरी भंडारण प्रणाली विकासकर्ता द्वारा कंपनी द्वारा अपने आंतरिक संसाधनों(निदेशक मंडल द्वारा पारित संकल्प द्वारा) से निधियों की प्रतिबद्धता और/अथवा ऋण की स्वीकृति अथवा वित्तपोषण के लिए सहमत होते हुए निश्चित प्रतिबद्धता पत्र द्वारा किसी बैंक/वित्तीय संस्था के माध्यम से निधियों की व्यवस्था द्वारा आवश्यक निधियों की व्यवस्था अभिप्रेत है।

15. **"मध्यवर्ती क्रेता" अथवा "कार्यान्वयन एजेंसी":** कुछ मामलों में,खरीदी गई विद्युत को संचित करने और/अथवा विभिन्न विकासकर्ताओं से बड़े पैमाने की ऊर्जा भंडारण क्षमता के साथ इसे सुदृढ़ करने, और अंतिम क्रेता (क्रेताओं) को बेचने के लिए या तो वितरण लाइसेंसधारी (लाइसेंसधारियों) तथा बीईएसएसडी के मध्य कोई मध्यवर्ती,अथवा भारत सरकार द्वारा यथाअधिसूचित कोई "कार्यान्वयन एजेंसी" अपेक्षित है, ऐसे मामलों में "क्रेता" कोई व्यापार लाइसेंसधारी अथवा कोई कार्यान्वयन एजेंसी होगी, जो विकासकर्ता (विकासकर्ताओं) से विद्युत खरीदेगी और इसे एक या उससे अधिक वितरण लाइसेंसधारियों को बेचेगी, इन दिशानिर्देशों के उद्देश्य के लिए ऐसा वितरण लाइसेंसधारी "अंतिम क्रेता" होगा और व्यापार लाइसेंसधारी "मध्यवर्तीक्रेता" होगा।

16. **"क्रेता"** से, प्रसंगवश जैसा अपेक्षित हो, अंतिम क्रेता अथवा कोई मध्यवर्तीक्रेता अभिप्रेत होगा।

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17. **"नवीकरणीय ऊर्जा (आरई) स्रोत"** से 'सौर फोटोवोल्टिक' (इसके बाद 'सौर' के रूप में भी संदर्भित), 'पवन' तथा'सौर पीवी-पवन हाइब्रिड' (इसके बाद 'हाइब्रिड' के रूप में भी संदर्भित) भारत सरकार द्वारा समय-समय पर यथाअधिसूचित अन्य नवीकरणीय ऊर्जा स्रोतों के लिए संदर्भित है।

18. **"नवीकरणीय विद्युत" अथवा "आरई विद्युत"** से इन दिशानिर्देशों में जहां कहीं भी "आरई विद्युत" शब्द प्रयोग किया गया है, नवीकरणीय ऊर्जा स्रोतों से विद्युत के लिए संदर्भित होगा।

19. **"आरई पार्क"** सौर, पवन अथवा सौर-पवन हाइब्रिड विद्युत परियोजनाओं सहित आरई विद्युत परियोजनाओं की स्थापना के लिएकेंद्र अथवा राज्य सरकारों द्वारा जारी दिशानिर्देशों और/अथवा नीतियों के अनुसारविकसित क्षेत्रों अथवा पार्कों के लिए संदर्भित होगा।

20. **"चयन हेतु अनुरोध"** अथवा **"आरएफएस"** अथवा **"निविदा"** या **"बोली दस्तावेज"** से अभिप्राय बोलीकर्ता एजेंसी द्वारा जारी निविदा दस्तावेजों से है जिसमें इन दिशानिर्देशों के अंतर्गत किसी प्रतिस्पर्धात्मक बोली प्रक्रिया के माध्यम से विद्युत के क्रय के लिए, यथालागू ऊर्जा क्रय तथा ऊर्जा विक्रय करार शामिल होंगे।

21. **"सौर"**: इन दिशानिर्देशों में जहां कहीं भी'सौर' शब्द का प्रयोग किया गया है, यह सौर फोटोवोल्टिक (पीवी) तथा सौर ताप प्रौद्योगिकियों अथवा ऐसी प्रौद्योगिकियों पर आधारित विद्युत संयंत्र के लिए संदर्भित होगा।

22. **"पवन"**: इन दिशानिर्देशों में जहां कहीं भी 'पवन' शब्द का प्रयोग किया गया है, यह पवन ऊर्जा प्रौद्योगिकी अथवा ऐसी प्रौद्योगिकी पर आधारित विद्युत संयंत्र के लिए संदर्भित होगा।

खंड-III: बोली प्रक्रिया और परियोजनाओं को अवार्ड करना

क. बोलियां आमंत्रित करने की तैयारी और परियोजना की तैयारी

1. क्रेता द्वारा पूरी की जाने वाली शर्तें

1.1. बोली दस्तावेज तैयार करना:

क. क्रेता, नीचे उपखंड ख में दी गई व्यवस्था को छोड़कर, इन दिशानिर्देशों के अनुसार बोली दस्तावेज तैयार करेगा।

ख. क्रेता, इन दिशानिर्देशों के खंड क, धाराV में वर्णित प्रक्रिया के अनुसार, आरएफएस के प्रारूप, बीईएसपीए के प्रारूप, बीईएसएसए के प्रारूप (यदि लागू हो) मेंइन दिशानिर्देशों से किसी व्यतिक्रम के लिए उपयुक्त सरकार से पूर्व अनुमोदन प्राप्त करेगा।

ग. इन दिशानिर्देशों की अधिसूचना से पहले चल रहे किसी प्रक्रियाधीन बोली के मामले में, विशिष्ट निविदा दस्तावेजों के प्रावधान प्रचलित रहेंगे।

1.2. स्वीकृति सहित स्थल संबंधी परियोजना प्रारंभिक गतिविधियां

क्रय की जा रही विद्युत की समय से आपूर्ति आरंभ करना सुनिश्चित करने के लिए और बोलीकर्ता को क्रेता के अटल इरादे के बारे में विश्वास दिलाने के लिए, आवश्यक है किइन दिशानिर्देशों में नीचे दिए गए खंड 1.4 और खंड 1.5 में वर्णित विभिन्न परियोजना प्रारंभिक गतिविधियोंको समय पर पूरा किया जाए।

1.3. स्थल से संबंधित व्यवस्थाएं

क्रेताओं द्वारा जारी किए जाने वाले बोली दस्तावेजों में यथानिर्दिष्ट परियोजनाक्रेता द्वारा निर्दिष्टपरियोजना स्थल पर अथवा विकासकर्ता द्वारा चयनित परियोजना स्थल पर स्थापित की जाए।ग्रिड में बहुल-ऊर्जा अंतःक्षेपण बिन्दुओं के लिए निविदा दस्तावेज के प्रावधानों के अंतर्गत अनुमति दी जा सकती है। बहुल-अंतःक्षेपण बिन्दुओं के मामले में, प्रत्येक विशिष्ट ऊर्जा अंतःक्षेपण बिन्दु के लिए कनेक्टिविटी की क्षमता और खुली पहुँच समय-समय पर संशोधित मौजूदा विनियमों के अनुसार प्रदान की जाएगी। इसके अतिरिक्त, बहुल अंतःक्षेपण बिन्दु वाली किसी अकेली परियोजना के लिए प्रत्येक अंतःक्षेपण बिन्दु के लिए विचलन समाधान तंत्र के अनुसार शेड्यूलिंग और समाधान पृथक रूप से किए जाएंगे। ऐसे मामलों में,क्रेता का दायित्व होगा कि वह बीईएसपीए और प्रत्येक अंतःक्षेपण बिन्दु पर प्रदान की गई कनेक्टिविटी के अनुसार अनुबंधित क्षमता तक संचयी रूप से सभी अथवा किसी अंतःक्षेपण बिन्दु से विद्युत का क्रय करे।

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1.4.क्रेता द्वारा निर्दिष्ट परियोजना स्थल

क्रेताकिसी निर्दिष्ट स्थल पर परियोजना के स्थान का चयन कर सकता है और इसे क्रेता द्वारा बोली दस्तावेजों में निर्दिष्ट किया जाए। ऐसे मामलों में, विद्युत की समय सेआपूर्ति शुरू करना सुनिश्चित करने के लिए, क्रेता और विकासकर्ता को सुनिश्चित करना चाहिए कि संबंधित कंपनियों द्वारा नीचे दर्शाई गई विभिन्न परियोजना प्रारंभिक एवं कार्यान्वयन से संबंधित गतिविधियाँ समय-सीमा के अनुसार पूरी की जाएं।

लक्ष्य	अंतिम समय सीमा
भूमि और सब-स्टेशन के 100% क्षेत्र की पहचान (भूमि की चारदीवारी केनिर्देशांक और सबस्टेशन का स्थान उपलब्ध कराने के बारे में) - क्रेता द्वारा	निविदा दस्तावेजों में निर्दिष्टानुसार
भूमि की 100% सैद्धांतिक उपलब्धता दर्शाने के लिए दस्तावेजों/करारों का प्रावधान- क्रेता द्वारा	निविदा दस्तावेजों में निर्दिष्टानुसार
निविदा प्रक्रिया	बोलीकर्ता एजेंसी को निविदा दस्तावेजों के जारी होने के 3 माह के भीतर निविदा को अंतिम रूप देने का प्रयास करना चाहिए
बीईएसपीए पर हस्ताक्षर करना	एलओए जारी होने के 30 दिन बाद (निविदा शर्तों पर निर्भर करते हुए आगे बढ़ाया जा सकता है)
भूमि के पट्टे/उपयोगाधिकार करार पर हस्ताक्षर करना	बीईएसपीए पर हस्ताक्षर के साथ-साथ
100% चिन्हित भूमि क्षेत्र (सभी बाधाओं से मुक्त) के कब्जे/उपयोगाधिकार की वन स्वीकृति, यदि लागू हो,सहित स्वीकृति - क्रेता द्वारा	बीईएसपीए पर हस्ताक्षर करने के 60 दिन के भीतर
एसटीयू/सीटीयू(जैसा लागू हो) द्वारा कनेक्टिविटी औरखुली पहुँच प्रदान करने के लिए आवेदन - क्रेता/बीईएसएसडी द्वारा सुविधा प्रदान की जानी है/आवेदन किया जाना है	एलओए जारी होने के 30 दिन के भीतर
वित्तीय परिसमापन	इन दिशानिर्देशों की धारा IV केखंड ख के अनुसार
विद्युत की निकासी के लिए सब-स्टेशन की तैयारी - क्रेता द्वारा	संबद्ध पारेषण प्रणाली के मूल एससीओडी के साथ-साथ
यथापेक्षित अन्य विधिक स्वीकृतियां - क्रेता द्वारा	एससीडी से 15 दिन पूर्व
निर्धारित चालू होने की तिथि (एससीडी)	इन दिशानिर्देशों की धारा IV केखंड ग के अनुसार

1.5. किसीआरई पार्क में क्रेता द्वारा निर्दिष्ट परियोजना स्थल

क्रेता उचित अवसंरचना और सुविधाओं वाले (आरई पार्क) विशिष्ट अंचल में परियोजना के स्थल का चयन कर सकता है और इसे क्रेता द्वारा बोली दस्तावेजों में निर्दिष्ट किया जाए।आरई पार्क का विकास एमएनआरई/केंद्र सरकार/राज्य सरकार द्वारा इस संबंध में जारी की गई संबद्ध नीतियों और/अथवा दिशानिर्देशों (उदाहरण के लिए 'सौर पार्कों' के लिए एमएनआरई द्वारा जारी "सौर पार्कों के विकास के लिए दिशानिर्देश")के अनुसारकिया जाएगा। इसके होते हुए भी,विद्युत की आपूर्ति समय से शुरू होना सुनिश्चित करने के लिए, क्रेता,आरईपार्क विकासकर्ता और परियोजना विकासकर्ताको सुनिश्चित करना चाहिए कि नीचे दिए हुए अनुसार विभिन्न परियोजना प्रारंभिक एवं कार्यान्वयन संबंधी गतिविधियां संबंधित कंपनियों द्वारा इसमें वर्णित समय-सीमा के अनुसार पूरी की जाएं।आरई पार्कों के लिए,ऐसे पार्कों के विकासकर्ता (विकासकर्ताओं) [उदाहरण के लिए 'सौर पार्क' के मामले में सौर विद्युत पार्क

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विकासकर्ता (एसपीपीडी)] के उत्तरदायित्व एमएनआरई/केंद्र सरकार/राज्य सरकार द्वाराऐसे पार्कों के विकास के लिएजारी संबद्धनीतियों और/अथवा दिशानिर्देशों और कार्यान्वयन सहायक करार, यदि कोई हो, सेप्रवाहित होंगे, जोऐसे पार्क के विकासकर्ताऔर बीईएसएसडी के बीच संबंध को परिभाषित करता है।

लक्ष्य	अंतिम समय सीमा
भूमि और सब-स्टेशन के 100% क्षेत्र की पहचान (भूमि की चारदीवारी के निर्देशांक और सबस्टेशन का स्थान उपलब्ध कराने के बारे में) – पार्क विकासकर्ता द्वारा	निविदा दस्तावेजों में निर्दिष्टानुसार
बोली प्रक्रिया की शुरुआत में भूमि की 100% सैद्धांतिक उपलब्धता दर्शाने के लिए दस्तावेजों/करारों का प्रावधान-पार्क विकासकर्ता द्वारा	निविदा दस्तावेजों में निर्दिष्टानुसार
निविदा प्रक्रिया	बोलीकर्ता एजेंसी को निविदा दस्तावेजों के जारी होने के 3 माह के भीतर निविदा को अंतिम रूप देने का प्रयास करना चाहिए
बीईएसपीए पर हस्ताक्षर करना	एलओए जारी होने के 30 दिन बाद (निविदा शर्तों पर निर्भर करते हुए आगे बढ़ाया जा सकता है)
भूमि पट्टा करार पर हस्ताक्षर करना	बीईएसपीए पर हस्ताक्षर के साथ-साथ
100% चिन्हित भूमि क्षेत्र (सभी बाधाओं से मुक्त) के कब्जे/उपयोगाधिकार की वन स्वीकृति, यदि लागू हो,सहित स्वीकृति - पार्क विकासकर्ता द्वारा	बीईएसपीए पर हस्ताक्षर करने के 60 दिन के भीतर
पार्क विकासकर्ता को अग्रिम प्रभारों का भुगतान - बीईएसएसडी द्वारा	3 किश्तों में भुगतान किया जाना है: भूमि पट्टा करारके हस्ताक्षर करने के साथ25%। भूमि पट्टा करार पर हस्ताक्षर करने के 30 दिन के भीतर अगला 25% पार्क विकासकर्ता द्वारा चिन्हित 100%भूमि क्षेत्र के कब्जे/उपयोगाधिकार प्रदान करने के समय शेष 50%
एसटीयू/सीटीयूद्वारा कनेक्टिविटी औरखुली पहुँच प्रदान करने के लिए आवेदन(मौजूदा विनियमों के अनुसार) – पार्क विकासकर्ता द्वारा सुविधा प्रदान की जानी है/आवेदन किया जाना है	एलओए जारी होने के 30 दिन के भीतर
वित्तीय परिसमापन	इन दिशानिर्देशों की धारा IV केखंड ख के अनुसार
विद्युत की निकासी के लिए सब-स्टेशन की तैयारी -पार्क विकासकर्ता द्वारा	संबद्ध पारेषण प्रणाली के मूल एससीओडी के साथ-साथ
यथापेक्षित अन्य विधिक स्वीकृतियां - पार्क विकासकर्ता द्वारा	एससीडी से 15 दिन पूर्व
निर्धारित चालू होने की तिथि (एससीडी)	इन दिशानिर्देशों की धारा IV केखंड ग के अनुसार

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2.बीईएसएसडी द्वारा चयनित परियोजना स्थल

यदि क्रेता स्थल विनिर्दिष्ट नहीं करता है और समय से पूर्णता औरविद्युत की आपूर्ति शुरू होना सुनिश्चित करने के लिए परियोजना स्थल का चयनबीईएसएसडी द्वारा किया जाता है, तो बोलीकर्ता के लिए नीचे निर्दिष्ट समय-सीमा के अनुसार परियोजना लक्ष्यों के संबंध में दस्तावेज प्रस्तुत करना आवश्यक होगाः

लक्ष्य	अंतिम समय सीमा
निविदा प्रक्रिया- बोलीकर्ता एजेंसी द्वारा पूरी की जानी है	बोलीकर्ता एजेंसी को निविदा दस्तावेजों के जारी होने के 3माह के भीतर निविदा को अंतिम रूप देने का प्रयास करना चाहिए
बीईएसपीए पर हस्ताक्षर करना	एलओए जारी होने के 30 दिन बाद (निविदा शर्तों पर निर्भर करते हुए आगे बढ़ाया जा सकता है)
भूमि संबंधी दस्तावेजों पर हस्ताक्षर करना और प्रस्तुत करना	परियोजना चालू होने के समय
एसटीयू/सीटीयू(जैसा लागू हो) द्वारा कनेक्टिविटी औरखुली पहुँच प्रदान करने के लिए आवेदन	एलओए जारी होने के 30 दिन के भीतर
वित्तीय परिसमापन	इन दिशानिर्देशों की धारा IV केखंड ख के अनुसार
निर्धारित चालू होने की तिथि (एससीडी)	इन दिशानिर्देशों की धारा IV केखंड ग के अनुसार

इसके अतिरिक्त, बीईएसएसडी/क्रेता(जैसा लागू हो), एलओए के जारी होने के 30 दिन के भीतर, आईएनएसटीएस/आईएसटीएस सब-स्टेशन को संयंत्र की कनेक्टिविटी/खुली पहुँच की तकनीकी व्यवहार्यता के लिए सीटीयू/एसटीयू ग्रिड (यथापेक्षित) को कनेक्टिविटी/खुली पहुँच के लिए आवेदन करेगा, जिसे मौजूदा प्रचलित विनियमों के अनुसार प्रक्रियाबद्ध किया जाएगा।

यथाचिन्हित दस्तावेजों के अतिरिक्त, परियोजना के शुरू होने से पहले बीईएसएसडी द्वारा एसटीयू/सीटीयू, जैसा लागू हो, से कनेक्टिविटी के संबंध में, राज्य पारेषण यूटिलिटी (एसटीयू)/केंद्रीय पारेषण यूटिलिटी (सीटीयू), (अथवा चयनित स्थल के आरई पार्क में होने की स्थिति में, आरई विद्युत विकासकर्ता), जैसा लागू हो, से एक पत्र प्रस्तुत किया जाना अपेक्षित होगा। यदि परियोजना स्थल क्रेता/अंतिम क्रेता के राज्य में ही स्थित है, तो राज्य सरकार आईएनएसटीएस/आईएसटीएस सबस्टेशन से संयंत्र की कनेक्टिविटी को सुविधा प्रदान करने के लिए आवश्यक सहायता उपलब्ध कराने का प्रयास करेगी।

परियोजना निर्माण के लिए यथापेक्षित परियोजना चालू करने से पहले सभी अन्य स्वीकृतियां प्राप्त करना पूर्ण रूप से बीईएसएसडी का उत्तरदायित्व होगा और उक्त/ऐसी स्वीकृतियां प्राप्त करने में देरी की स्थिति में क्रेता उत्तरदायी नहीं होगा। इसके निरूपण के संबंध में निविदा दस्तावेजों में सुस्पष्ट प्रावधान उपलब्ध कराए जाएंगे।

ख. बोली संरचना

1. बोली पैकेज

बोलियां भंडारण की कुल क्षमता के अनुसार डिजाइन की जाएंगी। बोलियों के लिए न्यूनतम परियोजना और पैकेज आकारउपर्युक्त खंड-I के क्रम सं. ख.1 में दर्शाया गया है। तथापि, किफायत के लिए, क्रेता को, बोलीकर्ता को बोली लगाने हेतु अनुमत न्यूनतम परियोजना आकार को, जैसा भी मामला हो, उपर्युक्त निर्दिष्ट सीमा से अधिक निर्दिष्ट करने की अनुमति है। इसके होते हुए भी, भूमि की उपलब्धता और पारेषण सुविधा पर विचार करते हुए, पूर्वोत्तर राज्यों,विशेष श्रेणी के राज्यों, औरआरई पार्कों के बाहर की परियोजनाओं के मामले में अपेक्षाकृत छोटा बोली आकार रखा जा सकता है। क्रेता, किफायत, भूमि की उपलब्धता, संभावित प्रतिस्पर्धा और बाजार के विकास की आवश्यकता जैसे कारकों पर ध्यान देते हुए इसके सहायकों सहित किसी एकल बोलीकर्ता को आबंटित किए जा सकने वाली अधिकतम क्षमता निर्दिष्ट करने का भी चयन कर सकता है।

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2. बोली मानदंड

क्रेता बीईएसएस क्षमता के अनुसार क्रय के लिए बोलियां बोलियां आमंत्रित कर सकता है। क्षमता क्रय में व्यवस्था होगी कि क्रेता भंडारण क्षमता की उपलब्धता के लिए भुगतान करेगा। तद्नुसार, बोली मानदंड निम्नानुसार होंगे।

क. करार की शर्तों के अनुसार उपलब्धता आधारित निश्चित प्रभार/वार्षिकी (आईएनआर प्रति किलावाट (अथवा प्रति मेगावाट) प्रति वर्ष (अथवा प्रति माह)

ख. किसी पूर्व निर्दिष्ट निश्चित टैरिफ/निर्दिष्ट वार्षिकी के लिए बोलीकर्ता द्वारा अपेक्षित वीजीएफ सहायता की मात्रा।

बोलीकर्ता एजेंसी आरएफएस में, बीईएसएस अनुप्रयोग तथा क्रेता की कुल खरीद की व्यवस्थाओं पर निर्भर करते हुए, कोई एक बोली मानदंड निर्दिष्ट कर सकता है, जिसे आरएफएस में निर्दिष्ट किया जाएगा।

बीईएसपीए का न्यूनतम कार्यकाल 8 वर्ष होने की परिकल्पना की गई है जिसे क्रय की आवश्यकता के अनुसार बढ़ाया जा सकता है।

ग. बोली प्रक्रिया

1. क्रेताएकल मंच, द्विभाग (तकनीकी बोली और वित्तीय बोली), बोली प्रक्रिया अपनाने का प्रस्ताव कर सकता है, बोली प्रक्रिया वरीयतः इलेक्ट्रॉनिक मोड (ई-बोली) के माध्यम से संचालित की जानी है। तकनीकी बोली को पहले खोला जाएगा। केवल उन बोलीकर्ताओं की वित्तीय बोली को खोला जाएगा, जो तकनीकी बोली के मूल्यांकन चरण में योग्य पाए गए हों। क्रेता सफल बोलीकर्ताओं के चयन के लिए ई-रिवर्स नीलामी करेगा, जिसका बोली आमंत्रण सूचना और बोली दस्तावेज में विशेष उल्लेख किया जाएगा। सफल ट्रैक रिकॉर्ड और पर्याप्त सुरक्षा, संरक्षा और गोपनीयता विशेषताओं वाले ई-प्रापण प्लेटफॉर्म का प्रयोग किया जाएगा। आरई पार्क विशिष्ट परियोजना के मामले में,क्रेता द्वाराआरई विद्युत पार्क विकासकर्ता को बोली प्रक्रिया आरंभ होने के बारे में सूचना दी जाएगी, जो सभी आवश्यक भूमि एवं अवसंरचना संबंधी ब्यौरे उपलब्ध कराते हुए बोली प्रक्रिया में सक्रिय रूप से भाग लेगा।
2. क्रेता, इन दिशानिर्देशों के अनुसार, बोलीकर्ताओं को बीईएसएस आधारित परियोजनाओं के संस्थापन के लिए आरएफएस में भाग लेने हेतु आमंत्रित करेगा।
3. क्रेता द्वारा इन दिशानिर्देशों के अनुरूप आरएफएस, बीईएसपीए प्रारूप और बीईएसए प्रारूप (यदि लागू हो) सहित बोली दस्तावेज तैयार किए जाएंगे। यदि परियोजना आरई पार्क में स्थापित की जानी अपेक्षित है, क्रेता बोलीकर्ताओं को कार्यान्वयन सहायता करार और भूमि संबंधी करारों के प्रारूप दिखाने की व्यवस्था भी करेगा।
4. क्रेता व्यापक प्रचार के लिएआरएफएस सूचना को केंद्रीय/राज्य लोक प्रापण पोर्टल और/अथवा इसकी अपनी वेबसाइट पर प्रकाशित करेगा।
5. क्रेता प्रत्याशित बोलीकर्ताओं को बोली पूर्व वार्तालाप का अवसर प्रदान करेगा और किसी भी बोलीकर्ता को निविदा दस्तावेजों की लिखित व्याख्या उपलब्ध कराएगा जिसे सभी अन्य बोलीकर्ताओं को भी उपलब्ध कराया जाएगा। सभी संबंधित पक्षकार पूर्ण रूप से लिखित संप्रेषण पर ही भरोसा करेंगे। बोली दस्तावेजों के किसी स्पष्टीकरण अथवा संशोधन को पर्याप्त सूचना के लिए क्रेता की वेबसाइट पर अपलोड किया जाएगा। बोली दस्तावेजों के किसी संशोधन अथवा परिशोधन को जारी करने की स्थिति में, बोलीकर्ताओं को बोलियां प्रस्तुत करने के लिए उस समय से कम से कम 7 दिन की अवधि उपलब्ध कराई जाएगी।

घ. चयन हेतु अनुरोध (आरएफएस) दस्तावेज

क्रेता द्वारा आरएफएस में उपलब्ध कराए जाने वाले मानक प्रावधानों में निम्नलिखित शामिल होंगे:

1. बोली प्रतिक्रियाशीलता

बोली का मूल्यांकन तब ही किया जाएगा यदि यह प्रतिक्रियाशील है और अन्य बातों के साथ-साथ निम्नलिखित शर्तों की पूर्ति करती है:

क. बोलीकर्ता अथवा उसके किसी सहयोगी कोजानबूझकर किसी ऋणदाता का चूककर्ता नहीं होना चाहिए;

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ख. किसी कंसोर्टियम सदस्य तथा इसके किसी सहायक सहित बोलीकर्ता और उसके किसी सहायक, उनके निदेशकों कोभारत में किसी सरकारी एजेंसी अथवा प्राधिकरण, बोलीकर्ता अथवा सदस्यों के न्यायाधिकार, जहां उन्हें निगमित किया गया है अथवा उनके व्यापार के मुख्य स्थान के न्यायाधिकार की सरकार, विश्व बैंक समूह, एशियाई विकास बैंक, अफ्रीकी विकास बैंक,अंतर-अमेरिकी विकास बैंक, एशियाई अवसंरचना निवेश बैंक इत्यादि जैसी किसी अंतर्राष्ट्रीय वित्तीय संस्था अथवा संयुक्त राष्ट्र अथवा इसकी किसी अन्य एजेंसी द्वारा प्रतिबंधित नहीं किया गया हो या ब्लैक लिस्ट में शामिल नहीं किया गया हो।

2.बोलीकर्ताओं द्वारा पूरी की जाने वाली योग्यता अपेक्षाएं

क) **सामान्य अर्हता मानदंड:** इन दिशानिर्देशों के अंतर्गत निविदाओं में भाग लेने वाले बोलीकर्ताओं को निम्नलिखित में से किसी एक श्रेणी का होना चाहिए:

(i) कंपनी अधिनियम, 2013 के अंतर्गत कोई कंपनी।

(ii) संबंधित राष्ट्र के कानूनों के अंतर्गतकोई विदेशी कंपनी।

(iii) सेबी के अंतर्गतयथापंजीकृत वैकल्पिक निवेश निधियां (एआईएफ)। "एआईएफ" सेबी द्वारा दी गई परिभाषा के अनुसार होंगे।

(iv) उपर्युक्तकंपनियों का कोई कंसोर्टियम।

उपर्युक्त समय-समय पर यथासंशोधित भारत सरकार के संबद्ध अधिनियमों, नियमों, दिशानिर्देशों, आदेशों तथा नीति दस्तावेजों के अधीन होंगे।

ख) **तकनीकी अर्हता मानदंड:** सरकार प्रतिभागिता बढ़ाते हुए प्रतिस्पर्धा को प्रोत्साहित करने की इच्छुक होगी।तथापि, परियोजनाओं के उचित कार्यान्वयन को सुनिश्चित करने के लिए, क्रेताबोलीकर्ताओं के पूर्व अनुभव, अवसंरचना परियोजनाओं के समय से निर्माण आदि जैसे तकनीकी अर्हता मानदंडों को निर्दिष्ट करने का चयन कर सकता है। ऐसे मानदंड उन परियोजना विकासकर्ताओं की संख्या के मूल्यांकन के बाद निर्धारित किए जाएंगे जिनसे इन मानदंडों को पूरा किया जाना अपेक्षित है ताकि प्रतिस्पर्धा का पर्याप्त स्तर प्राप्त किया जा सके। तकनीकी मानदंडों की पूर्ति के लिए निर्धारित अंतिम तिथि को आम तौर पर बोली प्रस्तुत करने की अंतिम तारीख के रूप में रखा जाना चाहिए।

ग) **वित्तीय अर्हता मानदंड:**

i. प्रबंधन के अंतर्गत निवल मूल्य/परिसंपत्ति (एयूएम) अथवा निवेश योग्य निधियां:क्रेता योग्यता अपेक्षाओं के भाग के रूप में निवल मूल्य के रूप में वित्तीय मानदंडों को निर्दिष्ट करेगा। निवल मूल्य अपेक्षा बोलियां जारी किए जाने वाले वित्तीय वर्ष के लिए परियोजना की अनुमानित पूंजीगत लागत का कम से कम 20% (बीस प्रतिशत) होना चाहिए। परियोजना की अनुमानित पूंजी लागत बोलीकर्ता एजेंसी द्वारा निर्धारित की जाएगी। बोलीकर्ता के सेबी पंजीकृत एआईएफ होने की स्थिति में, क्रेता/मध्यवर्तीक्रेता द्वारा यथानिर्णीत न्यूनतम अपेक्षा सहित प्रबंधन के अंतर्गतपरिसंपत्तियों (एयूएम) के संचयी मूल्य को वित्तीय अर्हता मानदंड के भाग के रूप में प्रदर्शित किया जाएगा। इस संदर्भ में, एयूएम का अभिप्राय एआईएफ के सांविधिक लेखापरीक्षक द्वारा यथाप्रमाणित राशि से होगा।

उपर्युक्त कार्य के लिए विचार किए जाने वाले एयूएम कानिवल मूल्य/मूल्य बोलीकर्ता कंपनी/एआईएफ अथवा कंसोर्टियम सदस्यों का संचयी निवल मूल्य होगा। एआईएफ के मामले को छोड़कर, आरएफएस के अनुसार निवल मूल्य मानदंडों को पूरा करने के उद्देश्य के लिए बोलीकर्ता अपनी संबद्ध कंपनी (कंपनियों)की वित्तीय क्षमता के आधार पर अर्हता की मांग कर सकता है। बोलीकर्ता के कोई बोलीकर्ता कंसोर्टियम होने की स्थिति में, कोई सदस्य अपनी सहायक कंपनी (कंपनियों) की वित्तीय क्षमता के आधार पर उपर्युक्त मानदंडों को पूरा कर सकता है। दोनों ही स्थितियों में, बोलीकर्ता (बोलीकर्ताओं) के आरएफएस के अनुरूप ऐसा करने में विफल रहने की स्थिति में ऐसी सहायक कंपनियां अपेक्षित इक्विटी वित्तपोषण और निष्पादन बैंक गारंटी का योगदान करने का वचन देंगे।

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यह स्पष्ट किया जाता है कि इस खंड के लिए विचार किये जाने वाला निवल मूल्य कंपनी अधिनियम, 2013 के अनुसार गणना किया गया कुल निवलमूल्य होगा, और इस खंड के अंतर्गत विचार किए जाने वाला एयूएम अथवा निवेश योग्य निधियों कीलागू सेबी (एआईएफ) विनियमों के अनुसार गणना की जाएगी।

निविदाओं में तकनीकी और वित्तीय अर्हता मानदंडों को पूरा करने के सीमित उद्देश्य के लिए, बोलीकर्ता कंपनी में 50% से अधिक शेयर धारण करने वाली सहायक कंपनियों के प्रमाण-पत्रों का प्रयोग करने के अतिरिक्त, बोलीकर्ता निम्नलिखित के अधीन, बोलीकर्ता कंपनी का 50% से अधिक नियंत्रण नहीं करने वाली सहायक कंपनियों के प्रमाण-पत्रों का प्रयोग भी कर सकते हैं:

क. इन अपेक्षाओं को पूरा करने के लिए जिस कंपनी के प्रमाण-पत्रों का प्रयोग किया जा रहा है, उनके इक्विटी योगदान के आनुपातिक रूप में अर्हता मानदंड पैरामीटरों की पूर्ति की जाएगी। उदाहरण के लिए, निवल मूल्य अपेक्षा 100 करोड़ रुपये होने और बोलीकर्ता में कुल 30% की शेयरधारिता के स्वामित्व वाली सहायक कंपनी की शक्ति का प्रयोग किए जाने की स्थिति में, कथित सहायक कंपनी को निवल मूल्य के 30 करोड़ रुपये तक की पूर्ति करने में सक्षम होना चाहिए।

ख. अर्हता मानदंडों को पूरा करने के लिए प्रयोग की गई सहायक कंपनी की शक्ति के मामले में, संबंधित सहायक कंपनी के शेयरधारिता पैटर्न को परियोजना के सीओडी तक अवरुद्ध कर दिया जाएगा।

ii. लिक्विडिटी: आवश्यक है कि बोलीकर्ता के पास परियोजना की निधि आवश्यकताओं के प्रबंध के लिए पर्याप्त नकद प्रवाह/आंतरिक जमा/बैंक संदर्भ हों।क्रेता वार्षिक कारोबार, पीबीडीआईटी, आंतरिक संसाधन सृजन, बैंक संदर्भों/ऋण व्यवस्था आदि जैसे उपयुक्त मानदंड भी निर्धारित कर सकता है।

ड. बोली प्रस्तुत करना और मूल्यांकन

1. कंसोर्टियम के गठन की अनुमति होगी, ऐसे मामले में कंसोर्टियम एक अग्रणी सदस्य को चिन्हित करेगा जो बोली प्रक्रिया के दौरान सभी लिखापढ़ी के लिए संपर्क बिंदु होगा।
2. बोलीकर्ता एजेंसी निविदा दस्तावेजों में,बोलीकर्ताओं के लिए उपयुक्त तकनीकी और वित्तीय अर्हता मानदंड निर्दिष्ट करेगी।
3. क्रेता बोलियों के मूल्यांकन के लिएकम से कम तीन सदस्यों की एक समिति (मूल्यांकन समिति) गठित करेगा जिसमें से कम से कम एक सदस्य वित्तीय मामलों/बोली मूल्यांकन का विशेषज्ञ होगा।
4. बोलीकर्ता को आरएफएस में यथानिर्दिष्ट अप्रतिदेयप्रक्रिया शुल्क और/अथवा सफलता शुल्क जमा करना होगा।
5. बोलीकर्ताओं को तकनीकी और मूल्य बोलियां अलग-अलग जमा करनी होंगी। बोलीकर्ताओं को बोलियों के साथ ईएमडी के रूप में आवश्यक बोली-गारंटी भी प्रस्तुत करनी होगी।
6. तकनीकी बोलियों का मूल्यांकन यह सुनिश्चित करने के लिए किया जाएगा कि प्रस्तुत की गई बोलियां आरएफएस दस्तावेज में सभी मूल्यांकन पैरामीटरों पर निर्धारित अर्हता मानदंडों को पूरा करती हैं। केवल आरएफएस में निर्धारित मूल्यांकन मानदंडों को पूरा करने वाली बोलियों पर ही मूल्य बोलियों के संबंध में आगे मूल्यांकन हेतु विचार किया जाएगा।
7. प्रतिस्पर्धा सुनिश्चित करने के लिए, अर्हताप्राप्तबोलीकर्ताओं की न्यूनतम संख्या दो होनी चाहिए। यदि बोली लगाने के तीन प्रयासों के बाद भीअर्हताप्राप्त बोलीकर्ताओं की संख्या 2 से कम होती है, और क्रेता अभी भी बोली प्रक्रिया में बने रहना चाहता है, तो उपयुक्त आयोग की सहमति से ऐसा किया जा सकता है।
8. यदि बोलीकर्ता द्वारा प्रस्तुत की गई बोली में निविदा शर्तों से कोई विचलन होता है, तो मूल्य बोली को रद्द कर दिया जाएगा।
9. **बोलियों के मूल्यांकन के लिए क्रेता द्वारा अपनाई जाने वाली बोली मूल्यांकन विधि:** बोली पैरामीटर के बढ़ते क्रम में बोलियों की रैंकिंग के माध्यम से उपर्युक्त खंड ख2 पर दिए गए पैरामीटरों के अनुसार बोलियों का मूल्यांकन किया जाएगा।बोलीकर्ता एजेंसी परियोजनाओं के अवार्ड के लिए इलेक्ट्रॉनिक रिवर्स नीलामी करेगा।

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10. आरएफएस में बोली के मूल्यांकन और सफल बोलीकर्ता (बोलीकर्ताओं) के चयन की विस्तृत प्रक्रिया उपलब्ध कराई जाएगी।

च. बोली प्रक्रिया के लिए सांकेतिक समय सारिणी

बोली प्रक्रिया क्रेता द्वारा आरएफएस को जारी किए जाने की तिथि के 3 माह के भीतर पूरी हो जानी चाहिए। स्पष्ट किया जाता है कि यदि क्रेता घटना के पहले पूरा करने हेतु अपेक्षित गतिविधियों को प्राप्त करने में देरी के कारण, अथवा किसी अन्य कारण से बोली प्रक्रिया में किसी घटना के लिए, समय विस्तार देता है तो ऐसा समय विस्तार किसी भी प्रकार से इन दिशानिर्देशों से विचलन नहीं माना जाएगा।

छ. अनुबंध अवार्ड और समापन

1. बोली प्रक्रिया समाप्त होने के बाद, बोलियों के मूल्यांकन के लिए गठित मूल्यांकन समिति बोलियों का समीक्षात्मक रूप से मूल्यांकन करेगी और यथोचित प्रमाणित करेगी कि बोली प्रक्रिया और मूल्यांकन इन दिशानिर्देशों के प्रावधानों के अनुरूप संचालित किया गया है।

2. बीईएसपीए पर सफल बोलीकर्ता/परियोजना कंपनी अथवा सफल बोलीकर्ता द्वारा गठित किसी एसपीवी के साथ हस्ताक्षर किए जाएंगे।

3. बीईएसपीए बीईएसएसडी और क्रेता के बीच निष्पादित किया जाएगा। मध्यवर्तीक्रेता की संबद्धता की स्थिति में, बीईएसपीए बीईएसएसडी और मध्यवर्तीक्रेता के बीच निष्पादित किया जाएगा और बीईएसएसए मध्यवर्तीक्रेता और अंतिम क्रेता के बीच निष्पादित किया जाएगा। बीईएसएसए पर हस्ताक्षर किए जाने के बाद वरीयतःतुरंत बीईएसपीए पर हस्ताक्षर किए जाने चाहिए।

4. मध्यवर्तीक्रेता विकासकर्ता (विकासकर्ताओं) के साथ बैटरी भंडारण क्रय करार (बीईएसपीए)/विद्युत क्रय करार करेगा और वितरण लाइसेंसधारक (लाइसेंसधारकों)/उपभोक्ता (उपभोक्ताओं) के साथ बैटरी भंडारण बिक्री करार (बीईएसएसए)/विद्युत विक्रय करार करेगा। बीईएसएसए में बीईएसपीए के संबद्ध प्रावधानबैक-टू-बैक आधार पर निहित होंगे। मध्यवर्तीक्रेता ऐसी ऊर्जा/क्षमता के क्रय और विक्रय के लिए क्रेता कंपनी/क्रेता सेसात पैसे/किलोवाट घंटा अथवा क्षमता प्रभारों (यथा लागू) के0.5% केव्यापार मार्जिन को प्रभारित करने का हकदार होगा।

5. मध्यवर्तीक्रेता बीईएसएस के प्रापण के लिए जब तक इन दिशानिर्देशों का पालन करता है, तब तक ऐसा माना जाएगा कि ऐसी विद्युत केप्रापण के लिए अंतिम क्रेताने इन दिशानिर्देशों का पालन किया है। कुछ राज्यों में वितरण लाइसेंसधारियों के लिए विद्युतप्रापण को होल्डिंग कंपनी अथवा किसी अन्य सरकारी एजेंसी के माध्यम से केंद्रीकृत किया गया है। ऐसी कंपनियों/एजेंसियों को इन दिशानिर्देशों के उद्देश्यों के लिए मध्यवर्ती क्रेता नहीं अपितुक्रेता माना जाएगा।

6. बीईएसपीए पर हस्ताक्षर करने में,एलओए जारी करने की तिथि अथवा बोलीकर्ता एजेंसी और सफल बोलीकर्ताओं के बीच पारस्परिक सहमति के अनुसार किसी अन्य विस्तारित तिथि से 6 माह से अधिक की देरी के मामले में, अवार्ड की गई क्षमता रद्द कर दी जाएगी। कुछ मामलों में उपर्युक्त अंतिम समय-सीमा के बाद, यदि बीईएसपीए पर हस्ताक्षर होने के लिए अर्ह संचयी क्षमता निविदा के अंतर्गत अवार्ड की गई संचयी क्षमता से कम रहती है, तो आगे की कार्रवाई का निर्णय बोलीकर्ता एजेंसी द्वारा लिया जाएगा, जिसे निविदा दस्तावेज में स्पष्ट रूप से निर्दिष्ट किया जाएगा।

7. पारदर्शिता के उद्देश्य से, बीईएसपीए के निष्पादन के बाद,क्रेता सफल बोलीकर्ता (बोलीकर्ताओं) के नाम उनके द्वारा उद्धृत टैरिफ/प्रभारों का उनके घटकों के विवरण, यदि कोई हों, सहित सार्वजनिक रूप से प्रकट करेगा। यह सार्वजनिक प्रकटन क्रेता की वेबसाइट पर कम से कम 30 (तीस) दिन के लिए अपेक्षित ब्यौरों को पोस्ट करते हुए किया जाएगा।

8. अधिनियम के प्रावधानों के अधीन, वितरण लाइसेंसधारी अथवामध्यवर्तीक्रेता, जैसा भी मामला हो, को सफला बोलीकर्ता (बोलीकर्ताओं) को अवार्ड पत्र जारी किए जाने के 30 दिन के भीतर गणना किए गए टैरिफ (क्षमता प्रभारों सहित, यदि लागू हो) और क्रय की जाने वाली क्षमता/विद्युत की मात्रा के अधिग्रहण के लिए

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उपयुक्त आयोग से संपर्क करना चाहिए। ऐसे मामलों में जहां टैरिफ (क्षमता प्रभारों सहित, यदि लागू हो) को अपनाने की प्रक्रिया में इसके साथ हस्ताक्षरित बीईएसपीए को प्रस्तुत किया जाना अपेक्षित हो, तो उपर्युक्त समय-सीमा को पर्याप्त रूप से आगे बढ़ाया जा सकता है।

9. कुछ मामलों में, मध्यवर्तीक्रेता/क्रेता दो-भाग वाले टैरिफ के घटक के रूप में निश्चित मूल्य भी निर्धारित कर सकता है। ऐसे मामलों में, टैरिफ केउपर्युक्त निश्चित भागके लिए उपयुक्त आयोग द्वारा किसी टैरिफ अभिग्रहण की आवश्यकता नहीं है, और इन दिशानिर्देशों के अंतर्गत लागू माना जाएगा।

10. अंतिम क्रेता/मध्यवर्ती क्रेता द्वारा टैरिफ के अभिग्रहण के लिए उपयुक्त आयोग से संपर्क करने के बाद, यदि उपयुक्त आयोग बीईएसपीए की प्रभावी तिथि से 120 दिन के भीतर इस पर निर्णय नहीं लेता है तो क्रेताउपयुक्त आयोग द्वारा अभिग्रहण में देरी के अनुरूप (बीईएसपीए की प्रभावी तिथि के 120 दिन बाद),उपयुक्त आयोग द्वारा अभिग्रहण की तिथि तक वित्तीय परिसमापन की अंतिम समय-सीमा और बीईएसएसडी की निर्धारित चालू होने की तिथि में उपयुक्त समय विस्तार प्रदान करेगा।

ज. बैंक गारंटियां/भुगतान आदेश दस्तावेज/वचन पत्र

1. बीईएसएसडी आरएफएस और बीईएसपीए की शर्तों के अनुसार, क्रेता को निम्नलिखित दस्तावेज उपलब्ध कराएगाः

   क. बयाना राशि (ईएमडी), क्रेता द्वारा निर्धारित की जानी है, किन्तु उस वित्तीय वर्ष के लिए जिसमें बोलियां आमंत्रित की गई हैं, परियोजना की अनुमानित पूंजीगत लागत के 2% (दो प्रतिशत) से अधिक नहीं हो, इसे आरएफएस के उत्तर के साथ प्रस्तुत किया जाना है। बोलीकर्ता एजेंसी/क्रेता के पास विकल्प होगा कि वह उपयुक्त सरकार द्वारा अधिसूचित अधिसूचनाओं/सरकारी संकल्पोंपर उचित विचार करते हुए, निम्नलिखित रूप में, ईएमडी को स्वीकार करने के तरीके/रूप निर्दिष्ट करेः

      i. बैंक गारंटी;

         अथवा

      ii. इस उद्देश्य के लिए भारत सरकार अथवा राज्य सरकारों द्वारा समय-समय पर यथाअधिसूचित किसी एजेंसी से, बीईएसपीए की शर्तों के अनुसार बीईएसएसडी के चूक की स्थिति उत्पन्न होने परबोलीकर्ताओं द्वारा "भुगतान आदेश दस्तावेज"/भुगतान हेतु वचन-पत्र प्रस्तुत करना होगा।बीईएसएसडी के निर्धारित समयावधि के भीतर बीईएसपीए निष्पादित करने में विफल रहने की स्थिति में इन दिशानिर्देशों में यथापरिभाषित ईएमडी की जब्ती अथवा ब्लैकलिस्टिंग अथवा विवर्जन आदि कर दिया जाएगा।

         "भुगतान आदेश दस्तावेज" से यदि निविदा दस्तावेजों और/अथवा बैटरी भंडारण क्रय करार (बीईएसपीए) के अनुसार बैटरी भंडारण प्रणालीविकासकर्ता (बीईएसएसडी) की चूक की स्थिति उत्पन्न होती है तो भुगतान के लिए, इस उद्देश्य के लिए भारत सरकार अथवा राज्य सरकारों द्वारासमय-समय पर यथाअधिसूचित किसी एजेंसी से वचन पत्र अभिप्रेत है। इस पत्र का वही प्रभाव होगा जो किसी सार्वजनिक क्षेत्र के बैंक द्वारा जारी बैंक गारंटी का होता है। ऐसे "भुगतान आदेश दस्तावेज" के निबंधन एवं शर्तें वही होंगी जो किसी सार्वजनिक क्षेत्र के बैंक की किसी बैंक गारंटी में दी जाती हैं और इसमें क्रेता को निर्धारित समय के भीतर मांग करने पर भुगतान करने का वचन दिया जाएगा। बीईएसएसडी उपर्युक्त वर्णित तीन गैर-बैंकिंग वित्तीय संस्थाओं को उचित प्रतिभूति देकर ऐसे पत्रों की मांग कर सकता है। क्रेता उपर्युक्त अधिसूचित संस्थानों को छोड़कर किसी अन्य गैर-बैंकिंग वित्तीय संस्था अथवा बैंक से उपर्युक्त वर्णित अनुसार अथवा किसी अन्य रूप में "वचन पत्र" के दस्तावेज स्वीकार नहीं करेगा।

   ख. निष्पादन बैंक गारंटी (पीबीजी),क्रेता द्वारा निर्धारित की जानी है, किन्तु जिस वित्तीय वर्ष में बोलियां आमंत्रित की गई हैं, उसके लिए परियोजना लागत के 5% (पांच प्रतिशत) से अधिक नहीं हो, इसे बीईएसपीए पर हस्ताक्षर होने के समय प्रस्तुत किया जाना है। बोलीकर्ता एजेंसी/क्रेता के पास विकल्प होगा कि वह उपयुक्त सरकार द्वारा अधिसूचित अधिसूचनाओं/सरकारी संकल्पोंपर उचित विचार करते हुए, निम्नलिखित रूप में, ईएमडी को स्वीकार करने के तरीके/रूप निर्दिष्ट करेः

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i. बैंक गारंटी;

अथवा

ii. इस उद्देश्य के लिए भारत सरकार अथवा राज्य सरकारों द्वारा समय-समय पर यथाअधिसूचित किसी एजेंसी से, बैटरी ऊर्जा भंडारण क्रय करार (बीईएसपीए) की शर्तों के अनुसार बीईएसएसडी के चूक की स्थिति उत्पन्न होने परबोलीकर्ताओं द्वारा "भुगतान आदेश दस्तावेज"/भुगतान हेतु वचन-पत्र प्रस्तुत करना होगा।

2. अन्य उपचारों के अतिरिक्त, बीईएसपीए के अनुसार बीईएसएसडी की किसी क्षति/बकायों की वसूली के लिए पीबीजी (इन दिशानिर्देशों के अनुसार उपलब्ध कराए गए इसके किसी अन्य विकल्प) को नकदीकृत किया जा सकता है। स्पष्ट किया जाता है किबीईएसपीए के अंतर्गत बीईएसएसडी की चूक होने पर, मध्यवर्ती क्रेता द्वारा पीबीजी को नकदीकृत कर वसूल किए गए क्षतियों/बकायों को इन दिशानिर्देशों के खंड छ, धारा IV के अंतर्गत मध्यवर्ती क्रेता द्वारा अनुरक्षित भुगतान सुरक्षा निधि में जमा किया जाएगा। निर्णीत क्षतियों (यदि कोई हों) की कटौती के बाद पीबीजी (इन दिशानिर्देशों के अनुसार उपलब्ध कराए गए इसके किसी अन्य विकल्प) को परियोजना के चालू होने के 45 दिन के भीतर वापस लौटा दिया जाएगा। तथापि, क्रेता/मध्यवर्ती क्रेता ऐसी अवधि में वृद्धि का चयन कर सकता है, जो सीओडी से 15 माह से अधिक नहीं होगी और बोली दस्तावेजों में स्पष्ट रूप से निर्दिष्ट किया जाएगा। आंशिक रूप से चालू होने की स्थिति में, चालू हुई आंशिक क्षमता के अनुरूप पीबीजी/भुगतान आदेश दस्तावेज को भी, बोली दस्तावेजों में यथानिर्दिष्ट समयावधि के भीतर, निर्णीत क्षतियों (यदि कोई हों) की कटौती के बाद जारी कर दिया जाएगा। पीबीजी/भुगतान आदेश दस्तावेज के नकदीकरण के विकल्प के रूप में, क्रेता/मध्यवर्ती क्रेता बीईएसएसडी को संबंधित पीबीजी/भुगतान आदेश दस्तावेज को किसी नकदीकरण के बिना जारी करने के लिए बीईएसएसडी को क्रेता/मध्यवर्ती क्रेता को डीडी/इलेक्ट्रॉनिक भुगतान के माध्यम सेअपेक्षित राशि के भुगतान का विकल्प भी दे सकता है।

3. यदि बीईएसपीए के अनुसार उत्पन्न बीईएसएसडी की चूक की स्थिति में भुगतान के लिए बीईएसएसडी किसी परियोजना की 'निष्पादन बैंक गारंटी (पीबीजी)' के रूप में बीईएसएसडी द्वारा प्रस्तुत की गई बैंक गारंटियों कोखंड ज.1.ख.ii के अनुसार "भुगतान आदेश दस्तावेज"/वचन पत्रों से बदल सकता है तो क्रेता द्वारा इसे जारी किया जा सकता है। बीईएसएसडी क्रेता के साथ पहले से रखी गई अपनी बैंक गारंटी के प्रतिस्थापन के लिए अधिसूचित एजेंसियों को उचित सुरक्षा प्रदान करते हुए ऐसे पत्रों की मांग कर सकता है।

I. तकनीकी विनिर्देशन:

प्रौद्योगिकी जोखिम को कम करने और परियोजनाओं को चालू कर सकने के लिए क्रेता व्यावसायिक रूप से स्थापित और प्रचालनात्मक प्रौद्योगिकियों को बढ़ावा देंगे।इन दिशानिर्देशों के अंतर्गतशामिल और चयन की जाने वाली आरई परियोजनाओं के प्रकार के लिए विस्तृत तकनीकी मानदंड, समय-समय पर विद्युत मंत्रालय द्वारा निर्दिष्ट किए जाएंगे। तकनीकी विनिर्देशनों सांकेतिक सूची इन दिशानिर्देशों के परिशिष्ट-2 में दी गई है।

खंड IV: परियोजना का कार्यान्वयन

क. बैटरी भंडारण क्रय करार (बीईएसपीए)

बीईएसपीएके मसौदे को सफल बोलीदाता के साथ शामिल करने का प्रस्ताव है और बीईएसएसएके मसौदे को (यदि लागू हो) आरएफएसके साथ जारी किया जाएगा। इस बीईएसपीए के हिस्से के रूप में शामिल किए जाने वाले मानक प्रावधानों में अन्य बातों के साथ-साथ निम्नलिखित शामिल होंगे, जो, जब तक कि यहां अन्यथा निर्दिष्ट नहीं किया जाता है, बीईएसएसएमें बैक-टू-बैक आधार पर प्रदान किया जाएगा।

1.बीईएसपीए की अवधि

प्रतिस्थापन के बिना उपयोग किए जा रहे बैटरी प्रणालियों के वर्तमान में प्रचलित जीवन चक्र को देखते हुए, बीईएसपीए अवधि की न्यूनतम समय सीमा निर्धारित कमीशनिंग तिथि (एससीडी) से 8 (आठ) वर्ष या परियोजना के पूर्ण चालू होने की तिथि, जो भी बाद में हो, होनी चाहिए। यदि भूमि और बुनियादी ढांचे के स्वामित्व वाली एजेंसियों, संबंधित ट्रांसमिशन यूटिलिटीज और सिस्टम ऑपरेटरों के साथ व्यवस्थाएं प्रदान करती हैं तो बीईएसएसडी

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बीईएसपीए अवधि की समाप्ति के बाद संयंत्रों को संचालित करने के लिए स्वतंत्र है। एतद्वारा यह स्पष्ट किया जाता है कि ऐसे मामलों में जहां खरीददार द्वारा परियोजना स्थल को या तो आरई पार्क में स्थित होने के लिए निर्दिष्ट किया गया है या अन्यथा, दिशानिर्देशों के अनुभाग III के खंड क.1.1.4 और क.1.1.5 के अनुसार जमीन की व्यवस्था करने के लिए खरीदारों की जिम्मेदारी बीईएसपीए अवधि के लिए सीमित होगी।

2. परियोजना के निष्पादन मानदंड

विद्युत की खरीद या तो क्षमता (किलोवाट/मेगावाट) और/या ऊर्जा (केवीएच/एमवीएच) शर्तों में हो सकती है।

क) बोली दस्तावेज उपलब्धता, चार्जिंग/डिस्चार्जिंग दर, दक्षता, रैंप दर इत्यादि जैसे निष्पादन मानदण्डों को निर्दिष्ट कर सकते हैं। उपलब्धता के मामले में निविदा में निष्पादन पैरामीटर होने के नाते, अंतिम खरीददार की आवश्यकताओं को पूरा करने के लिए, बीईएसएस द्वारा बनाए रखा जाने वाला न्यूनतम उपलब्धता आरएफएस में निर्दिष्ट किया जाना चाहिए। इसके अलावा, निविदा के तहत परिकल्पित बीईएसएस के विशिष्ट उपयोग के आधार पर, बीईएसएसडी को न्यूनतम मासिक और / या वार्षिक उपलब्धता आवश्यकताओं को पूरा करने, या डे-अहेड आधार पर उपलब्धता की घोषणा करने की आवश्यकता हो सकती है। पूरा किए जाने वाले न्यूनतम उपलब्धता मानदंड भी दिन में निर्दिष्ट घंटों/दिन में व्यस्ततम घंटों तक सीमित हो सकते हैं, जिस पर ऐसे मानदंडों को पूरा करने में कमी की गणना की जाएगी। भंडारण के घंटे और निष्पादन मानदंड खरीददार द्वारा तय किए जा सकते हैं।

ख) क्षमता की खरीद (मेगावाट) और ऊर्जा के लिए शेड्यूलिंग

यदि विभिन्न समय ब्लॉकों में ऊर्जा के शेड्यूलिंग के लिए खरीद की जाती है तो खरीददार "बीईएसएसडी द्वारा प्रदान की जाने वाली न्यूनतम उपलब्धता और खरीददार द्वारा प्रदान की जाने वाली न्यूनतम कुल खरीद ऊर्जा अनुसूची" में स्पष्ट शर्तों के साथ क्षमता का उल्लेख करेगा । ऐसी परियोजनाओं में न्यूनतम कुल खरीद और उपलब्धता अनुबंधित क्षमता के "xx%" से कम नहीं होनी चाहिए।

- उपलब्धता आधारित क्षमता प्रभार: खरीददार द्वारा ऊर्जा के शेड्यूलिंग के बावजूद, खरीददार बीईएसएसडी द्वारा उपलब्ध कराई गई क्षमता के लिए क्षमता प्रभार का भुगतान करेगा।
- यदि बीईएसएस से खरीददार द्वारा शुल्क लिया जाता है, तो बीईएसएसडी पूर्व-निर्दिष्ट रूपांतरण हानियों के लिए लेखांकन के बाद ऊर्जा वापस वितरित करेगा।
- यदि बीईएसएसडी द्वारा ऊर्जा भी प्रदान की जाती है, तो आपूर्ति की गई ऊर्जा के लिए भी खरीददार को पूर्व-उद्धृत ऊर्जा प्रभार का भुगतान करना होगा। हालांकि, खरीददार विद्युत की न्यूनतम मासिक और वर्ष में कुल खरीद की गारंटी का आश्वासन देगा।
- निर्धारित प्रभार: बीईएसएसडी द्वारा प्रस्तावित और खरीददार द्वारा शैड्यूल की गई उपलब्धता के बीच ऊर्जा के अंतर के लिए, खरीददार को पूर्व-निर्धारित निश्चित प्रभार का भुगतान करना होगा जिसे टैरिफ के xx% के रूप में परिभाषित किया जा सकता है। उपरोक्त प्रावधानों में "xx%" बोली दस्तावेजों के अनुसार निर्धारित किया जाएगा।

ग) **निष्पादन मानदंडों को पूरा करने में कमी के कारण परिसमापन नुकसान**: निष्पादन मानदंडों के मुकाबले कमियों के लिए परिसमापन हर्जाना देय होगा, राशि निम्नानुसार होगी:

(i) प्रतिबद्ध क्षमता उपलब्धता से नीचे कमी के लिए यथानुपात आधार परक्षमता शुल्क या आरएफएस में पूर्वनिर्धारित किसी भी संख्या की दर पर।

(ii) आरएफएस में पूर्वनिर्धारित टैरिफ या किसी भी संख्या पर प्रतिबद्ध ऊर्जा की आपूर्ति में कमी के लिए यथानुपात आधार पर।

(iii) बीईएसएसडी गारंटीकृत पैरामीटर से अधिक ऊर्जा हानि के लिए भुगतान करेगा (जैसा कि आरएफएस दस्तावेज़ में निर्धारित है) @ आरएफएस में पूर्वनिर्धारित किसी भी संख्या या खरीददार द्वारा प्रदान की गई इनपुट ऊर्जा का टैरिफ।

(iv) किसी भी निष्पादन विचलन के लिए, सहायक सेवाओं के मापदंडों से संबंधित, आरएफएस में खरीददार द्वारा परिभाषित पूर्वनिर्धारित परिसमापन नुकसान वसूला जाएगा।

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(v) आरएफएस दस्तावेज़ में यथापरिभाषित कोई अन्य परिसमापन नुकसान

घ) बोली दस्तावेजों या बीईएसपीए या बीईएसएसए में विनिर्दिष्टित परिसमापन नुकसान की राशि वास्तविक और नुकसान का उचित पूर्व-अनुमान है जो कि खरीददार/मध्यस्थ खरीददार (रों) को हो सकता है।

3.पुनःपूर्ति

बीईएसएसडीज निष्पादन मानदंडों को पूरा करने के लिए अपनी लागत और खर्च पर बीईएसपीए अवधि के दौरान समय-समय पर बैटरी क्षमता को फिर से भरने के लिए स्वतंत्र होंगे। तथापि, खरीददार केवल बीईएसपीए में निर्दिष्ट निष्पादन सीमा के भीतर और मौजूदा समझौतों के अनुसार लागू शुल्क पर बिजली खरीदने के लिए बाध्य होगा। अतिरिक्त आपूर्ति (यदि कोई हो) के प्रबंध के प्रावधान अंतिम खरीददार/मध्यस्थ खरीददार द्वारा जारी किए जाने वाले बोली दस्तावेजों में निर्दिष्ट किए जाएंगे। नियमानुसार मुआवजा/भुगतान में परिवर्तन केवल अनुबंधित क्षमता तक ही सीमित होगा।

ख.वित्तीय समापन

1. बीईएसडीए को बीईएसपीए के संदर्भ में वित्तीय समापन निर्धारित समयावधि में करना होगा जो बैटरी ऊर्जा भंडारण क्रय करार हस्ताक्षर होने की तारीख से 12 माह है। तथापि, यदि किसी कारण से, वित्तीय समापन करने की समयावधि इन दिशानिर्देशों में प्रदान की गई अवधि से कम करने की आवश्यकता होती है, तो खरीददार ऐसा कर सकता है।

2. उपरोक्त में विफल रहने पर, खरीददार/मध्यस्थ खरीददार पीबीजी/पीओआई का तब तक लाभ उठाएगा जब तक कि खरीददार द्वारा इन दिशानिर्देशों के भाग ।।। के खंड 1.1.4 और 1.1.5 के अनुसार भूमि के आवंटन में देरी अथवा बीईएसएसडी की ओर से किसी कार्रवाई या निष्क्रियता के कारण सरकार द्वारा भूमि के आवंटन में देरी के कारण के बिना अथवा किसी अप्रत्याशित घटना के कारण देरी नहीं हुई हो।तथापि, खरीददार द्वारा बीईएसएसडी के व्यक्तिगत अनुरोध पर, वित्तीय समापन करने के लिए वित्तीय समापन में देरी के लिए प्रति दिन 1,000 रुपये प्रति मेगावाट के विस्तार शुल्क के भुगतान पर एक विस्तार परविचार किया जा सकता है। इस विस्तार का निर्धारित कमीशनिंग तिथि (एससीडी) पर कोई प्रभाव नहीं पड़ेगा। इस प्रकार भुगतान की गई कोई भी विस्तार शुल्क, एससीडी के भीतर पूर्ण परियोजना क्षमता की सफल कमीशनिंग की उपलब्धि पर बिना किसी ब्याज के बीईएसएसडी को वापस कर दिया जाएगा। अन्य मामलों में, ऐसे दंड/विस्तार शुल्क को खरीददार/मध्यस्थ खरीददार द्वारा रखे जा रहे भुगतान सुरक्षा कोष में जमा किया जाएगा।

3. बीईएसपीए की प्रभावी तिथि के 120 दिनों के उपरांतउपयुक्त, आयोग द्वारा टैरिफ को अंगीकृत करने में किसी भी देरीके लिए वित्तीय समापन की समय सीमा में तदनुरूप विस्तार की आवश्यकता होगी।

ग. कमीशन किया जाना

1. **आंशिक कमीशनिंग**

क) खरीददार द्वारा परियोजना की आंशिक कमीशनिंग को इस शर्त के अधीन स्वीकार किया जाएगा कि पहले भाग की कमीशनिंग की स्वीकृति के लिए न्यूनतम क्षमता परियोजना क्षमता की 50% या 50 मेगावाट, जो भी कम हो, उस हिस्से पर बीईएसपीए का जो कमीशन नहीं किया गया है अर्थदंड लगाने के पूर्वाग्रह के बिना, शर्तों के अनुसार होगी। आईएसटीएस से जुड़ी परियोजनाओं के लिए, पहले भाग के लिए न्यूनतम आंशिक कमिशनिंग क्षमता 50 मेगावाट होगी। परियोजना की कमिशनिंग के लिए किस्तों की कुल संख्या 3 से अधिक नहीं होगी, अर्थात पहली प्रारंभिक किस्त और 2 बाद की किश्तें। तथापि, आंशिक कमीशनिंग के कारण निर्धारित कमीशनिंग तिथि (एससीडी) में कोई बदलाव नहीं किया जाएगा। आंशिक कमीशनिंग या पूर्ण कमीशनिंग की तारीखों पर ध्यान दिए बिना, बीईएसपीए एससीडी से न्यूनतम 8 वर्षों की अवधि या परियोजना क्षमता के पूर्ण कमीशन की तारीख, जो भी बाद में हो, के लिए लागू रहेगा।

ख) परियोजना की आंशिक कमिशनिंग के मामले में, बीईएसएसडी को ऐसे आंशिक कमिशनिंग की तारीख को या उससे पूर्व एक अवधि के लिए जो बीईएसपीए की पूर्ण अवधि से कम का न हो बीईएसएसडी के नाम पर कमीशन की जा रही आंशिक क्षमता के अनुरूप आवश्यक भूमि का कब्जा/उपयोग करने का अधिकार प्राप्त करने के लिए दस्तावेज/पट्टा समझौता प्रस्तुत करना होगा।

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ग) आंशिक कमिशनिंग के मामले में, क्षमता खरीद करार के लिए, कमीशन की गई क्षमता के अनुपात में, आनुपातिक आधार पर बीईएसपीए के अनुसार भुगतानकिया जा सकता है। आंशिक कमीशन क्षमता की खरीद पूर्णत: खरीददार/मध्यस्थ खरीददार के विवेक पर आधारित होगी। यदि खरीददार/ मध्यस्थ खरीददार कमिशनिंग तक आंशिक क्षमता की खरीद पर विचार करने के लिए इच्छुक नहीं हैं, तो आंशिक कमीशन क्षमता को एससीडी तक खुले बाजार में बेचने की अनुमति दी जाएगी।

2. समय से पहले कमीशनिंग

बीईएसएसडी को पारेषण कनेक्टिविटी और/या खुली पहुंच, यदि लागू हो, की उपलब्धता के अध्यधीन, एससीडी से पहले भी परियोजना की पूर्ण कमीशनिंग के साथ-साथ आंशिक कमीशनिंग की अनुमति होगी। समय से पहले आंशिक कमिशनिंग के मामलों में, बीईएसएसडी, एससीडी तक, उत्पन्न विद्युत/बैटरी क्षमता को, खरीददार (खरीदारों) के अलावा किसी भी इकाई को बेचने के लिए स्वतंत्र होगा, बशर्ते कि इनकार करने का पहला अधिकार खरीदारों के पास निहित होगा। खरीददार(रों)/मध्यस्थ खरीददार अनुरोध प्राप्त होने के 15 (पंद्रह) दिनों के भीतर इनकार प्रस्तुत करेगा, जिसके उपरांत इसे इनकार मान लिया जाएगा। एससीडी से पहले पूर्ण परियोजना क्षमता की समय से पहले कमिशनिंग के मामले में, यदि खरीददार इस प्रकार की समय से पहले कमीशन की गई विद्युत खरीदने के लिए सहमत होता है, तो खरीददार/मध्यस्थ खरीददार यथालागू बीईएसपीए/बीईएसएसए टैरिफ पर उत्पादन की खरीद करेगा।

3. कमीशनिंग कार्यक्रम

क) बीईएसएसडी, बीईएसपीए के संदर्भ में निम्नलिखित समय-सीमाओं के अनुसार परियोजना को कमीशन करेगा:

i. 250 मेगावाट तक (और सहित) की परियोजना क्षमता के मामले में, निर्धारित कमीशनिंग तारीख (एससीडी), अर्थात् बिना किसी परिनिर्धारित नुकसान के परियोजनाओं को कमीशन करने कीअधिकतम समय सीमा, बीईएसपीए की प्रभावी तारीख के 18 महीने बाद की तारीख होगी।

ii. 250 मेगावाट से अधिक की परियोजना क्षमता के मामले में, एससीडी बीईएसपीए की प्रभावी तारीख के 24 महीने बाद की तारीख होगी।

तथापि, यदि किसी कारणवश, इन दिशानिर्देशों में उल्लिखित निर्धारित कमीशन अवधि को कम करने की आवश्यकता है, तो खरीददारआईएसटीएस/इंट्रा-एसटीएस पारेषण प्रणाली में निकासी मार्जिन के संबंध में सीटीयू/एसटीयू से पुष्टि के अध्यधीन, ऐसा कर सकता है।

ख) अप्रत्याशित घटना के संबंध में इन दिशानिर्देशों के प्रावधानों के अध्यधीन, निर्धारित कमीशनिंग तारीख से आगे कमीशनिंग में देरीहोने पर बीईएसएसडी पर निम्नवत् परिसमापन हर्जाना लगाया जाएगा:

i. एससीडी के उपरांत कमिशनिंग में 9महीने तक देरी के लिए, बीईएसएसडी को कमीशन नहीं की गई संविदा क्षमता के अनुपात में पीबीजी/पीओआई के नकदीकरण के रूप में प्रति दिन के आधार पर परिसमापन हर्जाना लगाया जाएगा। इस प्रकार के परिसमापन नुकसान का भुगतान निम्नवत् किया जा सकता है:

- खरीददार/मध्यस्थ खरीददार को हर्जाने का सीधा भुगतान करके
- बीजी/पीओआई के नकदीकरण द्वारा

बीईएसएसडीके पास इन दो विकल्पों में से किसी एक को चुनने का विकल्प होगा और इस विकल्प को चुनने की समयावधि बीईएसएसए /बीईएसपीए में विनिर्दिष्ट की जाएगी।

ii. एससीडी के उपरांत कमीशनिंग में9महीने से अधिक की देरी के लिए, संविदा क्षमता को एससीडी के 9महीने तक शुरू की गई परियोजना क्षमता तक कम कर दिया जाएगा, संपूर्ण कार्य निष्पादन गारंटी को खरीददार/मध्यस्थ खरीददार द्वारा भुनाया जाएगा और शेष गैर-कमीशन क्षमता के लिए परियोजना की बीईएसपीए को समाप्त कर दिया जाएगा।

iii. तथापि, यदि किसी कारण से, इन दिशानिर्देशों में प्रदान समापन हर्जाने की उपरोक्त अवधि को कम करने की आवश्यकता है, तो खरीददार ऐसा कर सकता है।

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ग) उपयुक्त आयोग द्वारा टैरिफ (क्षमता प्रभारों सहित, यदि कोई हो) को अपनाने में बीईएसपीए की प्रभावी तिथि के उपरांत 120 दिनों से अधिक कोई भी देरीहोने पर एससीडी में तदनुरूप विस्तार करना आवश्यक होगा।

घ) भूमि की व्यवस्था: यह ध्यान देना होगा कि परियोजना की कमीशनिंग/आंशिक-कमीशनिंग तब तक घोषित नहीं की जाएगी जब तक कि बीईएसएसडी पूर्ण/आंशिक क्षमता को चालू करने के लिए इस प्रकार के पूर्ण/आंशिक कमीशन की तारीख को या उससे पहले, बीईएसपीए की पूर्ण अवधि से कम अवधि के लिए बीईएसएसडी के नाम आवश्यक भूमि के कब्जे/उपयोग के अधिकार को स्थापित करने के लिए दस्तावेज/पट्टा समझौता प्रस्तुत नहीं करता है।

4. **कनेक्टिविटी/ग्रिड पहुंच प्रचालन में देरी के कारण कमीशनिंग में देरी :**

कुछ परियोजनाओं में, परियोजना के चालू होने से पहले बीईएसएसडीद्वारा कनेक्टिविटी और ग्रिड पहुंच प्रस्तुत करना आवश्यक होगा। कनेक्टिविटी प्रदान करने के उपरांत, यदि सीटीयू/एसटीयू द्वारा ग्रिड पहुंच देने में/परिचालन में देरी होती है और/या जिसमें परियोजना के एससीडी तक आईएसटीएस/आईएनएसटीएस नेटवर्क की विद्युत निकासी और पारेषण अवसंरचना सहित डिलीवरी प्वाइंट/इंजेक्शन प्वाइंट पर आईएसटीएस/आईएनएसटीएस उप केंद्र की तैयारी में देरी होती है, और यह पाया गया है कि:

i. बीईएसएसडीने कनेक्टिविटी प्रक्रिया के अनुसार पूरी आवेदन औपचारिकताओं का अनुपालन किया है।

ii. बीईएसएसडी ने इस संबंध में सीईआरसी/एसईआरसी/जेईआरसी/सीटीयू/एसटीयू द्वारा अधिसूचित लागू प्रक्रिया का पालन किया है, और

iii. सीटीयू/एसटीयू द्वारा कनेक्टिविटी/ग्रिड पहुंच देने में देरी और/या आईएसटीएस/इनएसटीएस नेटवर्क की विद्युत निकासी और पारेषण इंफ्रास्ट्रक्चर की तैयारी सहित डिलीवरी प्वाइंट पर आईएसटीएस/आईएनएसटीएस उप केंद्र की तैयारी में देरी, एसटीयू/सीटीयू/पारेषण लाइसेंसधारी के कारण हुई है, और यह बीईएसएसडी के नियंत्रण से बाहर है;

तो उपरोक्त को बीईएसएसडी के नियंत्रण से बाहर की देरी के रूप में माना जाएगा, और ऐसी परियोजनाओं के लिए एससीडी को डिलीवरी प्वाइंट की तैयारी और विद्युत निकासी बुनियादी ढांचे और/या ग्रिड पहुंच के संचालन के उपरांत 30 दिनों की तारीख के रूप में संशोधित किया जाएगा। उपरोक्त के कारण अपेक्षित विस्तार पर निर्णय खरीददार/मध्यस्थ खरीददार द्वारा लिया जाएगा।

घ. वाणिज्यिक संचालन तारीख (सीओडी)

आंशिक कमीशनिंग के मामले में, वाणिज्यिक संचालन तारीख (सीओडी) केवल परियोजना क्षमता के उस भाग के लिए घोषित की जाएगी। परियोजना की वाणिज्यिक संचालन तारीख (सीओडी) [परियोजना सीओडी] को परियोजना की पूर्ण क्षमता या परियोजना की अंतिम भाग क्षमता, जैसा भी मामला हो, के कमिशनिंग की वास्तविक तारीख का अगला दिन माना जाएगा, जैसा कि बीईएसपीए में प्रदान की गई कमीशनिंग प्रक्रिया के अनुरूप घोषित किया गया है। इसी प्रकार, प्रत्येक भाग की कमिशनिंग के लिए, संबंधित आंशिक क्षमता के चालू होने की वास्तविक तिथि का अगला दिन सीओडी होगा।

बीईएसएसडी परियोजना की कमिशनिंग से पहले केंद्रीय विद्युत प्राधिकरण/सीईआईजी से आवश्यक सुरक्षा मंजूरी प्राप्त करेगा।

कमीशनिंग बोली दस्तावेजों में विनिर्दिष्टित प्रावधानों के अनुसार मौजूदा सीईआरसी विनियम की कमीशनिंग प्रक्रिया के अनुसार होगी।

ङ. पारेषण संयोजन

1. परियोजना को लागू सीईआरसी/एसईआरसी विनियमों के अनुरूप, खरीददार/एसटीयू/सीटीयू द्वारा यथानिर्दिष्टित उपयुक्त वोल्टेज स्तर पर आईएनएसटीएस / आईएसटीएस सब-स्टेशन के साथ सीधे या पूलिंग उप केंद्र के माध्यम से इंटर-कनेक्शन के लिए डिज़ाइन किया जाएगा, जहां अन्य परियोजनाएं भी आईएनएसटीएस / आईएसटीएस सब-स्टेशन से पहले एक पारेषण नेटवर्क के माध्यम से लागू विनियमों के अनुसार, उचित समय पर इंटर-कनेक्ट होती हैं। सुसंगत पारेषण अवसंरचना के निर्माण के लिए जिम्मेदार इकाई को बोली दस्तावेजों में स्पष्ट रूप से विनिर्दिष्ट किया

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जाएगा। कार्यान्वयन व्यवस्था और निकासी प्रणाली के डिजाइन के आधार पर, आईएनएसटीएस / आईएसटीएस सब-स्टेशन से पहले पारेषण लाइनों और सब-स्टेशनों की पूंजीगत लागत या तो सीधे बीईएसएसडी द्वारा भुगतान की जा सकती है, या आरई पार्क डेवलपर या अन्य कार्यान्वयन एजेंसी द्वारा भुगतान किया जा सकता है और बीईएसएसडीसे सीधे तौर पर दावा किया जा सकता है या आरोपित या विभाजित और एकमुश्त या वर्षों में भुगतान के रूप में वसूल किया जा सकता है।

2. ऐसे मामलों में, जहां खरीददार द्वारा परियोजना स्थल निर्दिष्ट नहीं किया गया है, एसटीयू/सीटीयू/पारेषण लाइसेंसधारी के स्वामित्व वाली पारेषण प्रणाली के लिए कनेक्टिविटी और ग्रिड पहुंच प्राप्त करने की जिम्मेदारी बीईएसएसडी की होगी और बीईएसएसडी की कीमत पर होगी। इस संबंध में, बोली लगाने वाली एजेंसी, सीटीयू/एसटीयू के परामर्श से, ऐसे सब-स्टेशनों की एक सूची प्रदान कर सकती है, जहां से बोलीदाता किसी निविदा में डिलीवरी बिंदु चुन सकते हैं।

3. ऐसे मामलों में, जहां खरीददार द्वारा निर्दिष्ट परियोजना स्थल आरई पार्क में नहीं है, खरीददार यह चयन कर सकता है कि पारेषण कनेक्टिविटी और ग्रिड पहुंच प्राप्त करने की लागत को वहन करने की जिम्मेदारी बीईएसएसडी उठाए।

4. ऐसे मामलों में जहां खरीददार कोई ऐसा आरई पार्क निर्दिष्ट करता है, जहां परियोजना को स्थापित किया जाना है, परियोजना की कमिशनिंग में देरी के संबंध में किसी भी क़ानून या विनियम के तहत सीटीयू / एसटीयू द्वारा लगाया गया हर्जाना, जुर्माना और शुल्क, जिस सीमा तक देरी के लिए बीईएसएसडी जिम्मेदार है, बीईएसएसडी द्वारा देय होंगे, और शेष खरीददार द्वारा देय होगा।

5. इस संबंध में मौजूदा विनियमों/निर्देशों के अनुसार, अंतर-राज्यीय पारेषण प्रणाली (आईएसटीएस) प्रभारों और हानियों में छूट का लाभ, यदि कोई हो, परियोजनाओं पर लागू होगा।

6. मीटरिंग प्वाइंट, वह बिंदु है जिस पर खरीददार को आपूर्ति की गई ऊर्जा को मापा जाएगा, आईएनएसटीएस / आईएसटीएस सब-स्टेशन का लो वोल्टेज बस बार होगा, जिस पर एसटीयू / सीटीयू या बोली दस्तावेज में निर्दिष्ट किसी अतिरिक्त बिंदु के पारेषण प्रणाली में विद्युत इंजेक्ट की जाती है। जब तक अन्यथा प्रावधान हो, विद्युत के अंतरसंयोजन के बिंदु तक जहां ऊर्जा लेखांकन के लिए मीटरिंग की जाती है, अपनी लागत पर बीईएसएसडी की जिम्मेदारी होगी।

7. आरई पार्क के मामले में, मीटरिंग प्वाइंट (बोली दस्तावेज में निर्दिष्ट) अंतिम निकासी आईएनएसटीएस / आईएसटीएस सब-स्टेशन है जिसके साथ सभी पूलिंग सब-स्टेशनों से आंतरिक पारेषण जुड़ा हुआ है। परियोजना और मीटरिंग प्वाइंट के बीच पारेषण / व्हीलिंग शुल्क और नुकसान आदि सहित किन्तु इन तक ही सीमित नहीं, सभी खर्चों का भुगतान खरीददार द्वारा बीईएसएसडी द्वारा बिना किसी प्रतिपूर्ति के किया जाएगा। मीटरिंग प्वाइंट से आगे पारेषण और वितरण के संबंध में 'पारेषण प्रभार और हानियां' (यदि कोई हो) और 'व्हीलिंग प्रभार और हानियां' सहित सभी खर्च, सिवाय आरएफएस में विशेष रूप से उल्लिखित खर्च खरीददार द्वारा वहन किए जाएंगे। आरई पार्क विकासकर्ता द्वारा परियोजनाओं/बीईएसएसडी या किसी अन्य संस्था, जो भी हो, को बिलिंग के लिए व्यवस्था की जाएगी, जो बदले में सीधे खरीददार से इसे वसूल कर सकता है।

8. सीईआरसी, ग्रिड और मीटरिंग के साथ इंटरकनेक्शन के लिए, खुली पहुंच और वाणिज्यिक लेखांकन और निपटान का लाभ उठाने के लिए, बीईएसएसडीज विनियमों/प्रक्रिया और आरई कनेक्टिविटी प्रक्रिया के प्रावधानों और सीईए द्वारा जारी किए गए ग्रिड कोड, तकनीकी मानकों सहित विभिन्न सीईए विनियमों/ मानकों, इस संबंध में उपयुक्त आयोग और सीईए द्वारा जारी ग्रिड कनेक्टिविटी विनियम, विद्युत पारेषण के लिए संचार प्रणाली संबंधी विनियम और अन्य विनियम (समय-समय पर यथासंशोधित) का पालन करेंगे।

9. बीईएसएसडी यथालागू पूर्वानुमान, निर्धारण और विचलन निपटान संबंधी सीईआरसी/ एसईआरसी/ जेईआरसी विनियमों का पालन करेगा और इस संबंध में लागू सभी देनदारियों के लिए जिम्मेदार होगा।

10. बीईएसएसडी के अनुरोध पर परियोजना के चालू होने से पहले, बीईएसएसडी को पारेषण कनेक्टिविटी, मौजूदा शर्तों के अध्यधीन परीक्षण को सुगम बनाने के लिए और ग्रिड में उत्पन्न अस्थायी विद्युत के प्रवाह की अनुमति देने के लिए सीटीयू / एसटीयू, जैसा भी मामला हो, द्वारा प्रदान की जा सकती है, और इस प्रकार के आवेदन को लागू विनियमों में निर्दिष्ट निर्धारित समय सीमा के भीतर किया जाना चाहिए।

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11. पारेषण घटक के रूप में बीईएसएस परियोजनाओं के मामले में, परियोजना की आयोजना पारेषण नेटवर्क और संबंधित आरई परियोजनाओं के साथ मिलकर बनाई जाएगी। संबद्ध नेटवर्क से जुड़ी आरई परियोजनाओं में देरी होने पर, बीईएसएस प्रदाता को देय क्षमता शुल्क आरई परियोजना विकासकर्ता पर मध्यस्थ खरीददार द्वारा आनुपातिक आधार पर लगाई जाएगी।

च. ऑफटेक बाधाओं के लिए मुआवजा

खरीददार को बैकडाउन के कारण बीईएसएसडी द्वारा निर्धारित/प्रस्तावित विद्युत को ऑफटेक करने के लिए बाध्य किया जा सकता है और केवल ऐसे मामले में लागू मुआवजा निम्नवत् होगा:

1. खरीददार द्वारा कम ऑफटेक के कारण मुआवजा

क) क्षमता संविदा के मामले में बीईएसएसडी किसी भी मुआवजे के लिए पात्र नहीं होगा। तथापि ऐसे मामलों में भी बीईएसएसडी को करार के अनुसार क्षमता प्रभार/टैरिफ का भुगतान किया जाएगा।

छ. भुगतान सुरक्षा तंत्र

खरीददार नीचे यथा विनिर्दिष्टित अनुसार पर्याप्त भुगतान सुरक्षा उपाय प्रदान करेगा।

1. **परिदृश्य 1: बीईएसएसडी से अंतिम खरीददार द्वारा सीधी खरीद**

खरीददार निम्नलिखित के माध्यम से बीईएसएसडी को भुगतान सुरक्षा प्रदान करेगा:

क. विचाराधीन परियोजना से कम से कम 1 (एक) महीने की औसत बिलिंग की राशि **के चक्रीयनन साख पत्र (एलसी)**।

तथा

ख. **भुगतान सुरक्षा निधि,** जो ऐसी निधि से जुड़ी सभी परियोजनाओं के कम से कम 3 (तीन) महीने की बिलिंग के लिए भुगतान में सहायता करने के लिए उपयुक्त होगी।

ग. उपरोक्त दो तंत्रों के संयोजन के रूप में, खरीददार कुल 4 (चार) महीने की ऊर्जा बिलिंग के लिए कुल भुगतान सुरक्षा प्रदान करेगा, जिसमें से कम से कम 1 महीने की ऊर्जा बिलिंग अवधि के लिए एलसी प्रदान किया जाना चाहिए।

घ. उपरोक्त खंड (क) और (ख) के अनुसार भुगतान सुरक्षा के अलावा, खरीददार यह सुनिश्चित करते हुए कि बीईएसएसडी को दोनों ऊर्जा प्रभारों के भुगतान और परिसमापन मुआवजे, यदि कोई हो, के रूप में पर्याप्त सुरक्षा है, कानूनी रूप से प्रवर्तनीय **राज्य सरकार गारंटी** प्रदान करने का विकल्प भी चुन सकता है। यह उस स्थिति में लागू नहीं होगा जब खरीददार कोई पारेषण यूटिलिटी या प्रणाली संचालक है।

2. परिदृश्य 2: मध्यस्थ-खरीददार बीईएसएसडी से खरीदता है और अंतिम खरीददार को बेचता है

क. बीईएसएसडी को मध्यस्थ खरीददार द्वारा भुगतान सुरक्षा:

मध्यस्थ खरीददार बीईएसएसडी को निम्नलिखित के माध्यम से भुगतान सुरक्षा प्रदान करेगा:

i. विचाराधीन परियोजना के लिए कम से कम 1 (एक) महीने की औसत बिलिंग राशि **का चक्रीयन साख पत्र (एलसी)**।

तथा

ii. **भुगतान सुरक्षा निधि** , जो ऐसी निधि से जुड़ी सभी परियोजनाओं के कम से कम 3 (तीन) महीने की बिलिंग के भुगतान में सहायता करने के लिए उपयुक्त होगी। इस भुगतान सुरक्षा निधि के प्रयोजन के लिए, मध्यस्थ खरीददार भुगतान सुरक्षा तंत्र पूल को सुदृढ करने के उपाय के रूप में बीईएसएसडीज से 5.0 लाख रुपये / एमडब्ल्यूएच (पांच लाख रुपये प्रति एमडब्ल्यूएच) की एक गैर-वापसी योग्य राशि एकत्र करेगा। इस प्रकार के शुल्क आरएफएस में स्पष्ट रूप से निर्धारित किए जाएंगे और ऐसे मध्यस्थ खरीददार के लिए भारत सरकार द्वारा स्थापित भुगतान सुरक्षा निधि (उपार्जित ब्याज के साथ) में डाले जाएंगे।

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ख. अंतिम खरीददार द्वारा मध्यस्थ खरीददार को भुगतान सुरक्षा:

अंतिम खरीददार निम्नलिखित के माध्यम से मध्यस्थ खरीददार को भुगतान सुरक्षा प्रदान करेगा:

i. विचाराधीन परियोजना (परियोजनाओं) के लिए कम से कम 1 (एक) महीने की औसत बिलिंग राशि **का चक्रीयन साख पत्र (एलसी)** ।

या

ii. कानूनी रूप से प्रवर्तनीय **राज्य सरकार की गारंटी,** जिसमें ऊर्जा शुल्क के भुगतान और समापन हर्जाना, यदि कोई हो, दोनों ही मामले में पर्याप्त सुरक्षा उपलब्ध है [इस खण्ड के लिए, भारतीय रिजर्व बैंक, केंद्र सरकार और राज्य सरकार के बीच हस्ताक्षरित त्रि-पक्षीय समझौता (टीपीए) ऊर्जा शुल्क के भुगतान की सुरक्षा संबंधी राज्य सरकार की गारंटी के रूप में मान्य होगा]। मध्यस्थ खरीददार यह सुनिश्चित करेगा कि इस गारंटी का प्रतिसंहरण लागू करने पर, यह एक ही बार में, बीईएसएसडी को उस सीमा तक सौंप देगा, जिस सीमा तक बीईएसपीए के संदर्भ में बीईएसएसडी को भुगतान देय है। परंतु, ऐसे मामलों में जहां अंतिम खरीददार न तो त्रि-पक्षीय समझौते (टीपीए) द्वारा कवर किया गया है और न ही राज्य सरकार की गारंटी प्रदान करने में सक्षम है, निम्नलिखित को अपनाया जाएगा:

यदि कोई विशेष खरीददार भुगतान सुरक्षा के हिस्से के रूप में राज्य सरकार की गारंटी प्रदान नहीं करता है, तो एलसी राशि को औसत मासिक बिलिंग के 2.1 गुना तक बढ़ाया जाएगा।

iii. उपरोक्त खंड (i) और (ii) के अनुसार भुगतान सुरक्षा के अलावा, अंतिम खरीददार **भुगतान सुरक्षा निधि** प्रदान करने का भी चयन कर सकता है, जो ऐसी निधि से संबद्ध सभी परियोजनाएं, के कम से कम 3 (तीन) महीने के बिलिंग के भुगतान में सहायता करने के लिए उपयुक्त होगा।

एतद्वारा यह स्पष्ट किया जाता है कि राज्य सरकार की गारंटी का केवल तभी प्रतिसंहरण किया जाएगा जब मध्यस्थ खरीददार बीईएसपीए के तहत साख पत्र और भुगतान सुरक्षा निधि, यदि कोई हो, के माध्यम से अपनी बकाया राशि की वसूली करने में असमर्थ रहा हो।

ज. अप्रत्याशित घटना

1. अप्रत्याशित घटना की परिभाषा

किसी 'अप्रत्याशित घटना' (एफएम) का तात्पर्य निम्नलिखित में से किसी एक या अधिक कृत्यों, घटनाओं या परिस्थितियों या कृत्यों, घटनाओं या परिस्थितियों या उसके परिणाम (मों) के संयोजन से होगा, जो पूर्णत: या आंशिक रूप से पक्ष (प्रभावित पक्ष) संबंधित बीईएसपीए के तहत उसके दायित्वों के निर्वहन में बाधक है या अपरिहार्य रूप से देरी करती है, किंतु उस सीमा तक कि ऐसी घटनाएं या परिस्थितियां प्रभावित पक्ष के प्रत्यक्ष या अप्रत्यक्ष रूप से उचित नियंत्रण में नहीं हैं और प्रभावित पक्ष द्वारा इनसे बचा नहीं जा सकता था यदि पक्ष ने उचित सावधानी बरती होती थी या विवेकपूर्ण यूटिलिटी प्रथाओं का अनुपालन किया होता था।

क) दैवीय घटनाएं, जिसमें आकाशीय विद्युत, आग और विस्फोट (स्थल के बाहरी स्रोत से उत्पन्न होने की सीमा तक), भूकंप, ज्वालामुखी विस्फोट, भूस्खलन, बाढ़, महामारी, चक्रवात, आंधी या बवंडर शामिल हैं, किंतु इन्हीं तक सीमित नहीं है, यदि यह सक्षम राज्य / केंद्रीय प्राधिकरण / एजेंसी द्वारा घोषित किया गया हो/अधिसूचित किया गया हो (जैसा लागू हो), या खरीददार के समाधान के लिए सत्यापित हो; यदि कोई जल विद्युत संयंत्र बोलीदाता द्वारा स्थापित की जाने वाली आरई परियोजना के पैकेज का एक हिस्सा है, तो ऐसे मामले में सूखे को आरई परियोजना के जल विद्युत संयंत्र घटक के लिए एक सुसंगत अप्रत्याशित घटना माना जा सकता है।

ख) भारत में किसी स्रोत से उत्पन्न या ऊपर वर्णित किसी अन्य अप्रत्याशित घटना से उत्पन्न रेडियोधर्मी संदूषण या आयनकारी विकिरण, उन परिस्थितियों को छोड़कर जहां दूषित या विकिरण का स्रोत या कारण प्रभावित पक्ष या या प्रभावित पक्ष द्वारा नियोजित लोगों द्वारा विद्युत परियोजना में या उसके पास लाया जाता है।

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ग) परियोजना भूमि पर भूगर्भीय स्थितियों, जहरीले संदूषण या पुरातात्विक अवशेषों का पता चलना, जिनकी परियोजना भूमि के निरीक्षण और/या विवेकपूर्ण उद्योग प्रथाओं के अनुसार उचित रूप से पाए जाने की उम्मीद नहीं की जा सकती थी।

घ) असाधारण रूप से प्रतिकूल मौसम की स्थिति जो पिछले सौ (100) वर्षों के सांख्यिकीय माप से अधिक है।

ङ) युद्ध संबंधी कोई भी गतिविधि (चाहे घोषित या अघोषित), आक्रमण, सशस्त्र संघर्ष या विदेशी दुश्मन का कार्य, नाकाबंदी, प्रतिबंध, क्रांति, दंगा, विद्रोह, आतंकवादी या सैन्य कार्रवाई, या उद्योग-व्यापी हड़ताल और श्रमिक उपद्रव, जिसका भारत में देशव्यापी प्रभाव पड़ता हो।

च) भारत सरकार के किसी दस्तावेज/ राज्य सरकार द्वारा राष्ट्रीय हित में राष्ट्रीयकरण या किसी भी अनिवार्य अधिग्रहण या किसी भी सामग्री परियोजना संपत्ति या बीईएसएसडी के अधिकारों का अधिग्रहण, जिसके परिणामस्वरूप बीईएसएसडी या उसके शेयरधारक बीईएसपीए के तहत अपने अधिकारों (पूर्ण या आंशिक रूप से) या पात्रता से वंचित होते हैं। परंतु इस प्रकार की कार्रवाई किसी भी लागू कानून या बीईएसएसडी या बीईएसएसडी से संबंधित पक्षकारों द्वारा लागू परमिट के किसी भी उल्लंघन के परिणामस्वरूप खरीददार या किसी अन्य सरकारी प्राधिकरण द्वारा कानूनी रूप से प्रयोग किए गए उपाय या प्रतिबंध नहीं बनते है।

2. अप्रत्याशित घटना के अपवाद

अप्रत्याशित घटना में (i) कोई भी घटना या परिस्थिति शामिल नहीं होगी जो पक्षकारों के उचित नियंत्रण में है और (ii) निम्नलिखित परिस्थितियां, सिवाय उस सीमा तक कि वे अप्रत्याशित घटना की घटना के परिणाम हैं:

क. विद्युत परियोजना के लिए संयंत्र, मशीनरी, उपकरण, सामग्री, स्पेयर पार्ट्स या उपभोग्य सामग्रियों की अनुपलब्धता, देरी से प्रदायगी, या लागत में परिवर्तन;

ख. किसी ठेकेदार, उप-ठेकेदार या उनके एजेंटों के कार्य निष्पादन में देरी;

ग. विद्युत उत्पादन सामग्री और उपकरणों में आम तौर पर अनुभव किए जाने वाले सामान्य टूट-फूट के परिणामस्वरूप गैर-निष्पादन;

घ. प्रभावित पक्ष के कार्य स्थल पर हड़ताल या श्रमिक गड़बड़ी;

ङ. निष्पादित को दुष्कर बनाने वाले वित्त या धन या समझौते की अपर्याप्तता;

तथा

च. प्रभावित पक्ष के कारण या उससे संबंधित गैर-निष्पादन: (i) लापरवाही या जानबूझकर किए गए कार्य, त्रुटियां या चूक, या किसी भी विवेकपूर्ण और तर्कसंगत व्यक्ति से अपेक्षित उचित परिश्रम की कमी; (ii) भारतीय कानून का पालन करने में विफलता; या (iii) इस समझौते का उल्लंघनया उसके तहत चूक।

3. अप्रत्याशित घटना की अधिसूचना

क) प्रभावित पक्ष अन्य पक्ष को किसी भी अप्रत्याशित घटना की सूचना यथाशीघ्र यथोचित रूप से देगा, किंतु उस तारीख के पंद्रह (15) दिनों के उपरांत नहीं, जिस दिन उस पक्ष को अप्रत्याशित घटना के शुरू होने के बारे में पता चला था या उसे यथोचित रूप से पता होना चाहिए था। यदि अप्रत्याशित घटना के परिणामस्वरूप संचार टूट जाता है जिसके यहां निर्दिष्ट लागू समय सीमा के भीतर नोटिस देना अनुचित हो जाता है, तो अप्रत्याशित घटना का दावा करने वाला पक्ष संचार की बहाली के उपरांत यथाशीघ्र ऐसी सूचना देगा, लेकिन ऐसी बहाली के एक (1) दिन उपरांत नहीं। अप्रत्याशित घटना की सूचना प्राप्त करने वाला पक्ष, प्रभावित पक्ष के पास उपलब्ध सहायक दस्तावेजों के साथ, सूचना प्राप्त होने के 30 दिनों के भीतर अप्रत्याशित घटना के दावे पर निर्णय लेगा।

ख) परंतु इस प्रकार का नोटिस बीईएसपीए के तहत राहत का दावा करने के लिए प्रभावित पक्ष की हकदारी के लिए एक पूर्व शर्त होगी। इस प्रकार के नोटिस में अप्रत्याशित घटना का पूरा विवरण, राहत का दावा करने वाले पक्ष पर इसका प्रभाव और प्रस्तावित उपचारात्मक उपाय शामिल होंगे। प्रभावित पक्ष, दूसरे पक्ष को उन उपचारात्मक उपायों की प्रगति पर नियमित (और साप्ताहिक से कम नहीं) रिपोर्ट और ऐसी अन्य जानकारी जैसा कि अन्य पक्ष अप्रत्याशित घटना के बारे में उचित रूप से अनुरोध कर सकता है, उपलब्ध कराएगा।

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ग) प्रभावित पक्ष दूसरे पक्ष को (i) सुसंगत अप्रत्याशित घटना की समाप्ति; और (ii) बीईएसपीए के तहत अपने अधिकारों या दायित्वों के निष्पादन पर उस अप्रत्याशित घटना के प्रभावों की समाप्ति की, जैसे ही इनके बारे में उसे जानकारी मिलती है, व्यावहारिक रूप से तत्काल सूचना देगा।

4. निष्पादन से छूट

क) प्रभावित पक्ष को, अप्रत्याशित घटना के परिणामस्वरूप बीईएसपीए के तहत अपने दायित्वों या उसके दायित्व के अंश को पूरा करने में असमर्थ होने की सीमा तक, दायित्वों के निष्पादन से छूट दी जाएगी, परंतु यह अवधि अप्रत्याशित घटना की सूचना जारी करने की तारीख से 180 (एक सौ अस्सी) दिन या परस्पर सहमति से किसी भी विस्तारित अवधि से अधिक नहीं होगी। पक्षकार उस अवधि को बढ़ाने के लिए परस्पर सहमत हो सकते हैं जिसके लिए अप्रत्याशित घटना के कारण निष्पादन से छूट दी गई है। तथापि, अप्रत्याशित घटना के 180 दिनों की अवधि या पारस्परिक रूप से सहमत किसी भी विस्तारित अवधि तक जारी रहने के मामले में, किसी भी पक्ष को बीईएसपीए को समाप्त करने का अधिकार होगा।

ख) पक्षकारों द्वारा परस्पर सहमत उस अवधि के लिए, जिसके दौरान निष्पादन से छूट दी जाएगी, बीईएसएसडी वित्तीय समापन या निर्धारित कमीशन अवधि या बीईएसपीए अवधि के लिए, जो भी हो, प्रदान की गई अवधि के दिन-प्रतिदिन के विस्तार के लिए हकदार होगा। उपरोक्त विस्तार के अनुसार बीईएसपीए और बीईएसएसए की अवधि उपयुक्त रूप से बढ़ाई जाएगी।

ग) परंतु किसी पक्ष को केवल अप्रत्याशित घटना के लिए उचित रूप से आवश्यक सीमा तक ही निष्पादन से छूट दी जाए।

घ) परंतु आगे, प्रभावित पक्ष को अंतर्निहित अप्रत्याशित घटना के घटित होने से पहले अर्जित किसी भी भुगतान दायित्वों से मुक्त नहीं करेगा।

5. अन्य हानियों के लिए कोई उत्तरदायित्व नहीं

इन दिशानिर्देशों में अन्यथा यथा उपबंधित के साथ, कोई भी पक्ष किसी भी अप्रत्याशित घटना के घटित होने या अस्तित्व से संबंधित या उत्पन्न होने वाली किसी भी हानि के संबंध में किसी भी प्रकार से, अन्य पक्षकारों के प्रति उत्तरदायी नहीं होगा।

6. कार्य निष्पादन की बहाली

अप्रत्याशित घटना के बने रहने की अवधि के दौरान, प्रभावित पक्ष, अन्य पक्षकारों के परामर्श से, बीईएसपीए के तहत अपने दायित्वों के निष्पादन पर ऐसी अप्रत्याशित घटना के प्रभावों को सीमित करने या कम करने के लिए सभी उचित प्रयास करेगा। प्रभावित पक्ष इस समझौते के तहत अपने दायित्वों के निष्पादन का यथाशीघ्र पुनरारंभ का प्रयास करेगा और पुनरारंभ होने पर, अन्य पक्षकारों को लिखित रूप में इसकी सूचना देगा। दूसरा पक्ष इस संबंध में प्रभावित पक्ष को सभी उचित सहायता प्रदान करेगा।

7. अप्रत्याशित घटना के कारण समापन

क) यदि, अप्रत्याशित घटना नोटिस जारी होने की तारीख से शुरू होने वाली अप्रत्याशित घटना के लिए 180-दिन की अवधि (या किसी भी विस्तारित अवधि) के पूरा होने से पहले, पक्षकारों का यथोचित विचार है कि अप्रत्याशित ऐसी 180-दिन की अवधि या उपरोक्त खंड 4 के अनुसरण में सहमत किसी भी विस्तारित अवधि (निष्पादन को माफ किया गया) से आगे जारी रहने घटना की संभावना; या यह कि प्रभावित इकाई को पुनः प्रचालित करना अलाभकारी या अव्यावहारिक है, तो पक्षकार बीईएसपीए को समाप्त करने का परस्पर निर्णय ले सकती हैं, और समाप्ति उस तारीख से प्रभावी होगी जिस दिन ऐसा निर्णय लिया जाता है।

ख) उपरोक्त खंड 7 (क) के प्रावधानों पर प्रतिकूल प्रभाव डाले बिना, प्रभावित पक्ष 180 दिनों की अवधि या किसी अन्य पारस्परिक रूप से विस्तारित अवधि की समाप्ति के उपरांत, नोटिस जारी करके अपने विवेकाधिकार में बीईएसपीए को तुरंत प्रभावसे समाप्त करने का हकदार होगा।

ग) खंड 7 (ख) के अनुसार बीईएसपीए की समाप्ति पर:

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i. उपरोक्त खण्ड 1 (क), (ख), (ग) और (घ) के अनुसार अप्रत्याशित घटना के रूप में सूचीबद्ध किसी घटना के कारण समापन के मामले में, बीईएसएसडी को कोई समापन मुआवजा देय नहीं होगा।

ii. बीईएसएसडी के कहने पर समापन के मामले में, उपरोक्त खंड 1 (ड.) और (च) के अनुसार अप्रत्याशित घटना के रूप में सूचीबद्ध होने के कारण, खरीददार के पास देय ऋण का भुगतान करके परियोजना की संपत्ति पर अधिकार का विकल्प होगा (लेकिन बाध्यकर नहीं होगा) यदि खरीददार उपरोक्त विकल्प का प्रयोग नहीं करने का विकल्प चुनता है, और इसकी बीईएसएसडी द्वारा सहमति नहीं दी जाती है, तो परिणामस्वरूप यह बीईएसपीए के अनुसार विवाद होगा, और बीईएसपीए के तहत विवाद समाधान तंत्र के अनुसार हल किया जाएगा।

iii. अप्रत्याशित घटना के घटित होने से पहले बकाया मासिक बिल (बिलों) के तहत बीईएसएसडी निर्विवाद भुगतान के लिए पात्र होगा।

8. बीईएसएसडी या मध्यस्थ खरीददार, जैसा भी मामला हो, को प्रभावित करने वाले बीईएसपीए से संबंधित उपरोक्त में निहित अप्रत्याशित घटना के प्रावधान, जैसा भी मामला हो, को आवश्यक परिवर्तनों के साथ बीईएसए के तहत अप्रत्याशित घटना के प्रावधानों के रूप में पढ़ा जाएगा और अप्रत्याशित घटनाके तहत अंतिम खरीददार को प्रभावित करेगा। बीईएसएसए को बीईएसपीए के तहत मध्यस्थ खरीददार को प्रभावित करने वाली अप्रत्याशित घटना माना जाएगा और इसी प्रकार बीईएसपीए के तहत बीईएसएसडीको प्रभावित करने वाली अप्रत्याशित घटना को बीईएसएसए के तहत मध्यस्थ खरीददार को प्रभावित करने वाली अप्रत्याशित घटना माना जाएगा।

झ. डिफ़ॉल्ट (चूक) की घटना और उसके परिणाम

जबकि संबंधित पक्षों के चूक की घटना और इसके परिणामी प्रभावों के संबंध में विस्तृत प्रावधान बीईएसपीए/ बीईएसएएसए में संविस्तार दिए जाएंगे, यह खंड बीईएसएसडी और खरीददारों (मध्यस्थ खरीददार को छोड़कर) की चूक से संविदात्मक रूप से निपटने के व्यापक सिद्धांतों को निर्धारित करता है।

1. डिफ़ॉल्ट (चूक) की बीईएसएसडी घटना और उसके परिणाम

क) उस स्थिति में जब बीईएसएसडी बीईएसएसडी के संदर्भ में बिजली की आपूर्ति करने में विफल रहता है, या बीईएसपीए की शर्तों के विपरीत अपने किसी भी अधिकार या दायित्वों को नियत या नवीकरण करता है, या बीईएसपीए को अस्वीकार करता है, या बीईएसपीए के प्रावधानों के उल्लंघन में अपने प्रमोटरों नियंत्रण या शेयरधारिता में बदलाव करता है, या बीईएसपीए में यथानिर्धारित किसी भी अन्य कृत्यों या चूक या चालू करता है और उसे ठीक करने की अवधि के भीतर उपरोक्त में से किसी को भी ठीक करने में असमर्थ है, जैसा कि बीईएसपीए में प्रदान किया गया है, तो बीईएसएसडी को डिफ़ॉल्ट (चूक) रूप में माना जाएगा।

ख) डिफ़ॉल्ट में होने पर, बीईएसएसडी 6 (छह) महीनों या शेष बीईएसपीए अवधि, जो भी कम हो, के लिए बीईएसपीए के अनुसार घोषित न्यूनतम निष्पादन मानदंड के अनुरूप ऊर्जा भुगतान के बराबर, खरीददार को हर्जाना, अपनी अनुबंधित क्षमता के लिए भुगतान करेगा । खरीददार को किसी अन्य कानूनी उपाय या उपचार का सहारा लिए बिना, बैंक गारंटी, यदि कोई हो, की जब्ती के माध्यम से उक्त नुकसान की वसूली का अधिकार होगा।

ग) पूर्वोक्त नुकसान की वसूली के अलावा, बीईएसएसडी द्वारा चूक की स्थिति में, घटनाओं के निम्नलिखित क्रम का अनुसरण किया जाएगा:

i. एक निर्दिष्ट समय अवधि के भीतर परियोजना ऋणदाताओं के पास बीईएसएसडी के प्रतिस्थापन का पहला अधिकार होगा।

ii. यदि ऋणदाता उपरोक्त निर्दिष्ट समय सीमा के भीतर बीईएसएसडी को प्रतिस्थापित करने में असमर्थ है, तो खरीददार के पास खरीददार व ऋणदाता द्वारा पारस्परिक रूप से तय किए गए मुआवजे का बीईएसएसडी को भुगतान करके परियोजना की संपत्ति का अधिग्रहण करने का अधिकार (लेकिन बाध्यकारी नहीं होगा) होगा।

iii. यदि खरीददार उपरोक्त विकल्प का प्रयोग नहीं करने का विकल्प चुनता है, या खरीददार और ऋणदाता एक समझौते पर आने में असमर्थ हैं, तो ऋणदाता परियोजना की संपत्ति का परिसमापन कर सकते हैं और अंतिम उपाय के रूप में अपनी बकाया राशि की वसूली कर सकते हैं।

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2. खरीददार चूक की घटना और उसके परिणाम

क) यदि खरीददार अन्य बातों के साथ-साथ निर्धारित समय अवधि के भीतर मासिक और/या पूरक बिलों का भुगतान करने में विफलता या बीईएसपीए के परित्याग सहित कारणों से, चूक करता है, तो चूककर्ता खरीददार बीईएसएसडीकी पूर्व सहमति के अधीन, बीईएसपीए/ बीईएसएएसए के अपने हिस्से को निर्धारित अवधि के भीतर अपने सहयोगियों सहित किसी भी तीसरे पक्ष को नवीकृत करेगा । इस मामले में, खरीददार परियोजना की संपत्ति को बीईएसएसडी द्वारा बनाए रखने और बीईएसपीए/ बीईएसएएसएसे बाहर निकलने के साथ-साथ अपनी अनुबंधित क्षमता के लिए घोषित उपलब्धता के आधार पर 3 (तीन) महीने या शेष बीईएसपीए अवधि, जो भी कम हो, की ऊर्जा बिलिंग के बराबर राशि का भुगतान करेगा। खरीददार द्वारा बीईएसएसडी से सीधी खरीद के मामले में, खरीददार द्वारा बीईएसएसडी को उपरोक्त भुगतान किया जाएगा। एक मध्यस्थ खरीददार के माध्यम से बिजली की खरीद के मामले में, उपरोक्त भुगतान अंतिम खरीददार द्वारा मध्यस्थ खरीददार को किया जाएगा।

ख) उस स्थिति में जब बीईएसपीए का नवीकरण बीईएसएसडी को स्वीकार्य नहीं है, या निर्धारित अवधि के भीतर चूक करने वाले खरीददार द्वारा बीईएसपीए के नवीकरण का कोई प्रस्ताव नहीं दिया जाता है, तो बीईएसएसडी बीईएसपीए को समाप्त कर सकता है अथवा एक वैकल्पिक खरीददार खोज कर परियोजना का संचालन जारी रखना परियोजना के संचालन को बंद करना, इनमें से कुछ भी चुन सकता है। यदि बीईएसएसडी परियोजना का संचालन जारी रखने का विकल्प चुनता है, तो खरीददार बीईएसएसडी को, घोषित उपलब्धता के अनुरूप 6 (छह) महीने की ऊर्जा बिलिंग के बराबर 'समापन मुआवजा', या शेष बीईएसपीए अवधि, जो भी कम हो, अपनी अनुबंधित क्षमता के लिए भुगतान करेगा।

ग) यदि बीईएसएसडी परियोजना के संचालन को बंद करने का फैसला करता है, तो उसे चूककर्ता को 'समापन मुआवजे' का भुगतान करने की आवश्यकता हो सकती है जो देय ऋण की राशि और 110% समायोजित इक्विटी का (एक सौ दस प्रतिशत) बीमा कवर को घटाकर यदि कोई हो, के बराबर होगा।

घ) एक ही निविदा के तहत एक मध्यस्थ खरीददार के माध्यम से एक से अधिक खरीददारों द्वारा खरीद के परिदृश्य में, मध्यस्थ खरीददार अपने संबंधित बीईएसपीएके तहत एक या एक से अधिक खरीददारों द्वारा चूक से निपटने के लिए उपयुक्त प्रावधान प्रदान कर सकता है।

ङ) बीईएसपीए की समाप्ति की स्थिति में, संयंत्र की कनेक्टिविटी के लिए एसटीयू/सीटीयू को देय किसी भी नुकसान या शुल्क को खरीददार द्वारा वहन किया जाएगा।

नोट: सभी मामलों में, ऋणदाता उपयुक्त होने पर भी वित्तीय दस्तावेजों में यथा उपबंधित, हस्तक्षेप कर सकते हैं। इसके अलावा, सभी मामलों में, चूककर्ता पक्ष को इस तरह के भुगतान की नियत तारीख से 3 महीने के भीतर लागू मुआवजे का भुगतान करना होगा, जिसके बाद, चूककर्ता पक्ष को मुआवजे के 1% की दर से मासिक ब्याज का भुगतान करना होगा।

ञ. विधि में परिवर्तन

1. इन दिशानिर्देशों में, 'विधि में परिवर्तन' शब्द बोली प्रस्तुत करने की अंतिम तिथि के बाद निम्नलिखित घटनाओं में से किसी भी घटित होने वाली उस घटना को संदर्भित करेगाजिसका परियोजना पर सीधा प्रभाव पड़ता है औरलागत में अनुरूप परिवर्तन होने से, टैरिफ में परिवर्तन की आवश्यकता हो सकती है, और इसमें शामिल है (i) किसी सक्षम न्यायालय द्वारा किसी विधि के निर्वाचन में परिवर्तन; या (ii) किसी नए कानून का अधिनियमन; या (iii) केंद्रीय सरकार, राज्य सरकार या संघ राज्य क्षेत्र प्रशासन द्वारा शुल्क, उद्ग्रहण, उपकर, प्रभार या अधिभार सहित किसी भी घरेलू कर में परिवर्तन, जिसके परिणामस्वरूप लागत में ततस्थानी परिवर्तन हो; या (iv) विद्युत की खरीद, आपूर्ति या पारेषण के लिए प्राप्त किए गए या प्राप्त किए जाने वाले अनुमोदन या अनुज्ञप्ति की किसी भी शर्त में परिवर्तन, जब तक कि विद्युत की खरीद, आपूर्ति या पारेषण के लिए करार में विशिष्ट रूप से अपवर्जित न किया गया हो, जिसके परिणामस्वरूप लागत में कोई परिवर्तन हो। तथापि, विधि/विनियम में परिवर्तन में (i) कॉर्पोरेट आय पर करों में कोई परिवर्तन या आय या लाभांश पर किसी भी प्रकार की कर कटौती में कोई परिवर्तन, या (ii) उपयुक्त आयोग द्वारा विचलन समाधान प्रभार या आवृत्ति अंतराल के संबंध में परिवर्तनशामिल नहीं होगा।इस प्रावधान में "विधि" शब्द में भारत देश में प्रवृत्त कोई अधिनियम, अध्यादेश, आदेश, उप-विधि, नियम, विनियम, अधिसूचना सम्मिलित है।

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2. यदि विधि में परिवर्तन के परिणामस्वरूप बीईएसएसडी/खरीददार को कोई प्रतिकूल वित्तीय हानि/लाभ होता है, तो यह सुनिश्चित करने के लिए कि बीईएसएसडी/खरीददार को उसी वित्तीय स्थिति में रखा गया है जैसा कि वह विधि/विनियमन में परिवर्तन होने पर नहीं होता, जैसा भी मामला हो, बीईएसएसडी/खरीददार दूसरे पक्ष द्वारा मुआवजे का हकदार होगा। इस तरह के 'विधि में परिवर्तन' के कारण मुआवजे का भुगतान निर्धारित किया जाएगा और उस तारीख से प्रभावी होगा जैसा कि उपयुक्त आयोग द्वारा तय किया जाए।

3. **विधि में परिवर्तन के कारण देय मुआवजा:**

क. परियोजना के चालू होने से पहले होने वाले विधि में परिवर्तन के मामले में, मुआवजे को परियोजना लागत में वृद्धि/कमी के साथ जुड़े टैरिफ में वृद्धि/कमी के रूप में पारित किया जाएगा, जिसका भुगतान स्वचालित रूप से मासिक ऊर्जा बिलिंग के माध्यम से किया जाएगा। इस मामले में पास थ्रू, परियोजना के चालू होने की तारीख से प्रभावी होगा। बोली दस्तावेजों में टैरिफ में लागू वृद्धि/कमी की गणना के लिए उपयुक्त सूत्र/प्रावधान शामिल होंगे।

ख. परियोजना क्षमता के चालू होने के बाद होने वाले विधि में परिवर्तन के मामले में, और करों/शुल्कों/उपकर आदि में परिवर्तन को प्रतिशत या टैरिफ के अनुपात के रूप में परिभाषित किया जाता है, टैरिफ में परिवर्तन स्वचालित रूप से उचित वृद्धि/कमी के रूप में हस्तांतरित कर दिए जाएंगेऔर मासिक ऊर्जा बिलिंग के माध्यम से भुगतान किया जाएगा।

ग. उपरोक्त दोनों मामलों में, बीईएसपीए में निर्धारित फार्मूले के अनुसार पास-थ्रू, कानून की घटना में इस तरह के परिवर्तन के तहत राहत के लिए अपने दावे को प्रमाणित करने के लिए प्रभावित पक्ष द्वारा सभी आवश्यक दस्तावेज जमा करने के 60 दिनों के बाद स्वचालित रूप से प्रभावी हो जाएगा। .

घ. कानून की घटनाओं में उपरोक्त परिवर्तन के कारण गणना की जांच उपयुक्त आयोग द्वारा की जाएगी। उपयुक्त आयोग द्वारा किसी भी निर्णय की स्थिति में, जो टैरिफ में किसी भी बदलाव को संशोधित या रद्द करता है, उस समय तक पहले से भुगतान की गई राशि की वसूली / अतिरिक्त भुगतान, उपयुक्त रूप से किया जाएगा।

ङ. परियोजना की परिचालन अवधि के दौरान विधि में परिवर्तन के मामले में, और जहां इस तरह के परिवर्तन टैरिफ में स्वत: संशोधन के रूप में लागू नहीं होते हैं, उपयुक्त आयोग द्वारा निर्णय के अनुसार यथोचित मुआवजा प्रदान किया जाएगा।

च. यदि विधि में परिवर्तन के परिणामस्वरूप कमीशनिंग में देरी होती है, जहां इन दोनों के बीच कारण और प्रभाव स्पष्ट रूप से स्थापित किया जा सकता है, तो खरीददार परियोजना के वित्तीय समापन और कमीशन की समय सीमा के लिए उपयुक्त विस्तार प्रदान कर सकता है।

ट. प्रमोटर द्वारा धारित की जाने वाली न्यूनतम प्रदत्त शेयर पूंजी

1. सफल बोलीदाता, यदि एकल कंपनी है, सुनिश्चित करेगा कि बीईएसपीए को क्रियान्वित करने वाली एसपीवी/परियोजना कंपनी में उसकी हिस्सेदारी वाणिज्यिक संचालन तारीख (सीओडी) से पहले किसी भी समय 51% (इक्यावन प्रतिशत) से कम नहीं होगी ।यदि सफल बोलीदाता एक संघ है, तो बीईएसपीए को क्रियान्वित करने वाली एसपीवी/परियोजना कंपनी में संघ के सदस्यों की संयुक्त शेयरधारिता सीओडी से पहले किसी भी समय 51% से कम नहीं होगी। इसके अलावा, यदि परियोजना को सफल बोलीदाता द्वारा स्वयं निष्पादित किया जाता है, तो यह सुनिश्चित करेगा कि बोली लगाने वाली कंपनी/संघ की नियंत्रक शेयरधारिता सीओडी तक अपरिवर्तित रहे। सफल बोलीदाता, खरीददार के साथ बीईएसपीए पर हस्ताक्षर करने से पहले, खरीददार को अपनी शेयरधारिता के बारे में जानकारी प्रदान करेगा।

2. सीओडी के बाद शेयरधारिता में कोई भी परिवर्तन खरीददार को सूचित करते हुए किया जा सकता है।

3. यदि बीईएसएसडी ऋणदाता (ऋणदाताओं) के लिए चूक करता है, तो ऋणदाता खरीददारों की सहमति से "प्रमोटर का प्रतिस्थापन" करने के हकदार होंगे।

ठ. निर्माण और निष्पादन निगरानी

इन दिशानिर्देशों के तहत शामिल सभी ग्रिड से जुड़ी परियोजनाओं को परियोजना के निष्पादन को लगातार रिकॉर्ड करने के लिए आवश्यक उपकरण स्थापित करने होंगे। बीईएसएसडी को इस डेटा को बीईएसपीए की पूरी अवधि में

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आरएफएस दस्तावेजों में यथा विनिर्दिष्टित प्राधिकारियों/अभिकरणों को ऑनलाइन प्रस्तुत करना होगा। इस संबंध में, वे अनिवार्य रूप से 24×7 आधार पर बिजली संयंत्रों के रिमोट मॉनिटरिंग पोर्टल के लिए खरीददार और एमएनआरई या किसी अन्य नामित एजेंसी को पहुंच प्रदान करेंगे। परियोजनाओं की जियो-टैगिंग अनिवार्य होगी।

ड. राज्य नोडल एजेंसियों और अन्य सुगमकर्ताओं की भूमिका

संबंधित राज्य सरकारों द्वारा नियुक्त राज्य नोडल एजेंसियां समयबद्ध तरीके से आवश्यक अनुमोदनों और स्वीकृतियों को सुगम बनाने के लिए आवश्यक सहायता प्रदान करेंगी ताकि निर्धारित समय सीमा के भीतर परियोजनाओं की कमीशनिंग प्राप्त की जा सके। इसमें निम्नलिखित क्षेत्रों में सुगमता शामिल हो सकती है:

I. परियोजनाओं के त्वरित कार्यान्वयन के लिए विभिन्न राज्य और केंद्रीय एजेंसियों के बीच समन्वय

II. परियोजनाओं की कमीशनिंग के दौरान सहायता।

खंड V: विविध प्रावधान

क. दिशानिर्देशों में परिभाषित प्रक्रिया से विचलन

यदि इन दिशानिर्देशों से कोई विचलन होता है, तो यह उपयुक्त सरकार द्वारा पूर्वानुमोदन के अधीन होगा।

ख विवाद समाधान तंत्र

भारत सरकार केंद्र में विवाद समाधान तंत्र प्रदान करने के लिए उपयुक्त आदेश जारी कर सकती है और राज्य सरकार से राज्य स्तर पर इस तरह के तंत्र पर विचार करने का अनुरोध कर सकती है। ये विवाद समाधान तंत्र कानून के प्रावधानों से पृथक अतिरिक्त फोरम होंगे और संबंधित पक्षों द्वारा विकल्प चुने जाने के आधार पर उपयोग में लाए जा सकते हैं।

ग. लागू कानून और विनियम

इन दिशानिर्देशों के तहत की जा रही सभी गतिविधियां/खरीद सरकार के समय-समय पर यथा संशोधित कानूनों और विनियमों के अधीन होंगी।

परिशिष्ट 1

इन दिशानिर्देशों के भाग III के खंड 1.4 और 1.5 में दर्शाई गई समय-सीमा के संबंध में टिप्पणियाँ

क. पट्टा/भू संपत्ति के उपयोग करने का अधिकार आदर्श रूप से कम से कम बीईएसपीए की अवधि के साथ समवर्ती होना चाहिए। तथापि, संबंधित राज्यों में लागू कानूनों के आधार पर पट्टे की कम अवधि की अनुमति दी जा सकती है। ऐसे मामलों में, सरकारी संस्थाओं द्वारा भूमि पट्टे/उपयोग के अधिकार का विस्तार करने में विफलता को अप्रत्याशित घटना के रूप में शामिल किया जाना चाहिए, जिसके लिए खरीददार द्वारा बीईएसएसडी को मुआवजे का भुगतान करने की आवश्यकता होगी, परंतु उपरोक्त घटना के परिणामस्वरूप परियोजना संचालित करने के अनुमति नहीं दी जा रही हो।

ख. बीईएसएसडी द्वारा भूमि पट्टे/किराया शुल्क के भुगतान के लिए भुगतान अनुसूची, आरएफएस/बीईएसपीए दस्तावेजों में स्पष्ट रूप से निर्दिष्ट की जाएगी और उपरोक्त अनुसूचियों में परिवर्तन को इन दिशानिर्देशों से विचलन के रूप में नहीं माना जाएगा, जिसके लिए अनुमोदन की आवश्यकता होती है।

ग. खरीददार द्वारा अभिचिन्हित की गई साइट के मामले में, यदि कोई विशेष लक्ष्य खरीदार के परिचालन कार्यक्षेत्र में नहीं है, तो खरीददार सर्वोत्तम प्रयास के आधार पर, संबंधित अधिकारियों से उपरोक्त समय सीमा के भीतर आवश्यक अनुमोदन प्राप्त करने की सुविधा का समर्थन करेगा।

घ. आरई पार्क में स्थापित की जा रही परियोजनाओं के मामले में, आरई पार्क विकासकर्ती द्वारा दायित्वों को पूरा करने की समय-सीमा, जैसी कि ऊपर की अभिचिन्हित की गई है, को भारत सरकार द्वारा जारी संबंधित आरई पार्क दिशानिर्देशों में प्रदान की गई समय-सीमा के साथ, संरेखित करने की आवश्यकता होगी।

ङ. आरई पार्क में स्थापित की जा रही परियोजनाओं के मामले में, उपरोक्त समय-सीमा बीईएसएसडी और पार्क विकासकर्ता के बीच निष्पादित किए जाने वाले भूमि पट्टा समझौते/उपयोग के अधिकार समझौते का हिस्सा बनेगी। दो संस्थाओं के बीच एक और अनुबंध निष्पादित किया जाएगा, जिसे "कार्यान्वयन समर्थन अनुबंध (आईएसए)" कहा

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जाएगा, जो स्पष्ट रूप से अनुबंध के प्रत्येक पक्ष की अन्य मदों, भूमिकाओं और जिम्मेदारियों को निर्दिष्ट करेगा। लागू आरई पार्क दिशानिर्देशों के अनुरूप पार्क विकासकर्ता द्वारा प्रदान की जाने वाली सुविधाओं को उपरोक्त समझौते में स्पष्ट रूप से अभिचिन्हित किया जाएगा, और अतिरिक्त भुगतान शर्तों, यदि कोई हो, के साथ की जाने वाली आवश्यक और गैर-आवश्यक बुनियादी ढांचा गतिविधियों के लक्ष्यों को बिना किसी अस्पष्टता के यदि कोई हो, इंगित किया जाना चाहिए।

च. उपरोक्त दोनों परिदृश्यों में, खरीददार/पार्क विकासकर्ता के दायित्व के तहत किसी भी लक्ष्य को पूरा करने में देरी के परिणामस्वरूप बीईएसपीए पर हस्ताक्षर करने, एफसी और एससीडी समय सीमा का उपयुक्त विस्तार होगा। इसे आरएफएस, बीईएसपीए, आईएसएऔर भूमि पट्टा समझौतों में उपयुक्त रूप से स्पष्ट किया जाएगा।

छ. बीईएसएसडी द्वारा अपने दायित्वों के भुगतान में देरी के मामले में, संबंधित समझौते में बीईएसएसडी पर लगाए जाने वाले लागू परिसमापन नुकसान को निर्धारित किया जाएगा।

ज. किसी समझौते पर हस्ताक्षर करने में देरी और/या केवल बीईएसएसडी के कारण भुगतान करने में देरी के मामले में, परियोजना लक्ष्यों में कोई विस्तार नहीं होगा ।

परिशिष्ट-2

बीईएसएस के तकनीकी मापदंड, बीईएसएस विशेषता और निष्पादन मापदंड

क. कोड और मानक

बीईएसएस निम्नलिखित संहिताओं और मानकों या समकक्ष भारतीय मानकों, जैसा लागू हो, का पालन करेगा।

मानक	विवरण	प्रमाणन आवश्यकताएँ
आईईसी 62485-2	द्वितीयक बैटरी और बैटरी संस्थापन के लिए सुरक्षा आवश्यकताएं - निर्माण, उपयोग, निरीक्षण, रखरखाव और निपटान से जुड़े सुरक्षा पहलुओं पर आवश्यकताओं को पूरा करने के लिए: लीड एसिड और एनआईसीडी / एनआईएमएच बैटरी के लिए लागू	केवल लीड एसिड और एनआईसीडी/एनआईएमएच बैटरियों के लिए लागू
यूएल1642 अथवा यूएल1973, परिशिष्ट-ङ (सेल) अथवा आईईसी 62619 (सेल) + आईईसी 63056 (सेल)	क्षारीय या अन्य गैर-एसिड इलेक्ट्रोलाइट्स युक्त द्वितीयक सेल और बैटरी - औद्योगिक अनुप्रयोगों में उपयोग के लिए द्वितीयक लिथियम सेलों और बैटरी की सुरक्षा आवश्यकताएं	सेल के लिए आवश्यक
यूएल 1973 (बैटरी) अथवा (आईईसी 62619 (बैटरी) + आईईसी 63056 (बैटरी))	स्थिर, वाहन सहायक विद्युत और लाइट इलेक्ट्रिक रेल (एलईआर) अनुप्रयोगों में उपयोग के लिए बैटरियों/द्वितीयक सेल और क्षारीय या अन्य गैर-एसिड इलेक्ट्रोलाइट्स युक्त बैटरी- औद्योगिक अनुप्रयोगों में उपयोग के लिए द्वितीयक लिथियम सेलों और बैटरियों के लिए सुरक्षा आवश्यकताएँ	बैटरी स्तर के लिए या तो यूएल 1642 या यूएल 1973 अथवा (आईईसी 62619 + आईईसी 63056)
आईईसी 62281/यूएन 38.3	परिवहन के दौरान प्राथमिक और द्वितीयक लिथियम सेल और बैटरी की सुरक्षा: लिथियम आयन रसायनों का उपयोग करने वाले भंडारण प्रणाली के लिए लागू	बैटरी और सेल दोनों के लिए आवश्यक
आईईसी 61850/डीएनपी3	संचार नेटवर्क और प्रबंधन प्रणाली। (बीईएसएस नियंत्रण प्रणाली संचार)	

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यूएल 9540 अथवा (आईईसी टीएस 62933-5-1 + आईईसी 62933-5-2)	विद्युत ऊर्जा भंडारण (ईईएस) प्रणाली - भाग 5-1: ग्रिड-एकीकृत ईईएस प्रणाली के लिए सुरक्षा विचार - सामान्य विनिर्देश / ऊर्जा भंडारण प्रणालियों के लिए मानक और उपकरण	बीईएसएसप्रणाली स्तर के लिए या तो यूएल 9540 अथवा (आईईसी 62933-5-1 + आईईसी 62933-5-2) आवश्यक है

बीईएसएसके लिए पावर कंडीशनिंग यूनिट मानक

आईईसी 62909-1	द्वि-दिशात्मक ग्रिड कनेक्टेड पावर कन्वर्टर्स - भाग 1: सामान्य आवश्यकताएं
आईईसी 62909-2 (यदि लागू हो)	द्वि-दिशात्मक ग्रिड-कनेक्टेड पावर कन्वर्टर्स - भाग 2: जीसीपीसी का इंटरफ़ेस और वितरित ऊर्जा संसाधन
आईईसी 61683 ईडी.1	फोटोवोल्टिक सिस्टम - पावर कंडीशनर - दक्षता मापने की प्रक्रिया
आईईसी 61000-6-2 ईडी.2	विद्युत चुंबकीय संगतता (ईएमसी) - भाग 6-2: सामान्य मानक - औद्योगिक वातावरण के लिए प्रतिरक्षा मानक
आईईसी 61000-6-4 ईडी. 2.1	विद्युत चुंबकीय संगतता (ईएमसी) - भाग 6-4: सामान्य मानक - औद्योगिक वातावरण के लिए उत्सर्जन मानक
आईईसी 62116 ईडी 2	यूटिलिटी-इंटरकनेक्टेड फोटोवोल्टिक इनवर्टर - आइलैंडिंग रोकथाम उपायों की परीक्षण प्रक्रिया
आईईसी 60068-2-1: 2007	पर्यावरण परीक्षण - भाग 2-1: परीक्षण - परीक्षण क: शीत
आईईसी 60068-2-2:2007	पर्यावरण परीक्षण - भाग 2-2: परीक्षण - परीक्षण ख: शुष्क ऊष्मा
आईईसी 60068-2-14:2009	पर्यावरण परीक्षण - भाग 2-14: परीक्षण - परीक्षण एन: तापमान में परिवर्तन
आईईसी 60068-2-30:2005	पर्यावरण परीक्षण - भाग 2-30: परीक्षण - परीक्षण डीबी: नम ऊष्मा, चक्रीय (12 एच + 12 एच चक्र)

ख. सामान्य विनिर्देश

1. **पहचान और पता लगाने की क्षमता:** सेल/रैक/पैक असेंबली बीईएसएस के संयंत्र स्थान के लिए भूकंपीय आवश्यकता को पूरा करेगी। सेल/बैटरियों की लेबलिंग में निर्माता का नाम, सेल का प्रकार, नेम-प्लेट रेटिंग, निर्माण की तारीख और भागों की समाप्ति की तारीख और श्रम वारंटी शामिल होगी।

2. **अन्य उप-प्रणालियां/घटक:** बीईएसएस में प्रयुक्त अन्य उप-प्रणालियों/घटकों को भी विद्युत सुरक्षा के लिए प्रासंगिक अंतरराष्ट्रीय/राष्ट्रीय मानकों के अनुरूप होने के साथ-साथ, अपेक्षित सेवा जीवन और मौसम प्रतिरोध सुनिश्चित करने के लिए आवश्यक गुणवत्ता के लिए भी होना चाहिए ।

3. **अग्नि सुरक्षा:** बीईएसएसडी राष्ट्रीय और स्थानीय कोड के अनुरूप अग्नि सुरक्षा प्रणाली को डिजाइन और संस्थापित करेगा। अग्नि सुरक्षा प्रणाली के डिजाइन और संबंधित अलार्म को ध्यान में रखना चाहिए कि बीईएसएस ज्यादातर समय अनुपस्थित रहेगा। उच्च ऊर्जा घनत्व प्रौद्योगिकियों के लिए, बीईएसएसडी बैटरी भंडारण प्रणालियों का थर्मल रनअवे लक्षण भी प्राप्त करेगा।

4. **अधिकृत परीक्षण केंद्र:** विद्युत संयंत्रों में लगे बैटरियों/पावर कंडीशनिंग इकाइयों के पास आईएलएसी सदस्य हस्ताक्षरकर्ता मान्यता प्राप्त प्रयोगशालाओं में से एक द्वारा उपरोक्त निर्दिष्ट आईईसी/बीआईएस मानकों के अनुसार उनकी योग्यता के लिए वैध परीक्षण प्रमाण पत्र होना चाहिए। मॉड्यूल प्रकार/बीईएसएस/उपकरणों के मामले में जिनके लिए ऐसी परीक्षण सुविधाएं वर्तमान में भारत में उपलब्ध नहीं हो सकती हैं, विदेशों में प्रतिष्ठित आईएलएसी सदस्य निकाय मान्यता प्राप्त प्रयोगशालाओं से परीक्षण प्रमाण पत्र स्वीकार्य होंगे।

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5. **वारंटी:** बीईएसएसडी आरएफएस की शर्तों के अनुसार पूर्वनिर्धारित आवेदन (आवेदनों) के लिए न्यूनतम निष्पादन स्तर सुनिश्चित करने के लिए निष्पादन गारंटी प्राप्त करेगा। वारंटी स्पष्ट रूप से आवेदन के लिए प्रदान की गई डिस्चार्ज प्रोफाइल को देखते हुए जीवन प्रत्याशा को इंगित करेगी।

ग. निष्पादन निगरानी

निष्पादन निगरानी के भाग के रूप में, निम्नलिखित कार्य किए जाएंगे:

क. बीईएसएसडी को मौजूदा नियमों के अनुसार मीटरिंग व्यवस्था के साथ-साथ बीईएसएस के ऑपरेटिंग मापदंडों (वोल्टेज, करंट, परिवेश की स्थिति आदि सहित लेकिन इन तक सीमित नहीं) के साथ-साथ बीईएसएस से ऊर्जा इनपुट और ऊर्जा आउटपुट को मापने के लिए आवश्यक उपकरण स्थापित करना चाहिए। उन्हें अनुबंध की पूरी अवधि के लिए यह डेटा संबंधित अधिकारियों/संगठनों को ऑनलाइन और/या नियमित आधार पर एक रिपोर्ट के माध्यम से हर महीने जमा करना होगा।

ख. एसपीडी डेटा के ऑनलाइन हस्तांतरण की सुविधा के लिए किसी भी अतिरिक्त निगरानी उपकरण को संस्थापित करने के लिए संबंधित अधिकारियों/संगठनों या उनके अधिकृत प्रतिनिधियों तक पहुंच प्रदान की जाएगी ।

ग. जैसा कि ऊपर उल्लेख किया गया है, सभी डेटा अनुबंध की पूरी अवधि के लिए उपलब्ध कराए जाएंगे।

घ. संयंत्र स्कॉडा ओपीसी संस्करण 2.0क (या ओपीसीयूए सहित बाद का संस्करण) के अनुरूप होना चाहिए और ओपीसीसंस्थान के विनिर्देश के अनुसार उपयुक्त ओपीसी -डीएसर्वर को लागू करना चाहिए। संबंधित अधिकारियों/संगठनों को वास्तविक समय ऑनलाइन डेटा (बीईएसएस पैरामीटर) प्रदान करने के लिए सभी डेटा इस ओपीसी सर्वर के माध्यम से सुलभ होना चाहिए। निगरानी की सुविधा के लिए इस बार श्रृंखला डेटा परियोजना स्काडा प्रणाली से उपलब्ध होगा और इसमें निष्पादन की निगरानी के लिए दैनिक, मासिक और वार्षिक रिपोर्ट की सुविधा के लिए पहले बताए गए मापदंडों के अलावा अन्य को शामिल होना चाहिए।

ङ. वेब आधारित निगरानी उपलब्ध होनी चाहिए, जो मशीन पर निर्भर न हो। वेब-आधारित निगरानी को वही स्क्रीन प्रदान करने चाहिए जो संयंत्र में उपलब्ध हैं।

इसके अलावा, पीडीएफ या एक्सेल प्रारूप में दूरस्थ वेब-क्लाइंट से रिपोर्ट डाउनलोड करना संभव होना चाहिए।

च. बीईएसएस से यूनिट बैटरियों का सुरक्षित निपटान

विकासकर्ता खतरनाक और अन्य अपशिष्ट (प्रबंधन और सीमापार संचलन) नियम, 2016, समय-समय पर यथासंशोधित, के तहत जैसा लागू हो, आवश्यकताओं का पालन करेगा। बीईएसएसडी यह सुनिश्चित करेगा कि संयंत्र से सभी यूनिट बैटरी मॉड्यूल उनके 'जीवनकाल समाप्त' हो जाने (जब वे दोषपूर्ण/गैर-प्रचालन/गैर-मरम्मत योग्य हो जाते हैं) के बाद सरकार द्वारा अधिसूचित और समय-समय पर यथासंशोधित "ई-अपशिष्ट (प्रबंध और हैंडलिंग) नियम, 2016", और भारत सरकार द्वारा अधिसूचित किए जाने वाले बैटरी अपशिष्ट प्रबंध नियम, के अनुसार निपटाया जाता है।

घनश्याम प्रसाद, संयुक्त सचिव

MINISTRY OF POWER

RESOLUTION

New Delhi, the 10th March, 2022

No. 23/16/2020-R&R Part (1).—

Guidelines for Procurement and Utilization of Battery Energy Storage Systems as part of Generation, Transmission and Distribution assets, along with Ancillary Services

SECTION I: BACKGROUND AND INTRODUCTION

A. PREAMBLE

1. Background

a. The growth of renewable energy in India has been one of the key success stories of the nation's energy sector. Today, Solar and Wind power have become integral to the nation's energy mix at par with the conventional energy sources. India has already achieved installation of 150 GW of

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RE capacity enroute the ambitious journey of installing 500 GW of non-fossil energy capacity. With the share of RE in India's energy mix significantly increasing, and in view of the targeted energy mix by 2030, it is pertinent to plan for optimum utilization of resources and selection of right resource mix to meet the projected energy demand of the country.

b. With various global developments in technology and manufacturing, RE power has become the most affordable and clean source for annual energy requirements. Initial capacities have been successfully integrated to the grids so far, but with increasing penetration of RE in the energy mix, further capacity addition is expected to face issues due to supply-demand mismatch, wherein generation from RE sources happens mainly during the low demand period and has a characteristic of being infirm in nature. Some utilities have already started experiencing the effects of the integrating renewables into their grids and forcing curtailment of power. In this context, Central Electricity Authority (CEA), in its report titled "Optimal Generation Capacity Mix for 2029-30", dated January, 2020, has envisaged a key disruption of replacement of thermal based generation with renewable energy generation complemented with energy storage technology. In this regard, an excerpt from the above report is reproduced below:

"This has been possible with the downward trend of cost of solar panels and newer technology options like battery energy storage systems. In fact, the reduction in cost projections is very aggressive for Battery Energy Storage technology to render them financially viable in near future. In this context, planning for optimal generation capacity mix gains tremendous importance so as the future generation capacity mix is cost effective as well as environmental friendly, a horizon of 10-12 years is sufficient to gear up the systems and policies in the right direction to achieve the optimal generation mix."

c. In addition to the above, Ancillary Services have been an integral part of the electricity ecosystem all over the world. The basic services of frequency and voltage control are embedded in the electricity supply system and in order to enable provision of these basic services, specific support services are required to complement reliable and efficient grid operation. These support services which act as 'Value added Services' are known as 'Ancillary Services'. The Ancillary Services comprise of services required for maintaining load-generation balance (frequency control), maintaining voltage and reactive power support and maintaining generation & transmission reserves. As an initial step, the Central Electricity Regulatory Commission (CERC) had in 2013 floated a Staff Paper on "Introduction of Ancillary Services in Indian Electricity Market". The Staff Paper had discussed about the types of Ancillary Services such as the real power support services or Frequency Support Ancillary Services/ Load following, Voltage or reactive power support services and Black start support services. It was envisaged that the generators having surplus capacity, (i.e. either un-requisitioned surplus capacity by the beneficiaries of that capacity or generators who could not sell their capacity in the market and/or surplus captive capacity) may be allowed to bid into the power exchange, in a separate market segment.

d. Pursuant to above, CERC issued Regulations on Ancillary Service operation in August, 2015. After consultations with the stakeholders, CERC decided that in order to meet the current requirement, tertiary frequency control through utilization of un-despatched surplus capacity available in generating stations at the inter-state level, whose tariff is determined/adopted by CERC, may be introduced as Reserve Regulation Ancillary Service (RRAS). The variable cost of RRAS provider is considered for merit order despatch.In order to facilitate Congestion management, transmission constraints (both interregional and intraregional) are considered during despatch of RRAS. Both the fixed charges and variable charges are paid to the RRAS providers with a mark-up as an incentive. The fixed charges are in turn refunded to the original beneficiary(s) in proportion to the power surrendered. Therefore, at present the ancillary services in India are provided by resources which are spinning and already scheduled at a certain MW level with both headroom and legroom margins available (as reserves) for regulating up and down. While, the scheduled MW is decided by the market participants, the System Operator utilizes only the headroom and legroom of generation margins as ancillary services for frequency control.

e. As the demand grows to match the generating capacity, the present ancillary system is being changed, the new ancillary system needs to integrate Energy Storage Systems (ESS) with existing

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and upcoming RE capacity in order to optimize generation and transmission mix. Guidelines for setting up of new RE capacity through tariff-based bidding mechanism are already in place. With respect to increasing the storage component in the energy mix, Ministry of Power had requested the CEA in April, 2021, to submit a report on identification of usage of storage as business case and for ancillary services. The Report identifies Pumped Hydro Storage System (PSP) and Battery Energy Storage Systems (BESS) as the commercially deployed solutions for providing requisite storage capacity. The said CEA Study has revealed that the planning model selects the battery energy storage system from the year 2027-28 onwards and a Battery Energy Storage capacity of 27,000 MW/108,000 MWh (4-hour storage) is projected to be part of the installed capacity in 2029-30. This will be in addition to 10,151 MW of Pumped Hydro Storage System envisaged to be a component of the installed capacity in 2029-30.

f. With the limited support available from existing Pumped Hydro Storage Plants and the long gestation period for the new Pumped Hydro Storage Plants, the circumstances merit consideration of Battery Energy Storage System (BESS) as one of the sources of resource adequacy for the Indian power system. RE plus storage/BESS can provide the required flexibility in generation apart from ensuring the resource adequacy.

2. **Objectives**

The specific objectives of these Guidelines are as follows:

a. To facilitate procurement of BESS, as part of individual RE power projects or separately, for addressing the variability/firming power supply / increasing energy output / extending the time of supply from an individual RE project or a portfolio of RE projects, augmentation of existing RE Projects and/or to provide ancillary, grid support and flexibility services for the grid.

b. To facilitate procurement of BESS for optimum utilization of transmission and distribution network.

c. To ensure transparency and fairness in procurement processes/ and to provide for a framework for an Intermediary Procurer as an Aggregator / Trading licensees / Implementing Agency for the inter-state/intra-state sale-purchase of power.

d. To provide standardization and uniformity in processes and a risk-sharing framework between various stakeholders, involved in the energy storage and storage capacity procurement, thereby encouraging competition and enhanced bankability of the Projects.

SCOPE OF THE GUIDELINES

1. **Applicability of Guidelines**

These Guidelines are being issued under the provisions of Section 63 of the Electricity Act, 2003 for procurement of energy from BESS by the 'Procurers', through competitive bidding, from grid-connected Projects to be set up on "Build-Own-Operate" or "Build-Own-Operate-Transfer" basis, with following minimum project size and bid capacity requirements**:**

(i) For Intra-State Projects: Minimum individual project size of power rating of 1MW and above with suitable energy rating based on application at one site with minimum bid capacity of 1MW; and

(ii) For Inter-State Projects: Minimum individual project capacity of 50 MW and above with suitable energy rating based on application at one site with minimum bid capacity of 50 MW at the minimum voltage level as specified by the extant CERC regulations/Detailed Procedure.

2. The provisions of these Guidelines shall be binding on the BESSD /Procurer/ Intermediary Procurer/End Procurer/Implementing Agency and the Authorised Representative of the Procurer. The process to be adopted in event of any deviation proposed from these Guidelines is specified in Clause A, Section V of these Guidelines**.**

3. **Business Cases**

Following business cases have been identified regarding utilization of BESS in supply of energy and grid maintenance:

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(i) RE supply with BESS: In this case, the BESS is included as part of the RE Project, and ownership of the RE and BESS assetslies with the Generator. These Projects may also be utilized to meet Peak power and firm dispatchable RE requirements of Procurers.

(ii) BESS with transmission infrastructure: This model is aimed at maximization of the utilization of the transmission Asset, increasing duration of usage of transmission system and Strengthen Grid Stability. These systems will enable large-scale optimization of transmission infrastructure by optimum utilization of transmission capacity and reducing network congestion. As a result, the requirement of augmentation of evacuation and transmission infrastructure gets drastically reduced.

(iii) Storage for ancillary services/ balancing services / flexible operations: The BESS, with fast ramp rate, is particularly suited for second-by-second management of interchange flows. The system operator (for eg. RLDC/NLDC and SLDCs) may use BESS for frequency control and balancing services to manage the inherent uncertainty/variations in load and generation.

(iv) Storage for Distribution: This model aims at maximization of the utilization of the Storage Asset and strengthening DISCOM operations. Connected at the load centres, it may be suitably utilized by the Discom to manage its peak load, grid resilience, portfolio management and flexible operations. BESS can also be used to facilitate large scale expansion of electric mobility segment as part of major consumers for the Discoms. BESS can also be used as an optimum tool to achieve asset shifting by the Discoms, thereby increasing asset life.

(v) Standalone BESS for the Arbitrage operation which may be used by the Developer / owner or by the lessee including merchant operation.

(vi) The BESS developer/owner may sell storage space for a particular duration. In this case he will get capacity charges.

(vii) Any other business cases as found suitable by Procurers / Intermediary procurers / beneficiaries/ Generators

(viii) Along with the business casesmentioned at Sl. No (i) to (vii) above, it is possible that a certain component can also be earmarked for utilisation as merchant capacity by the BESS developer. This component may be traded in power market as per extant regulations.

4. These Guidelines shall be applicable for business cases identified above vide Sl. (ii) to (vii). For Sl. (i) above, i.e. in case of systems which contain RE generating stations along with BESS as a single Project (co-located or multi-located), the respective Standard Bidding Guidelines issued for procurement of power from Solar, Wind and Hybrid Power Projects, or the Unified Standard Bidding Guidelines, as issued by the Ministry of Power, shall be applicable**.**

5. The BESS may be charged by RE power or non RE power or through a combination of RE and non-RE power, However, when it seeks to supply RE power, it will need to the charged with RE power only**.**

SECTION II: DEFINITIONS

The terms used in these Guidelines will have the following meanings:

1. **"Act"** shall mean the Electricity Act, 2003, including subsequent amendments and clarifications issued thereof.

2. **"Adjusted Equity"** shall mean the Equity funded in Indian Rupees and adjusted on the first day of the current month (the "Reference Date"), in the manner set forth below, to reflect the change in its value on account of depreciation and variations in Wholesale Price Index (WPI), and for any Reference Date occurring between the first day of the month of Appointed Date (the date of achievement of Financial Closure) and the Reference Date;

    a. On or before Commercial Operation Date (COD), the Adjusted Equity shall be a sum equal to the Equity funded in Indian Rupees and expended on the Project, revised to the extent of one half of the variation in WPI occurring between the first day of the month of Appointed Date and Reference Date;

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b. An amount equal to the Adjusted Equity as on COD shall be deemed to be the base (the "Base Adjusted Equity");

c. After COD, the Adjusted Equity hereunder shall be a sum equal to the Base Adjusted Equity, reduced by 0.333% (zero point three threethree percent) thereof at the commencement of each month following the COD [reduction of 1% (one percent) per quarter of a year] and the amount so arrived at shall be revised to the extent of variation in WPI occurring between the COD and the Reference Date;

For the avoidance of doubt, the Adjusted Equity shall, in the event of termination, be computed as on the Reference Date immediately preceding the Transfer Date; provided that no reduction in the Adjusted Equity shall be made for a period equal to the duration, if any, for which the BESPA period is extended, but the revision on account of WPI shall continue to be made.

3. **"Affiliate"** in relation to a Company shall mean a person who controls, is controlled by, or is under the common control with such Company.

4. **"Annual Availability"** shall be as defined in the RfS.

5. "**Appropriate Commission"** shall have the same meaning as defined in the Act.

6. **"Authorised Representative"** of the Procurer: In cases, where the Battery Energy Storage Purchase Agreement (BESPA) signing agency and the agency carrying out the tendering / bidding process are different, the agency carrying out the tendering / bidding process shall be deemed to be the Authorized Representative of the 'Procurer' and will on behalf of the Procurer be responsible for fulfilling all the obligations imposed on the 'Procurer' during the bidding phase, in accordance with these Guidelines.

7. **"Battery Energy Storage System Developer"** or **"BESSD"** or **"Developer"** shall mean the entity owning/operating the BESS facility for supply of power under these Guidelines.

8. "**Battery Energy Storage Purchase Agreement**" or "**BESPA**" shall mean agreement entered by Intermediary Procurer or End Procurer (as applicable) with BESSD for procurement of BESS Capacity.

9. **"Battery Energy Storage Systems"** or **"BESS"** or **"Project"** shall mean the system(s)/projects utilizing methods and technologies such as electrochemical batteries (Lead Acid, Li-ion, solid state batteries, flow batteries, etc.), providing a facility that can store chemical energy and deliver the stored energy in the form of electricity, including but not limited to ancillary facilities (grid support., for example). Such systems may be co-located with RE Generating Stations, or may be operated on stand-alone basis.

10. **"Bidding Agency"** shall refer to the organization issuing tender documents and carrying out the selection process under these Guidelines.

11. **"Control"** shall mean the ownership, directly or indirectly, of more than 50% of the voting shares of such Company or right to appoint majority Directors.

12. **"Debt Due"** shall mean the aggregate of the following sums expressed in Indian Rupees outstanding on the Transfer Date:

a. The principal amount of the debt provided by the Senior Lenders under the Financing Agreements for financing the Total Project Cost (the 'Principal') but excluding any part of the principal that had fallen due for repayment 2 (two) years prior to the Transfer Date;

b. All accrued interest, financing fees and charges payable under the Financing Agreements on, or in respect of, the debt referred to in sub-clause (a) above until the Transfer Date but excluding: (i) any interest, fees or charges that had fallen due 2 (two) years prior to the Transfer Date, (ii) any penal interest or charges payable under the Financing Agreements to any Senior Lender, (iii) any pre-payment charges in relation to accelerated repayment of debt except where such charges have arisen due to Procurer Default, and (iv) any Subordinated Debt which is included in the Financial Package and disbursed by equity investors or their Affiliates for financing the Total Project Cost.

Provided that if all or any part of the Debt Due is convertible into Equity at the option of Senior Lenders and/or the Concessionaire, it shall for the purposes of this Agreement be deemed not to be Debt Due even if no such conversion has taken place and the principal thereof shall be dealt with as

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if such conversion had been undertaken. Provided further that the Debt Due, on or after COD, shall in no case exceed 80% (eighty percent) of the Total Project Cost.

13. **"End Procurer"** shall mean the ultimate Procurer of energy from the Intermediary Procurer or the Battery Storage System Developer as the case maybe; and shall include the distribution licensee, bulk consumers, etc, as applicable.

14. **"Financial Closure"** or **"Project Financing arrangements"** shall mean arrangement of necessary funds by the Battery Storage System Developer towards 100 % project cost either by way of commitment of funds by the Company from its internal resources (by a resolution passed by the Board of Directors) and/or tie up of funds through a bank/financial institution by way of sanction of a loan or firm commitment letter agreeing to finance.

15. **"Intermediary Procurer" or "Implementing Agency":** In some cases, an intermediary between the distribution licensee(s) and the BESSD(s), or an "Implementing Agency" as notified by the Government of India, may be required either to aggregate the power purchased and / or firming the same with large scale energy storage capacity from different developers, and sell it to the End Procurer(s). In such cases, the "Procurer" would be a trading licensee or an Implementing Agency, buying power from the Developer(s) and selling the same to one or more distribution licensees, such distribution licensees shall be the "End Procurer" and the trading licensee shall be "Intermediary Procurer" for the purpose of these Guidelines.

16. **"Procurer"** shall, as the context may require, shall mean the End Procurer, or an Intermediary Procurer.

17. **"Renewable Energy (RE) sources"** shall refer to 'solar photovoltaic' (hereinafter also referred as 'solar'), 'wind' and 'solar PV- wind hybrid' (hereinafter also referred as 'hybrid') and other renewable energy sources as notified by the Government of India from time to time.

18. **"Renewable Power" or "RE Power"** The term 'RE Power', wherever used in these Guidelines, shall refer to power from Renewable Energy sources.

19. **"RE Park"** shall refer to areas or parks developed, in accordance with the Guidelines and/or Policies issued by Central or State Governments, for setting-up of RE power projects, including Solar, Wind or Solar-Wind Hybrid Power projects.

20. **"Request for Selection"** or **"RfS"** or **"Tender"** or **"Bid Document"** shall mean the tender documents issued by the Bidding Agency, including Energy Purchase and Energy Sale Agreements as applicable, for procurement of power through a competitive bidding process under these Guidelines.

21. **"Solar"**: The term 'Solar', wherever used in these Guidelines, shall refer to Solar Photovoltaic (PV) and Solar Thermal technologies or the power plant based on such technologies.

22. **"Wind':** The term 'Wind', wherever used in these Guidelines, shall refer to Wind energy technology or the power plant based on such technology.

SECTION III: BIDDING PROCESS AND AWARD OF PROJECTS

A. PREPARATION FOR INVITING BIDS AND PROJECT PREPAREDNESS

1. Conditions to be met by Procurer

1.1. <u>Bid Documentation:</u>

a. The Procurer shall prepare the bid documents in accordance with these Guidelines, except as provided in sub clause b below.

b. The Procurer shall seek prior approval of the Appropriate Government for deviations, if any, in the draft RfS, draft BESPA, draft BESSA (if applicable) from these Guidelines, in accordance with the process described in Clause A, Section V of these Guidelines.

c. In case of an ongoing bidding under process prior to notification of these Guidelines, the provisions of the specific tender documents shall prevail.

1.2. <u>Site-related Project preparatory activities including clearances</u>

In order to ensure timely commencement of supply of electricity being procured and to convince the bidders about the irrevocable intention of the Procurer, it is necessary that various Project

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preparatory activities as mentioned in Clause 1.4 and Clause 1.5 below of these Guidelines are completed in time.

1.3. Arrangements related to site

As specified in the bidding documents to be issued by the Procurers, the Project may be set up either at the Project site specified by the Procurer, or at the Project site selected by the Developer. Multiple energy injection points in gridmay be permitted, subject to provisions in the tender document. In case of multiple injection points, the capacity of Connectivity and Open Access for each individual energy injection point will be granted as per extant regulations as amended from time to time. Further, for a single Project with multiple injection points, scheduling and settlement as per Deviation Settlement Mechanism will be carried out for each injection point separately. In such cases, obligation of the Procurer will be to procure power from all or any of the points of injection, cumulatively upto the Contracted Capacity as per the BESPA, and connectivity granted at each injection point.

1.4. Project site specified by the Procurer

The Procurer may choose to locate the Project at a specified site and the same may be specified by the Procurer in the bidding documents. In such cases, to ensure timely commencement of supply of electricity, the Procurer and the Developer should ensure that various Project preparatory and implementation related activities as indicated below are completed by the respective entities as per the timelines indicated below.

Milestones	**Deadline**
Identification of 100% area of the land and substation (entails providing coordinates of land boundaries and substation location)- by the Procurer	As specified in tender documents
Provision of documents/agreements to indicate in-principle availability of 100 % of land - by the Procurer	As specified in tender documents
Tendering process	The bidding agency should try to conclude the tender within 3 months of issuance of the tender documents
Signing of BESPA	30 days after issuance of LoA (may be extended depending on tender conditions)
Signing of Land lease/right-to-use Agreement	Along with signing of BESPA
Grant of possession/right to use of 100% of land area identified (free from all encumbrances) along with forest clearance if applicable- by the Procurer	Within 60 days of signing of BESPA
Application for grant of Connectivity and Open Access by the STU/CTU (as applicable)-to be facilitated/applied for by the Procurer/BESSD	Within 30 days of issuance of LOA.
Financial Closure	In line with Clause B. of Section IV of these Guidelines.
Substation readiness for evacuation of power-by the Procurer	Matching with original SCOD of the Associated Transmission System
Other legal clearances as required-by the Procurer	15 days prior to SCD
Scheduled Commissioning Date (SCD)	In line with Clause C. of Section IV of these Guidelines.

1.5. Project site specified by the Procurer in an RE Park

The Procurer may choose to locate the Project in a specified zone characterized with proper infrastructure and access to amenities (RE Park) and the same may be specified by the Procurer in the bidding documents. The RE Park shall be developed as per the relevant Policies and/or Guidelines in this regard issued by MNRE/Central Government/State Government(foreg.“Guidelines for Development of Solar Parks”, issued by MNRE for ‘Solar Parks’). Notwithstanding this, to ensure

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timely commencement of supply of electricity, the Procurer, the RE Park developerand the Project Developer should ensure that various Project preparatory and implementation related activities as indicated below are completed by the respective entities as per the timelines mentioned therein. For RE Parks, the responsibilities of the developer(s) of such Parks [for eg. Solar Power Park Developer (SPPD) in case of 'Solar Park'] shall flow from the relevant Policies and/or Guidelines for development of such Parks, issued by MNRE/Central Government/State Government and Implementation Support Agreement, if any, which defines the relationship between the developer of such park and the BESSD.

Milestones	**Deadline**
Identification of 100% area of the land and substation (entails providing coordinates of land boundaries and substation location)- by the Park Developer	As specified in tender documents
Provision of documents/ agreements to indicate in-principle availability of 100 % of land area at the initiation of bidding- by the Park Developer	As specified in tender documents
Tendering process	The bidding agency should try to conclude the tender within 3 months of issuance of the tender documents
Signing of BESPA	30 days after issuance of LoA (may be extended depending on the tender conditions)
Signing of Land lease agreement	Along with signing of BESPA
Grant of possession/right to use of at 100% of land area identified (free from all encumbrances) along with forest clearance if applicable-by the Park Developer	Within 60 days of signing of BESPA
Payment of upfront charges to the Park Developer-by the BESSD	To be paid in 3 instalments: 25% along with signing of Land lease agreement. Next 25% within 30 days of signing of Land lease agreement. Remaining 50% at the time of grant of possession/right to use of 100% of land area identified by the Park Developer
Application for Grant of Connectivity and Open Access by the STU/CTU (as per extant regulations)- to be facilitated/applied by the Park Developer	Within 30 days of issuance of LOA.
Financial Closure	In line with Clause B. of Section IV of these Guidelines.
Substation readiness for evacuation of power-by the Park Developer	Matching with original SCOD of Associated Transmission System
Other legal clearances as required-by the Park Developer	15 days prior to SCD
Scheduled Commissioning Date (SCD)	In line with Clause C. of Section IV of these Guidelines.

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2. Project site selected by the BESSD

In case the Procurer does not specify a site and the Project site is selected by the BESSD, to ensure timely completion and commencement of supply of power, the bidder would be required to submit documents in respect of project milestones as per the time schedule specified herein below:

Milestones	**Deadline**
Tendering process- to be completed by the Bidding Agency	The bidding agency should try to conclude the tender within 3months of issuance of the tender documents
Signing of BESPA	30 days after issuance of LoA (may be extended depending on tender conditions)
Signing& Submission of Land related Documents	At the time of commissioning of the Project
Application for grant of Connectivity and Open Access by the STU/CTU (as applicable)	Within 30 days of LOA
Financial Closure	In line with Clause B. of Section IV of these Guidelines.
Scheduled Commissioning Date (SCD)	In line with Clause C. of Section IV of these Guidelines.

Further, the BESSD/Procurer (as applicable), within 30 days of issuance of LOA, shall apply for Connectivity/Open Access to the CTU/STU Grid (as required) for technical feasibility of Connectivity/Open Access of the plant to InSTS/ISTS substation which shall be processed as per the extant Regulations in vogue.

In addition to the documents as identified, a letter from State Transmission Utility (STU)/ Central Transmission Utility (CTU), (or RE power park developer, in case of selected site being in a RE park) as applicable, regardingconnectivity from STU/CTU, as applicable, shall be required to be submitted by the BESSD prior to commissioning of the Project. If the Project site is located in the same State as the Procurer/ End Procurer, State Government shall endeavour to provide necessary support to facilitate the connectivity of the plant to InSTS/ISTS substation.

Obtaining all other clearances prior to Project commissioning as required for Project execution, shall be entirely the responsibility of the BESSD, and the Procurer shall not be responsible in case of delay in obtaining the above / such clearances. Provisions regarding treatment of the same will be explicitly provided in the tender documents.

B. BID STRUCTURE

1. **Bid Package**

The bids will be designed in terms of total capacity of storage.The minimum Project and package sizes for the bids are indicated at Sl. B.1. of Section I above. However, in order to have economies of scale, the Procurer is permitted to specify the minimum project size, that a bidder is allowed to bid for, to be more than the above specified limits, as the case may be. Notwithstanding this, on due consideration of availability of land and transmission facility, smaller bid sizes can be kept in case of North-Eastern States, Special Category States, and Projects outside RE Parks. The Procurer may also choose to specify the maximum capacity that can be allotted to a single bidder including its Affiliates keeping in mind factors such as economies of scale, land availability, expected competition and need for development of the market.

2. **Bidding Parameters**

The Procurer may invite bids for the procurement in terms of BESS Capacity. A Capacity Procurement would entail that the Procurer pays for the availability of storage capacity. The bidding parameter, accordingly, would be:

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a) Availability based fixed charge/ Annuity (INR per kW (or per MW) per year (or per month) as per terms and conditions of the Agreement and/or

b) A quantum of VGF support required by the bidder for a pre-specified fixed Tariff/ Annuity specified

The Bidding Agency may specify in the RfS, one of the above bidding parameters depending on the BESS application and the Procurer off-take arrangements, which will be specified in the RfS.

The minimum Term of the BESPA is envisaged to be 8 years which could be increased as per requirement of procurement.

C. BIDDING PROCESS

1. The Procurer shall call for the bids adopting a single stage, two part (Technical Bid & Financial Bid), bidding process to be conducted preferably through electronic mode (e-bidding). The technical bid shall be opened first. The financial bids of only those bidders who qualify in the technical bid evaluation stage, shall be opened. The Procurer will carry out e-reverse auction for selection of successful bidders, which will be specifically mentioned in the notice inviting bids and bid document. E-procurement platforms with a successful track record and with adequate safety, security and confidentiality features will be used. In case of a RE Park specific project, intimation about the initiation of the bidding process shall be given by the Procurer to the RE Power Park Developer, who has to engage actively in the bidding process by providing all the necessary land and infrastructure related details.
2. The Procurer shall invite the bidders to participate in the RfS for installation of BESS based Projects, in terms of these Guidelines.
3. The bidding documents including the RfS, draft BESPA and draft BESSA (if applicable), shall be prepared by the Procurer in consonance with these Guidelines. The Procurer shall also arrange the access of the bidders to the drafts of Implementation Support Agreement and land related agreements, in case the Project is required to be set up in a RE Park.
4. The Procurer shall publish the RfS notice in the Central/State Public Procurement Portal and/or its own website to accord wide publicity.
5. The Procurer shall provide opportunity for pre-bid conference to the prospective bidders, and shall provide written interpretation of the tender documents to any bidder which shall also be made available to all other bidders. All the concerned parties shall rely solely on the written communication. Any clarification or revision to the bidding documents shall be uploaded on the website of the Procurer for adequate information. In the event of the issuance of any revision or amendment of the bidding documents, the bidders shall be provided a period of at least 7 days there from, for submission of bids.

D. REQUEST FOR SELECTION (RFS) DOCUMENT

The standard provisions to be provided by the Procurer in the RfS shall include the following:

1. Bid Responsiveness

The bid shall be evaluated only if it is responsive and satisfies conditions including inter-alia:

(a). Bidder or any of its Affiliates should not be a wilful defaulter to any lender;

(b). The Bidder & any of its Affiliate including any Consortium Member & any of its Affiliate, their directors should not have been barred or included in the blacklist by any government agency or authority in India, the government of the jurisdiction of the Bidder or Members where they are incorporated or the jurisdiction of their principal place of business, any international financial institution such as the World Bank Group, Asian Development Bank, African Development Bank, Inter-American Development Bank, Asian Infrastructure Investment Bank etc or the United Nations or any of its agencies

2. Qualification requirements to be met by the bidders

a) **General Eligibility Criteria:** Bidders participating in the tenders issued under these Guidelines should fall under either of the following categories:

i. A Company under the Companies Act, 2013.

ii. A Foreign Company under the respective nation's laws.

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iii. Alternative Investment Funds (AIF) as registered under SEBI. "AIF" shall be as defined by SEBI.

iv. A Consortium comprising the above entities.

The above would be subject to the relevant Acts, Rules, Guidelines, Orders and Policy documents of the Government of India as amended from time to time.

b) **Technical Eligibility Criteria:** The Government would like to encourage competition by way of increased participation. However, in order to ensure proper implementation of the Projects, the Procurer may choose to specify Technical Eligibility Criteria such as past experience of the bidders, timely execution of infrastructure projects, etc. Such criteria should be set after an assessment of the number of project developers that are expected to meet the criteria so that an adequate level of competition is achieved. Cut-off date for meeting the technical criteria should generally be kept as the last date of bid submission.

c) Financial Eligibility Criteria:

i. Net-worth/Asset Under Management (AUM) or Investible Funds: The Procurer shall specify financial criteria in the form of net-worth as a part of the qualification requirement. The net-worth requirement should be at least 20% (twenty per cent) of the estimated capital cost of the Project, for the financial year in which bids are issued. The estimated capital cost of the Project will be determined by the Bidding Agency .In case of the Bidder being a SEBI registered AIF, the cumulative value of Assets Under Management (AUM) with minimum requirement as decided by the Procurer/Intermediary Procurer shall be demonstrated as part of Financial Eligibility Criteria. In this context, AUM shall mean the amount as certified by the Statutory Auditor of the AIF.

The net-worth/value of AUM to be considered for the above purpose will be the cumulative net-worth of the bidding company/AIF or consortium members. Except in the case of AIFs, the Bidder may seek qualification on the basis of financial capability of its Affiliate(s) for the purpose of meeting the Net Worth criteria as per the RfS. In case of the Bidder being a Bidding Consortium, any Member may meet the above criteria on the basis of financial capability of its Affiliate(s). In both cases, such Affiliates shall undertake to contribute the required equity funding and performance bank guarantees in case the bidder(s) fail to do so in accordance with the RfS.

It is clarified that the net-worth to be considered for this clause will be the total net-worth as calculated in accordance with the Companies Act, 2013, and AUM or investible funds to be considered under this clause will be calculated in accordance with applicable SEBI (AIF) Regulations.

For the limited purpose of meeting the technical and financial eligibility criteria in the tenders, in addition to using credentials of the Affiliates having more than 50% shareholding in the bidding company, the bidders may also use credentials of those Affiliates who do not control more than 50% of the bidding company, subject to the following:

a. The qualification criteria parameters will be met proportionately to the equity contribution of the entity whose credentials are being used to meet the requirement. For example, in case of Net Worth requirement being Rs. 100 Cr., and the strength of an Affiliate is used which owns 30% of the total shareholding in the bidder, the said Affiliate should be able to meet uptoRs. 30 Cr. of the Net Worth.

b. In case the strength of an Affiliate is being used for meeting the eligibility criteria, shareholding pattern of the respective Affiliate will be locked-in upto COD of the Project.

ii. Liquidity: It is necessary that the bidder has sufficient cash flow/ internal accruals/ bank references to manage the fund requirements for the Project. The Procurer may also stipulate suitable parameters such as annual turnover, PBDIT, internal resourcegeneration, bank references/line of credit, etc.

E. BID SUBMISSION AND EVALUATION

1. Formation of consortium shall be permitted, in which case the consortium shall identify a lead member which shall be the contact point for all correspondences during the bidding process.
2. The Bidding Agency will specify suitable technical and financial eligibility criteria for the bidders, in the tender documents.

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3. The Procurer shall constitute a committee for evaluation of the bids (Evaluation Committee), with at least three members, including at least one member with expertise in financial matters / bid evaluation.
4. The bidders may be required to submit non-refundable processing fee and/or success fee, as specified in the RfS.
5. The bidders shall be required to submit separate technical and price bids. The bidders shall also be required to furnish necessary bid-guarantee in the form of an EMD along with the bids.
6. The technical bids shall be evaluated to ensure that the bids submitted meet the eligibility criteria set out in the RfS document on all evaluation parameters. Only the bids that meet the evaluation criteria set out in the RfS shall be considered for further evaluation on the price bids.
7. To ensure competitiveness, the minimum number of qualified Bidders should be two. If the number of qualified bidders is less than two, even after three attempts of bidding, and the Procurer still wants to continue with the bidding process, the same may be done with the consent of the Appropriate Commission.
8. The price bid shall be liable to be rejected, if the bid submitted by the Bidder contains any deviation from the tender conditions.
9. **Bid evaluation methodology to be adopted by the Procurer for evaluating the bids:**Bid Evaluation shall be carried out in terms of parameters as brought at Clause B2 above through ranking of Bids in ascending order of the Bidding Parameter. the Bidding Agency will carry out electronic reverse auction for award of Projects.
10. The detailed procedure for evaluation of the bid and selection of the successful bidder(s) shall be provided for in the RfS.

F. INDICATIVE TIME TABLE FOR BID PROCESS

The bidding process should be completed within 3 months of the date of issuance of RfS by the Procurer. It is clarified that if the Procurer gives extended time for any of the events in the bidding process, on account of delay in achieving the activities required to be completed before the event, or any other reason, such extension of time shall not in any way be construed as deviation from these Guidelines.

G. CONTRACT AWARD AND CONCLUSION

1. After the conclusion of bidding process, the Evaluation Committee constituted for evaluation of bids shall critically evaluate the bids and certify as appropriate that the bidding process and the evaluation has been conducted in conformity to the provisions of these Guidelines.
2. The BESPA shall be signed with the successful bidder/project company or an SPV formed by the successful bidder.
3. The BESPA shall be executed between BESSD and Procurer. In case of involvement of the Intermediary Procurer, BESPA shall be executed between the BESSD and Intermediary Procurer and the BESSA shall be executed between the Intermediary Procurer and the End Procurer. The BESPA(s) should preferably be signed immediately after signing of the BESSA(s).
4. The Intermediary Procurer shall enter into the Battery Storage Purchase Agreement (BESPA) / Power Purchase Agreement with the Developer(s) and enter into a Battery Storage Sale Agreement (BESSA) /Power Sale Agreement with the distribution licensee(s)/ consumer(s). The BESSA shall contain the relevant provisions of the BESPA on a back-to-back basis. The Intermediary Procurer shall be entitled to charge trading margin of seven paise/kWh or 0.5% of the Capacity Charges (as applicable) from the Buying entity / Procurer for purchase and sale of such energy/capacity..
5. As long as the Intermediary Procurer follows these Guidelines for procurement of BESS, the End Procurer(s) shall be deemed to have followed these Guidelines for procurement of such power. The power procurement for Distribution licensees in some States is centralized through a holding company or another government agency. Such companies/ agencies will be considered as Procurer and not as Intermediary Procurer for the purposes of these Guidelines.
6. In case of delay in signing of BESPAbeyond 6 months from the date of issuance of LoAs, or any other extended date as mutually agreed between the Bidding Agency and the successful bidders, the awarded capacity shall stand cancelled. In certain cases, after the above deadline, if the cumulative capacity eligible for signing of BESPAs is lower than the cumulative capacity awarded under the tender, further

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course of action will be decided by the Bidding Agency, which will be clearly specified in the tender document.

7. For the purpose of transparency, the Procurer shall, after the execution of the BESPA, publicly disclose the name(s) of the successful bidder(s) and the tariff / charges quoted by them together with breakup into components, if any. The public disclosure shall be made by posting the requisite details on the website of the Procurer for at least 30 (thirty) days.

8. Subject to provisions of the Act, the distribution licensee or the Intermediary Procurer, as the case may be, should approach the Appropriate Commission for adoption of tariffs (including capacity charges, if applicable) discovered and quantum of capacity / electricity to be procured, within30 days of issuance of Letter(s) of Award to the successful bidder(s). In case the tariff (including capacity charges, if applicable) adoption procedure requires signed BESPA to be submitted alongwith, the above timeline may be extended suitably.

9. In some cases, the Intermediary Procurer/Procurer may also stipulate a fixed value as one of the components of a two-part tariff. In such cases, the above fixed part of the tariff need not require any tariff adoption by the Appropriate Commission, and will be deemed to be applicable under these Guidelines.

10. Subsequent to the End Procurer/Intermediary Procurer approaching the Appropriate Commission for adoption of tariffs, in case, the Appropriate Commission does not decide upon the same within 120 days from the Effective Date of the BESPA, the Procurer(s) shall grant appropriate extension of time in financial closure deadline and scheduled commissioning date to the BESSDs, corresponding to the delay (beyond 120 days of Effective Date of BESPA) in adoption by the Appropriate Commission, till the date of adoption by the Appropriate Commission.

H. BANK GUARANTEES/PAYMENT ON ORDER INSTRUMENTS/ LETTERS OF UNDERTAKING

1. The BESSD shall provide the following instruments to the Procurer in terms of the RfS and the BESPA:

   a. Earnest Money Deposit (EMD), to be fixed by the Procurer, but not to be more than 2% (two percent) of the estimated capital cost of the Project, for the financial year in which the bids are invited, to be submitted along with response to RfS. The Bidding Agency / Procurer shall have the option to specify modes / forms of accepting EMD, taking into due consideration the notifications/Government Resolutions notified by the Appropriate Government, in the form of:

      i. Bank Guarantee(s);

      OR

      ii. "Payment on Order instrument" / Letter of Undertaking to pay in case situation of default of BESSD in terms of BESPA arises, from any agency as notified by the Government of India or State Governments from time to time, for this purpose, to be furnished by the bidders. Forfeiture of EMD or blacklisting/debarring etc, as defined in these Guidelines, shall be undertaken in the event of failure of the BESSD to execute the BESPA within the stipulated time period.

      "Payment on Order instrument" means Letter of Undertaking from any agency as notified by the Government of India or State Governments from time to time for this purpose, to pay in case situation of default of Battery Storage System Developer(BESSD) in terms of tender documents and/or Battery Storage Purchase Agreement (BESPA) arises. Such Letter(s) will have same effect as that of a Bank Guarantee issued by any public sector bank. Such "Payment on Order instrument" would have terms and conditions similar to that of any Bank Guarantee given by any public sector bank and would promise to pay the Procurer on demand within stipulated time. BESSD can seek such Letters(s) by offering due security to the above mentioned three non-banking financial institutions mentioned above. Procurer(s) shall not accept the instrument of 'Letter of Undertaking' as described above or in any other form, from any other non-banking financial institutions or bank, except from the institutions as notified above.

   b. Performance Bank Guarantee (PBG),to be fixed by the Procurer, but not to be more than 5% (five percent) of the Project cost, for the financial year in which the bids are invited, to be submitted at the time of signing of the BESPA. The Bidding Agency / Procurer shall have the option to specify

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modes / forms of accepting EMD, taking into due consideration the notifications/Government Resolutions notified by the Appropriate Government, in the form of:

i. Bank Guarantee(s);

OR

ii. "Payment on Order instrument" / Letter of Undertaking to pay in case situation of default of BESSD in terms of Power Purchase Agreement (BESPA) arises, from any agency as notified by the Government of India or State Governments from time to time for this purpose.

2. In addition to the other remedies, the PBG (or the alternative provided thereto as per these Guidelines) can be encashed to recover any damages/dues of the BESSD in terms of the BESPA. It is hereby clarified that the damages/dues recovered by the Intermediary Procurer by encashing the PBG, upon the default of the BESSD under the BESPA, shall be credited to the Payment Security Fund to be maintained by the Intermediary Procurer under Clause G, Section IV of these Guidelines. PBG (or alternatives provided thereto as per these Guidelines) would be returned after deducting liquidated damages (if any), to the BESSD within 45 days of commissioning of the Project. However, Procurer / Intermediary Procurer may choose to increase such period which shall not be more than 15 months from COD and shall be clearly specified in the Bidding Documents. In case of part commissioning, PBG/Payment on Order Instrument corresponding to the part capacity commissioned, should also be released after deducting liquidated damages (if any),within the time period as specified in Bidding Documents. As an alternative to encashment of PBG/Payment on Order Instrument, the Procurer/Intermediary Procurer may also provide an option to the BESSD to furnish the requisite amount to the Procurer/Intermediary Procurer through DD/electronic payment, against release of the PBG/Payment on Order Instrument concerned without any encashments.

3. Procurer(s) may release the Bank Guarantees submitted by BESSD as ‘Performance Bank Guarantee (PBG)’ of any project, if the BESSD is able to replace the same with "Payment on Order instrument" / Letter(s) of Undertaking as per Clause H.1.b.ii.above, to pay in case situation of default of the BESSD in terms of BESPA arises. BESSD can seek such Letters(s) by offering due security to the notified agencies for seeking replacement of their Bank Guarantees already pledged withthe Procurer.

I. TECHNICAL SPECIFICATIONS

Procurers shall promote commercially established and operational technologies to minimize the technology risk and to achieve the commissioning of the Projects. The detailed technical parameters, for type of RE projects covered and to be selected under these Guidelines, shall be specified by Ministry of Power from time to time. An indicative list of technical specifications is brought out in Appendix-2 to these Guidelines.

SECTION IV: IMPLEMENTATION OF THE PROJECT

A. BATTERY STORAGE PURCHASE AGREEMENT (BESPA)

The draft BESPA proposed to be entered into with the successful bidder and draft BESSA (if applicable) shall be issued along with the RfS. Standard provisions to be incorporated as part of this BESPA shall include inter alia the following, which, unless otherwise specified herein, shall be provided for, on a back-to-back basis in the BESSA.

1. **Term of the BESPA**

In view of the currently prevailing life cycle of Battery systems being used without replacement, the minimum term of the BESPA period should be 8 (eight) years from the Scheduled Commissioning Date (SCD)or the date of full commissioning of the Project, whichever is later. The BESSD is free to operate the plants after the expiry of the BESPA period, in case the arrangements with the land and infrastructure owning agencies, the relevant transmission utilities and system operators so provide. It is hereby clarified that in cases where the Project site is specified by the Procurer to be located either in a RE Park or otherwise, the responsibility of the Procurers to arrange for the land in terms of Clauses A.1.1.4 and A.1.1.5 of Section III of the Guidelines shall be limited for the BESPA period.

2. **Performance Parameters of the Project**

The procurement of power could either be in capacity (kW/MW) and/or energy (kWh/MWh) terms.

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a) The bidding documents may specify performance parameters such as availability, charging/discharging rate, efficiency, ramp rate, etc. In case of availability being a performance parameter in a tender, in order to ensure the End Procurer's requirements are met, minimum availability to be maintained by the BESS should be specified in the RfS. Further, based on the specific usage of the BESS envisaged under the tender, the BESSD may be required to meet the minimum monthly and / or Annual Availability requirements, or to declare availability on a day-ahead basis. The minimum availability criteria to be met may also be limited to the specified hours in a day/peak hours in a day, on which the shortfall in meeting such criteria will be calculated. The hours of storage and the performance parameters may be decided by the Procurer.

b) Procurement of capacity (MW) and scheduling for energy

In case procurement is done for scheduling of energy in various time blocks, the Procurer will mention the capacity with clear conditions on "minimum availability to be provided by the BESSD and minimum off take energy schedule to be provided by the procurer". In such projects, the minimum off-take and availability should not be less than "xx%" of the contracted capacity.

- Availability based Capacity charge: Irrespective of scheduling of energy by the procurer, the Procurer shall pay the capacity charge for the capacity made available by the BESSD.
- If the BESS is charged by the Procurer, the BESSD will deliver the energy back after accounting for pre-specified conversion losses.
- If the energy also provided by the BESSD, the Procurer shall pay for the pre-quoted energy charge, for the energy supplied also. However, the Procurer would guarantee the minimum monthly and annual off take guarantee of power.
- Fixed charge: For the difference energy between the availability proposed by BESSD and scheduled by the Procurer, the Procurer shall pay pre-defined fixed charge which can be defined as xx % of the tariff."xx%" in the above provisions shall be determined as per the bidding documents.

c) **Liquidated Damages on account of shortfall in meeting performance criteria:**There will be liquidated damages payable for shortfalls against the performance parameters, the amount will be:

(i) On pro-rata basis for the shortfall below the committed capacity availability @ capacity charge or any number predefined in RfS.

(ii) On pro-rata basis for the shortfall in supply of committed energy at the tariff or any number predefined in RfS.

(iii)theBESSD shall pay for the Energy loss in excess of guaranteed parameter (as stipulated in the RfS Document) @ Tariff of input energy provided by the procurer or any number predefined in RfS.

(iv) For any performance deviations, related to the parameters for ancillary services, the predefined liquidated damages defined by the procurer in the RfS shall be levied.

(v) Any other Liquidated Damages as defined in the RfS Document

d) The amount of the liquidated damages as specified under the Bidding Documents or BESPA or in the BESSA is genuine and reasonable pre-estimate of the damages that may be suffered by the Procurer/Intermediary Procurer(s)..

3. **Replenishing**

The BESSDs will be free to replenish the battery capacity time to time during the BESPA duration at their cost and expense to meet the performance criteria. However, the Procurer will be obligated to buy power only within the performance range as specified in the BESPA and at the charges applicable as per the existing agreements. Provisions for treatment of excess supply (if any) shall be specified in the Bidding Documents to be issue by End Procurer / Intermediary Procurer. Change in Law compensation / payment shall be limited to the Contracted capacity only. .

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B. FINANCIAL CLOSURE

1. The BESSD shall attain the Financial Closure in terms of the BESPA, within the date which is 12 months of the Date of Signing of the Battery Energy Storage Purchase Agreement.However, if for any reason, the time period for attaining the financial closure needs to be reduced than that provided in these Guidelines, the Procurer can do the same.

2. Failing the aforesaid, the Procurer/Intermediary Procurer shall encash the PBG/POI unless the delay is on account of delay in allotment of land by the Procurer in terms of Clause A.1.1.4 and Clause A.1.1.5 of Section III of these Guidelines or delay in allotment of land by the Government not owing to any action or inaction on the part of the BESSD or is caused due to a Force Majeure. An extension for attainment of the financial closure can however be considered by the Procurer, on the sole request of the BESSD, on payment of extension charges of Rs. 1,000 per MW per day of delay in financial closure. This extension will not have any impact on the Scheduled Commissioning Date (SCD). Any extension charge paid so, shall be returned to the BESSD without any interest on achievement of successful commissioning of full Project capacity within the SCD. In other cases, such penalty / extension charges will be credited to the Payment Security Fund maintained by the Procurer / Intermediary Procurer.

3. Any delay in adoption of tariff by the Appropriate Commission, beyond 120 days after Effective Date of BESPA shall entail a corresponding extension in financial closure deadline.

C. COMMISSIONING

1. **Part Commissioning**

   a. Part commissioning of the Project shall be accepted by the Procurer subject to the condition that the minimum capacity for acceptance of first part commissioning shall be 50% of Project Capacity or 50 MW, whichever is lower, without prejudice to the imposition of penalty, in terms of the BESPA on the part which is not commissioned. For ISTS-connected Projects, the minimum part commissioning capacity for the 1st part will be 50 MW. The total number of instalments in which a Project can be commissioned will be not more than 3, i.e., 1stinitial instalment and 2 subsequent instalments. However, the Scheduled Commissioning Date (SCD) will not get altered due to part-commissioning. Irrespective of dates of part commissioning or full commissioning, the BESPA will remain in force for a period of minimum 8 years from the SCD or date of full commissioning of the Project capacity, whichever is later.

   b. In case of part-commissioning of the Project, the BESSD shall be required to submit documents/Lease Agreement to establish possession/right to use of the required land, corresponding to part capacity being commissioned, in the name of the BESSD for a period not less than the complete term of the BESPA, on or before the date of such part-commissioning.

   c. For capacity procurement contracts, in case of part-commissioning, payments as per the BESPA may be made on pro-rata basis, proportionate to the capacity commissioned. The procurement of part commissioned capacity will be based on the sole discretion of the procurer/intermediary procurer. If the procurer/intermediary procurer are not interested to consider procurement of the part capacity till commissioning, the part commissioned capacity will be allowed to sell in the open market till SCD

2. **Early Commissioning**

   The BESSD shall be permitted for full commissioning as well as part commissioning of the Project even prior to the SCD subject to availability of transmission connectivity and/or open access, if applicable. In cases of early part commissioning, till SCD, the BESSD will be free to sell the electricity generated / battery capacity, to any entity other than the Procurer(s), provided that the first right of refusal will be vested with the Procurer(s). The Procurer(s) /Intermediary Procurer shall provide refusal within 15 (fifteen) days from the receipt of the request, beyond which it would be considered as deemed refusal. In cases of early commissioning of full Project capacity prior to SCD, in case the Procurer agrees to purchase such early commissioned power, the Procurer/Intermediary Procurer shall purchase the generation at BESPA/BESSA tariff, as applicable.

3. **Commissioning Schedule**

   a. The BESSD shall commission the Project, in terms of the BESPA, as per following timelines:

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i. In case of Project capacity upto (and including) 250 MW, the Scheduled Commissioning Date (SCD), i.e., the maximum timeline for commissioning of Projects without any liquidated damages, shall be the date as on 18 months after the Effective Date of the BESPA.

ii. In case of Project capacity more than 250 MW, the SCD shall be the date as on 24 months after the Effective Date of the BESPA.

However, if for some reason, the scheduled commissioning period needs to be reduced than that provided in these Guidelines, the Procurer can do the same, subject to confirmation from CTU/STU regarding evacuation margins in ISTS/Intra-STS transmission system.

b. Subject to the provisions of these Guidelines regarding Force Majeure, delay in commissioning beyond the Scheduled Commissioning Date, shall involve liquidated damages levied on the BESSD, as detailed below:

i. For delay in commissioning upto9months after SCD, the BESSD shall be levied liquidated damages in the form of encashment of the PBG/POI on a per-day basis, pro-rata to the Contracted Capacity not commissioned. Payment of such liquidated damages could be done as follows:

- By direct payment of the damages of to the Procurer/Intermediary Procurer
- By encashment of the BG/POI

The BESSD would have the option of choosing between these two options and the time period for making this choice will be specified in the BESSA/BESPA.

ii. For delay in commissioning beyond 9 months after SCD, Contracted Capacity shall be reduced to the project capacity commissioned upto9monthsafter SCD, the entire Performance Guarantee will be encashed by the Procurer/Intermediary Procurer and the BESPA for the Project shall stand terminated for the balance un-commissioned capacity.

iii. However, if for some reason, the above period of liquidated damages needs to be reduced than that provided in these Guidelines, the Procurer can do the same.

c. Any delay in adoption of tariff (including capacity charges, if any) by the Appropriate Commission, beyond 120 days after Effective Date of the BESPA, shall entail a corresponding extension in SCD.

d. Land arrangements:It may be noted that commissioning/ part-commissioning of the Project will not be declared until the BESSD submits documents/ Lease Agreement to establish possession/ right to use of the required land, corresponding to full/ part capacity being commissioned, in the name of the BESSD for a period not less than the complete term of the BESPA, on or before the date of such full / part commissioning.

4. **Delay in Commissioning on account of delay in Connectivity/Grid Access Operationalisation:**

In certain Projects, Connectivity and Grid Access shall be required to be submitted by the BESSD prior to commissioning of the project. Subsequent to grant of connectivity, in case there is a delay in grant/operationalisation of Grid Access by the CTU/ STU and/or there is a delay in readiness of the ISTS/ InSTS substation at the Delivery Point/Injection Point, including readiness of the power evacuation and transmission infrastructure of the ISTS/ InSTS network until SCD of the Project, and it is established that:

i. The BESSD has complied with the complete application formalities as per the Connectivity Procedure.

ii. The BESSD has adhered to the applicable Procedure in this regard as notified by the CERC/ SERC/JERC/CTU/ STU, and

iii. The delay in grant of connectivity/ Grid Access by the CTU/ STU and/or delay in readiness of the ISTS/ InSTS substation at the Delivery Point, including readiness of the power evacuation and transmission infrastructure of the ISTS/ InSTS network, is a factor attributable to the STU/ CTU/ transmission licensee and is beyond the control of the BESSD;

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The above shall be treated as delays beyond the control of the BESSD and SCD for such Projects shall be revised as the date as on 30 days subsequent to readiness of the Delivery Point and power evacuation infrastructure and/or operationalization of the Grid Access. Decision on requisite extension on account of the above factor shall be taken by Procurer / Intermediary Procurer.

D. COMMERCIAL OPERATION DATE (COD)

In case of part commissioning, Commercial Operation Date (COD) will be declared only for that part of project capacity. The Commercial Operation Date (COD) of the project [Project COD] shall be considered as the next day after the actual date of commissioning of the full capacity of the Project or the last part capacity of the Project as the case may be, as declared in line with the commissioning procedure as provided in the BESPA. Similarly, for each part commissioning, COD will be the next day after actual date of commissioning of the respective part capacity.

The BESSD shall obtain necessary safety clearances from the Central Electricity Authority/CEIG prior to commissioning of the Project.

Commissioning shall be as per the Commissioning Procedure as per provisions specified in the Bidding Documents.

E. TRANSMISSION CONNECTIVITY

1. The Project shall be designed for inter-connection with InSTS / ISTS substation, either directly, or through a Pooling Substation where other projects also inter-connect prior to the InSTS / ISTS substation, through a transmission network as per applicable regulations, at the appropriate voltage level, as specified by the Procurer/STU/CTU, in line with the applicable CERC/SERC Regulations. The entity responsible for the construction of the relevant transmission infrastructure shall be clearly specified in the bidding documents. Depending on the implementation arrangements and design of the evacuation system, the capital costs of the transmission lines and substations prior to the InSTS / ISTS substation may either be directly paid by the BESSD, or paid by the RE park developer or another implementation agency and claimed from the BESSD as directly attributed or apportioned and recovered in lump sum or as payments over the years.
2. In cases, where the Project site is not specified by the Procurer, the responsibility of getting Connectivity and Grid Access to the transmission system owned by the STU / CTU/ Transmission Licensee will lie with the BESSD and shall be at the cost of the BESSD. In this regard, the Bidding Agency, in consultation with the CTU/STU, may provide a list of substations, from which the bidders may choose the delivery points in a particular tender.
3. In cases, where the Project site specified by the Procurer is not in a RE Park, the Procurer could choose to require the BESSD to bear the responsibility and cost of getting Transmission Connectivity and Grid Access.
4. In cases where the Procurer specifies a RE Park, where the Project is to be located, damages, fines and charges imposed by the CTU/ STU under any statute or regulation in relation to delay in commissioning of Project shall be payable by the BESSD to the extent the delay is attributable to the BESSD and the balance shall be payable by the Procurer.
5. The benefit of waiver of Inter-State Transmission System (ISTS) charges and losses, if any, as per the extant regulations/directions in this regard, will be applicable on the Projects.
6. The Metering Point, which is the point at which energy supplied to the Procurer shall be measured, shall be the low voltage bus bar of the InSTS / ISTS substation at which the power is injected in the transmission system of STU/CTU or any additional point(s) as specified in the Bidding Document. Unless otherwise provided, the transmission of power up to the point of interconnection where the metering is done for energy accounting shall be the responsibility of the BESSD at his own cost.
7. In case of RE Park, the metering point (as specified in the Bidding Document) is the final evacuation InSTS / ISTS substation with which the internal transmission from all the pooling substations is connected. All expenses including but not limited totransmission / wheeling charges and losses etc. between the Project and the Metering Point shall be paid by the BESSD without any reimbursement by the Procurer. All expenses including ‘transmission charges and losses’ (if any) and ‘wheeling charges and losses’ in relation to the transmission and distribution beyond the Metering Point shall be borne by

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the Procurers, except as provided specifically in the RfS. Arrangements shall be put in place for billing by the RE Park Developer to the Projects/BESSDs or any other entity, as the case may be who may in turn, recover the same directly from the Procurer.

8. For interconnection with grid and metering, availing Open Access and commercial accounting & settlement, the BESSDs shall abide by the provisions of the CERC Regulations/Procedure & RE connectivity procedure and the various CEA Regulations/Standards including Grid Code, Technical Standards as issues by CEA in this regard, Grid Connectivity Regulations, Regulations on Communication System for transmission of electricity and other regulations (as amended from time to time) issued by Appropriate Commission and CEA.
9. The BESSD shall comply with CERC/ SERC/ JERC regulations on Forecasting, Scheduling and Deviation Settlement, as applicable and are responsible for all liabilities applicable in this regard.
10. The transmission connectivity to the BESSD may be provided by the CTU/ STU, as the case may be, prior to commissioning of the project on the request of the BESSD, to facilitate testing and allow flow of infirm power generated into the grid, subject to existing conditions and such application should be made within the stipulated timeline as specified in the Applicable Regulations.
11. In case of BESS projects as transmission element, the project would planned in tandem with transmission network, and associated RE projects. In case of delay of RE projects associated in the associated network, the capacity charge payable to the to the BESS provider shall be levied on the RE project developers on pro-rata basis by intermediary procurer

F. COMPENSATION FOR OFFTAKE CONSTRAINTS

The Procurer may be constrained to reduce off-take of the power scheduled/offered by the BESSD on account of a Backdown and limited to such case, the applicable Compensation shall be as under.

1. **Compensation due to reducedofftake by the Procurer**

a) BESSD shall not be eligible for any compensation in case of Capacity Contract. However, Capacity Charge / Tariff as per Agreement shall be paid to BESSD for such cases also.

G. PAYMENT SECURITY MECHANISM

The Procurer shall provide adequate payment security measures, as specified below.

1. **Scenario 1: Direct Procurement by End Procurer from BESSD**

The Procurer shall provide payment security to the BESSD through:

a. **Revolving Letter of Credit (LC)** of an amount not less than 1 (one) months' average billing from the Project under consideration.

AND

b. **Payment Security Fund,** which shall be suitable to support payment for at least 3 (three) months' billing of all the Projects tied up with such fund.

c. As a combination of the above two mechanisms, the Procurer shall provide a total payment security for a total of 4 (four) months' energy billing, out of which, LC should be provided for a minimum period of 1 month's energy billing.

d. In addition to payment security as per clauses (a) & (b) above, the Procurer may also choose to provide **State Government Guarantee**, in a legally enforceable form, ensuring that there is adequate security to the BESSD, both in terms of payment ofenergy charges and termination compensation if any. This will not be applicable in case the Procurer is a transmission utility or a system operator.

2. **Scenario 2: Intermediary-Procurer procures from the BESSD and sells to the End Procurer**

a. **<u>Payment Security by Intermediary Procurer to the BESSD:</u>**

The Intermediary Procurer shall provide payment security to the BESSD through:

i. **Revolving Letter of Credit (LC)** of an amount not less than 1 (one) months' average billing for the Project under consideration.

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AND

ii. **Payment Security Fund**, which shall be suitable to support payment of at least 3 (three) months' billing of all the Projects tied up with such fund. For the purpose of this Payment Security Fund, the Intermediary Procurer will collect a non-refundable amount of Rs. 5.0 Lacs/MWh (Rupees Five Lacs per MWh) from the BESSD(s) as one of the routes for strengthening the Payment Security Mechanism pool. Such charges shall be stipulated clearly in the RfS and shall go to the Payment Security Fund (along with accrued interest) set up by the Government of India for such Intermediary Procurer.

b. **Payment Security by End Procurer to Intermediary Procurer:**

The End Procurer shall provide payment security to the Intermediary Procurer through:

i. **Revolving Letter of Credit (LC)** of an amount not less than 1 (one) months' average billing for the Project(s) under consideration.

OR

ii. **State Government Guarantee**, in a legally enforceable form, such that there is adequate security, both in terms of payment of energy charges and termination compensation if any [for the purpose of this clause, the Tri-Partite Agreement (TPA) signed between Reserve Bank of India, Central Government and State Government shall qualify as State Government Guarantee covering the security for payment of energy charges]. The Intermediary Procurer shall ensure that upon invoking this guarantee, it shall at once, pass on the same to the BESSD, to the extent the payments to the BESSD in terms of the BESPA are due. Provided that, in cases where the End Procurer is neither covered by Tri-Partite Agreement (TPA) nor is able to provide the State Government Guarantee, the following, shall be adopted:

In case a particular Procurer does not provide State Government Guarantee as part of the payment security, the LC amount will be enhanced to 2.1 times the average monthly billing.

iii. In addition to payment security as per clauses (i) & (ii) above, the End Procurer may also choose to provide **Payment Security Fund**, which shall be suitable to support payment of at least 3 (three) months' billing of all the Projects tied up with such fund.

It is hereby clarified that the State Government guarantee shall be invoked only after the Intermediary Procurer has been unable to recover its dues under the BESPA by means of the Letter of Credit and the Payment Security Fund, if any.

H. FORCE MAJEURE

1. Definition of Force Majeure

A 'Force Majeure' (FM) would mean one or more of the following acts, events or circumstances or a combination of acts, events or circumstances or the consequence(s) thereof, that wholly or partly prevents or unavoidably delays the performance by the Party (the Affected Party) of its obligations under the relevant BESPA, but only if and to the extent that such events or circumstances are not within the reasonable control, directly or indirectly, of the Affected Party and could not have been avoided if the Affected Party had taken reasonable care or complied with Prudent Utility Practices.

a) Act of God, including, but not limited to lightning, fire and explosion (to the extent originating from a source external to the site), earthquake, volcanic eruption, landslide, flood, pandemic, cyclone, typhoon or tornado if it is declared / notified by the competent state / central authority / agency (as applicable), or verified to the satisfaction of Procurer; if a hydro power plant is a part of the package of the RE project to be set up the bidder, then in such case drought may be considered a relevant Force Majeure event for the hydro power plant component of the RE project.

b) Radioactive contamination or ionising radiation originating from a source in India or resulting from another Force Majeure Event mentioned above excluding circumstances where the source or cause of contamination or radiation is brought or has been brought into or near the Power Project by the Affected Party or those employed or engaged by the Affected Party.

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c) The discovery of geological conditions, toxic contamination or archaeological remains on the Project land that could not reasonably have been expected to be discovered through an inspection of the Project land and/or as per prudent industry practices.

d) Exceptionally adverse weather condition which are in excess of the statistical measure of the last hundred (100) years.

e) Any act of war (whether declared or undeclared), invasion, armed conflict or act of foreign enemy, blockade, embargo, revolution, riot, insurrection, terrorist or military action, or Industry-wide strikes and labour disturbances, having a nationwide impact in India.

f) Nationalisation or any compulsory acquisition by any Indian Governmental Instrumentality/ State Government in national interest or expropriation of any material Project assets or rights of the BESSD, as a result of which the BESSD or its shareholders are deprived (wholly or partly) of their rights or entitlements under the BESPA. Provided that such action does not constitute remedies or sanctions lawfully exercised by the Procurer or any other Government Authority as a result of any breach of any of the Applicable Laws or the Applicable Permits by the BESSD or the BESSD related parties.

2. Force Majeure Exclusions

Force Majeure shall not include (i) any event or circumstance which is within the reasonable control of the Parties and (ii) the following conditions, except to the extent that they are consequences of an event of Force Majeure:

a. Unavailability, late delivery, or changes in cost of the plant, machinery, equipment, materials, spare parts or consumables for the Power Project;

b. Delay in the performance of any contractor, sub-contractor or their agents;

c. Non-performance resulting from normal wear and tear typically experienced in power generation materials and equipment;

d. Strikes or labour disturbances at the facilities of the Affected Party;

e. Insufficiency of finances or funds or the agreement becoming onerous to perform; and

f. Non-performance caused by, or connected with, the Affected Party's: (i) Negligent or intentional acts, errors or omissions, or lack of due diligence expected from any prudent and rational human being; (ii) Failure to comply with an Indian Law; or (iii) Breach of, or default under this Agreement.

3. Notification of Force Majeure Event

a) The Affected Party shall give notice to the other Party of any event of Force Majeure as soon as reasonably practicable, but not later than fifteen (15) days after the date on which such Party knew or should reasonably have known of the commencement of the event of Force Majeure. If an event of Force Majeure results in a breakdown of communications rendering it unreasonable to give notice within the applicable time limit specified herein, then the Party claiming Force Majeure shall give such notice as soon as reasonably practicable after reinstatement of communications, but not later than one (1) day after such reinstatement. The Party who receives the Force Majeure Notification, shall take a decision on the claim of occurrence of Force Majeure Event, within 30 days of the receipt of the intimation, accompanied with supporting documents available with the Affected Party.

b) Provided that such notice shall be a pre-condition to the Affected Party's entitlement to claim relief under the BESPA. Such notice shall include full particulars of the event of Force Majeure, its effects on the Party claiming relief and the remedial measures proposed. The Affected Party shall give the other Party regular (and not less than weekly) reports on the progress of those remedial measures and such other information as the other Party may reasonably request about the Force Majeure Event.

c) The Affected Party shall give notice to the other Party of (i) the cessation of the relevant event of Force Majeure; and (ii) the cessation of the effects of such event of Force Majeure on the

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performance of its rights or obligations under the BESPA, as soon as practicable after becoming aware of each of these cessations.

4. Performance Excused

a) The Affected Party, to the extent rendered unable to perform its obligations or part of the obligation thereof under the BESPA as a consequence of the Force Majeure Event, shall be excused from performance of the obligations, provided that the period shall not exceed 180 (one hundred and eighty) days from the date of issuance of the FM Notice, or any extended period as mutually agreed. The Parties may mutually agree to extend the period for which performance is excused due to a Force Majeure Event. However, in case of the FM continuing upto a period of 180 days or any extended period as mutually agreed, either Party has the right to terminate the BESPA.

b) For the time period, as mutually agreed by the Parties, during which the performance shall be excused, the BESSD shall be entitled for a day-to-day extension of the period provided for Financial Closure or Scheduled Commissioning Period or the BESPA period, as the case may be. The Term of the BESPA and BESSA will be suitably extended as per the above extension.

c) Provided always that a Party shall be excused from performance only to the extent reasonably warranted by the Force Majeure Event.

d) Provided further that, nothing shall absolve the Affected Party from any payment obligations accrued prior to the occurrence of the underlying Force Majeure Event.

5. No Liability for Other Losses

Save as otherwise provided in these Guidelines, no Party shall be liable in any manner, whatsoever, to the other Parties in respect of any Loss relating to or arising out of the occurrence or existence of any Force Majeure Event.

6. Resumption of Performance

During the period that a Force Majeure Event is subsisting, the Affected Party shall, in consultation with the other Parties, make all reasonable efforts to limit or mitigate the effects of such Force Majeure Event on the performance of its obligations under the BESPA. The Affected Party shall also make efforts to resume performance of its obligations under this Agreement as soon as possible and upon resumption, shall notify other Parties of the same in writing. The other Party shall afford all reasonable assistance to the Affected Party in this regard.

7. Termination Due to Force Majeure Event

a) If, prior to the completion of the 180-day period (or any extended period) for a Force Majeure Event commencing from the date of issuance of the Force Majeure Notice, the Parties are of the reasonable view that a Force Majeure Event is likely to continue beyond such 180-day period or any extended period agreed in pursuance of Clause 4 above (Performance Excused); or that it is uneconomic or impractical to restore the affected Unit, then the Parties may mutually decide to terminate the BESPA, and the termination shall take effect from the date on which such decision is taken.

b) Without prejudice to the provisions of Clause 7 (a) above, the Affected Party shall, after the expiry of the period of 180 days or any other mutually extended period, be entitled to forthwith terminate the BESPA in its sole discretion by issuing a notice to that effect.

c) On termination of the BESPA pursuant to Clause7(b):

i. In case of termination on account of an event listed as Force Majeure as per Clauses 1. (a), (b), (c) and (d) above, no Termination Compensation shall be payable to the BESSD.

ii. In case of termination at the instance of the BESSD, on account of an event listed as Force Majeure as per Clauses 1. (e) and (f)above, the Procurer will have the option to (but will not be obliged to) take-over the Project assets by paying the Debt Due. In case the Procurer chooses not to exercise the above option, and the same is not agreed to by the BESSD, it will result in a dispute as per the BESPA, and will be resolved as per the Dispute Resolution mechanism under the BESPA.

iii. The BESSD shall be eligible for undisputed payments under outstanding Monthly Bill(s), before the occurrence of Force Majeure Event.

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8. The provisions of Force Majeure contained herein above related to the BESPA affecting the BESSD or the Intermediary Procurer, as the case may be, shall be read mutatis mutandi as the provisions of Force Majeure under the BESSA and the Force Majeure affecting the End Procurer under the BESSA shall be read as Force Majeure affecting the Intermediary Procurer under the BESPA and similarly the Force Majeure affecting the BESSD under the BESPA shall be read as Force Majeure affecting the Intermediary Procurers under the BESSA.

I. EVENT OF DEFAULT AND THE CONSEQUENCES THEREOF

While detailed provisions with regard to the event of default of the concerned parties and its resulting consequences shall be detailed in the BESPA/BESSA, this clause lays down the broad principles of contractually dealing with the default of the BESSD and the Procurers (excluding the Intermediary Procurer).

1. BESSD Event of Default and the consequences thereof

a) In the event the BESSD fails to supply power in terms of the BESPA, or assigns or novates any of its rights or obligations contrary to the terms of the BESPA, or repudiates the BESPA, or effectuates a change in control or shareholding of its promoters in breach of the provisions of the BESPA, or commits any other acts or omissions or commissions, as laid down in the BESPA and is also unable to cure any of the aforesaid within the cure period, as may be provided in the BESPA, the BESSD shall be construed to be in default.

b) Upon being in default, the BESSD shall pay to the Procurer, damages, equivalent to energy payments corresponding to the declared minimum performance criteria as per the BESPA for 6 (six) months, or balance BESPA period whichever is less, for its contracted capacity. The Procurer shall have the right to recover the said damages by way of forfeiture of bank guarantee, if any, without prejudice to resorting to any other legal course or remedy.

c) In addition to the levy of damages as aforesaid, in the event of a default by the BESSD, following sequence of events will be followed:

i. Project lenders will have the first right of substitution of the BESSD, within a specified time period.

ii. In case the lender is unable to substitute the BESSD within the above specified timeline, the Procurer will have the right (but will not be obliged) to takeover the Project assets, by paying to the BESSD, a compensation as mutually decided by the Procurer and the lender.

iii. In case the Procurer chooses not to exercise the above option, or the Procurer and the lender are unable to come to an agreement the lenders may liquidate the Project assets and recover their dues, as the last resort.

2. Procurer Event of Default and the consequences thereof

a) If the Procurer is in default on account of reasons including inter-alia failure to pay the monthly and/or supplementary bills within the stipulated time period or repudiation of the BESPA, the defaulting Procurer shall, subject to the prior consent of the BESSD, novate its part of the BESPA/BESSA to any third party, including its Affiliates within the stipulated period. In this case, the Procurer shall pay amount equivalent to 3 (three) months of energy billing based on the declared availability, or balance BESPA period, whichever is less, for its contracted capacity, with the Project assets being retained by the BESSD, and exit from the BESPA/BESSA. In case of direct procurement by the Procurer from the BESSD, the above payment will be made by the Procurer to the BESSD. In case of procurement of power through an Intermediary Procurer, the above payment will be made by the End Procurer to the Intermediary Procurer.

b) In the event the novation of the BESPA is not acceptable to the BESSD, or if no offer of novation of BESPA is made by the defaulting Procurer within the stipulated period, then the BESSD may terminate the BESPA and choose to either continue operating the project by itself finding an alternate procurer or to discontinue the operation of the project. If the BESSD chooses to continue operating the project, the Procurer will pay to the BESSD, 'termination compensation' equivalent to 6 (six) months of energy billing corresponding to the declared availability, or balance BESPA period whichever is less, for its contracted capacity.

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c) If the BESSD decides to discontinue the operation of the Project, it may require the defaulting Procurer to make a payment of the 'termination compensation' which will be equivalent to the amount of the Debt due and 110% (one hundred and ten per cent) of the Adjusted Equity, less Insurance Cover if any.

d) In the scenario of procurement by more than one Procurer through an Intermediary Procurer under a single tender, the Intermediary Procurer may provide for suitable provisions to deal with default by one or more Procurers under their respective BESSAs.

e) In the event of termination of BESPA, any damages or charges payable to the STU/ CTU, for the connectivity of the plant, shall be borne by the Procurer.

Note: In all cases, the lenders may also step in where appropriate as provided in the financing documents.Further, in all cases, the defaulting Party will be required to pay the applicable compensation within 3 months from the due date of such payment, subsequent to which, the defaulting Party will be required to pay a monthly interest @1% of the compensation.

J. CHANGE IN LAW

1. In these Guidelines, the term 'Change in Law' shall refer to the occurrence of any of the following events, after the last date of the bid submission, which have a direct effect on the Project, leading to corresponding changes in the cost requiring change in tariff, and includes(i) a change in interpretation of any law by a competent court; or (ii) the enactment of any new law; or (iii) a change in any domestic tax, including duty, levy, cess, charge or surcharge by the Central Government, State Government or Union Territory administration leading to corresponding changes in the cost; or; or (iv) a change in any condition of an approval or license obtained or to be obtained for purchase, supply or transmission of electricity, unless specifically excluded in the agreement for the purchase, supply or transmission of electricity, which results in any change in the cost;. However, Change in Law/ Regulation shall not include (i) any change in taxes on corporate income or any change in any withholding tax on income or dividends, or (ii) change in respect of deviation settlement charges or frequency intervals by an Appropriate Commission. The term "law" in this provision, includes any Act, Ordinance, order, bye-law, rule, regulation, notification, for the time being in force, in the territory of India..
2. In the event a Change in Law results in any adverse financial loss/ gain to the BESSD/Procurer then, in order to ensure that the BESSD/Procurer is placed in the same financial position as it would have been had it not been for the occurrence of the Change in Law / Regulation, the BESSD/ Procurer shall be entitled to compensation by the other party, as the case may be. Compensation payment on account of such 'Change in Law' shall be determined and shall be effective from such date as may be decided by the Appropriate Commission.
3. **Compensation payable on account of Change in Law:**

a. In case of Change in Law taking place prior to commissioning of the Project, the compensation will be passed through on in the form of increase/decrease in the tariff, linked with increase/decrease in the Project cost, which will be automatically paid through the monthly energy billing. The pass through in this case shall be effective from date of commissioning of the Project. The bidding documents shall contain the appropriate formula/provision to calculate the applicable increase/decrease in the tariff.

b. In case of Change in Law taking place subsequent to commissioning of the Project capacity, and changes in taxes/duties/cess etc. are defined as a percentage or the ratio of the tariff, the changes will be automatically passed on as appropriate increment/decrement in the tariff, and will be paid through monthly energy billing.

c. In the above two cases, the pass through according to the formula stipulated in the BESPA, will come into effect automatically after 60 days of submission of the all the necessary documents by the affected party to substantiate its claim for relief under such change in law event.

d. Truing up of the calculations on account of the above Change in Law events will be done by the Appropriate Commission. In the event of any decision by the Appropriate Commission which modifies or cancels any changes in the tariff, recovery/additional payment of the amount already paid until then, will be done suitably.

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e. In case of Change in Law during the operational period of the Project, and where such change is not applicable as an automatic modification in the tariff, suitable compensation will be provided as decided by the Appropriate Commission.

f. In case a Change in Law results in delay in commissioning, where cause and effect between these two can be clearly established, the Procurer may provide suitable extension to financial closure and commissioning deadlines of the Project.

K. MINIMUM PAID UP SHARE CAPITAL TO BE HELD BY THE PROMOTER

1. The successful bidder, if being a single company, shall ensure that its shareholding in the SPV/ project company executing the BESPA shall not fall below 51% (fifty-one per cent) at any time prior to Commercial Operation Date (COD). In the event the successful bidder is a consortium, then the combined shareholding of the consortium members in the SPV/ project company executing the BESPA, shall not fall below 51% at any time prior to COD. Further, in case the Project is executed by the successful bidder itself, it shall ensure that the controlling shareholding of the bidding company/consortium remains unchanged until the COD.The successful bidder shall provide the information about its shareholding to the Procurer before signing of the BESPA with Procurer.
2. Any change in the shareholding after the COD can be undertaken under intimation to Procurer.
3. In the event the BESSDis in default to the lender(s), lenders shall be entitled to undertake "Substitution of Promoter" in concurrence with the Procurers.

L. CONSTRUCTION & PERFORMANCE MONITORING

All grid-connected projects, covered under these Guidelines, must install necessary equipment to continuously record the Project's performance. The BESSD will be required to submit this data to Authorities / Agencies as specified in the RfS Document, online for the entire duration of BESPA. In this regard, they shall also mandatorily grant access to Procurer and MNRE or any other designated agency, to the remote monitoring portal of the power plants on a 24×7 basis. Geo-tagging of the Projects shall be mandatory.

M. ROLE OF STATE NODAL AGENCIES AND OTHER FACILITATORS

The State Nodal Agencies appointed by respective State Governments will provide necessary support to facilitate the required approvals and sanctions in a time bound manner so as to achieve commissioning of the projects within the scheduled timeline. This may include facilitation in the following areas:

i. Co-ordination among various State and Central agencies for speedy implementation of projects.

ii. Support during commissioning of projects.

SECTION V: MISCELLANEOUS PROVISIONS

A. DEVIATION FROM PROCESS DEFINED IN THE GUIDELINES

In case there is any deviation from these Guidelines, the same shall be subject to prior approval by the Appropriate Government.

B. DISPUTE RESOLUTION MECHANISM

The Government of India can issue suitable orders providing for a dispute resolution mechanism at the Centre and request the State Government to consider such a mechanism at the State Level. These dispute Resolution Mechanisms will be additional forums beyond the provisions of the law and can be used by the relevant parties at their option.

C. APPLICABLE LAWS AND REGULATIONS

All activities / procurement being undertaken under these Guidelines will be subject to applicable laws and regulations of the Government, as amended from time to time.

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Appendix-1

Notes regarding timelines indicated at Clauses 1.4 and 1.5 of Section III of these Guidelines

a) Lease/Right to use tenure should ideally be at least concurrent with Term of the BESPA. However, lesser lease period may be allowed depending on the applicable laws in the respective States. In such cases, failure by government entities to extend the land lease/ right to use should be included as a Force Majeure event that would require compensation to be paid by the Procurer to the BESSD, provided the above event results in the Project not being allowed to operate.

b) Payment schedule for payment of land lease/rental charges by the BESSD, will be clearly specified in the RfS/BESPA documents and changes from the above schedules will not be considered as a deviation from these Guidelines that requires approval.

c) In case of site identified by the Procurer, if a particular milestone is not within the operational domain of the Procurer, the Procurer will on best endeavour basis, support the facilitation in securing necessary approval from the concerned authorities within the above timelines.

d) In case of Projects being set up in an RE Park, the timelines for fulfilment of obligations by the RE Park Developer as identified above may be required to be aligned with the timelines as provided in the respective RE Park Guidelines issued by the Government of India.

e) In case of Projects being set up in an RE Park, the above timelines will form part of the Land Lease Agreement/Right to Use Agreement to be executed between the BESSD and Park Developer. There will be another Agreement executed between the two entities, called as "Implementation Support Agreement (ISA)", which will clearly specify, among other items, roles and responsibilities of each Party of the Agreement. The facilities to be provided by the Park developer in line with the applicable RE Park Guidelines will be clearly identified in the above Agreement, and milestones of essential and non-essential infrastructure activities to be undertaken, along with additional payment terms, if any, to be indicated without any ambiguity.

f) In both the above scenarios, delay in fulfilment of any milestone under the obligation of the Procurer/Park Developer, will result in suitable extension of BESPA signing, FC and SCD deadlines. The same will be suitably brought out in the RfS, BESPA, ISA and Land Lease Agreements.

g) In case of delay in payment by the BESSD towards its obligations, the respective Agreements will stipulate the applicable liquidated damages to be levied on the BESSD.

h) In case of delay in signing of any Agreement and/or delay in making payments due to the reasons solely attributable to the BESSD, there will not be any extension in the Project milestones.

Appendix-2

Technical Parameters of BESS, BESS Characterization and Performance Parameters

A. Codes and Standards

The BESS shall comply with the following Codes and Standards or equivalent Indian Standards, as applicable.

Standard	Description	Certification Requirements
IEC 62485-2	Safety requirements for secondary batteries and battery installations - to meet requirements on safety aspects associated with the erection, use, inspection, maintenance and disposal: Applicable for Lead Acid and NiCd / NiMH batteries	Applicable only for Lead Acid and NiCd / NiMH batteries
UL 1642 or UL 1973, Appendix E (cell) or IEC 62619 (cell) + IEC 63056 (cell)	Secondary cells and batteries containing alkaline or other non-acid electrolytes - Safety requirements for secondary lithium cells and batteries, for use in industrial applications	Required for Cell
UL 1973 (battery) or (IEC	Batteries for Use in Stationary, Vehicle	Either UL 1642 or

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62619 (battery) + IEC 63056 (battery))	Auxiliary Power and Light Electric Rail (LER) Applications / Secondary cells and batteries containing alkaline or other non-acid electrolytes - Safety requirements for secondary lithium cells and batteries, for use in industrial applications	UL1973 or (IEC 62619 + IEC 63056) for the Battery level
IEC 62281 / UN 38.3	Safety of primary and secondary lithium cells and batteries during transport: Applicable for storage systems using Lithium Ion chemistries	Required for both Battery and Cell.
IEC 61850/ DNP3	Communications networks and management systems. (BESS control system communication)	
UL 9540 or (IEC TS 62933-5-1 + IEC 62933-5-2)	Electrical energy storage (EES) systems - Part 5-1: Safety considerations for grid-integrated EES systems – General specification / Standard for Energy Storage Systems and Equipment	Either UL9540 or (IEC 62933-5-1 + IEC 62933-5-2) is required for BESS system level
Power Conditioning Unit Standards for BESS		
IEC 62909-1	Bi-directional grid connected power converters - Part 1: General requirements	
IEC 62909-2 (if applicable)	Bi-directional grid-connected power converters - Part 2: Interface of GCPC and distributed energy resources	
IEC 61683 Ed.1	Photovoltaic systems - Power conditioners - Procedure for measuring efficiency	
IEC 61000-6-2 Ed. 2	Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity standard for industrial environments	
IEC 61000-6-4 Ed. 2.1	Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments	
IEC 62116 Ed. 2	Utility-interconnected photovoltaic inverters - Test procedure of islanding prevention measures	
IEC 60068-2-1:2007	Environmental testing - Part 2-1: Tests - Test A: Cold	
IEC 60068-2-2:2007	Environmental testing - Part 2-2: Tests - Test B: Dry heat	
IEC 60068-2-14:2009	Environmental testing - Part 2-14: Tests - Test N: Change of temperature	
IEC 60068-2-30:2005	Environmental testing - Part 2-30: Tests - Test Db: Damp heat, cyclic (12 h + 12 h cycle)	

B. General Specifications

1. **Identification and Traceability:** Cells/Racks/Packs Assembly shall meet seismic requirement for the plant location of the BESS. Labelling of cells/batteries shall include manufacturer's name, cell type, name-plate rating, date of manufacture and date of expiry of parts and labour warranty.
2. **Other Sub-systems/Components:** Other subsystems/components used in the BESS must also conform to the relevant international/national Standards for Electrical Safety besides that for Quality required for ensuring Expected Service Life and Weather Resistance.
3. **Fire Protection:** The BESSD shall design and install a fire protection system that conforms to national and local codes. The fire protection system design and associated alarms shall take into account that the BESS will be unattended at most times. For high energy density technologies, the BESSD shall also obtain thermal runaway characterization of the battery storage systems.
4. **Authorized Test Centres:** Batteries/ Power Conditioning Units deployed in the power plants must have valid test certificates for their qualification as per above specified IEC/ BIS Standards

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by one of the ILAC member signatory accredited laboratories. In case of module types/ BESS/equipment for which such Test facilities may not exist in India at present, test certificates from reputed ILAC Member body accredited Labs abroad will be acceptable.

5. **Warranty:** BESSD shall procure performance guarantees to ensure minimum performance levels for predefined application(s) as per the terms of the RfS. The Warranty shall clearly indicate life expectancy given discharge profiles provided for the application.

C. Performance Monitoring

As part of the performance monitoring, the following shall be carried out:

a. The BESSD must install necessary equipment to continuously measure BESS operating parameters (including but not limited to voltage, current, ambient conditions etc.) as well as energy input into and energy output from the BESS along with Metering arrangement in accordance with extant regulations. They will be required to submit this data to the concerned authorities/organizations on line and/or through a report on regular basis every month for the entire duration of contract.

b. The SPDs shall provide access to the concerned authorities/organisations or their authorized representatives for installing any additional monitoring equipment to facilitate on-line transfer of data.

c. All data shall be made available as mentioned above for the entire duration of the Contract.

d. The plant SCADA should be OPC version 2.0a (or a later version including OPC UA) compliant and implement appropriate OPC-DA server as per the specification of OPC Foundation. All data should be accessible through this OPC server for providing real time online data (BESS parameters) to the concerned authorities/organisations. This time series data shall be available from the Project SCADA system to facilitate monitoring and should include among others as stated before, parameters to facilitate daily, monthly and annual report for performance monitoring.

e. Web-based monitoring should be available, which should not be machine dependent. The web-based monitoring should provide the same screens as available in the plant. Also, it should be possible to download reports from a remote web-client in PDF or Excel format.

D. Safe Disposal of unit Batteries from the BESS

The Developer will comply with the requirements under Hazardous & other Waste (Management and Transboundary Movement) Rules, 2016, as amended from time to time, as applicable. The BESSD shall ensure that all Unit Battery modules from the plant after their 'end of life' (when they become defective/ non-operational/ non-repairable) are disposed in accordance with the "e-waste (Management and Handling) Rules, 2016" notified by the Government and as revised and amended from time to time and Battery Waste Management Rules, as and when notified by the Government of India.

GHANSHYAM PRASAD, Jt. Secy.

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and Published by the Controller of Publications, Delhi-110054.

SURENDER MAHADASAM
Digitally signed by SURENDER MAHADASAM
Date: 2022.03.11 12:58:41 +05'30'

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Minutes of the Evaluation meeting held on 15/04/2024 in ANERT Conference Hall (Online) chaired by CEO ANERT for the EoI called for the Selection of Agency for Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram

The live Demonstration of the EoI for the Selection of Agency for Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram was held Online chaired by CEO ANERT. The 4 bidders, who have met the Pre-Qualification conditions were provided a 15-minute slot for demonstration.

A. M/s Hykon India Limited

The agency showcased their 40kVA Electronic Generator, which is under trial run at their Thrissur Factory. The system proposed don't have bi-directional capabilities as required for a BESS system and they assured if provided a chance, being an OEM from Kerala, they would be able to develop the required system. CEO ANERT mentioned that, Since the EoI called for is for Supply of a commercially available product and not an R&D project, the same cannot be considered. The agency could continue their R&D on the product and possibly participate with a final product in future tenders.

B. M/s Solgen Energy Pvt Ltd

They have quoted products of OEM - Ningbo Deye ESS International Trade Co., Ltd. The products offered is a Hybrid Inverter with LFP battery bank, which functions as separate units and the bidder propose to install these in a container-based solution having dedicated HVAC features for cooling and protection. They were unable to showcase any live product and only had commercial videos prepared for the product, which are not available in India.

C. M/s POM Systems & Services Pvt Ltd

The agency proposed a system of OEM - M/s. Hebei Ecube New Energy Technology Co. Ltd. The trial run of the product is being done at their factory Premise and showcased the various use cases of a BESS system viz Frequency Regulation, VAR compensation, Exporting Power to the utility grid from Battery, Power load from Solar, and Battery/Grid as per settings done by the user etc. They even did a fast charging of EV from a 30kW CCS2 machine directly from Battery alone and from Solar supported

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along with grid power. The provision for capacity addition of PCU/PCS is also available within the proposed system without any major modifications. The battery bank can also be added on as required in the future making it a future ready fully modular system.

D. M/s Solar Systems

They have quoted products of OEM - Ningbo Deye ESS International Trade Co., Ltd. The agency didn't join the presentation and hence cannot be considered for evaluation.

Narendra Nath Veluri IFS,
CEO ANERT

http://www.spd.kerala.gov.in/docs/go/2508_b2_2013_spd.pdf

221/C4/B
29/11/13

GOVERNMENT OF KERALA

Stores Purchase (B) Department

CIRCULAR

No.2508/B2/2013/SPD Dated, Thiruvananthapuram, 28.10.2013.

Sub:- Stores Purchase Department- Acceptance of single bid - guidelines issued - reg.

Many instances have come to the notice of the Government as to whether the purchasing authority can accept a single bid ie, when , one and only one bid is received at the closing time & date of open tender. In such a situation the following guidelines are to be observed by all purchasing officers, in the best interest of public procurement.

i. In general, single bid or tenders are not acceptable in the first instance.

ii. If there is only one bid even after re-tendering, there is need for detailed justification to accept the single tender or single bid with the approval from the competent authority.

iii. There should be no negotiation with the bidder at all. However, in cases where a decision is taken to go for re-tendering due to the unreasonableness of the quoted rates, but the requirements are urgent and a re-tender for the

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entire requirement would delay the availability of the items, thus jeopardizing the essential operations, maintenance and safety, negotiations would be permitted with L1 bidder(s)/single bidder for the supply of a bare minimum quantity. The balance quantity should however be procured expeditiously through a re-tender, following the normal tendering process.

In view of the guidelines of Central Vigilance Commission and various rulings of the Hon'ble Supreme Court and all State High Courts, all purchasing officers are directed that single bid /single tender shall be accepted only after re-tendering and subject to a detailed justification in support of acceptance.

Subhash John Mathew,
Additional Secretary.
Stores Purchase Department.

Forwarded/By Order

Rahmi .CV

Section Officer

To

The Additional Chief Secretaries/Principal Secretaries/Secretaries/
Special Secretaries.
The Secretary, Kerala Legislature Secretariat, Thiruvananthapuram
(with C/L)
All Heads of Departments/Offices/Public Sector Undertakings/
Autonomous bodies/Local Self Government Institutions/Universities etc.
The Registrar, High Court, Ernakulam(with C/L)
The Advocate General, Ernakulam(with C/L)

..3.

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The Registrar, Kerala Administrative Tribunal(with C/L)
All Enquiry Commissioners and Special Judges Court, EC & SJ Courts.
The Vigilance Tribunal, Kozhikode, Ernakulam, Thiruvananthapuram & Kottayam.
The Director of Printing, Thiruvananthapuram.
The Principal Accountant General (Audit), Kerala, Thiruvananthapuram.
The Accountant General (A & E) Kerala, Thiruvananthapuram.
Information & Public Relations Department (for publishing in the Print Media)
Information & Public Relations Department- Web & New Media (for hosting in the Stores Purchase Department Website, www.spd.kerala.gov.in)
All Departments in the Secretariat including Law and Finance.
The Stores Purchase (B, IW-I & IW-II)Departments.
The C-DIT, GORKY BHAVAN,
Van Ross Jn., Thiruvananthapuram.(for hosting in the web site www.spd.kerala.gov.in)
Stock File/Office Copy

Copy to: 1) PA to Additional Chief Secretary, Finance & Stores Purchase Department.
2) CA to Additional Secretary, Stores Purchase Department.

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सत्यमेव जयते

PRINCIPAL ACCOUNTANT GENERAL (AUDIT-II), KERALA

लोकहितार्थ सत्यनिष्ठा
Dedicated to Truth in Public Interest

Local Audit Party : CA Party 18
Auditee Unit Name : Agency for Non-Conventional Energy and Rural Technology (ANERT)
Dated : 25-Sep-23

Audit observation reference : #2 (OBS-985872)

Subject: Electrification of Thazhe Thuduki Tribal hamlet

Based on an inspection conducted by District Engineer Palakkad at THAZHAE THUDUKKI TRIBAL HAMLET " in the Bhavani range under the Silent Valley Forest range, Palakkad, Project Engineer ANERT (December 2021)proposed a MicroGrid of 65 KW for 44 Tribal Hamlets in December 2021. The estimated cost for the proposed 65 KW solar plant was ₹1.65 crore.

ANERT invited Request for Proposal for the Survey, Design, Supply, Installation, Testing and Commissioning with remote monitoring system of 50 kW Micro Grid system (Solar -Wind Hybrid Power Plant with battery backup) at Thazhae Thudukki Tribal Hamlet on 21 December 2021. ANERT amended the tender condition and insisted that out of the total 50kW Hybrid System, one of the sources of Alternate Renewable Energy should be minimum of 10 *per cent.*

As against the tender, two bidders - M/s Windstream Energy Technology private Limited and M/s Precis Accubiz submitted bids. Bid submitted by M/s Precis Accubiz was rejected under technical evaluation due to non- submission of relevant documents. The work was awarded (19 January 2022) to M/s Windstream for an amount of ₹ 1.43 crore . M/s Windstream completed the work in March 2023. Cost of the work was met from plan fund of ANERT for the period 2022-23.

In this connection Audit observed the following:

As per the tender,

- Prices quoted by the Bidder shall be fixed during the bidder's performance of the contract and not subject to variation on any account. A bid submitted with an adjustable/ variable price quotation will be treated as non - responsive and rejected.
- The rate quoted should be all inclusive including delivery of materials, the cost of materials and labour for the civil works, Installation and Commissioning, 5-year Warranty, fee for approval from the Electrical Inspectorate if any, Solar Meter, Remote monitoring facility, Insurance, GST and all other expenses deemed necessary for the proper implementation of the conditions and specification in-corporated in the tender.
- Due to its location in designated forest area, the site is slightly difficult for its approach for conventional electrification

However, Governing Body in its meeting held on 19 July 2023 directed to put up a comprehensive proposal to Government for reimbursement of additional expenditure of ₹27.66 lakh incurred by M/s Windstream Energy Technology private Limited. As per the agenda notes, reason for additional expenditure include additional manpower, engagement of tribes, non- availability of labour etc. Recommendation to sanction additional expenditure lacked justification as the same is against the tender conditions. Further, studying the site conditions before submission of bid is a prerequisite in any tender.

2. Out of the two bids received, bid submitted by M/s Precis Accubiz was rejected due to non qualification in the technical evaluation. ANERT has not explored the possibility of obtaining competitive rate by retendering the work.
3. Reason for including the wind component may be stated to Audit. Details of wind data in the specific locality, feasibility study, if any, conducted with regard to wind energy in the area may also be furnished to Audit.

Senior Audit Officer

Agency for Non-Conventional Energy and Rural Technology (ANERT)

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Kerala Tenders

eTendering System Government of Kerala

Tender Summary Reports

Print

Organisation Chain :	ANERT
Tender ID :	2024_ANERT_664557_2
Tender Ref No :	ANERT-TECH/41/2024-PE1(RTS)
Tender Title :	Re-Invitation of Expression of Interest (EoI) for the Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram

Bids List

S.No	Bid Number	Bidder Name	Submitted Date	Status	Remarks	Status Updated On
1	1876385	HYKON INDIA LIMITED	31-May-2024 01:23 PM	Admitted-Fee/PreQual/Technical		31-May-2024 04:01 PM
2	1875604	POM SYSTEMS AND SERVICES PVT LTD	30-May-2024 05:37 PM	Admitted-Fee/PreQual/Technical		31-May-2024 04:01 PM
3	1876120	SOLAR SYSTEMS	29-May-2024 03:10 PM	Admitted-Fee/PreQual/Technical		31-May-2024 04:01 PM

Technical Bid Opening Summary

Type :	**Technical**
Summary :	**Bids are opened for technical evaluation**
Updated By :	**Vinay P**
Updated On :	**31-May-2024 04:01 PM**
Document :	None

Tendering Inviting Authority

eTendering System Government of Kerala
Created By: Vinay P
Created Date/Time: 07-Jun-2024 04:56 PM
Tender Title: Re-Invitation of Expression of Interest (EoI) for the Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram
Tender ID: 2024_ANERT_664557_2

Tender Inviting Authority: CEO, ANERT

Name of Work: Re-Invitation of Expression of Interest (EoI) for the Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram

ANERT Ref No: ANERT-TECH/41/2024-PE1(RTS)

SCHEDULE OF WORK / ITEM(S)

Sl.No	Description of Work / Item(s)	No.of Qty	POM SYSTEMS AND SERVICES PVT LTD(GSTN-NA)--1875604		SOLAR SYSTEMS(GSTN-NA)--1876120		L1 Rate With Tax	L1 Bidder With Tax
			Rate Without Tax	Rate With Tax	Rate Without Tax	Rate With Tax		
1.00	Re-Invitation of Expression of Interest (EoI) for the Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram The rate quoted should be inclusive of all scopes following all the specifications mentioned as per the tender.							
1.01	Rate for BESS system at ANERT HQ, Thiruvananthapuram, Kerala	100	12660000	14938800	12900000	15222000	14938800	POM SYSTEMS AND SERVICES PVT LTD
	Total in Figures		12660000	14938800	12900000	15222000		

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Item Wise BoQ

Tender Inviting Authority: CEO, ANERT

Name of Work: Re-Invitation of Expression of Interest (EoI) for the Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram

ANERT Ref No: ANERT-TECH/41/2024-PE1(RTS)

Name of the Bidder/ Bidding Firm / Company :	SOLAR SYSTEMS

(This BOQ template must not be modified/replaced by the bidder and the same

NUMBER #	TEXT #	NUMBER #	NUMBER #	NUMBER
Sl. No.	Item Description	Capacity (kW)	Basic Rate Rs. P	Transportation Charges Rs. P
1	2	4	7	16
1	**Re-Invitation of Expression of Interest (EoI) for the Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram** **The rate quoted should be inclusive of all scopes following all the specifications mentioned as per the tender.**			
1.01	Rate for BESS system at ANERT HQ, Thiruvananthapuram, Kerala	100	**9000000.00**	**100000.00**
Total in Figures				
Quoted Rate in Words				

PRICE SCHEDULE

should be uploaded after filling the relevent columns, else the bidder is liable to be rejected for this tender. Bidders are allowed to enter the Bidder Name and Values only)

NUMBER	NUMBER	NUMBER	NUMBER	NUMBER	NUMBER	NUMBER	NUMBER	NUMBER #
Civil & associated Electrical works Rs. P	Balance of System Rs. P	Installation and Commissioning Charges Rs. P	Insurance *(From Material dispatch till 10 years warranty period)* Rs. P	Warranty Charges for 7 years Rs. P	AMC Charges for 3 years post warranty Rs. P	Any site specific additional expense required for the successful commissioning of the plant Rs. P	GST Amount in Rs. P	TOTAL AMOUNT excluding taxes in Rs. P
17	20	21	22	23	26	27	41	11
800000.00	250000.00	250000.00	500000.00	1200000.00	600000.00	200000.00	2322000.00	12900000.00
								0.00

INR Zero Only

NUMBER #	TEXT #
TOTAL AMOUNT including taxes Rs. P	TOTAL AMOUNT In Words
12	13
15222000.00	INR One Crore Fifty Two Lakh Twenty Two Thousand and Paise Zero Zero Only
0.00	INR Zero Only

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Item Wise BoQ

Tender Inviting Authority: CEO, ANERT

Name of Work: Re-Invitation of Expression of Interest (EoI) for the Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram

ANERT Ref No: ANERT-TECH/41/2024-PE1(RTS)

Name of the Bidder/ Bidding Firm / Company :	POM SYSTEMS AND SERVICES PVT LTD

PRICE SCHE

(This BOQ template must not be modified/replaced by the bidder and the same should be uploaded after filling the relevent colum

NUMBER #	TEXT #	NUMBER #	NUMBER #	NUMBER	NUMBER	NUMBER
Sl. No.	Item Description	Capacity (kW)	Total O&M charges for 1st year Rs. P	Total O&M charges for 2nd year Rs. P	Total O&M charges for 3rd year Rs. P	Total O&M charges for 4th year Rs. P
1	2	4	7	16	17	20
1	Re-Invitation of Expression of Interest (EoI) for the Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram Operation & Maintenance Charges The rate entered should be inclusive of all scopes following all the specifications mentioned as per the tender and inclusive of GST					
1.01	Rate for BESS system at ANERT HQ, Thiruvananthapuram, Kerala	100	189900.00	200724.00	212166.00	224259.00
Total in Figures						
Quoted Rate in Words						

DULE

ns, else the bidder is liable to be rejected for this tender. Bidders are allowed to enter the Bidder Name and Values only)

NUMBER	NUMBER	NUMBER	NUMBER	NUMBER	NUMBER	NUMBER #	TEXT #
Total O&M charges for 5th year Rs. P	Total O&M charges for 6th year Rs. P	Total O&M charges for 7th year Rs. P	Total O&M charges for 8th year Rs. P	Total O&M charges for 9th year Rs. P	Total O&M charges for 10th year Rs. P	TOTAL AMOUNT including taxes Rs. P	TOTAL AMOUNT In Words
21	22	23	26	27	41	12	13
237042.00	250553.00	264835.00	279930.00	295886.00	312752.00	2468047.00	INR Twenty Four Lakh Sixty Eight Thousand &Forty Seven and Paise Zero Zero Only
						0.00	INR Zero Only

INR Zero Only

Projects (ANERT) <projects@anert.in>

ANERT - Tender ID: - 2024_ANERT_664557_2 - Component wise Split up Cost - reg

GM Pompower <gm@pompower.in> Wed, Jun 12, 2024 at 9:20 AM
To: ANERT Projects <projects@anert.in>
Cc: Chief Technical Manager ANERT <ctm@anert.in>, Kala KG <kala@anert.in>, "I.B.Rao" <ibrao@pompower.in>

Dear Sir,

Please find the below split-up prices. Conversion rate calculated is at Rs.85/-

Description	USD	Qty	INR	Total
Power Management System and aligned hardwares for 100 kW PCS and 150 kWHr LI-Ion Batteries extendable up to 200 kW/225 kW with it's operational fees, handling charges and license	8000	1	680000.00	680000.00
50 kW PCS Modules	6500	2	552500.00	1105000.00
100 kW MPPT	2800	1	238000.00	238000.00
100 kW STS	2500	1	212500.00	212500.00
100 kW Isolation Transformer	4300	1	365500.00	365500.00
Switchgear and cabling expandable up to 200 kW / 225 kWHr	2000	1	170000.00	170000.00
HVAC and Fire Unit	2500	1	212500.00	212500.00
Structural design of the container extendabkle up to 200 kW	4800	1	408000.00	408000.00
Cabinet with MS stand to withstand 5 ton weight	1400	1	119000.00	119000.00
Special Transporation of Lithium Battery based ESS	6800	1	578000.00	578000.00
51.2 V 100 Ah Battery Modules with PMS Hardware	1725	30	146625.00	4398750.00
Incidential Charges	6000	1	510000.00	510000.00
Total Cost				8997250.00

Regards,

K.G. Balasankar Menon
General Manager
POM Systems & Services Pvt.Ltd
[Quoted text hidden]

THE QUALITY CHOICE
FOR YOUR
POWER NEEDS

POM Systems & Services Pvt. Ltd.

Ref: POM/07/2024/KGB/Q-012
Date: 22/05/2024

To,
CTO,
ANERT
Law College Road, Vikas Bhavan. PO,
Thiruvananthapuram - 695 033, Kerala

Attn: Mr.Aneesh S Prasad
Ref:- ANERT-TECH/41/2024-PE1(RTS)

Sub: - Price Negotiation on Expression of Interest (EoI) for the Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram

Dear Sir/Madam ,
Greetings from POM POWER....!!

This clarifications are in the reference to above cited subject, we thankful for your valued inquiry on us, we hereby pleased to submit you our best revised Techno-Commercial offer.

We are willing to reduce the **total price to Rs.1,33,00,000 all inclusive**.
The break-up is as follows;

Sl No	Capacity	Quoted Price	Final Price
1	Basic Price	9000000	**9000000**
2	Transportation Charges	60000	**Absorbed**
3	Civil & Associated Electrical works	800000	**400000**
4	Balance of System	120000	**Absorbed**
5	Installation and Commissioning Charges	200000	**200000**
6	Insurance (from Materiel dispatch till 10 years warranty period)	480000	**480000**
7	Warranty Charges for 7 years	1200000	**400000**
8	AMC Charges for 3 years post warranty	600000	**600000**
9	Any site specific aditional expense required for the successful commissioning of the plant	200000	**200000**

Marketing Office: No-2, D-01, 1st Floor, Solus Jain Heights, 1st Cross JC Road Opposite to Bangalore Stock Exchange, Bengaluru-560027. Ph.+91 9663370222, E-Mail: info@pompower.in
Registered Office & Factory: No-75, 6th Main 3rd Phase, Peenya Industrial Area, Karnataka, Bengaluru-560058. Ph.080-28372296 / +91 9844034106, E-mail: pompower@pompower.in

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THE QUALITY CHOICE
FOR YOUR
POWER NEEDS

POM Systems & Services Pvt. Ltd.

	Total Amount excluding Taxes in	12660000	**11280000**
	GST Amount	2278800.0	**2030400**
	Total Amount	14938800	**13310400**

We sincerely trust that the above matches your stringent techno commercial requirement.

If you required any of the further information / clarification in this regard, please feel free to contact undersigned.

Assuring you our best and prompt support all the time.

For **POM Systems & Services Private Limited**

K G Balasankar Menon
General Manager
Email id – gm@pompower.in
Mobile no- 790 724 1109

AGENCY FOR NEW & RENEWABLE ENERGY RESEARCH AND TECHNOLOGY (ANERT)
Department of Power, Government of Kerala
Thiruvananthapuram, Kerala – 695 033;
www.anert.gov.in , projects@anert.in

E-EOI DOCUMENT

Re-Invitation of Expression of Interest (EoI) for the Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram

Ref. No.: ANERT-TECH/41/2024-PE1(RTS)

PART – 1: GENERAL CONDITIONS

Date of Publishing of Bids : - **21/05/2024**

Last Date of Submission of Bids : - **31/05/2024**

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EOI NOTICE

EoIs in two cover system with Earnest Money Deposit (EMD) are invited from reputed Consultant Agencies / Consultants, with relevant experience in Government and Management Consultancy services in the ***Re-Invitation of Expression of Interest (EoI) for the Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram***. The e-EoI documents can be downloaded from the e-Tendering website of Govt. of Kerala – www.etenders.kerala.gov.in. The EoI form will not be available in any other form.

Thiruvananthapuram CEO

21/05/2024

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ABSTRACT

Ref. No.	**ANERT-TECH/41/2024-PE1(RTS)**
Name of Work	**Re-Invitation of Expression of Interest (EoI) for the Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram**
Download of EoI Form	http://www.etenders.kerala.gov.in
Last date of submission of bids	31/05/2024 @ 1.00 PM
Date and Time of opening the bids	31/05/2024 @ 2.00 PM
Cost of EoI form	**Rs. 1,18,000/- (Including GST)**
Period of Warranty	7 Years from the date of Commercial operation
Availability of EoI Forms	Website http://www.etenders.kerala.gov.in
Place of opening of EoI	Office of CEO, ANERT Law College Road, Vikas Bhavan. PO, Thiruvananthapuram - 695 033, Kerala

Thiruvananthapuram
21/05/2024

Sd/-
CEO

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GENERAL TERMS AND CONDITIONS FOR E-PROCUREMENT

This e-EoI is being published by ANERT inviting Re-Invitation of Expression of Interest (EoI) for the Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram. The EoI is invited in two cover system through e-procurement portal of Government of Kerala (www.etenders.kerala.gov.in). The Prospective bidders willing to participate in this EoI shall necessarily register themselves with above mentioned e-procurement portal.

The EoI timeline is available in the critical date section of this EoI published in www.etenders.kerala.gov.in

1. ONLINE BIDDER REGISTRATION PROCESS:

1.1 Bidders should have a Class III or above Digital Signature Certificate (DSC) to be procured from any Registration Authorities (RA) under the Certifying Agency of India. Details of RAs will be available on www.cca.gov.in. Once, the DSC is obtained, bidders have to register on www.etenders.kerala.gov.in website for participating in this EoI. Website registration is a one-time process without any registration fees. However, bidders have to procure DSC at their own cost.

1.2 Bidders may contact e-Procurement support desk of Kerala State IT Mission over telephone at 0471- 2577088, 2577188, 2577388 or 0484 – 2336006, 2332262 - through email: helpeEoI@gmail.com/eEoIshelp@kerala.gov.in for assistance in this regard

2. ONLINE PROCESS:

The EoI process shall consist of the following stages:

i. Downloading of EoI document: The EoI document will be available for free download on www.etenders.kerala.gov.in. However, EoI document fees shall be payable at the time of bid submission as stipulated in this EoI document.

ii. Pre-bid meeting: (will be updated in ANERT website – www.anert.gov.in)

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iii. Publishing of Corrigendum: All corrigenda shall be published on www.etenders.kerala.gov.in and shall not be available elsewhere.

iv. Bid submission: Bidders have to submit their bids along with supporting documents to support their eligibility, as required in this EoI document on www.etenders.kerala.gov.in. No manual submission of bid is allowed and manual bids shall not be accepted under any circumstances.

v. In case bidder encounters any technical issues pertaining to e-Procurement system while acting on the EoI, computer screen shot of the error message with date & time stamp on the web-browser along with the query shall be e-mailed by the bidder to the help desk **(helpetenders@gmail.com/ etendershelp@kerala.gov.in)**, for resolution of the problem. At the same time, problem must be intimated to the concerned EoI Inviting Authority via email.

vi. The time taken to ascertain, evaluate and suggest a solution for the problem reported by bidder may vary from case to case. Hence bidders are advised to submit the bid **at least 2 working days before the due date** and time of bid submission to avoid any last-minute issues that may come up.

vii. Opening of Bid and Bidder short-listing: The single cover bids will be opened, evaluated and shortlisted as per the eligibility. Failure to submit the required documents online will attract disqualification. Price bids of the eligible bidder's will open the same day of opening and the work will be awarded.

3. DOCUMENTS COMPRISING BID:

3.1 (a) The First Stage - Pre- Qualification cum Technical Bid with Commercial terms

Technical proposal shall contain the scanned copies of the following documents which every bidder has to upload:

Cover 1 shall contain, Part-I (this document in PDF form)/scanned copies of:

i. EoI documents downloaded (signed with office seal)

ii. Summary of Bid qualification requirement (Annexure A)

iii. Undertaking of the agency in the prescribed format (Annexure B) on Govt. of Kerala stamp paper worth Rs.200/-

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iv. Power of Attorney for the authorised signatory to sign the documents on behalf on the Consultancy firm.
v. Copy of Registration Certificate of the bidder firm
vi. Copy of GST Certificate
vii. Copy of PAN card / TAN
viii. Documents proving Previous Experience and Pre-Qualification
ix. Declaration by the bidder (format as in Annexure – D)
x. Declaration of relationship with ANERT employee (format as in Annexure - E)
xi. Undertaking for No Blacklisting & No Banning (Annexure - F)

3.2 The department doesn't take any responsibility for any technical snag or failure that has taken place during document upload.

4. DOCUMENT FEES

4.1 The Bidder shall pay a fee of Rs. 50,000/-. MSMEs, MSEs or NSIC registered agencies are exempted from payment of this fee.

4.2 Online Payment modes: The fees can be paid in through e-Payment facility provided by the e-Procurement system. Bidders can make payment only via Internet banking facility.

State Bank of India Multi Option Payment System (SBI MOPS Gateway): Bidders are required to avail Internet Banking Facility in any of below banks for making EoI remittances in eProcurement System.

A) Internet Banking Options (Retail)			
1	Allahabad Bank	32	Kotak Mahindra Bank
2	Axis Bank	33	Lakshmi Vilas Bank
3	Andhra Bank	34	Mehsana Urban Co-op Bank
4	Bandan Bank	35	NKGSB Co-operative Bank
5	Bank of Bahrain and Kuwait	36	Oriental Bank of Commerce
6	Bank of Baroda	37	Punjab and Maharashtra Cooperative Bank
7	Bank of India	38	Punjab National Bank
8	Bank of Maharashtra	39	Punjab and Sind Bank

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9	Bassein Catholic Co-operative Bank	40	RBL Bank
10	BNP Paribas	41	Saraswat Cooperative Bank
11	Canara Bank	42	ShamraoVithal Cooperative Bank
12	Catholic Syrian Bank	43	South Indian Bank
13	Central Bank of India	44	Standard Chartered Bank
14	City Union Bank	45	State Bank of India
15	Corporation Bank	46	Syndicate Bank
16	Cosmos Bank	47	Tamilnad Mercantile Bank
17	DCB Bank	48	Tamilnadu Cooperative Bank
18	Dena Bank	49	The Kalyan Janata Sahakari Bank
19	Deutsche Bank	50	TJSB Bank
20	Dhanalaxmi Bank	51	UCO Bank
21	Federal Bank	52	Union Bank of India
22	HDFC Bank	53	United Bank of India
23	ICICI Bank	54	Vijaya Bank
24	IDBI Bank	55	YES Bank
25	Indian Bank		
26	Indian Overseas Bank		
27	IndusInd Bank		
28	Jammu & Kashmir Bank		
29	Janata Sahakari Bank		
30	Karnataka Bank		
31	Karur Vysya Bank		
B) Internet Banking Options (Corporate)			
1	Bank of Baroda	21	Laxmi Vilas Bank
2	Bank of India	22	Oriental Bank of Commerce
3	Bank of Maharashtra	23	Punjab & Maharashtra Coop Bank
4	BNP Paribas	24	Punjab & Sind Bank
5	Canara Bank	25	Punjab National Bank
6	Catholic Syrian Bank	26	RBL Bank

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7	City Union Bank	27	Shamrao Vitthal Co-operative Bank
8	Corporation Bank	28	South Indian Bank
9	Cosmos Bank	29	State Bank of India
10	Deutsche Bank	30	Syndicate Bank
11	Development Credit Bank	31	UCO Bank
12	Dhanalaxmi Bank	32	Union Bank of India
13	Federal Bank	33	UPPCL
14	HDFC Bank	34	Vijaya Bank
15	ICICI Bank	35	Axis Bank
16	Indian Overseas Bank		
17	Janta Sahakari Bank		
18	Jammu & Kashmir Bank		
19	Karur Vysya Bank		
20	Kotak Bank		

During the online bid submission process, bidder shall select ***SBI MOPS*** option and submit the page, to view the ***Terms and Conditions*** page. On further submitting the same, the e-Procurement system will re-direct the bidder to MOPS Gateway, where two options namely ***SBI*** and ***Other Banks****** will be shown. Here, Bidder may proceed as per below:

a) *SBI Account Holders* shall click ***SBI*** option to with its Net Banking Facility., where bidder can enter their internet banking credentials and transfer the EoI Fee and EMD amount.

b) *Other Bank Account Holders* may click ***Other Banks*** optionto view the bank selection page. Here, bidders can select from any of the 54 Banks to proceed with its Net Banking Facility, for remitting EoI payments.

**Transaction Charges for Other Banks vide SBI Letter No. LHO/TVM/AC/2016-17/47 – 1% of transaction value subject to a minimum of Rs. 50/- and maximum of Rs. 150/-*

** Bidders who are using Other Banks option under SBI MOPS Payment Gateway, are advised by SBI to make online payment 72 hours in advance before EoI closing time.*

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5. SUBMISSION PROCESS:

5.1 For submission of bids, all interested bidders have to register online as explained above in this document. After registration, bidders shall submit their Technical bid online on www.etenders.kerala.gov.in along with online payment of fees. They are also required to fill the form available in the ANERT website.

5.2 For page-by-page instructions on bid submission process, please visit www.etenders.kerala.gov.in and click "Bidders Manual Kit" link on the home page.

5.3 It is necessary to click on "Freeze bid" link/ icon to complete the process of bid submission otherwise the bid will not get submitted online and the same shall not be available for viewing/ opening during bid opening process.

6. BID VALIDITY

6.1 The bid will be valid for a period of 6 months from the date of opening of bids

7. DEVIATIONS

7.1 The offers with Deviations in Commercial terms and Technical Terms of the EoI Document are liable for rejection.

8. BLACK LIST

8.1 All the intending bidders shall agree that in the event of the documents furnished with the offer being found to be bogus or the documents contain false particulars, they shall be blacklisted for future EoIs/ association with ANERT

9. BIDDER'S LOCATION

9.1 The bidders are requested to furnish the exact location of their registered office with detailed postal address and pin code, telephone and fax nos. etc. in their EoIs to arrange inspection by ANERT, if considered necessary.

9.2 All communication shall be made to the registered email of the bidder in the e-tender systems and ANERT shall not be responsible for non-receipt or delay of any such communication.

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10. CORRUPT AND FRAUDULENT PRACTICES

ANERT requires compliance with its policy in regard to corrupt and fraudulent/prohibited practices as set forth in this proposal. In further pursuance of this policy, the selected service Provider(s) shall permit ANERT or its representatives to inspect the accounts, records and other documents relating to the submission of the Proposal and execution of the contract, in case of award, and to have the records inspected by ANERT.

11. CONFLICT OF INTEREST

i. The service Provider(s) is required to provide professional, objective, and impartial services, at all times holding ANERT‟s interests paramount, strictly avoiding conflicts with other assignments or its own corporate interests, and acting without any consideration for future work. The consultant has an obligation to disclose to ANERT any situation of actual or potential conflict that impacts its capacity to serve the best interest of ANERT. Failure to disclose such situations may lead to the disqualification of the supplier or the termination of its Contract and/or sanctions by the Government.

ii. Relationship with the ANERT staff: a service Provider (including its subsidiaries /partners) that has a close business or family relationship with a professional staff of the ANERT who are directly or indirectly involved in any part of the preparation of the Terms of Reference for the assignment, the selection process for the Contract, or the supervision of the Contract, may not be awarded a Contract, unless the conflict stemming from this relationship has been resolved in a manner acceptable to ANERT throughout the selection process and the execution of the Contract. Any other types of conflicting relationships as indicated in the EOI

12. CONFIDENTIALITY

i. From the time the Proposals are opened to the time the Contract is awarded, the agency (ies) should not contact any of the officials of ANERT on any matter related

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to its Technical Proposal. Information relating to the evaluation of Proposals and award recommendations shall not be disclosed to the agency (ies) who submitted the Proposals or to any other party not officially concerned with the process, until the publication of the Contract award information.

ii. Any attempt by the agency (ies) or anyone on behalf of the bidders to influence improperly ANERT in the evaluation of the Proposals or Contract award decisions may result in the rejection of its Proposal and may be subject to the application of prevailing Government sanctions procedures.

iii. Notwithstanding the above provisions, from the time of the Proposals‟ opening to the time of Contract award publication, if a agency (ies) intends to contact ANERT on any matter related to the selection process, it should do so only in writing.

iv. The Bids should be submitted only through the e-EoI portal www.etenders.kerala.gov.in. Agency (ies) shall upload all the necessary documents in the e EoI portal before the last date & time for online submission. Proposal received after the submission deadline will be treated as non-responsive and will be excluded from further evaluation process.

v. Proposals must be direct, concise, and complete. ANERT will evaluate bidder's proposal based on its clarity and the directness of its response to the requirements of the project as outlined in this EoI document. Bidders shall furnish the required information on their technical and financial proposals in the enclosed formats only. Any deviations in format or if the proper information is not provided properly, the EoI will be liable for rejection. EoI Evaluation committee may seek clarification, if required, while evaluating the proposal.

vi. The technical bid opening date, time and the address are as stated in the EoI document.

13. APPLICABLE LAW

This EoI shall be governed by the laws and procedures established by Government of Kerala, within the frame work of applicable legislation and enactment made from time to time concerning such commercial dealings. Any default in the terms and conditions of the document by the service provider will lead to rejection of work order.

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14. AMENDMENT OF EOI DOCUMENT

At any time prior to the deadline for submission of the EoI, ANERT may for any reason, modify the EoI document. The amendment document/ corrigendum shall be notified through the website www.etenders.kerala.gov.in and such amendments shall be binding on all the bidders.

15. GOVERNMENT OF KERALA – CORRUPT AND FRAUDULENT PRACTICES

ANERT follows the policy of the Government of Kerala for anti-corruption and fraudulent practices to maintain sound procurement principles of open competition, economy and efficiency, transparency, and fairness. ANERT requires the agency (ies) to observe the following Government manuals (amended from time-to-time) during the selection process and in execution of such contracts The Kerala Financial Code (KFC), 2008 (7th Edition, 1st Edition was in 1963), The Stores Purchase Manual (SPM), 2013.

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AGENCY FOR NEW & RENEWABLE ENERGY RESEARCH AND TECHNOLOGY (ANERT)
Department of Power, Government of Kerala
Thiruvananthapuram, Kerala – 695 033;
www.anert.gov.in , projects@anert.in

E-EOI DOCUMENT

Re-Invitation of Expression of Interest (EoI) for the Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram

Ref. No.: ANERT-TECH/41/2024-PE1(RTS)

PART – 2: REGISTRATION PROCEDURE

Date of Publishing of Bids : - 21/05/2024

Last Date of Submission of Bids : - 31/05/2024

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SELECTION OF AGENCY

16. GENERAL

16.1 This Expression of Interest is being invited by ANERT from competent and eligible agencies/firms who fulfil the eligibility criteria prescribed in this document for the Pilot implementation of Battery Energy Storage System (ESS) with PCU for powering the full load of ANERT HQ.

16.2 The applicant should not have any pending litigation with ANERT or any other Government agency within the Country.

16.3 ANERT will not have any liability to any prospective Consultancy Company / Firm/ Consortium / Entity or person under any laws (including without limitation the law of contract, tort), the principles of equity, restitution or unjust enrichment or otherwise for any loss, expense or damage which may arise from or be incurred or suffered in connection with anything contained in this EoI document, any matter deemed to form part of this EoI document, the award of the Assignment, the information and any other information supplied by or on behalf of ANERT or its employees, any consultants or otherwise arising in any way from the selection process. ANERT will also not be liable in any manner whether resulting from negligence or otherwise however caused arising from reliance of any Applicant upon any statements contained in this RFP.

17. INTRODUCTION

ANERT is planning to implement a 100 kW Battery Energy Storage System (BESS) on pilot mode, which would function as a reference / demo installation for all the stakeholders in the State. INDIA is moving aggressively towards Renewable Energy and for enabling Round the Clock (RTC) from Renewables, some sort of Energy Storage System is necessary. The city of Thiruvananthapuram is being developed as Solar City, and mere Solarisation through On Grid systems may help us in attaining the tag, for RTC to be ensured, BESS is an essential component.

In this context, a working Pilot installation in the Solar City is proposed at ANERT HQ,

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The system must be capable of providing complete back up to the HQ building, replacing the current Diesel generator, Charge the BESS from the existing Solar Power plants and must also have the feature of exporting from the storage at Peak Hours if required, with prior permission from KSEBL or concerned authorities.

18. SCOPE OF WORK

The Scope of Supply & Work includes all design & engineering, procurement & supply of equipment and materials, testing at manufacturers works, multi – level inspections, packing and forwarding, supply, receipt, unloading and storage at site, associated civil works, services, permits, licences, installation and incidentals, insurance at all stages, erection, testing and commissioning of containerised Battery Energy Storage System and performance demonstration with associated equipment and materials on turnkey basis at ANERT HQ, Thiruvananthapuram, Kerala.

i. The system proposed must have provision to include minimum three sources of power – Solar, Utility power & Backup DG. The BESS system must have provision to manage the input source based on availability and must also be able to schedule based on ToD and should have scheduling capabilities.
ii. The system shall consist of a 100 kW Bi-Directional PCS + Provision for connecting existing Solar and 150 kWh Lithium Battery Storage System, which shall provide uninterrupted power to the output even at failure of 30% of the battery modules. The total system shall be designed for mobile or stationary use in a modular container divided into battery room and PCS room with all requisite fire protecting equipment and Air conditioner-based cooling. The proposed system must have a Power monitoring System (PMS) with to monitor and control all the functions of BESS.
iii. The system will replace the existing Diesel Generator which is powering the ANERT building on black outs and Power cuts. The same is currently connected to the AMF panel, which need to be decommissioned and connected to the new PCU. The output of the PCU is to be connected to this AMF panel, which will act as the primary source of powering the building.

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iv. The PCU part adopts advanced modular digital control technology, which optimizes the control performance, improves the reliability of the system, and realizes uninterrupted switching between modes such as grid-connected discharge, grid-connected charging, and system off-grid operation. The PCU system has a wide DC input range, which can better suit the charging and discharging requirements of different battery combinations. Under the same power output, the diversity of battery pack connections is increased, and the number of parallel battery packs is reduced. It can better manage the battery, improve the life of the battery and the economic benefits of the energy storage system.

v. The abandoned building near the electrical room can be used to house the BESS system. The requisite civil works for accommodating the system inside the building is under the scope of the bidder.

vi. The bidder is required to take necessary approvals from the Electrical Inspectorate and KSEBL as per norms to commission the system.

vii. All associated civil and electrical works are under the scope of the bidder.

19. QUALIFICATION CRITERIA

19.1.1 An undertaking in Rs.200/- Kerala stamp paper as per the format given in Annexure IC must be submitted along with e-EoI document.

19.1.2 Power of Attorney for signing the documents has to be provided by the bidder. The documents signed by this authority only will be accepted for Expression of Interest and other documents submitted under this project. If the agency desires to change this authority fresh PoA has to be submitted.

19.2 Eligibility Requirement

19.2.1 The detail of eligibility requirements is provided in the table below. The bidders are required to furnish the required supporting documents along with the Technical Bid.

S. No.	Criteria	Documents Required

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1.1	The Applicant should be a Legal Entity continuously operational since last 10 Years. i.e., Legal Entity of the firm i.e., • Sole Proprietorship Private Limited • Public Sector Undertaking • Limited Company • Partnership firm • LLP	a) In case of Company – Copy of Registration / Incorporation Certificate issued by MCA b) In case of LLP – Copy of Deed of Partnership along with registration certificate issued by MCA c) In case of Partnership – Copy of Deed of Partnership d) In case of Sole Proprietor – Duly notarized Undertaking from Sole proprietor
1.2	Bidder must have GST Registration	Copy of GST registration certificate with GSTIN.
1.3	The Bidder must have valid PAN Number	Copy of Pan Card
1.4	The bidder should have undertaken and completed at least one installation of BESS system within the Country	Details of installation available in India along with photographs and event log / summary of monitoring details available for the system.
1.5	If the bidder is not an OEM of BESS, authorization certificate along with a copy of agreement between bidder and OEM regarding service and maintenance support must be submitted. Further, at least two service engineers of the bidder must have completed factory training to ensure timely rectification of complaints at the site.	Copy of MoU between OEM and bidder along with authorisation for bidding in the tender. Copy of successful training completion by service engineers along with their EPF / ESIC details.
1.6	The bidder should have a dedicated office in Thiruvananthapuram and personnel with Graduate Engineering degree with prior experience in Solar / BESS / UPS to attend any complaints. In case, the bidder is not having a dedicated office, an undertaking to open	Details of office in Thiruvananthapuram and profile of Engineer available at office.

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	an office within 30 days of award of work to be submitted.	
1.5	The Applicant entity should have a Minimum Average Annual Turnover of Rs. 5 Crores in any of two out of the last five financial years	Audited Statements of the Last 5 Financial years and Certificate as per Format
1.6	The bidder should be having unblemished record and must not be blacklisted or declared ineligible for corrupt & fraudulent practices by "any state/ central government" department/ company / entity" as on date of bid opening.	The bidder shall provide an Undertaking as per the format provided as Format A.

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CONDITIONS OF CONTRACT

20. GENERAL CONDITIONS

20.1 The bids should be submitted online at www.etenders.kerala.gov.in

20.2 The EoI should be as per the prescribed form which should be downloaded from the e-tender website. The cost of EoI forms if any, should be paid online, and once paid will not be refunded. EoI forms are not transferable. EoIs that are not in the prescribed form are liable to be rejected.

20.3 Intending bidders should submit their EoIs on or before the due date and time mentioned in the document. Late EoI will not be accepted.

20.4 EoIs subject to conditions will not be considered. They are liable to be rejected on that sole ground.

20.5 The final acceptance/rejection of the bids rests entirely with CEO, ANERT who do not bind themselves to accept the lowest or any EoI.

20.6 In case the contractor becomes insolvent or goes into liquidation, or makes or proposes to make any assignment for the benefit of his creditors or proposes any composition with his creditors for the settlement of his debts, carries on his business or the contract under inspection or behalf of or his creditors or in case any receiving order(s) for the administration of his estate are made against him or in case the contractor shall commit any act of insolvency or in case in which under any clause or clauses any act of insolvency or in case in which under any clause(s) of this contract the contractor shall have rendered himself liable to damages amounting to the whole of his security deposits, the contract shall, thereupon, after notice given by the Purchasing Officer to the contractor, be determined and ANERT may complete the contract in such time and manner and by such persons as ANERT shall think fit. But such determination of the contract shall be without any prejudice to any right or remedy of ANERT against the contractor or his sureties in respect of any breach of contract committed by the contractor. All expenses and damages caused to ANERT by any breach of contract by the contractor shall be paid by the contractor to ANERT and may be

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recovered from him under the provisions of the Revenue Recovery Act in force in the State.

20.7 In case the contractor fails to supply and deliver any of the said articles/services and things within the time provided for delivery of the same, or in case the contractor commits any breach of any of the covenants, stipulations and agreements herein contained, and on his part to be observed and performed, then and in any such case, it shall be lawful for ANERT (if they shall think fit to do so) to arrange for the purchase of the said articles and things from elsewhere of on behalf of ANERT by an order in writing under *the* hand of the CEO put an end to this contract and in case ANERT shall have incurred sustained or been put to any costs, damages or expenses by reason of such purchase or by reason of this contract having been so put an end to or in case any difference in price, compensation, loss, costs, damages, expenses or other moneys shall then or any time during the continuance of this contract be payable by the contractor to ANERT under and by virtue of this contract, it shall be lawful for ANERT from and out of any moneys for the time being payable or owing to the contractor from ANERT under or by virtue of this contract or otherwise to pay and reimburse to ANERT all such costs, damages and expenses they may have sustained, incurred or been put to by reason of the purchase made elsewhere or by reason of this contract having been so put an end to as aforesaid and also all such difference in price, compensation, loss, costs, damages, expenses and other moneys as shall for the time being payable by the contractor aforesaid.

20.8 Any sum of money due and payable to the contractor (including security deposit returnable to him) under this contract may be appropriated by the CEO or any other person authorised by ANERT and set off against any claim of ANERT for the payment of a sum of money arising out of or under any other contract made by the contractor with ANERT or any other person authorised by ANERT. Any sum of money due and payable to the successful tenderer from ANERT shall be adjusted against any sum of money due to ANERT from him under any other contracts.

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20.9 Every notice hereby required or authorised to be given may be either given to the contractor personally or left at his residence or last known place of abode or business, or may be handed over to his agent personally, or may be addressed to the contractor by post at his usual or last known place of abode or business and if so addressed and posted, shall be deemed to have been served on the contractor on the date on which in the ordinary course of post, a letter so addressed and posted would reach his place of abode or business.

20.10 **Conditions in the technical document, technical specifications and special conditions of this EoI document would override these General Conditions, wherever applicable.**

20.11 **ANERT, by notice sent to the successful, may terminate the contract, in whole or in part, at any time for its convenience. The notice of termination shall specify that termination is for ANERT's convenience, the extent to which performance of the Supplier under the contract is terminated, and the date upon which such termination becomes effective.**

20.12 **The EoI shall be opened at the time and date announced in the Kerala Tenders portal, and the date for opening of price bid will be updated in the portal in due course after evaluation of the technical bids.**

20.13 **In case any difference or dispute arises in connection with the contract, all legal proceedings relating to the matter shall be instituted in the Court within whose jurisdiction the CEO, ANERT voluntarily resides.**

20.14 **The Courts situated at the place where the headquarters of ANERT is situated viz, Thiruvananthapuram alone will have jurisdiction to entertain civil suits and all other legal pertaining to this contract.**

21. SELECTION PROCESS FOR BIDDER

There are two bid-opening events:

a) Pre-Qualification cum Technical Bid

b) Commercial Bid

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The Commercial Bids of only those bidders will be opened who score equal to or more than qualifying marks in Technical Bid as decided by ANERT.

21.1 PRE-QUALIFICATION PROCESS

a. The Bidders Pre-Qualification Proposal will be evaluated as per the requirements specified in the document and adopting the pre-qualification criteria spelt out. The Bidder is required to submit all required documentation in support of the pre-qualification criteria specified.
b. The Bidder shall meet all the mandatory compliance requirements. Failure in meeting the mandatory compliance requirements will result in disqualification of the Bidder.
c. An undertaking in Rs.200/- Kerala stamp paper as per the format given in Annexure B must be submitted online

21.2 Pre-Qualification Criteria

#	Criteria	Documents Required
1.1	The Applicant should be a Legal Entity continuously operational since last 10 Years. i.e., Legal Entity of the firm i.e., • Sole Proprietorship Private Limited • Public Sector Undertaking • Limited Company • Partnership firm • LLP	a. In case of Company – Copy of Registration / Incorporation Certificate issued by MCA b. In case of LLP – Copy of Deed of Partnership along with registration certificate issued by MCA c. In case of Partnership – Copy of Deed of Partnership d. In case of Sole Proprietor – Duly notarized Undertaking from Sole proprietor
1.2	Bidder must have GST Registration	Copy of GST registration certificate with GSTIN.
1.3	The Bidder must have valid PAN Number	Copy of PAN Card
1.4	The bidder should have undertaken and completed at least one installation of BESS system within the Country	Details of installation available in India along with photographs and event log / summary of monitoring details available for the system.

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1.5	If the bidder is not an OEM of BESS, authorization certificate along with a copy of agreement between bidder and OEM regarding service and maintenance support must be submitted. Further, at least two service engineers of the bidder, must have completed factory training to ensure timely rectification of complaints at the site.	Copy of MoU between OEM and bidder along with authorisation for bidding in the tender. Copy of successful training completion by service engineers along with their EPF / ESIC details.
1.6	The bidder should have a dedicated office in Thiruvananthapuram and personnel with Graduate Engineering degree with prior experience in Solar / BESS / UPS to attend any complaints. In case, the bidder is not having a dedicated office, an undertaking to open an office within 30 days of award of work to be submitted.	Details of office in Thiruvananthapuram and profile of Engineer available at office.
1.7	The bidder should be having unblemished record and must not be blacklisted or declared ineligible for corrupt & fraudulent practices by "any state/ central government" department/ company / entity" as on date of bid opening.	The bidder shall provide an Undertaking as per the format provided as Format A.

21.3 TECHNICAL QUALIFICATION

a. ANERT will review the Technical bids to determine whether the technical bids are substantially responsive. Bids that are not substantially responsive are liable to be disqualified at ANERT's discretion.
b. The bidder's technical solutions proposed in the bid document will be evaluated as per the requirements specified in this document.

21.4 Commercial Qualification

The Bidders shall quote for the entire scope of contract on an "overall responsibility" basis such that the total contract value covers all obligations of the Bidder mentioned in

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or to be reasonably inferred from the Bidding documents in respect of providing the services. The Financial Bid shall be submitted in the format given as in the e-portal.

Prices quoted by the Bidder shall remain firm during the entire contract period and shall not be subject to variation on any account except change in applicable tax rates. A Bid submitted with an adjustable price quotation will be treated as non-responsive and rejected.

22. EVALUATION PROCESS

ANERT shall evaluate the responses and scrutinize the supporting documentary evidence. Inability to submit the requisite supporting documents may lead to rejection. The decision of ANERT in the evaluation of proposals shall be final. No correspondence will be entertained outside the process of evaluation. Each of the responses/Proposals shall be evaluated as per the criteria and requirements specified in this tender document.

An Evaluation Committee will be constituted to evaluate the technical and financial proposals and recommend award of the works. The proposals will be evaluated in three stages.

22.1 Stage 1: - Pre-Qualification Cum Technical Bid

a. Each of the Pre-Qualification condition mentioned in Section24.1 is MANDATORY. In case the Bidder does not meet any one of the conditions, the bidder will be disqualified.
b. Response to the Pre-Qualification Requirements shall be evaluated in accordance with the requirements specified in this document; A checklist has to be created with proper page-wise indexing of all supporting documents
c. ANERT will review the technical bids of the short-listed bidders to determine whether the technical bids are substantially responsive. Bids that are not substantially responsive are liable to be disqualified.

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22.2 Stage 2: - Commercial Bid

a. The bid should include all taxes, duties, fees, levies, works contract tax and other charges as may be applicable in relation to the activities proposed to be carried out.
b. The taxes quoted in the offer should be as per the prevailing tax rates. Any subsequent increase in the tax rates or introduction of new tax will not be paid by ANERT. Similarly, if any benefits arising due to downward revision in tax rates, or any exemptions availed by the Bidders organization should be passed on to ANERT.

23 SPECIAL CONDITIONS

23.1 Each bidder should submit only one (1) bid. Any bidder who submits/participates in more than one bid for the work shall be disqualified.

23.2 If the due date for opening the EoI happens to be declared holiday, then the EoI will be received and opened on the very next day, for which no prior intimation will be given.

23.3 **During the EoI evaluation, ANERT may seek more clarifications/details from any or all of the bidders, if felt necessary.**

23.4 The ownership of all documents, reports, projects etc. being created as part of the assignment will vest with ANERT.

23.5 Any information furnished by the Bidder, if found to be incorrect at any stage, would render them being declared as ineligible.

23.6 Incomplete proposals may be summarily rejected. ANERT reserves the right to reject any or all the bid without assigning any reason thereof**.**

24. PAYMENT TERMS

24.1 No advance payment will be given. All the documents submitted should be certified by the concerned personnel of ANERT.

24.2 The terms of payment shall be:

i. Upon delivery of materials at the site, 60 % of the contract value against that site will be released as first part payment. The supplier shall submit the invoice for the materials (including serial numbers and delivery chalan) duly certified by

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the concerned District Office along with a report regarding the supply of materials.

ii. On completion of the installation of BESS system and filing application for connectivity, 20% of the contract value shall be released as second part payment. The supplier shall submit the invoice for the materials supplied and all documents related including the Project Completion Report to the completion of the work certified by the district office shall be submitted for the release of the amount. The PCR submitted will be used for conducting the pre-commissioning tests. Proof of the completion report submitted to the electrical inspectorate shall be submitted.

iii. After the Inspection and Approval of the Electrical Inspectorate, date of Energisation to the Grid by the DISCOM will be considered as the official Date of Commissioning (CoD) of the project and this will be treated as the commissioning of the system.

iv. On commissioning of the grid connected system, 10% of the remaining contract value will be released after proving the Key Performance Indexes. All documents related to the completion of the work including commissioning report shall be submitted for the release of the amount.

v. The balance 10% shall be retained as performance security and will be released in parts - 2% after 1 year of operation, 3% after 3 years of operation, 2% after 5 years of operation, 3% after 7 years of operation of warranty.

vi. The security deposit of 3% furnished along with the contract agreement shall be released on successful completion of supply, installation, and commissioning.

25. RIGHTS TO ACCEPT/REJECT ANY OR ALL PROPOSALS

ANERT reserves the right to accept or reject any proposal, and to annul the EoI process and reject all Bids at any time prior to award of Contract, without thereby incurring any liability to the affected Bidders or any obligation to inform the affected Bidders of the grounds for ANERT's action.

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26. FAILURE TO AGREE WITH THE TERMS & CONDITIONS /CONTRACT

Failure of the Bidder to agree with the Terms & Conditions of the EoI shall constitute sufficient grounds for the annulment of the award of contract. The contract may be awarded to the next most responsive bid among other bidders.

27. PERFORMANCE SECURITY

The successful bidder has to remit an amount @ 3% of the total amount quoted by the bidder per annum as performance security deposit in terms of e-Bank Guarantee/Deposit having validity for 3 years from the date of agreement. The bank guarantee/deposit will be released/refunded to the successful bidder after completion of the contract period after deducting the penalties if any.

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TECHNICAL SPECIFICATIONS

GRID BASED BATTERY ENERGY STORAGE SYSTEM

The Scope of Work covered under this specification shall be but not limited to the following.

28. INITIAL DESIGN AND FABRICATION

For the initial design and fabrication of the equipment, the Contractor shall

- Design, fabricate, and assemble a fully functional, transportable BESS that meets the requirements delineated herein.
- Fully document the design and expected performance of the BESS by means of documents, drawings, reports, data, and other submittals, as required herein.
- Perform factory acceptance testing of the BESS.
- Conduct design review meetings during initial design and fabrication, in Consultation with the ANERT with special reference to the geographical/climatic conditions of the Project site.
- Obtain site-specific data in preparation for developing installation implementation plans.
- Develop site installation/construction drawings, specifications, and calculations.
- A control system that provides control actions for all required operational and protective features with event logging facility.
- Supply any special equipment and tools required for maintenance of the BESS.
- Supply an initial complement of spare parts (at a to-be-determined level).
- Provide warranty for the entire BESS and its constituent equipment.

29. TRANSPORTATION AND SITE SETUP

Interconnection of the BESS with the grid is at the point of common connection (PCC). The Contractor shall be responsible for all equipment and installation activities up to the system side of the PCC. The Contractor will be responsible for completing the necessary work for the interconnection point.

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For installation/interconnection, the Contractor shall

- Develop drawings, specifications, and calculations for Contractor's scope of installation equipment and services (that is, up to the BESS side of the PCC).
- Obtain all permits necessary to transport the BESS to the site.
- Ship the BESS to the project site.
- Assemble BESS components on site to produce a functional system (as required).
- Perform start-up testing and SAT of the BESS.
- Provide on-site Contractor representative during installation and/or interconnection activities by the ANERT and during start-up and SAT of the BESS by Contractor.
- Obtain permits necessary to prepare the site and to install and interconnect the BESS to the grid.
- Provide a complete set of as-built drawings.
- Provide a training class for ANERT's technicians and maintenance personnel.

30. OPERATION AND MAINTENANCE

The operation and maintenance (O&M) of the BESS on comprehensive basis to the Contractor on turnkey for the 10 (Ten) years. The rates quoted by bidder for Comprehensive O&M of the Plant Facilities on yearly basis for 10 years shall be inclusive of the replacement costs if any.

31. DEFINITIONS

- PCC - Point of common connection – MSB Panel at ANERT HQ
- Utility - Kerala State Electricity Board Limited (KSEBL)
- Unit battery - A unit battery is the minimum field-replaceable stored energy component or assembly. It may consist of one or more electrochemical cells, electrically interconnected in any series and/or series-parallel configuration. A unit battery has one (and not more than one) set of positive and negative terminals, by which it is interconnected with the rest of the storage system.
- BESS - Transportable, containerized energy storage system based on commercially available electrochemical storage solutions, capable of receiving, it and / or balancing it.

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32. BESS INTERCONNECTION

The BESS will be interconnected with the KSEBL grid at PCC. It is expected that the PCC will be at the MSB panel at ANERT HQ. However, the same must be finalized by the Contractor after consultation with the KSEBL.

33. GRID CHARACTERISTICS

The BESS shall be capable of continuous operation under variable voltage, frequency and phase imbalance conditions at the PCC, as described in the Table below. Information on available fault current and other characteristics of the KSEBL grid will be provided by the KSEBL. The Contractor shall confirm, for each KSEBL site, that this information has been received and understood during the site-specific engineering phase.

Codes and Standards

IEC 62477	Secondary cells and batteries for renewable energy storage for On-grid applications: Non-chemistry Specific (applicable to all secondary battery types) | Safety requirements for power electronic converter systems and equipment
IEC 61000	Electro Magnetic Compatibility of Lithium-Ion Battery Energy Storage System.
IEC 62116	Utility-interconnected photovoltaic inverters - Test procedure of islanding prevention measures
IEC 61727	Photovoltaic (PV) systems - Characteristics of the utility interface
UL 9540 or (IEC TS 629335-1 + IEC 62933-5-2)	Electrical energy storage (EES) systems -Part 5-l: Safety considerations for grid-integrated EES systems - General specification / Standard for Energy Storage Systems and Equipment
IEC 62485-2	Safety requirements for secondary batteries and battery installations – to meet requirements on safety aspects associated with the erection, use, inspection, maintenance, and disposal: Non-chemistry Specific (applicable to all secondary battery types)
IEC 61508 IEC 62620 / IEC 62619	Functional Safety of Electrical/Electronic/Programmable Electronic Safety- related Systems: Applicable for all Battery Energy Storage Systems OR Secondary cells and batteries containing alkaline or other non-acid electrolytes – Safety requirements for secondary lithium cells and batteries, for use in industrial applications

Any other Standards that are mandatory as per Ministry of Power guidelines and not mentioned here, need to comply.

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34. TECHNICAL SPECIFICATION OF BATTERY ENERGY STORAGE SYSTEM

34.1 Procurement-Specific Ratings and Requirements

Item Description	Requirement
Battery Technology	Any battery technology with totally Maintenance Free suitable for operation in site-specific climatic conditions can be used with sufficient HVAC system in place and accessible from outside.
Rated No of Cycles (Minimum)	4000 cycles at rated energy capacity at 80%; Depth of Discharge (DoD) at 25°C and C/1 Rate of Discharge
Nameplate watt rating*, AC (A)	100 kW, continuous. The same shall comprise of two units of 50 kW each, for N+1 redundancy, with capability of extending up to 200kW in the future.
Nameplate watt-hour rating, ac (B)	150 kWh at 100 kW net ac output at the beginning of life and not less than 80% of this capacity at any point of time up to End of Battery Life. The battery Ah shall be 51.2V, 100 AH capacity and shall have provision to expand up to 225 kWhr, without any major hardware changes in the future.
System AC-DC-AC efficiency*:	> 90%
Use case requirements	Peak Management Voltage Support Frequency Regulation (demonstration only) Intermittent Resource Support
Peak Management	Yes Morning and evening (preference to evening) No. of days per year: up to 365 In the Peak Management Use Case scenario, power generated during the early and midday periods shall be stored in the BESS and released later in the day, during peak demand. In this case, the BESS shall be discharged in the Peak Limiting profile in the late afternoon. To the extent that the total energy dispatched does not

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Item Description	Requirement
	exceed the nameplate watt-hour rating, the BESS may be further discharged in Constant Power Mode after Part 01 (Solar PV Plant) is no more generating. One discharge cycle per day is envisaged in this use case.
VAR compensation /voltage support (VC/VS)	Yes
Intermittent resource support (IRS)	Yes This use case is envisaged to be employed during the day, primarily to support variations in Solar PV generation. The days for operation in this use case shall be determined in consultation with the ANERT/KSEBL.
Black Start Capability	Yes
Ventilation System inside the Container	Should be such as to maintain minimum and maximum Temperature as recommended by the manufacturer for optimum performance of the batteries on continuous basis.
Grid Charging	Allowed with the discretion of grid operator. If the BESS is charged through the grid, the energy consumed shall be considered part of the Auxiliary power and shall be metered.
Over Loading Capacity	(105%) : continuous operation (105%~120%) :10min (120%) : stop operation

34.2 Additional Information and Requirements for Frequency Regulation Use Case

This Clause provides information regarding the anticipated energy dispatch under the frequency regulation use case, as described in Clause 35.4. However, the same may be altered as per Control Strategy proposed so as to allow minimum Energy Imbalances.

Table 3: Additional Information and Requirements for Frequency Regulation Use Case

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Item Description: Frequency Regulation Use Case	Requirement
Maximum BESS power level for frequency regulation	Discharging: 50% of nameplate watt rating Charging: 50% of nameplate watt rating

34.3 Additional Information and Requirements for Intermittent Resource Support Use Case

This section provides information regarding the anticipated energy dispatch under the intermittent resource support use case, as described in Clause 35.5.

Table 4: Additional Information and Requirements for Intermittent Resource Support Use Case	
Item Description: Intermittent Resource Support Use Case	Requirement
Voltage flicker compensation:	Yes Compensate for all changes in intermittent resource output power level that exceed 10% per second and in which the new power level remains for at least 5 seconds. The Maximum system Power level for Voltage flicker compensation during discharging and discharging to be determined during detailed system design in terms of % of nameplate watt and VAR rating.
Ramp rate control: period of operation	To be specified in design
Ramp rate control (Power level of the BESS shall decrease at a linear rate)	75 kW/min Maximum BESS power level for charging and discharging to be determined at the time of detailed system design in terms of % of nameplate watt and VAR rating.
Intermittent resource generation following daily schedule and combined power output. Intermittent resource generation following: period of operation	Suggested Scheme (to be finalized during detailed design stage): Charging during morning up to noon and other off-peak periods Begin discharging in load following mode in the afternoon (coinciding with Peak Demand in the evening) Conclude discharging at 08:00

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	PM Combined Power output of Intermittent resources (Part 01 and Part 02) and BESS to be at unity power factor. Maximum BESS power level for charging and discharging to be determined at the time of detailed system design in terms of % of nameplate watt and VAR rating
Warranties	Seven (7) year parts and labour warranty for the entire BESS and its constituent equipment. 10-year warranty for Battery

34.4 Frequency Regulation

The BESS shall be capable of both charging and discharging, at the power level or levels specified in Table above, in response to an external signal (such as an automatic generation control signal). FR may occur for as much as 24 hours per day and for as much as 365 days per year. FR operation would not be simultaneous with any other real power discharge or charge, but it may occur simultaneously with supply of reactive power.

34.5 Intermittent Resource Support

The BESS will support the integration of solar PV plant into the grid by either eliminating or reducing undesirable voltage and power fluctuations on the KSEBL line or by firming the power delivered by the resource (that is, augmenting the power produced so that an expected output may reliably be achieved).

34.6 Nameplate Ratings

34.6.1 Overall System Real Power and Energy Ratings

During discharge, the BESS shall be rated to supply at the PCC the continuous net ac real power and ac energy output specified in *Table 2: Supply-Specific Ratings and Requirements* above. These ratings shall be referred to in all project documentation, including this specification, as the nameplate watt rating and the nameplate watt-hour rating. All nameplate ratings shall be achievable over the End of Battery life, as specified in this tender document. The nameplate watt rating and nameplate watt-hour rating shall be achievable during discharge for the full range of stated environmental conditions, provided that the battery is fully charged and the HVAC system (if

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incorporated in the BESS) has stabilized. In any case, the BESS shall be capable of being discharged at reduced power levels from that specified above. However, in no case will the energy discharged from the battery be greater than the nameplate watt-hour rating.

The Contractor shall clearly state in its O&M manual as well as during design review the expected efficiencies of the major subsystems (battery, PCS) as well as the expected losses from auxiliaries.

Note: There may be specific requirements regarding the attainable power level during charging, which the Contractor may need to identify in co-ordination with the grid operator/ANERT. However, unless otherwise specified in those sections, the real power level attainable during charging shall be at the Contractor's discretion, so long as the other charging requirements in this specification are met.

34.2.1 Overall System Reactive Power Rating

In accordance with the VAR-related control modes identified in Clause 23, the BESS shall be capable of dispatching both leading and lagging reactive power at the PCC, up to the rated VAR capacity specified in Table-2, regardless of whether the battery is being simultaneously discharged or charged. This rating shall be referred to in all project documentation, including this specification, as the nameplate VAR rating. The BESS shall be capable of simultaneously producing real and reactive power as long as no nameplate rating is exceeded. That is, the combination of operation at full nameplate watt rating and full nameplate VAR rating shall not exceed the nameplate VA rating.

35 BESS Use Cases

The BESS shall be capable of operating over its entire life in one or more of the use cases described in this section to meet the system requirements specified in Table-2, and further detailed in the tender document.

The possible use cases supported by this technical specification include the following:

- Peak management (PM)
- VAR compensation /voltage support (VC/VS)
- Frequency regulation (FR)

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- Intermittent resource support (IRS)

The use cases should not be interpreted as either operating modes or control functions. The requirements for the BESS control functions that are required to operate the BESS in a manner that supports these use cases as mentioned in this document. While Use cases describe what the BESS will be used for, whereas control functions describe how the equipment will be operated to achieve those uses. Mapping of the control functions to the use cases is provided in Clause 38.

The purpose for defining and describing the use cases is to provide the Contractor with essential information needed to ensure that the BESS will have the desired life and performance characteristics. In particular, the requirements listed in this section should support Contractor's efforts to accomplish the following:

- Determine other BESS subsystem performance capabilities
- Understand the various combinations of uses that the KSEBL may exercise

The operation of the BESS at the KSEBL site may also include some combination of the above use cases. The possible (or required) combinations are described in Clause 37.

Each use case description in the following subsections includes a capability requirement for a number of cycles and days per year of operation in that use case. On days of the year in which a particular use case is not being used, the BESS shall be considered available for operation in some other use case, so long as the nameplate ratings specified elsewhere are not exceeded. Simultaneous operation in two or more of the real power use cases (PM, FR, IRS) is not required, but it may be optionally provided at the discretion of the Contractor, so long as no nameplate rating is exceeded. In accordance with Clause 37, simultaneous operation in the VC/VS use case together with one of the other use cases is a required capability.

Important Note: The various use cases described below represent a wide range of battery and PCS capabilities. The BESS shall be designed to accommodate the most stringent of the intended operation scenarios so that any of the scenarios can be exercised without exception. The use cases described in this Clause 37 presuppose the provision of a suitably designed control system, as outlined in Clause 40 of this specification. Accordingly, the descriptions of the use cases must be read and understood in conjunction with the description of the control functions specified in Clause 40.

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35.1 Peak Management (PM)

In the PM use case, the BESS is controlled to reduce peak power demand on the KSEBL feeder to which the BESS is connected. The BESS would be discharged at any power level up to the maximum power level specified as the nameplate watt rating. The BESS shall support operation in this application for up to the number of times per year specified, if any, in Table-2. In this Use case, each daily operation is expected to consist of one discharge and charge cycle, in either a variable or a constant power output, as described below.

In that event that two discharges are required in a day, the maximum number of days per year that the system would operate with two daily discharges is one-half the number of days in single-daily-discharge mode. In the case of two discharges in a single day, it may be desirable for the KSEBL to charge the battery between the two discharges (opportunity charging) and the BESS shall permit such operation. For example, a morning and afternoon peak may be shaved, with a partial (or complete) recharge taking place during the day between the morning and evening peaks.

Note: Specification of the number of days per year for the two-daily-discharges scenario at half those for the single-daily-discharge mode assumes that opportunity charging between daily cycles would fully restore battery capacity, so that each of the two discharges in the day would take place at the full nameplate watt-hour rating. If each discharge were less than the nameplate watt-hour rating, the PM operation in a two-daily-discharges scenario could potentially occur on more days per year.

Two different power dispatch profiles during discharge are specified, as described in the following two subsections.

i. Constant Power

The BESS is discharged at a single, constant power level for a specified duration. The dispatch power level may be any value less than or equal to the nameplate watt rating. The duration of the constant power discharge may be any period of time (up to six hours), so long as the total energy dispatched to the load does not exceed the nameplate energy rating of the BESS or exceed any other operational or safety limits.

ii. Peak Limiting

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The BESS is discharged at a varying power level proportional to the amount by which the actual load on the KSEBL feeder or substation transformer exceeds a desired value. The dispatch of power from the BESS in this case would mirror the shape of the KSEBL load (which may be, generally, sinusoidal in shape). The duration of this discharge may be several hours, so long as the total energy dispatched to the load does not exceed the nameplate energy rating of the BESS or any other operational or safety limits. As an example, with the BESS installed at a distribution substation, the load on the secondary winding of the substation transformer would be monitored and sent to the control system. The KSEBL operator would enter a set point, and the BESS would operate so as to prevent or reduce overloading of the transformer by serving some (or all) of its entire peak load.

Actual discharge profiles may vary with respect to overall shape, number of peaks and valleys per day, ramp rate, and overall duration of discharge, including possible standby time between successive peaks. The Contractor shall specify all operational and warranty-specific limitations on the use of the battery for the two different power dispatch profiles.

35.2 VAR Compensation/Voltage Support (VC/VS)

The BESS shall be capable of supporting voltage on the KSEBL feeder to which it is connected by the injection or absorption of both real and reactive power (VARs). This operation shall be possible during real power discharge or charge and during standby. The operation may be dynamic (continuously varying reactive/real power output) or static (operation at a fixed power factor).

In this use, it shall be possible for the KSEBL to determine the priority of operation and/or the level of reactive power support desired, including different levels for leading and lagging VARs, as well as precedence of reactive power over real power or real power over reactive power. Specifically, it shall be possible to give either real power or reactive power the higher priority, so long as the nameplate VA rating (see Clause 71.6.271.6.2) is not exceeded. In this use, the BESS shall be capable of responding to both real-time and pre-programmed control signals (see Clause 74).

i. VAR Compensation Option

The intent of VAR Compensation is that the BESS be capable of carrying out the basic functions of a synchronous generator having the option to include injection voltage

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control/reactive power consumption and limitation of active power when the effect of the reactive power is not sufficient. It uses a progressive curve, whereby the higher the deviation is from the target voltage, the greater is the effort to correct the deviation. It may be necessary to automatically disable over frequency or under frequency protection during operation in VC/VS mode. The Contractor shall coordinate this with the KSEBL.

35.3 Frequency Regulation (FR)

The BESS shall be capable of both charging and discharging, at the power level or levels specified in Table-2, in response to an external signal (such as an automatic generation control signal). FR may occur for as much as 24 hours per day and for as much as 365 days per year. FR operation would not be simultaneous with any other real power discharge or charge, but it may occur simultaneously with supply of reactive power.

35.4 Intermittent Resource Support

The BESS will support the integration of solar PV plant into the grid by either eliminating or reducing undesirable voltage and power fluctuations on the KSEBL feeder or by firming the power delivered by the resource (that is, augmenting the power produced so that an expected output may reliably be achieved).

In IRS use, the BESS shall respond to one of two classes of controlling signals: (1) the voltage at the electrical connection point or PCC and (2) the output power level of the intermittent resource (or some other power level signal). Several scenarios are possible, as described in the following paragraphs.

i. Voltage Flicker

In a voltage flicker control scenario, the BESS shall be dispatched to control rapid but small (such as 2% to 5%), potentially frequent changes in voltage on the utility feeder that produce voltage flicker at other customer loads on the feeder. The flicker standard to be implemented shall be determined during detailed design stage in consonance with the regulation of the jurisdiction having authority.

The control signal is the power output level of the solar PV plant. Drops in power shall be compensated by a discharge of the BESS, whereas increases in power shall be compensated by a charge of the BESS in accordance with a specified scheme (to be finalized during detailed design stage). The BESS shall respond instantaneously for each

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qualifying power level change and then immediately begin a ramp to zero power with a specific ramp rate.

Depending on a number of factors—including the size of the intermittent resource compared to the native feeder load, the impedance of the feeder, and the location of the BESS and the intermittent resource relative to one another—voltage flicker may be improved by the BESS providing either real or reactive power or both in response to either variations in the voltage at the electrical connection point or variations in the output power level of an intermittent resource. The output of the BESS (either discharge or charge) shall be instantaneous in response to a change in the monitored quantity, followed by a ramp to zero over a settable period of time.

ii. Ramp Rate Control

In a ramp-rate-control scenario, the BESS shall be dispatched to limit the rate of power change up or down (ramp rate) from the intermittent resource so that large step changes in power output are smoothed over time to produce a controlled ramp (up or down). Ramp rate control is effectively the same as voltage flicker control from the point of view of power in or out of the storage system except that the goal, for example, is to limit the operation of automatic voltage regulators and tap changers on the feeder or at the substation that are caused by relatively larger changes in output of the intermittent resource.

The control signal is the power output level of solar PV plant. Drops in power shall be compensated by a discharge of the BESS, whereas increases in power shall be compensated by a charge of the BESS in accordance with a specified scheme (to be finalized during detailed design stage). The BESS shall respond instantaneously for each qualifying power level change and then immediately begin a ramp to zero power with a specific ramp rate.

The BESS shall be dispatched in response to variations in power at the point of concern, whether it is the feeder at the electrical connection point or the output terminals of the intermittent resource. The output of the BESS (either discharge or charge) shall be instantaneous in response to a change in the monitored quantity, followed by a ramp to zero over a settable period of time. The maximum output (either discharge or charge) of the BESS shall be specified in the detail design Scheme.

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iii. Generation-Following

In the generation-following scenario, the BESS shall be dispatched to follow the output power from the intermittent resource(s) part of the Plant Facilities to compensate for its variability. The output from the BESS shall be controlled to produce a resultant power output level from the same. The desired level of the resultant power shall be settable. The BESS shall charge the battery with energy from the renewable sources, as determined in consultation with the Owner. The BESS shall discharge the battery so that the output of solar PV plant plus battery is a constant (see Table -2). During the recharge operation, the charging power level should be such that the net output of the array is kept more or less constant (that is, array power momentary dropouts should be compensated to the extent possible during recharge).

In the most general case, both discharge and charge operations will occur depending on the maximum power output capability of the solar PV plant relative to the battery storage system capability, the desired power set point, the window of operation of the storage, and the variations in output of the resource. Actual discharge profiles in the IRS use case may vary with respect to overall shape, number of peaks and valleys per day, ramp rate, and overall duration of discharge, including possible standby time between successive discharges or charges. The Contractor should specify all operational and warranty-specific limitations on the use of the battery for different dispatch profiles.

35.5 Combination Use Case Requirements

On days of the year in which a particular use is not active, the BESS shall be considered available for other uses, so long as the nameplate ratings specified elsewhere (see Clauses 37) are not exceeded. Simultaneous operation in two or more of the real power use cases (PM, FR, IRS) is not required but may be optionally provided at the discretion of the Contractor, so long as no nameplate rating is exceeded. In accordance with Section simultaneous provision of VAR support (VC/VS) with other use cases is a required capability. The BESS shall be capable of operating in several combinations of use cases, like Peak Limiting plus Frequency Regulation, Peak Limiting plus Voltage Flicker, Peak Limiting plus Ramp Rate Control. On any given day of the year, only one of these two dispatch profiles would be executed.

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35.6 Charging Requirements

The control system shall allow the KSEBL to initiate a specified or programmed charge cycle. The Contractor shall work with each KSEBL to ensure that the KSEBL's requirements are met to the full capability of the BESS and that the battery is properly charged manner describe all charging requirements and shall guide the user in ensuring that charging of the battery is properly carried out.

36 DESIGN, FABRICATION, AND CONSTRUCTION REQUIREMENTS OF BESS

36.1 General

The methods and materials specified in this technical specification are intended to represent minimum requirements. Reliance thereon shall not diminish the responsibility for meeting performance and other requirements stated in this technical specification.

The design of the BESS shall incorporate the principle of modularity, with a view to reducing life-cycle costs and ease of replenishment of storage capacity while facilitating ease of maintenance, space requirements, and reliability. The design should also facilitate rapid and easy replacement of the unit batteries without significant downtime. Specifically, the BESS should be designed so that battery replacement is not necessitated within the first five years of operation considering the remoteness of the project sites. Overall, the design philosophy shall be to minimize and optimize all costs to the ANERT, not simply initial capital costs or low maintenance costs.

Life-cycle costs include the following: initial system cost, unit battery replacement cost, periodic equipment upgrades, maintenance costs, auxiliary system energy consumption, charging energy costs (that is, costs due to overall battery and PCS losses), and any other contributors to life-cycle energy cost.

36.2 System-Level Design and Performance Requirements

36.2.1 The major equipment items shall include a battery, battery management system (BMS), PCS, output/isolation transformer, and SCADA which is to be integrated with the solar plant SCADA system defined elsewhere in this document. Additional equipment shall include HVAC, wiring, connectors, protective devices, grounding, junction boxes and enclosures, instrumentation, enclosures, and all other items needed for a fully functional, grid-interactive BESS to meet the

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requirements set forth in this specification. All systems and components of systems—including electrical storage unit, switching devices in the PCS, components of monitoring and control systems, and components of auxiliary systems— must use proven and previously demonstrated technology. Electrochemical cells, PCS switching devices, and control system hardware and software must be commercially available and in use for other markets. Electrochemical cells must be replaceable (in small orders) with a maximum six-week lead time under normal business conditions. Designs using experimental or otherwise undocumented components are not permitted.

36.2.2 The BESS shall be characterized using language and methods consistent with IEEE 1679, "Recommended Practice for the Characterization and Evaluation of Emerging Energy Storage Technologies in Stationary Applications."

36.2.3 The BESS shall be IEEE 1547 (Standard for Interconnecting Distributed Resources with Electric Power Systems)-compliant, where possible.

36.2.4 The prudent design of the BESS should include careful consideration of resonance and Ferro-resonance.

36.3 Containerization and Transportability

36.3.1 The BESS shall be containerized, using either standard International Organization for Standardization (ISO) 668 shipping containers or custom-designed power equipment centres. The container or containers shall be designed to be drop-shipped onto a properly prepared pad or foundation (such as compacted soil, concrete pad or platform, and so on). When fully installed, all BESS components—including battery racks all auxiliaries, such as HVAC and fire suppression systems, (preferably Heptafluoropropane), step-up transformers to match grid, ac switchgear, and so on—and tools shall be enclosed in (or on) the containers, even if certain components must be separately shipped and installed at the site.

36.3.2 Containers shall be designed and constructed to meet IP54 and NEMA 3R requirements, which protect the equipment inside from harmful effects resulting from the ingress of water, dirt, dust, and wind. The design and installation of Containers shall meet relevant regulatory requirements for occupational safety and health under national and state legislations.

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36.3.3 All containers and packaging of separately shipped components shall be suitable for land or sea transport, including offering suitable protection of the equipment inside against damage from weather and vibration or shock from transportation.

36.3.4 The containers and their contents shall be designed to be easily prepared for transport, shipped, connected and operated at site. The Contractor shall ensure that all required bracing and shipping stabilization equipment to enable transport is either kept at hand or brought to the site in a timely manner before transport.

36.4 Additional transportability requirements and/or clarifications

36.4.1 In designing for transportability of the lithium-ion batteries, the Contractor shall follow the relevant guidelines (Sub-section 38.3) set forth in the United Nations document "Recommendations on the Transport of Dangerous Goods—Manual of Tests and Criteria" (ST/SG/AC.10/11/Rev.5), with specific reference to obtaining UN38.3 and UN3480 certifications at the battery module and/or container level.

36.4.2 The BESS container or containers shall be of a size and weight to be capable of being transported to project sites with due consideration for the load bearing restrictions imposed by bridges, if any, and rarefied atmospheric conditions in the region.73.4.3 Containers shall incorporate standard lugs or other means for lifting by crane or shall be properly palletized for movement with forklift trucks, or both.

36.5 Design Life and Life-Cycle Costs

36.5.1 End of battery life - End of battery life is that point in time when the BESS can no longer meet the power and/or energy discharge requirements of this Specification due to age or non-repairable malfunction of the battery subsystem, and/or non-replaceable components. When the system is no longer able to provide these requirements, the system has reached its end of life. Battery End of life shall be not less than 10 years from the date of Commissioning.

36.5.2 It shall be the responsibility of the Contractor to make periodic replacements/replenishments of unit batteries, if and when required, up to the End of Battery Life as described above. Outage time as a result of replacement

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will also be counted as an "Accountable BESS Outage" for the purpose of computing BESS Availability.

36.6 Reliability, Availability, and Operability of the BESS

The BESS shall be designed for high reliability, defined in the following terms:

Starting reliability: (99% starting reliability means that the unit shall start in 99 of 100 attempts)

Mean-time-to-repair- The time taken from the time of notification of a need for repair to the time of completion of repairs (that is, inclusive of time for arrival of spare parts and repair personnel at the location of the BESS)

Availability

Availability is the percentage of hours that the BESS is available during the year. The availability guarantee shall begin upon facility commissioning. Annual availability shall be calculated as follows:

$$[1 - \left(\frac{\sum Accountable\ BESS\ Outage\ duration\ in\ hours}{8760}\right)\ ] \times 100$$

Where:

Accountable BESS outages are outages caused or necessitated by the BESS equipment that result in reduced capacity or loss of essential function of the BESS. These outages may be initiated by failure of components, loss of battery capacity (to the extent that End of Battery Life is not reached), operation of protective devices, alarms, or manual action. Such outages include both forced outages due to equipment problems and scheduled outages for BESS maintenance.

Accountable BESS outage duration is the elapsed time of accountable BESS outages from the instant the BESS experiences reduced capacity or is out of service to the instant it is returned to service or full capacity. If the BESS experiences reduced capacity but is determined by the ANERT to be available for service even if the ANERT elects not to immediately return the equipment to full capacity, such time will be discounted from the outage duration.

- The Procurement specific nameplate ratings shall be as defined in Clause 37 above. The BESS shall be considered to be under an accountable outage if any of those ratings

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cannot be met. The BESS shall also be considered to be under an accountable outage if a scheduled (or required) charge cycle cannot be completed.

- The data required for assessment of the availability of the BESS shall be collected through the Plant's integrated SCADA system.

36.6.1 It shall be possible to fully remove, repair, and replace in the field any failed or poorly performing component within a day, assuming that spare parts, test equipment, and maintenance personnel are on the site. This capability shall be demonstrated in the factory acceptance test (FAT) for unit batteries and other key components.

36.6.2 The BESS shall be capable of unattended operation, with provision of remote monitoring and control.

36.7 Planned Maintenance Outage

Up to 5 weeks each year will be permitted for a planned outage to perform any required maintenance. The Contractor shall provide a guarantee for the maximum length of time required for this type of maintenance operation.

36.8 Battery Subsystem Design Requirements

36.8.1 Electrochemical Cells

Only cells that are commercially available or for which suitable (not necessarily identical) replacement cells can be supplied on short notice will be allowed. *For both premature cell failures and end-of-battery-life replacement, the Contractor shall guarantee cell availability and the length of down time (hours or days) required to replace cells.* The cells may be supplied as separate, individual units or as group of cells combined into modules. The cells shall meet the seismic requirements for the planned location of the BESS. Cell and module design shall accommodate the anticipated vibrations and shocks associated with the transportation of the BESS and shall resist deterioration due to vibrations resulting from the same. Associated hardware and paraphernalia should also be able to withstand the rigors of transportation. The transport plan shall be shared with the ANERT and approved prior to dispatch.

36.8.2 Labelling of the cells or unit batteries shall include manufacturer's name, cell type, nameplate rating, and date of manufacture, in fully legible characters. All cells shall

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be traceable to the point of origin for purpose of addressing safety issues.

36.8.3 Electrochemical Storage System

36.8.3.1 The storage system may consist of one or more-unit batteries. If the storage system consists of more than one unit battery, these may be electrically interconnected in any desirable series and parallel configuration to achieve the overall system storage and power rating requirements.

36.8.3.2 Each electrically series-connected string of unit batteries shall include a means of disconnecting the string from the rest of the system and of providing over-current protection (during a fault). The means of disconnect shall provide for a physical interruption of the string electrical circuit, which shall be visible to anyone servicing the individual unit batteries in the string and shall be capable of being locked or secured in an open position.

36.8.3.3 If the disconnect means consists of removal of a unit battery, the storage system shall be designed to allow maintenance personnel to determine that there is no current flowing in the string and provisions to ensure that the PCS is off before the unit battery is removed. Procedures for maintenance and/or field replacement of unit batteries shall neither require nor recommend removal of the unit battery without first ensuring that no current is flowing in the string circuit.

36.8.3.4 Over-current protection, whether on the ac or dc side, in paralleled unit battery strings shall be sized and coordinated so that currents from other strings do not contribute to a fault in any unit battery string.

36.8.3.5 Where appropriate, dc wiring shall be braced for available fault currents. Protection shall include a dc breaker, fuse, or other current-limiting device on the battery bus. This protection shall be coordinated with the PCS capabilities and battery string protection and shall take into account switching or other transients and the inductance/resistance (L/R) ratio at the relevant areas of the dc system. The Contractor shall produce a fault analysis and protection coordination study for the battery dc subsystem during final design. *The ANERT reserves the right to withhold permission to ship the BESS until the fault analysis has been satisfactorily completed.*

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36.8.3.6 Cells, wiring, switch gear, and all dc electrical components shall be insulated for the maximum expected voltages plus a suitable factor of safety.

36.8.3.7 The battery system shall include a system to detect and alarm excessive ground leakage current levels. Ground fault detection shall be enabled for the container or, if more than one electrical series string is installed in the container, for each series string. The detection/trip level shall be field adjustable. The Contractor shall have overall responsibility for the safety of the electrical design and installation of the battery, as well as all aspects of the BESS.

36.8.3.8 The battery system shall include a monitoring/alarm system and/or prescribed maintenance procedures to detect abnormal unit battery conditions and notify proper personnel of their occurrence.

36.8.3.9 Abnormal conditions shall include but not be limited to (1) weak unit batteries that could reasonably be expected to fail to provide rated capacity upon full discharge, (2) high- resistance or open-unit batteries, (3) high-resistance or open external unit battery connections, (4) unit batteries with temperatures exceeding operating thresholds, and (5) internally shorted unit batteries. Unit battery monitoring, whether automatic or manual, should be specified to alert the proper personnel in a timely manner that an abnormal unit battery condition exists or may exist. All alarms shall be part of the control system and shall include remote display or annunciation capability.

36.8.3.10 The unit batteries shall be racked or shall be housed in stackable modules. The unit batteries or cells shall be arranged and installed to permit easy access for equipment and personnel. The moveable units shall be arranged and installed to permit easy access for equipment and personnel to carry out unit removal and replacement activities. For all systems, it shall be possible to remove and replace a prematurely failed unit battery or cell (as appropriate), when system performance specifications cannot be met. The lengths and widths of all aisles and spaces into which personnel may enter in the field for operations and/or routine or unscheduled maintenance

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purposes, as well as egress routes from these aisles and spaces, shall conform to applicable codes and standards. All racks and metallic conductive members of stackable modules shall be grounded to earth. Racks shall meet the seismic load and road vibration requirements and shall include means to restrain cell movement during seismic events and transport. The Contractor shall furnish analyses and/or other data that show that the rack and cell designs are designed to meet all potential seismic and transport vibration requirements.

36.8.3.11 The design of all modules and racks shall specifically account for the anticipated vibrations and shocks associated with the periodic transportation of the BESS.

36.8.3.12 Cell/Battery Auxiliary Systems

The cells and battery system shall be supplied with all required and/or recommended accessories. This includes inter-cell connectors and monitoring devices for cell temperature and cell voltage, if required.

36.9 Power Conditioning System Design Requirements

36.9.1 General

36.9.1.1 The PCS is the interface between the DC battery system and the AC system and provides for charging and discharging of the battery. The PCS may consist of one or more parallel units. Paralleling may be at the DC or AC terminals. Line-commutated systems or systems that require the presence of utility voltage or current to develop an AC output are not acceptable. The PCS circuit topology shall be voltage source (that is, the PCS at its AC terminals shall appear to the grid as a voltage source rather than as a current source and, at its DC terminals, shall be capable of reversing current flow in the battery without reversing the polarity of the DC bus).

36.9.1.2 All load-carrying cables within the PCS subsystem shall have a suitable load factor of safety. The PCS shall preferably be air-cooled suitable for the site climatic conditions, with final rejection of waste heat to the ambient air. The air-handling systems shall include filtering that is adequate to keep dust from the interior of the PCS system.

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36.9.1.3 The PCS modules shall be housed inside the containerised solution, with provisions to prevent moisture condensation and to prevent the entrance of water, airborne salt or dust, rodents, insects, and/or similar materials or pests into air intake/exhaust ports.

36.9.2 **Power Conditioning System Rating**

The PCS shall be capable of delivering Real power as specified in Table-2. This rating shall be referred to in all project documentation, including this specification, as the nameplate VA rating. To account for losses in the PCS, the DC input power to the PCS will be higher than the rated PCS output power. The available DC input power will be the BESS nameplate watt rating divided by the PCS full load efficiency (as specified in the datasheet) during discharge. The PCS shall be directly accessible and modular type with multiple number of 50 kW capacity each and the system shall have provision to enhance capacity up to 200 kW, without making any major modifications.

36.9.3 Power Conditioning System Protection and Control

The PCS, in conjunction with the control system, shall be capable of completely automatic, unattended operation, including self-protection, synchronizing and paralleling with the grid, and disconnect. The control of the PCS shall be integrated with the overall BESS controls. The PCS shall include all necessary self-protective and self-diagnostic features to protect itself from damage in the event of component failure or the excursion of operating parameters beyond a safe or expected range. This includes excursions due to internal or external causes. The self-protective features shall prevent the PCS from being operated in a manner that may be unsafe or damaging. Faults due to malfunctions within the PCS, including commutation failures, shall be cleared by the PCS over-current protection device(s).

36.10 Power Conditioning System AC Interface with AC bus

36.10.1 The BESS must meet applicable harmonic current and voltage specifications in accordance with applicable standards. Harmonic suppression may be included with the PCS or at the BESS AC system level. However, the Contractor shall design the BESS electrical system to preclude unacceptable harmonic levels in

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the BESS auxiliary power system.

36.10.2 In addition to interconnection standards specified in this document, there may be specific requirements for interconnection, which need to be ascertained by the Contractor in coordination with the distribution utility at each site. The PCS transformer may be used to aid in harmonic cancellation and may include tertiary windings to supply BESS auxiliary power requirements. The transformer must be dry type. The PCS shall include provisions for disconnect on both its AC and DC terminals for maintenance work. Conductor separation must be clearly visible. The detailed maintenance procedure shall be addressed in the O&M manual.

36.10.3 Electromagnetic Interference

The PCS shall not produce electromagnetic interference (EMI) that will cause mis-operation of instrumentation, communications, or similar electronic equipment within the BESS.

36.10.4 Islanding

The PCS design shall include provisions to limit run-on and islanding as per applicable standards upon the loss of grid. This capability shall be demonstrated to the ANERT's satisfaction during the FAT.

36.11 AC System

The BESS AC system includes all switch gear, bus work, cable, connectors, transformers, and protective relaying required for connecting the BESS at the PCC. The Contractor shall design, procure, ship, and assemble on-site all ac interconnection equipment on the BESS side of the PCC. On-site assembly of Contractor supplied equipment shall be coordinated with the utility. The Contractor shall design, fabricate, ship and install all cabling required for connecting the BESS to the PCC. The BESS AC system shall include potential transformers, current transformers, and any other metering equipment so that the performance monitoring and documentation requirements of this specification can be met. Metering accuracy shall meet applicable standards.

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36.12 Protection and Control

36.12.1 The power system (PCS), AC and DC switchgear/protective devices) shall be designed to provide safe, reliable operation with minimum interruption. Reliable operation shall be supported by a sensitive and properly coordinated protection system. The protection system shall be capable of monitoring significant operating parameters and sensing all abnormal operations or fault conditions. It shall isolate the faulted circuits or components without causing damage to other circuits and components of the system. The protection system shall also provide adequate indications and/or alarms for identification of the faulted circuits, components, and abnormal conditions, allowing preventive action and rapid restoration of service.

36.12.2 The grid may have its own protective schemes at the point of common connection (PCC) that will be the responsibility of the Contractor to be fulfil.

36.12.3 Integration of the protective relaying and metering into the BESS controls shall not circumvent normal protective relaying. Protection shall not be interlocked with the position of any isolating/interrupting devices.

36.12.4 The BESS shall provide breaker failure protection for the primary interrupting device (that is, breaker, high-voltage interconnect, low-voltage interconnect) that is responsible for disconnecting the BESS and/or high-voltage ground sources from the distribution system.

36.12.5 The BESS shall be capable of interrupting line-to-line fault currents and line-to-ground fault currents available at the PCC and flowing in the Contractor's equipment in either direction for faults on either side of the PCC. Faults due to malfunctions within the BESS shall be cleared by the BESS protective devices.

36.12.6 The BESS must have low-voltage ride-through capabilities according to extant technical guidelines on connectivity.

36.12.7 BESS and high-voltage ground sources should be disconnected from the distribution system and the system operators must be notified if any of the following occur:

- The BESS local interconnection protection system fails
- The interrupting device fails.

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- The dc supply is lost
- The signal channel fails

The BESS interconnection protection must be capable of distinguishing between external faults on the distribution system and internal faults within the facility. The automatic reconnection scheme must be disabled for faults occurring within the facility.

The BESS shall include provisions to protect against transient voltage surges from switching, lightning, and similar causes, in accordance with applicable standards. The overall PCS design shall also limit surges on the dc bus to twice the normal maximum DC bus voltage.

36.13 Auxiliary Power

The BESS shall include an auxiliary power system (separate or same as the Solar Plant auxiliary system) derived from the utility AC bus, the PCS transformer low-side bus, PCS transformer tertiary winding, or similar means with metering. The auxiliary power system shall include all step-down transformers, breakers, fuses, motor starters, relaying, panels, enclosures, junction boxes, conduits, raceways, wiring, and similar equipment, as required for the BESS operation. The auxiliary power system shall include separate potential transformers and current transformers, so that auxiliary power consumption can be measured and electronically recorded in real time, independently of operation of the PCS or of net power flows to and from the battery. The auxiliary power system and/or control system design shall provide for whatever emergency power is necessary for an orderly system shutdown during abnormal conditions such as a loss of grid power. The auxiliary power system and/or control system design shall also provide for the capability to restart automatically after BESS shutdowns of several days.

37 CONTROL AND COMMUNICATION

37.1 Control System General Requirements

The control system shall be designed to provide for automatic, unattended operation. The control system design shall provide for local manual operation and remote operation or dispatch from a remotely located computer. The control system shall be programmable for establishing or adjusting all parameters, set points, algorithms, limits,

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and so on that are required for effective operation as described in this specification. The control system shall be designed to prevent externally supplied, control panel or local signals from causing the BESS to operate in an unsafe manner or in a manner that may damage the BESS.

37.2 Control Functions and Protocols

37.2.1 To the extent possible, all BESS control functions, and operating modes shall be in accordance with standard functionalities for smart distributed resources, as documented in the IEC 61850-90-7.

37.2.2 The communication protocol for the BESS shall be according to IEEE 1815-2010, Standard for Electric Power Communications—Distributed Network Protocol (DNP3), as further developed in DNP3 Application Note AN2011-001, DNP3 Profile for Basic Photovoltaic Generation and Storage or IEC 61850.

37.2.3 If data points and/or control functions outside the standard point definitions in DNP3 AN2011- 001/IEC 61850 are created by the Contractor, the Contractor shall maintain a systematic log of the same for the purpose of maintaining/facilitating interoperability with future standards/protocols for distributed energy resources

37.3 Additional Control System Functions

37.3.1 Shutdown/Startup/Standby

The start and stop controls shall be as per DNP3 AN2011-001 standard specifications or IEC 61850. The control system shall use these controls for an orderly and safe shutdown, even in the absence of grid power. The control system shall also use these controls for an orderly startup sequence, which shall provide for a safe system reset from any standby or operating condition so that the unit goes through a normal startup sequence in the same way it would when being powered up after loss of power or being in a shutdown state. The control system shall include provisions for a standby state (that is, BESS but not charging or discharging), which shall be the end result of a normal startup sequence. It shall also be possible to enter the standby state from any of the other operating states except connect/disconnect.

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37.3.2 Initiation of Shutdown

The control system shall initiate shutdown under the following conditions and shall remain in the shutdown state until a reset signal, either local or remote, is initiated. An appropriate alarm shall be set.

- Emergency trip switch.
- Loss of the low-voltage AC or utility grid voltage.
- An AC circuit breaker trip (either side of transformer).
- Door interlock: Initiate shutdown when the door is opened (with appropriate provision for maintenance work). Interlocks shall be self-resetting.
- Smoke/fire alarm.
- Control logic trouble.
- A DC ground fault (field-adjustable setting).
- Remote disable (no reset required).
- grid system faults (balanced and unbalanced; line-to-ground, line-to-line, and three- phase).
- Abnormal frequency
- Abnormal voltage
- Islanding condition.
- Protection or control scheme failures, including the following:
  - Failure of local interconnection protection system
  - Failure of critical breaker trip coil or interrupting device
  - Loss of DC supply

37.3.3 Reset Alarms

For all system-generated alarms, the control system shall provide for the resetting of those alarms. This function is intended for alarms that, after they are set (for example, by a fault condition, as listed above and elsewhere in this specification), must be cleared by operator intervention to allow normal operation to be restored.

37.3.4 Modify Storage Settings

The control system shall provide for modification of various set points and fixed operation/control settings associated with the various control functions.

37.3.5 Event/History Logging

The control system shall provide for the automatic logging of the following information:

- All errors or failures
- All startup and shutdown actions

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- All control actions
- All responses to control actions
- All limit violations, including returns within limits

37.3.6 Status Reporting

The control system shall provide for reading and reporting of various BESS-supplied status information in accordance with the data collection and reporting requirements specified in this technical specification.

37.3.7 Time Synchronization

The control system shall provide for synchronization of its real-time clock with a standard time source.

37.3.8 Change Operational Mode

The control system shall support the mechanisms inherent in DNP3 AN2011-001 for activating/deactivating control functions. The control functions are expected to be executed by command from a remote host but may also be scheduled according to the DNP3 standard.

37.3.9 Perform Self Diagnostics

The control system shall provide for self-diagnostic functions.

37.4 Control System Hardware Requirements

All local control and monitoring system components shall be housed in appropriate controlled environment enclosures at a visible position of the container and shall be in conjunction with Solar Plant SCADA system.

37.5 Control System Self-Protection and Self-Diagnostic Features

37.5.1 The BESS shall include appropriate self-protective and self-diagnostic features to protect itself and the battery from damage in the event of BESS component failure or from parameters beyond the BESS's safe operating range due to internal or external causes. The self-protective features shall not allow local or remote signals to cause the BESS to be operated in a manner that may be unsafe or damaging to the BESS. All protective operations resulting in a shutdown shall be carried out in an orderly and safe manner, even in the absence of utility

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power.

37.5.2 Temperature sensors shall be incorporated in critical components within the BESS. The BESS shall alarm and go to standby/fault mode when an over-temperature condition is detected.

37.5.3 The BESS shall alarm upon detection of a DC ground fault. The alarm trip level shall be field adjustable.

37.5.4 Door interlock switches shall be provided for all BESS container doors. The BESS shall alarm and go to shutdown mode when an BESS door is opened. Doors shall be fitted with provisions for external locks.

37.5.5 The BESS shall alarm and go to shutdown mode upon detection of smoke.

37.5.6 Surge-protection devices shall be provided at the input and output terminals of the BESS.

37.6 Control Panel

- The BESS shall include a LCD touch display of Minimum10', which is easily accessible, on or within the BESS container. As a minimum, the following operator controls shall be located on the control panel:
- Trip/reset for the BESS AC circuit breaker or contactor.
- Trip/reset for DC circuit breaker(s)/contactor(s).
- PCS on/off.
- Reset toggle or push button. When reset is initiated, the control system shall resume control and proceed to the appropriate operating mode.
- Reset cut-out selector switch to disable remote or local reset signals.
- A selector switch to manually set the operating state (that is, the shutdown, disconnect, or operate state) and to have the control system set the operating state automatically.
- A selector switch to manually set the operating mode and to have the control system set the operating mode automatically.
- The control panel or console shall also include meters, indicators, and displays.

37.7 Performance Monitoring and Data Acquisition

37.7.1 The BESS shall include a (Data Acquisition System) DAS to provide continuous

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monitoring and display of key operational parameters, as well as permanent archival of all measured parameters. The DAS shall include sensors, transducers, wiring, signal isolation and conditioning circuitry, and data acquisition and analysis hardware and software as required to perform the functions described in this section. The DAS shall be of standard commercial manufacture and shall use hardened components suitable for operation in the climatic conditions prevailing at site.

37.7.2 The DAS shall measure operational data, as described in this Clause, and shall record all data points to fixed and removable non-volatile memory. The DAS shall be capable of making all monitored data and events available through the DNP3 / IEC 61850 communication interface and shall permit display of current values and recent historical trends on a local screen for all recorded points. In addition, the DAS shall provide panel meter displays of certain operational parameters, as prescribed below.

37.7.3 Provision of monitoring and event data via the communication interface shall adhere to DNP3 AN2011-001 / IEC 61850 to the extent possible and capture at least the following data points:

- Frequency at the AC bus
- AC real power
- Power factor
- Real energy delivered
- Real energy received
- Auxiliary power
- Auxiliary energy
- DC power
- DC voltage
- DC current
- Phase A voltage
- Phase A angle
- Phase B voltage
- Phase B angle
- Phase C voltage
- Phase C angle
- Battery state of charge
- Battery string currents

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- Battery temperature

37.7.4 Digital displays, on each battery bank, shall be no less than 1 in. (2.54 cm) high and shall update at least once per second. The DAS shall be integrated with the Solar PV SCADA described elsewhere in this Technical Specification either as addendum or within an overall Energy Management System Interface. The DAS shall, at a minimum, provide remote data inquiry from personal computer- based platforms and data file export capabilities in ASCII format on independent media (such as a universal serial bus drive) that are readable on personal computer-based systems.

37.7.5 The DAS shall continuously measure or calculate the data points identified in 40.7.2 and shall make them available via the communication network as specified. All measured parameters shall also be permanently archived in all modes of operation. For continuously varying quantities, the Contractor shall propose for ANERT's review and approval an approach to data archiving that is suitable for each quantity measured. The final approach will be decided during product design.

37.7.6 The DAS shall provide unsolicited message capability for reporting critical alarms. The Contractor and the ANERT will agree on a list of alarms that are reported the instant they are detected. However, a minimum of following parameters shall be displayed on BESS local control panel, console, or SCADA computer:

- Main temperature Alarm (on system temperature exceeding a predetermined threshold)
- Smoke/fire Alarm (on system detection of smoke/fire)
- DC leakage current (battery leakage current to ground exceeding a predetermined threshold)
- Breaker status (connect/disconnect switch)
- AC voltage OK (system ac voltage exceeding a predetermined threshold)
- Battery temperature alarm (battery temperature exceeding a predetermined threshold)
- Synchronization error shutdown
- PCS fault
- Weak Unit Battery Alarm
- AC system fault

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- Control logic problem (problem with the BESS control logic)
- DC fuse blown
- Container door open (BESS container door opening)

37.7.7 The BESS shall include provisions for determining and storing in non-volatile memory the sequence of abnormal events, trips, and/or alarms that cause the BESS to go the disconnect or shutdown state. It is preferable that this function be implemented separately from the normal operations data acquisition function of the DAS so that failures in the latter (hardware/software failures or power interruptions) will not prevent the permanent logging of abnormal event sequences. The BESS shall include provisions to transmit, at a minimum, the data displayed on the panel meters and the alarm/status indicators to the remote computer.

38 GROUNDING

A suitable equipment grounding system shall be designed and installed for the BESS. This system shall be designed to be tied to an existing site grounding system. The system also shall be adequate for the detection and clearing of ground faults. All exposed non-current-carrying metal parts shall be solidly grounded. Particular attention shall be given to prevention of corrosion at the connection of dissimilar materials such as aluminium and steel.

39 WIRING

39.1 All wiring shall be continuous for each wiring run; splices are not acceptable.

39.2 Wiring that may be exposed to mechanical damage shall be placed in conduit or armoured.

39.3 Wires shall have identifying labels or markings on both ends. The labels or markings shall be permanent and durable. Stick-on labels will not be allowed. All field wiring between separate equipment items supplied by the Contractor shall be color-coded according to appropriate standards.

39.4 In general, and where practicable, control and instrumentation wiring shall be separated from power and high voltage wiring by use of separate compartments

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or enclosures or by use of separate wireways and appropriate barrier strips within a common enclosure.

39.5 BESS and PCS control and instrumentation system wiring shall be bundled, laced, and otherwise laid in an orderly manner. Wires shall be of sufficient length to preclude mechanical stress on terminals. Wiring around hinged panels or doors shall be extra flexible and shall include loops to prevent mechanical stress or fatigue on the wires.

39.6 Insulation and jackets shall be flame retardant and self-extinguishing.

39.7 Wiring to terminal blocks shall be arranged as marked on wiring diagrams. Terminal groupings shall be in accordance with external circuit requirements.

39.8 Raceway and cable systems shall not block access to equipment by personnel. There shall be no exposed current-carrying or voltage-bearing parts.

40 CIVIL/STRUCTURAL

40.1 General Requirements

40.1.1 Soil bearing stresses shall not exceed the allowable stresses for the soil parameters, as determined by the Contractor. A minimum safety factor of 1.5 shall be provided against uplift, sliding, and overturning loads. Soil stresses shall be calculated using unfactored loads.

40.1.2 All structures and foundation designs must include suitable evidence to show that their design is commensurate with a minimum of 25-year life.

40.1.3 Unless specifically stated otherwise, the design of all structures, equipment, and foundations shall be based on applicable portions of IS codes, these specifications, and industry standards.

40.1.4 All components shall be painted, coated, or otherwise protected in a manner commensurate with at least 25-year design life. Particular attention shall be given to prevention of corrosion at the connections between dissimilar materials such as aluminium and steel, and steel and concrete.

40.1.5 All structures and foundations shall be designed to resist dead, live, wind, and seismic loads.

40.2 Requirements for Contractor Installation

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40.2.1 The Contractor shall be responsible for obtaining all required permits and ensuring that all inspections by local authorities are completed as required.

40.2.2 Calculations based on applicable standards shall be supplied to show that the design of the entire BESS will withstand wind speed and/or gusts and other loads specific to the site and that the design meets all applicable structural and transportation codes.

40.2.3 Excavation spoils shall be disposed of as directed by the ANERT.

40.2.4 All reinforced concrete work shall be in accordance with relevant Indian Standards. All other materials and installation requirements shall be subject to ANERT approval.

41 MECHANICAL

41.1 All exposed surfaces of ferrous parts shall be thoroughly cleaned, primed, and painted or otherwise suitably protected to survive outdoor conditions for at least 25-year design life of the system.

41.2 Outdoor enclosures shall be weatherproof and capable of surviving intact under the site environmental conditions specified. Outdoor enclosures shall be equipped to prevent condensation.

41.3 Components mounted inside enclosures shall be clearly identified with suitable permanent designations that also shall serve to identify the items on drawings provided.

41.4 The site temperatures and the effect of temperature on component life shall be considered in developing the thermal design for all components, including the battery and PCS. Irrespective of the heat-removal system design the final rejection of all waste heat from the BESS shall be to the ambient air. Air-handling systems shall include filters to prevent dust intrusion into the BESS.

41.5 The BESS shall include an HVAC or ventilation system designed to maintain battery temperatures at levels acceptable to the Contractor's normal battery warranty conditions, conducive to acceptable battery life, and as required to maintain battery capacity for all seasons/climatic conditions at the site. The air handling/distribution system shall be designed to promote temperature

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uniformity within the battery.

42 OTHER DESIGN REQUIREMENTS

42.1 Noise Levels

The Contractor shall provide for and maintain noise mitigation devices like Noise mufflers at site, if required.

42.2 Fire Protection

The Contractor shall design and install a fire protection system that conforms to good engineering practice. The fire protection system design and associated alarms shall take into account that the BESS will be unattended. If required by the type of fire protection system provided, the Contractor shall calculate and take into account the heat content of the battery cell materials in designing an appropriate fire protection system. Separate fire protection systems may be used in the battery, PCS, and control areas.

42.3 Toxic Materials

If any toxic substance can be emitted from the equipment during a failure, fire, or emergency or protective operation, description of the toxic nature of the substances as well as treatment for exposure to it shall be included in the O&M manual. Their treatment and disposal shall be in accordance with the New Hazardous Waste Management Rules 2016 notified by the Government of India.

42.4 Spare Parts and Equipment

The Contractor shall evaluate the design with regard to expected failure rates, modes, and effects; overall BESS reliability; and planned mode of servicing. Based on this evaluation, the Contractor shall recommend and furnish an initial complement of spare parts that are not readily available. For example, these spare parts may include spare unit batteries and a small rectifier to maintain the unit batteries, as well as fuses, printed circuit boards, and switching devices (gate turnoff thyristors [GTOs], silicon-controlled rectifiers [SCRs], insulated gate bipolar transistors [IGBTs], and so on).

43 MAINTENANCE AND REPAIR

43.1 The Contractor shall supply all labour, equipment, and materials needed to

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maintain the BESS performance and safe operation, including all maintenance required to satisfy the warranty terms and conditions.

43.2 The Contractor shall list all maintenance activities to be carried out under the maintenance contract. For each maintenance item, the list shall include a description of the item, the expected frequency (maintenance interval), the time required to perform the maintenance, any anticipated parts replacement, and any potential problems in carrying out the maintenance.

44 FACTORY ACCEPTANCE TESTING OF BESS

44.1 The Contractor shall develop and submit to the ANERT for its review and approval a comprehensive FAT plan that shall demonstrate that the BESS will meet the requirements of the specification. The ANERT shall have the right to request reasonable changes to the test plan.

44.2 Where full-scale testing of larger systems at the factory may be difficult or impossible due to the large system, the FAT shall be carried out at a subsystem or module level and shall consist of tests of 100% of the subsystems or modules that comprise the complete BESS, to the extent possible. In the FAT plan, the Contractor shall clearly state what is being tested and shall fully explain any features or functions of the fully assembled BESS that would not be fully tested in the reduced-scale testing proposed. In such a case, the SAT plan shall further describe how the tests that could not be carried out in the factory will instead be carried out at the site.

44.3 After the Contractor determines that the BESS is fully operational, the Contractor shall conduct a FAT, witnessed by the ANERT and/or the ANERT's representative. The FAT shall consist of the Contractor demonstrating to the ANERT that the BESS is fully operational and performs as specified. This includes but is not limited to the following:

- Visual inspection of all provided equipment, including dimensions and overall design.
- Verification of proper mechanical construction such as electrical connection torques.

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- Verification of sensors, metering, and alarms.
- Verification of all control functions, including remote control and monitoring, and communications interfaces.
- Verification of BESS performance at full and partial power and energy ratings.
- Verification of maintenance and replacement features for unit batteries and other key components.
- Verification of compliance with specifications.

44.4 During the FAT, the BESS shall meet the following:

- Be operated and function as specified and designed in all the operating states, use cases, and duty cycles specified herein
- Meet the power and energy requirements specified herein
- Be demonstrated to meet the safety and response to catastrophic failure requirements specified herein
- Have the efficiencies, response capabilities, and other features specified herein and/or proposed by the Contractor

44.5 Operation of all control, protective relaying, and instrumentation circuits shall be demonstrated by direct test, if feasible, or by simulating operating states for all parameters that cannot be directly tested. Automatic, local (control console), and remote operation of the controls shall be demonstrated. ANERT's site. If this is not possible for the full BESS at the manufacturing facility, independent laboratory certification of operation of critical components and subsystems in the battery, PCS, and control systems shall be submitted at the time of the FAT. The Contractor shall submit to the ANERT for approval, 90 days before the FAT, a list of components and subsystems for which independent lab testing certification will be sought.

44.6 The Contractor shall perform any and all system modifications required during start-up and testing. The testing may be suspended as a result of a BESS malfunction and resumed only on rectification of problem items. Such suspension and resumption will occur at the sole discretion of the ANERT.

44.7 The BESS will not be accepted for shipment until all FATs have been successfully completed. In addition, the ANERT will verify that all provisions of the contract

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have been met, including verification of all required submittals, any spare parts delivery, and any required system modifications.

45 COMMISSIONING AND FUNCTIONAL GUARANTEE TEST PROCEDURE

45.1 The Contractor shall develop and submit to the ANERT for its review and approval a comprehensive SAT plan that shall demonstrate to the ANERT that the BESS will perform as specified at the ANERT's site. The ANERT shall have the right to request reasonable changes to the test plan.

45.2 The Contractor shall develop and perform SAT procedures to ensure that the BESS will perform as designed and that the system meets the performance criteria specified elsewhere in these specifications. The SAT plan shall include procedures to test operating scenarios described in the specification. These procedures may involve special requirements and/or witnessing by the local independent system operator. To the extent achievable, all use cases and operating modes described in the specification shall be tested.

45.3 After the Contractor has determined that the BESS is fully operational, the Contractor shall conduct the SAT, witnessed by the ANERT and/or the ANERT's representative. The tests shall include, as a minimum, the following:

- Verification of sensors, metering, and alarms
- Verification of all control functions, including automatic, local, and remote control
- Verification that the performance criteria in the specification can be met or exceeded
- Demonstration of all of the intended uses
- Demonstration of interface protection circuits and functions and control interfaces

45.4 Tests shall demonstrate that the BESS capabilities, efficiencies, response, and features are as proposed by the Contractor.

45.5 Testing shall include, as a minimum, measurement of harmonic content and power factor at full and partial power levels for both charge and discharge.

45.6 Operation of all control, protective relaying, and instrumentation circuits shall be demonstrated by direct test, if feasible, or by simulating operating states for all

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parameters that cannot be directly tested. Automatic, local, and remote operation shall be demonstrated.

45.7 The SAT shall also specifically address discovery of problems or failures that may have occurred during or as a result of shipment.

45.8 The Contractor shall perform any required modifications and repairs identified by the testing, before acceptance by the ANERT.

45.9 The ANERT will not accept the BESS for commissioning until all acceptance tests have been successfully completed and all provisions of the contract have been met.

45.10 Functional Guarantee - Actual Operating Experience

Since it may not be possible, due to system constraints, to test all facets of the BESS function as part of the performance verification tests specified in the preceding sections the actual operating experience of the BESS during the performance guarantee period after initial startup shall be deemed an extension of the performance verification tests. The performance guarantee period shall not be construed as a substitute for the warranty requirements, as specified in the subsequent Clause. Actual operating experience will be documented through Contractor-furnished records, and other system monitoring equipment and associated BESS performance. Documented failure or malfunctions of any BESS component during the performance guarantee period shall be deemed a failure of the system commissioning test. The Contractor shall, at no cost to the ANERT, make the necessary repairs, replacements, modifications, or adjustments to prevent the same failure or malfunction from occurring again. The replacement of certain BESS components in response to a system failure may necessitate, at the discretion of the ANERT, the duplication of certain performance verification tests, which shall be performed at the Contractor's expense.

46 WARRANTY

46.1 The Contractor shall provide a warranty for the entire BESS and its constituent equipment.

46.2 At a minimum, the Contractor shall provide an unconditional, 7 (Seven) -year parts and labour warranty on all BESS equipment except battery (unit or racks). An

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additional 3-year AMC must be provided by the bidder for the whole unit and the rate for the same is to be quoted separately. For the battery storage, 10-year warranty is to provided and the warranty shall cover parts warranty including battery nominal capacity ratings in order to meet the End of battery Life condition described in this specification.

46.3 Warranty replacement shall be required for individual unit batteries that degrade in performance to the point at which the BESS cannot meet the requirements specified in this specification up to the End of Battery Life and/or for unit batteries that materially degrade the availability, reliability, safety, or functionality of the BESS.

46.4 The warranty shall guarantee the availability of battery replacements delivered to the site within 2 weeks of notification during the battery warranty period. This period, shall, however, not be considered part of the Accountable Outage period for assessing BESS availability.

46.5 Additional warranty requirements are as follows:

- The warranty shall specify the terms and conditions of the warranty, including operating conditions requirements, procedures that must be followed, and all maintenance requirements. The warranty terms shall be easy to understand and shall be clearly stated.
- The warranty shall provide an explicit statement as to the warranted cycle life and the warranted calendar life of the battery.
- The warranty shall include a simple and easy to understand proration formula, if any, to be used in crediting the ANERT for unused life or capacity of equipment replaced or repaired.
- The warranty shall specify guaranteed battery replacement costs. The ANERT shall be provided the option to secure the guaranteed replacement cost at the time of the initial supply agreement.
- The warranty shall specify the scope of service associated with software updates.
- The warranty shall specify the scope of service included in replacement or repair of the equipment.
- The warranty shall specify all labour, materials, shipping charges, and other

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ANERT expenses not included in the warranty.

- The warranty shall specify the estimated time to complete the repairs/replacement required to restore the BESS to the warranted performance level. The time shall be given as the number of working days from the time of ANERT's notice to the Contractor that the BESS has failed to meet the performance requirements.

47 DOCUMENTATION AND SUBMITTALS

a. The Contractor shall furnish complete documentation that will be used for determination of contract compliance, as well as O&M of the BESS.

b. Review and acceptance of submittals shall not encumber the ANERT or the KSEBL with responsibility for the adequacy or safety of the Contractor's design.

c. Titles shall clearly indicate the function of the document, the ANERT and location of the facility.

d. At a minimum, Contractor's documentation shall consist of the following:

- Construction and installation drawings
- Construction materials submittal
- Equipment drawings and specifications
- Operation and maintenance manual
- Maintenance schedule
- Critical path method project schedule
- Master test plan and procedures
- Quality assurance manual
- Software documentation
- Study reports
- Test reports
- Training manual

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FORMAT FOR COVERING LETTER

(This letter to be submitted on the official letter head of the bidder, signed by the authorised signatory.)

Sir,

I/We hereby e-tender to render the services under annexed terms and conditions of contract, the whole of the articles referred to and described in the attached specification and quantity decided by the Agency for New & Renewable Energy Research and Technology (ANERT), at the rates quoted against each item.

I am/We are remitting herewith the required amount of Rs. ..... towards the registration Fee by electronic payment vide transaction No ..... dtd.....

Yours faithfully,

Place:
Date:

Signature
Name
Designation

(Office Seal)

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ANNEXURE A – SUMMARY OF BID QUALIFICATION REQUIREMENTS

(To be filled in by the bidder in Letter Head)

1.	Name of the applicant and address with email, phone etc.	
2.	Main area of Business	
3.	Registered Office in Kerala	
4.	Details of Power of Attorney	
5.	Proof for Experience	

Documentary evidence for the bid qualification requirements are submitted along with this document and the details furnished above are true and correct.

Signature
of authorised signatory

Name
Designation

Date:

(Office seal)

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ANNEXURE B – AGREEMENT

(To be provided on Rs.200 Non-Judicial Kerala Stamp paper)

Subject: Selection of Consultant for Setting up the Project Management Unit (PMU) for Kerala Green Hydrogen Mission

With reference to the RFP Document for the captioned Project, I/we, I …….. (Name, Designation) authorised signatory of …….. (Name and full address of the bidder) having examined all relevant documents and understood their contents hereby undertake that the Proposal is unconditional and unqualified.

1. I/We confirm that I/we have examined the terms and conditions published in the EOI and accordingly submitting the Application. The proposal is unconditional and unqualified.
2. All information provided in the Proposal is true and correct and all documents accompanying such Proposal are true copies of their respective originals.
3. This statement is made for the express purpose of appointment Providing PMU services in terms of providing Consultancy and Technical Services
4. I/We shall make available to ANERT any additional information it may deem necessary or require for supplementing or authenticating the Proposal.
5. I/We acknowledge the right of the ANERT to reject our application without assigning any reason or otherwise and hereby waive our right to challenge the same on any account whatsoever.
6. I/We certify that in the last three years, I/we have neither failed to perform on any contract, as evidenced by imposition of a penalty by an arbitral or judicial Court or a judicial pronouncement or arbitration award against us, nor have been expelled from any project or contract nor have had any contract terminated for breach on our part.
7. I/We declare that:

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1. I/We have examined and have no reservations to the EOI Documents, including any Addendum thereto, issued by the ANERT;
2. I/We do not have any conflict of interest in accordance with provisions of the EOI Document;
3. I/We have not directly or indirectly or through an agent engaged or indulged in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice, as defined in the EOI document, in respect of any tender or request for proposal issued by or any agreement entered into with the ANERT or any other public sector enterprise or any Government, Central or State; and
4. I/We hereby certify that we have taken steps to ensure that in conformity with the provisions of this EOI, no person acting for us or on our behalf will engage in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice.

8. I / We understand that you may cancel the Selection Process at any time and that ANERT is neither bound to accept any Proposal that you may receive nor to select the Consultant, without incurring any liability to the Applicants in accordance with the EOI document.
9. I / We certify that in regard to matters other than security and integrity of the country, we or any of our Associates have not been convicted by a Court of Law or indicted or adverse orders passed by a regulatory authority which would cast a doubt on our ability to undertake the Consultancy for the Project or which relates to a grave offence that outrages the moral sense of the community.
10. I / We further certify that in regard to matters relating to security and integrity of the country, we have not been charge-sheeted by any agency of the Government or convicted by a Court of Law for any offence committed by us or by any of our Associates.
11. I / We hereby irrevocably waive any right or remedy which we may have at any stage at law or howsoever otherwise arising to challenge or question any decision taken by the ANERT (and/ or the Government of Kerala / India) in connection

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with the selection of Consultant or in connection with the Selection Process itself in respect of the above mentioned Project.

12. I / We agree and understand that the proposal is subject to the provisions of the EOI document. In no case, shall I/we have any claim or right of whatsoever nature if the Consultancy for the Project is not awarded to me/us or our proposal is not opened or rejected.
13. I / We agree to keep this offer valid for (120) days from the date of opening of technical bid.
14. I/We have studied EOI and all other documents carefully. We understand that we shall have no claim, right or title arising out of any documents or information provided to us by the ANERT or in respect of any matter arising out of or concerning or relating to the Selection Process including the award of Consultancy.
15. The Technical Proposals and Financial Proposals are being submitted in separate Covers available in the etenders portal.
16. I/We agree and undertake to abide by all the terms and conditions of the EOI Document. In witness thereof, I/we submit this Proposal under and in accordance with the terms of the EOI Document.

Signed by Sri	Signed by Sri . . . . .
(Date)	(Date) . . . .
in the presence of witnesses	in the presence of witnesses
1.	1.
2.	2.

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ANNEXURE C – POWER OF ATTORNEY

(On Stamp Paper of requisite Stamp value)

Know all men by these presents, we, ... (name of Firm and address of the registered office) do hereby constitute,.....nominate, appoint and authorise Mr / Ms..... son/daughter/wife and presently residing at ....., who is presently employed with us and holding the position of.....as our true and lawful attorney (Hereinafter referred to as the —Authorized Representative) to do in our name and on our behalf, all such acts, deeds and things as are necessary or required in connection with or incidental to submission of our Proposal for and selection as the Consultant for _____

including but not limited to signing and submission of all applications, proposals and other documents and writings, participating in pre-bid and other conferences and providing information/ responses to the ANERT, representing us in all matters before the ANERT, signing and execution of all contracts and undertakings consequent to acceptance of our proposal and generally dealing with the Authority in all matters in connection with or relating to or arising out of our Proposal for the said Project and/or upon award thereof to us till the entering into of the Agreement with the ANERT.

AND, we do hereby agree to ratify and confirm all acts, deeds and things lawfully done or caused to be done by our said Authorised Representative pursuant to and in exercise of the powers conferred by this Power of Attorney and that all acts, deeds and things done by our said Authorised Representative in exercise of the powers hereby conferred shall and shall always be deemed to have been done by us.

IN WITNESS WHEREOF WE, ... THE ABOVE - NAMED AUTHORISED REPRESENTATIVE HAVE EXECUTED THIS POWER OF ATTORNEY ON THIS DAY OF ....., 2023

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For

(Signature, name, designation and address)

Witnesses:

1.

2.

Notarized

Accepted (Signature, name, designation and address of the Attorney)

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ANNEXURE D – DECLARATION BY THE BIDDER

e-EoI Notification No: ....., dtd …….. for Re-Invitation of Expression of Interest (EoI) for the Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram

To

The CEO

ANERT

We, the undersigned, declare that:

1. We have examined and have no reservations to the Bidding Document, including Addenda No.: ..... (if any)
2. We offer to supply in conformity with the Bidding Document and in accordance with the delivery schedule
3. Our Bid shall be valid for a period of 4 months from the date fixed as deadline for the submission of EoIs in accordance with the Bidding Document, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;
4. If our Bid is accepted, we commit to submit a Security Deposit in the amount of 3 percent of the Contract Price for the due performance of the Contract;
5. We are not participating, as Bidders, in more than one Bid in this bidding process;
6. Our firm, its affiliates or subsidiaries, including any subcontractors or suppliers for any part of the Contract, has not been declared ineligible by the ANERT or Government of Kerala;
7. We understand that this Bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal Contract is prepared and executed.
8. Our firm has obtained the certifications from MNRE or NABL approved Test laboratories that the goods and services are satisfying the technical criteria specified in the bid.

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Signature

Date

Name

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ANNEXURE E – DECLARATION OF RELATIONSHIP WITH ANERT EMPLOYEE

(to be signed and submitted by the bidder along with the bid)

EoI Notification No.: ……..

Re-Invitation of Expression of Interest (EoI) for the Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram

To

The CEO

ANERT

Name of the ANERT employee with Designation:

Name of the bidder related to the employee:

This is to put on record that Shri/Smt …….. currently working as …….. in ANERT is related to ……., who is the bidder in the bid. We are aware of the Anti-corruption policy of ANERT and will observe the highest standards during the execution of contract and shall retain from corrupt, fraudulent, collusive or coercive practices on competing for the contract.

Signature

Date

Name

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ANNEXURE F – UNDERTAKING FOR NO BLACKLISTING & NO BANNING

(To be provided on Rs.200 Non-Judicial Stamp paper. In Case of JV the following format is to be provided by Each Member of the Joint Venture on their respective letterhead, signed by respective authorized Signatory along with Authorized Signatory for which POA is attached with Bid))

Undertaking for No Blacklisting & No Banning

To

The CEO
ANERT

Sub: Re-Invitation of Expression of Interest (EoI) for the Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram

I / We hereby declare that presently our Company/Limited Liability Partnership/ Partnership Firm/ Sole Proprietorship is having unblemished record and is not declared ineligible for corrupt/fraudulent practices by any State/Central Government/PSU on the date of Bid Submission.

I / We further declare that presently our Company/Limited Liability Partnership/ Partnership Firm/ Sole Proprietorship is not blacklisted and not declared ineligible for reasons other than corrupt/fraudulent practices by any State/Central Government/PSU on the date of Bid Submission.

If this declaration is found to be incorrect then without prejudice to any other action that may be taken, our security may be forfeited in full and the EoI if any to the extent accepted may be cancelled.

(Signature & Seal of Authorized Signatory for which POA attached)

Name of Authorized Signatory:

Designation:

Date:

Place:

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ANNEXURE G – CERTIFICATE OF FINANCIAL QUALIFICATION

(On Letterhead of the respective entity for which the below details are provided.)

Financial Qualification Certificate

(Rupees in Crores)

S/N	Financial parameters	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23
1.	**Net Worth**					
a)	Paid up Capital					
b)	Free Reserves and Surplus*					
c)	Misc expenses to the extent not written off					
	Net Worth (a+b-c)					
2.	**Annual Turnover ****					

** Free Reserve and Surplus shall be Exclusive of Revaluation Reserve, written back of Depreciation Provision and Amalgamation.*

*** Annual total Income/ turnover as incorporated in the Profit and Loss Account excluding non-recurring income, i.e., sale of fixed asset etc.*

It is certified that all the figures are based on audited accounts read with auditors report and Notes to Accounts etc.

(Signature & Seal of Authorized Signatory

Name of Authorized Signatory: **Certifying Chartered Accountant:**

Designation: **Name of Firm:**

Date: **UDIN No:**

Place: **Date:**

Place:

Note:

1. *In addition to above certificate from Chartered Accountant, Bidder is required to submit Firm's Annual Audit Report, Balance sheet, Profit & Loss and Income Tax Returns / CA certificate for last Five years i.e., F.Y: 2017-18, 2018-19, 2019-20, 2020-21 & 2021-22.*

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ANERT
Agency for New and renewable Energy Research and Technology
നവീനവും പുനരുപയോഗയോഗ്യവുമായ ഊർജ്ജ ഗവേഷണങ്ങൾക്കും സാങ്കേതിക വിദ്യകൾക്കുമുള്ള ഏജൻസി
DEPARTMENT OF POWER, GOVERNMENT OF KERALA
Law College Road, PMG, Thiruvananthapuram 695033 • director@anert.in • www.anert.gov.in
Tel.: (+91-471) 2338077, 2334122, 2333124, 2331803 • Fax: (+91-471) 2329853

Technical Evaluation Summary										
Tender ID :		2024_ANERT_664557_2								
Tender Title :		Expression of Interest (EoI) for the Selection of Agency for Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram								
S/N	Bidder	Registration Certificate	GST Registration	PAN Details	Details of similar installtion done in India	Whether OEM for BESS	Authorisation Letter	Details of Engineers who have undergone training	Minimum Average Annual Turnover of Rs. 5 Crores in any of two out of the last five financial years	The Proposed system meets all BESS requirements
1	Solar Systems	Y	Y	Y	Trial installation	N	Y	Y	Y	Y
2	Hykon India Ltd	Y	Y	Y	N	Y	N	Y	Y	N
3	POM Systems and Services Pvt Ltd	Y	Y	Y	Trial installation	N	Y	Y	Y	Y

CEO ANERT

Signed by
Narendra Nath Veluri I F S
Date: 07-06-2024 14:20:02

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DEPARTMENT OF POWER, GOVERNMENT OF KERALA
Law College Road, PMG, Thiruvananthapuram 695033 • director@anert.in • www.anert.gov.in
Tel.: (+91-471) 2338077, 2334122, 2333124, 2331803 • Fax: (+91-471) 2329853

No. ANERT-TECH/41/2024-PE1(RTS) 26-06-2024

To

M/s POM Systems & Services Pvt Ltd.
No.75, 6th Main, 3rd Phase, Peenya Industrial Area
Bangalore, Karnataka – 560058

WORK ORDER

Sir,

Sub: ANERT – Work Order for the Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram - reg

Ref:
1. Tender ID: 2024_ANERT_664557_2 published on Kerala Tenders portal
2. Your Bid No. 1875604 dtd 30/05/2024

Attention is invited to the references cited. Your bid for the Pilot Implementation of Battery Energy Storage System (BESS) at ANERT HQ, Thiruvananthapuram is accepted. You are requested to carry out the work at the sites as detailed below subject to the following terms and conditions.

SN	ITEM	Total
1	Battery Energy Storage System – 100kW / 150 kWh	**1,20,00,000**
	TOTAL	**1,20,00,000/-**
	Rupees One Crore Twenty Lakh only	

A tripartite agreement has to be executed by you in the prescribed form (enclosed as Annexure - I) on Kerala Stamp paper as per the Kerala Government order - G.O.(P) No.113/2019/TD dtd 24/07/2019 (One rupee for every Rs 1000 or part thereof on the contract amount, subject to a minimum of rupees 200 and a maximum of rupees one lakh) within 7 days of the receipt of this work order for the fulfilment of the contract along with a security deposit of **Rs. 6,00,000/- (Rupees Six Lakh only)** being the 5% of contract value of **Rs. 1,20,00,000/-** on Demand Draft/Bank Guarantee/NEFT transfer in favour of CEO, ANERT. You must pay all expenses incidental to the execution of the above agreement.

1. SCOPE OF WORKS

The Scope of Supply & Work includes all Design & Engineering, Procurement &

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Supply of equipment and materials, Testing at Manufacturers works, Multi – level inspections, Packing and Forwarding, Unloading and Storage at site, Associated Civil works, services, permits, licences, installation and incidentals, insurance at all stages(Pre commissioning), Erection, Testing and Commissioning of containerised Battery Energy Storage System and performance demonstration with associated equipment and materials on turnkey basis at ANERT HQ, Thiruvananthapuram, Kerala.

i. The system proposed must have provision to include minimum three sources of power – Solar, Utility power & Backup DG. The BESS system must have provision to manage the input source based on availability and must also be able to schedule based on ToD and should have scheduling capabilities.
ii. The system shall consist of a 100 kW Bi-Directional PCS along with Provision for connecting the existing Solar and 150 kWh Lithium Battery Storage System, which shall provide uninterrupted power to the output even at failure of 30% of the battery modules. The total system shall be designed for mobile or stationary use in a modular container divided into battery room and PCS room with all requisite fire protecting equipment and Air conditioner-based cooling.
iii. The proposed system must have a Power monitoring System (PMS) with to monitor and control all the functions of BESS.
iv. The system will replace the existing Diesel Generator which is powering the ANERT building on black outs and Power cuts. The same is currently connected to the AMF panel, which need to be decommissioned and connected to the new PCU. The output of the PCU is to be connected to this AMF panel, which will act as the primary source of powering the building.
v. The PCU part adopts advanced modular digital control technology, which optimizes the control performance, improves the reliability of the system, and realizes uninterrupted switching between modes such as grid-connected discharge, grid-connected charging, and system off-grid operation. The PCU system should have a wide DC input range, which can better suit the charging and discharging requirements of different battery combinations. Under the same power output, the diversity of battery pack connections is increased, and the number of parallel battery packs is reduced. It can better manage the battery, improve the life of the battery and the economic benefits of the energy storage system.
vi. The abandoned building near the electrical room can be used to house the BESS system. The requisite civil works for accommodating the system inside the building is under your scope.
vii. The bidder is required to take necessary approvals from the Electrical

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Inspectorate, including Scheme approval, Sanction for energisation etc and Approvals from KSEBL as per norms to commission the system.

viii. All associated civil and electrical works are under the scope of the bidder.

ix. Any other work required for the successful commissioning of the power plant which are not mentioned explicitly and are required as per prevailing laws & regulations in the country.

2. **SCHEDULE OF SUPPLY, INSTALLATION & COMMISSIONING:**

i. The items should be delivered and installed at the ANERT Campus as specified by ANERT, under prior intimation and supervision of ANERT personnel.

ii. If the successful bidder fails to deliver the materials within the days mentioned below, the order stands cancelled and ANERT will award the work to the next bidder and penalty as decided by ANERT will be levied.

SN	Capacity of BESS	Material Delivery (Days)	Completion Period (Days)
1	100 kW / 150 kWh	45	75

iii. The agency shall submit the timeline for completion along with the agreement and security deposit. This timeline must be followed and no extension of time for completing the installation will be granted. Although, time extension may be granted for things beyond the control of your agency.

iv. The detailed Bill of Materials along with datasheets & Test certificates of components as per tender must be provided well in advance and must be approved by ANERT before material despatch. The Factory Acceptance Tests as per tender / as laid by the Ministry of Power must be complied. ANERT reserves the right to reject the materials if they are not in compliance with the requirements of the tender. In case the successful bidder delivers the materials without BoM approval, they may have to take back the materials at their own cost and no time extension without penalty will be provided for completion of works.

v. The Supply, Installation and Commissioning of the Battery Energy Storage System must be completed within the timeline mentioned above. This is the time for handing over the system to ANERT with Grid connectivity.

vi. In case of no valid reason, extension of time of completion that can be granted at a time shall be 25% of the original time. The maximum extension that can be granted for a work shall be limited to half the original time of completion.

vii. When the contract period has to be extended wholly or partly due to default on the part of the bidder, the Agreement Authority may sanction extension of time after imposing fine as mentioned below;

Period	Rate of Fine
	1% of the PAC subject to a minimum of Rs. 1000/- and

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First Extension	maximum of Rs. 50,000/-.
Second Extension	2% of the PAC subject to a minimum of Rs. 2000/- and maximum of Rs. 1,00,000/-

viii. Penalty for delay in supply and installation will be imposed at 0.5 % per week up to a maximum 10%. In case of delay in supply and installation, CEO, ANERT may cancel the contract and take recourse to other action as deemed appropriate.

3. **INSTALLATION**

i. The Design and Manufacturing of the whole system must be in such a manner that it meets all the requirements as per the Design, Fabrication and Construction requirements as per tender. The BESS use cases mentioned in the tender shall be completely showcased and working at all stages.

ii. The installation work of the Battery Energy Storage System must be incompliance with the Technical Requirements and Standards as mentioned in the Tender. The basic technical requirements are as below:

Item Description	Requirement
Battery Technology	Any battery technology with totally Maintenance Free suitable for operation in site-specific climatic conditions can be used with sufficient HVAC system in place and accessible from outside.
Rated No of Cycles (Minimum)	4000 cycles at rated energy capacity at 80%; Depth of Discharge (DoD) at 25°C and C/1 Rate of Discharge
Nameplate watt rating*, AC (A)	100 kW, continuous. The same shall comprise of two units of 50 kW each, for N+1 redundancy, with capability of extending up to 200kW in the future.
Nameplate watt-hour rating, ac (B)	150 kWh at 100 kW net ac output at the beginning of life and not less than 80% of this capacity at any point of time up to End of Battery Life. The battery Ah shall be 51.2V, 100 AH capacity and shall have provision to expand up to 225 kWhr. without any major hardware changes in the future.
System AC-DC-AC efficiency*:	> 90%
Use case requirements	Peak Management Voltage Support Frequency Regulation (demonstration only) Intermittent Resource Support
Peak Management	Yes Morning and evening (preference to evening)

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	No. of days per year: up to 365 In the Peak Management Use Case scenario, power generated during the early and midday periods shall be stored in the BESS and released later in the day, during peak demand. In this case, the BESS shall be discharged in the Peak Limiting profile in the late afternoon. To the extent that the total energy dispatched does not exceed the nameplate watt-hour rating, the BESS may be further discharged in Constant Power Mode after Part 01 (Solar PV Plant) is no more generating. One discharge cycle per day is envisaged in this use case.
VAR compensation /voltage support (VC/VS)	Yes
Intermittent resource support (IRS)	Yes This use case is envisaged to be employed during the day, primarily to support variations in Solar PV generation. The days for operation in this use case shall be determined in consultation with the ANERT/KSEBL.
Black Start Capability	Yes
Ventilation System inside the Container	Should be such as to maintain minimum and maximum Temperature as recommended by the manufacturer for optimum performance of the batteries on continuous basis.
Grid Charging	Allowed with the discretion of grid operator. If the BESS is charged through the grid, the energy consumed shall be considered part of the Auxiliary power and shall be metered.
Over Loading Capacity	(105%) : continuous operation (105%~120%) :10min (120%) : stop operation

iii. The vendor is to bear the fee for KSEBL feasibility, Registration, and all other expenses along with additional costs for cabling works, earthing, mounting structure modifications, Electrical panel modification, access ladders, pathway facility in case required are also under the scope of the vendor. The scope of enhancing load, phase conversion wherever necessary is also under the scope.

iv. Any other work required for the successful commissioning of the power plant which are not mentioned in this document and are required as per prevailing

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laws & regulations in the country.

4. **COMMISSIONING AND FUNCTIONAL GUARANTEE TEST PROCEDURE**

i. The Contractor shall develop and submit to the ANERT for its review and approval a comprehensive SAT plan that shall demonstrate to the ANERT that the BESS will perform as specified in the tender. The ANERT shall have the right to request reasonable changes to the test plan.

ii. The Contractor shall develop and perform SAT procedures to ensure that the BESS will perform as designed and that the system meets the performance criteria specified in the detailed specifications in the tender. The SAT plan shall include procedures to test operating scenarios described in the specification. These procedures may involve special requirements and/or witnessing by the local independent system operator. To the extent achievable, all use cases and operating modes described in the specification shall be tested.

iii. After the Contractor has determined that the BESS is fully operational, the Contractor shall conduct the SAT, witnessed by the ANERT and/or the ANERT's representative. The tests shall include, as a minimum, the following:

- Verification of sensors, metering, and alarms
- Verification of all control functions, including automatic, local, and remote control
- Verification that the performance criteria in the specification can be met or exceeded
- Demonstration of all of the intended uses
- Demonstration of interface protection circuits and functions and control interfaces
- Tests shall demonstrate that the BESS capabilities, efficiencies, response, and features are as proposed by the Contractor.

iv. Testing shall include, as a minimum, measurement of harmonic content and power factor at full and partial power levels for both charge and discharge.

v. Operation of all control, protective relaying, and instrumentation circuits shall be demonstrated by direct test, if feasible, or by simulating operating states for all parameters that cannot be directly tested. Automatic, local, and remote operation shall be demonstrated.

vi. The SAT shall also specifically address discovery of problems or failures that may have occurred during or as a result of shipment.

vii. The Contractor shall perform any required modifications and repairs

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identified by the testing, before acceptance by the ANERT.

viii. The ANERT will not accept the BESS for commissioning until all acceptance tests have been successfully completed and all provisions of the contract have been met.

ix. Functional Guarantee - Actual Operating Experience

Since it may not be possible, due to system constraints, to test all facets of the BESS function as part of the performance verification tests specified in the preceding sections the actual operating experience of the BESS during the performance guarantee period after initial startup shall be deemed an extension of the performance verification tests. Actual operating experience will be documented through Contractor-furnished records, and other system monitoring equipment and associated BESS performance. Documented failure or malfunctions of any BESS component during the performance guarantee period shall be deemed a failure of the system commissioning test. The Contractor shall, at no cost to the ANERT, make the necessary repairs, replacements, modifications, or adjustments to prevent the same failure or malfunction from occurring again. The replacement of certain BESS components in response to a system failure may necessitate, at the discretion of the ANERT, the duplication of certain performance verification tests, which shall be performed at the Contractor's expense.

5. **PAYMENT**

A. No advance payment will be given. All the documents submitted should be certified by the concerned personnel of ANERT.

B. The terms of payment shall be:

i. Upon delivery of materials at the site, 60 % of the contract value against that site will be released as first part payment. The supplier shall submit the invoice for the materials (including serial numbers and FAT reports, and other relevant documents) duly certified by the concerned personnel along with a report regarding the supply of materials.

ii. On completion of the installation of BESS system and filing application for connectivity, 10% of the contract value shall be released as second part payment. The supplier shall submit the invoice and all documents related including the Project Completion Report to the completion of the work certified by the concerned ANERT personnel for the release of the amount. The PCR submitted will be used for conducting the pre-commissioning tests. Proof of the completion report submitted to the electrical inspectorate shall be submitted.

iii. After the Inspection and Approval of the Electrical Inspectorate, date of Energisation to the Grid by the DISCOM will be considered as the official Date of

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Commissioning (CoD) of the project and this will be treated as the commissioning of the system.

iv. After CoD, 5% of the contract value will be released upon proving the Key Performance Indexes. All documents related to the Commissioning of the system along with including commissioning report and functionality tests shall be submitted for the release of the amount.

v. The next 5% of the contract value will be released after completing programming and evaluating the performance of all the systems for a period of one Month. All documents related to the performance reports and complete logs of energy usage, energy fed to grid etc shall be submitted for the release of the amount.

vi. The balance 15% shall be retained as performance security and will be released in parts - 2% after each year of warranty, with the balance 1% at the end of the last year. The performance reports and availability as per tender must be submitted and CEO ANERT on its discretion will impose fine/penalty in case availability of at least 90% is not maintained.

vii. The security deposit of 3% furnished along with the contract agreement shall be released on successful completion of supply, installation, and commissioning.

c. Income tax, contribution to workers' welfare fund and other statutory deductions shall be made from the payment as per prevailing norms.

6. **WARRANTY**

i. The Contractor shall provide a warranty for the entire BESS and its constituent equipment.

ii. At a minimum, the Contractor shall provide an unconditional, 7 (Seven) - year parts and labour warranty on all BESS equipment except battery (unit or racks). For the battery storage, 10-year warranty is to provided and the warranty shall cover parts warranty including battery nominal capacity ratings in order to meet the End of battery Life condition described in the tender.

iii. Warranty replacement shall be required for individual unit batteries that degrade in performance to the point at which the BESS cannot meet the requirements specified in this specification up to the End of Battery Life and/or for unit batteries that materially degrade the availability, reliability, safety, or functionality of the BESS.

iv. The warranty shall guarantee the availability of battery replacements delivered to the site within 2 weeks of notification during the battery warranty period. This period, shall, however, not be considered part of the Accountable Outage period for assessing BESS availability.

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v. ANERT, in its discretion may or may not opt for additional 3-year AMC post 7-year warranty at the rate quoted by the contractor in the tender. The vendor is to be undertake the AMC post warranty at the rate quoted, for which additional work order will be issued.

7. SERVICE AND MAINTENANCE

i. The Contractor shall supply all labour, equipment, and materials needed to maintain the BESS performance and safe operation, including all maintenance required to satisfy the warranty terms and conditions.
ii. The Contractor shall list all maintenance activities to be carried out under the maintenance contract. For each maintenance item, the list shall include a description of the item, the expected frequency (maintenance interval), the time required to perform the maintenance, any anticipated parts replacement, and any potential problems in carrying out the maintenance.
iii. Any faulty system or components should be replaced/ repaired within 5 days of fault reporting. The servicing should be carried out at the site of installation.
iv. Any Delay in servicing beyond 5 days of fault reporting would attract penalty at the rate of at the rate fixed by CEO, ANERT and further actions will be initiated against the agency.
v. A designated contact Telephone Number and address should be submitted for reporting faults during the warranty period.

8. INSURANCE

i. The power plant must be insured at every stage of operation – from Material dispatch, storage, completion of installation and till 10 years after commissioning. The insurance for the system till commissioning of the plant must be borne by the contractor.
ii. The insurance coverage on handing over of the system must include all conditions of **Standard Fire and Special Perils Policy (Material Damage)** . The insurance premium for the 7-years of warranty is to be paid by your agency. The amount for insurance premium after commissioning will be borne by ANERT at actuals on reimbursement basis.
iii. On handing over of the system, the original insurance policy is to be handed over to the authorised person at ANERT.

Not Withstanding the terms and conditions stipulated above, it is to be noted that the conditions in the tender document shall prevail.

Yours faithfully

CEO ANERT

AGENCY FOR NEW AND RENEWABLE ENERGY RESEARCH AND TECHNOLOGY ★ ANERT TVM

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Draft List

Draft No.	Subject	Status	Approved By	Last Updated On
DFA/25688	Draft evaluation sheet	DELETED		14/05/2024 07:04 PM

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Technical Evaluation Summary												
Tender ID :		**2024_ANERT_664557_1**										
Tender Title :		**Expression of Interest (EoI) for the Selection of Agency for Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram**										
S/N	**Bidder**	**Registration Certificate**	**GST Registration**	**PAN Details**	**Details of similar installtion done in India**	**Whether OEM for BESS**	**Copy of MoU with OEM and Authorisation Letter**	**Details of Engineers who have undergone training**	**Minimum Average Annual Turnover of Rs. 5 Crores in any of two out of the last five financial years**	**IEC 62477**	**IEC 61508 OR IEC 62620 / IEC 62619**	**IEC 61000**
1	Solar Systems	**N**	**Y**	**Y**	**N**	**N**	**N**	**Y**	**Y**	**Y**	**Y**	**Y**
2	Hykon India Ltd	**Y**	**Y**	**Y**	**N**	**Y**	**N**	**Y**	**Y**	**Y**	**Y**	**Y**
3	POM Systems and Services Pvt Ltd	**Y**	**Y**	**Y**	**Y**	**N**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
4	Centre Tec	**Y**	**Y**	**Y**	**N**	**N**	**N**	**N**	**Y**	**Y**	**Y**	**Y**
5	Solgen Energy India Pvt Ltd	**Y**	**Y**	**Y**	**N**	**N**	**N**	**Y**	**Y**	**Y**	**Y**	**Y**

#ApprovedByPost#

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Local References List

Reference Attached	Attached By	Attached On
Centretec.pdf	VINAY P, ROOF TOP SOLAR ANERT	08/04/2024 11:12 AM
Hykon.pdf	VINAY P, ROOF TOP SOLAR ANERT	08/04/2024 11:14 AM
POM POwer.pdf	VINAY P, ROOF TOP SOLAR ANERT	08/04/2024 11:15 AM
Solarsystems.pdf	VINAY P, ROOF TOP SOLAR ANERT	08/04/2024 11:17 AM
Solgen.pdf	VINAY P, ROOF TOP SOLAR ANERT	08/04/2024 11:20 AM
T2 Hykon.pdf	VINAY P, ROOF TOP SOLAR ANERT	06/06/2024 07:35 PM
T2 POM.pdf	VINAY P, ROOF TOP SOLAR ANERT	06/06/2024 07:36 PM
T2 Solarsys.pdf	VINAY P, ROOF TOP SOLAR ANERT	06/06/2024 07:37 PM

Center Tec

To,

CEO
ANERT
Thiruvananthapuram

Sir,

I/We hereby e-tender to render the services under annexed terms and conditions of contract, the whole of the articles referred to and described in the attached specification and quantity decided by the Agency for New & Renewable Energy Research and Technology (ANERT), at the rates quoted against each item.

I am/We are remitting herewith the required amount of Rs.....towards the Registration Fee by electronic payment vide transaction No ..... dtd.....

(Tender Fee Exemption Claimed)

Yours faithfully,

Place: Kochi
Date: 05-03-2024

Signature
Name - **NELSON T**
Designation – **Managing Partner**

CENTER TEC ★ CUSAT Main Road ★ KOCHI-682

24/78, Primus Tower,PKA Nagar, CUSAT Main road, Kalamassery,Cochin-682022
E mail: sales@centertec.in
Firm Reg. No. 2626/2015

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Center Tec

ANNEXURE A – SUMMARY OF BID QUALIFICATION REQUIREMENTS

1.	Name of the applicant and address with email, phone etc.	**CENTER TEC** **PRIMUS TOWER** **PKA NAGAR** **CUSAT MAIN ROAD** **COCHIN – 682022** **E-MAIL : sales@centertec.in** **PH : 94470 10309**
2.	Main area of Business	**INFORMATION TECHNOLOGY, ENERGY STORAGE SYSTEM RELATED SERVICES**
3.	Registered Office in Kerala	**CENTER TEC** **PRIMUS TOWER** **PKA NAGAR** **CUSAT MAIN ROAD** **COCHIN – 682022**
4.	Details of Power of Attorney	Agg: No : 2314 6 to 2314 9 dtd 2/3/2024.
5.	Proof for Experience	**CERTIFICATE ATTACHED**

Documentary evidence for the bid qualification requirements are submitted along with this document and the details furnished above are true and correct.

Signature of authorized signatory

CUSAT Main Road

Date : 05-03-2024

Name – **Nelson T**

Designation – **Managing Partner**

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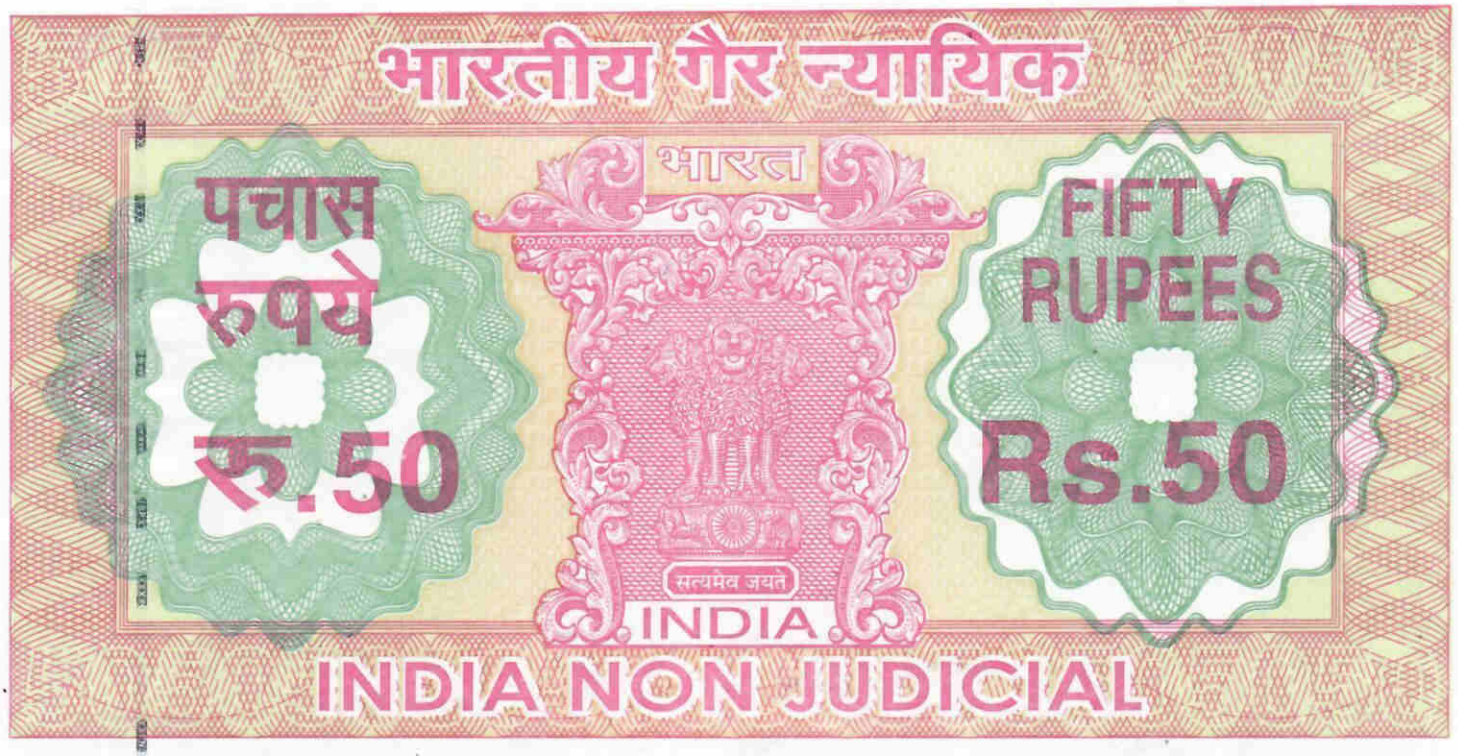

കേരളം केरल KERALA

CZ 150836

ANNEXURE B – AGREEMENT

Subject: Expression of Interest (EoI) for the Selection of Agency for Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram"

With reference to the RFP Document for the captioned Project, I/we, Nelson T, Managing Partner authorized signatory of Centertec, Primus Tower, PKA Nagar, CUSAT Main Road, Cochin - 682022 having examined all relevant documents and understood their contents hereby undertake that the Proposal is unconditional and unqualified.

1. I/We confirm that I/we have examined the terms and conditions published in the EOI and accordingly submitting the Application. The proposal is unconditional and unqualified.
2. All information provided in the Proposal is true and correct and all documents accompanying such Proposal are true copies of their respective originals.
3. This statement is made for the express purpose of appointment Providing PMU services in terms of providing Consultancy and Technical Services

No. 23150
21/2/2024
Center Tech
Kochi

CENTER TEC * CUSAT Main Road * KOCHI

SINDHU.I.S
SASTHAMANGALAM VENDOR

22 FEB 2024

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भारतीय गैर न्यायिक

भारत

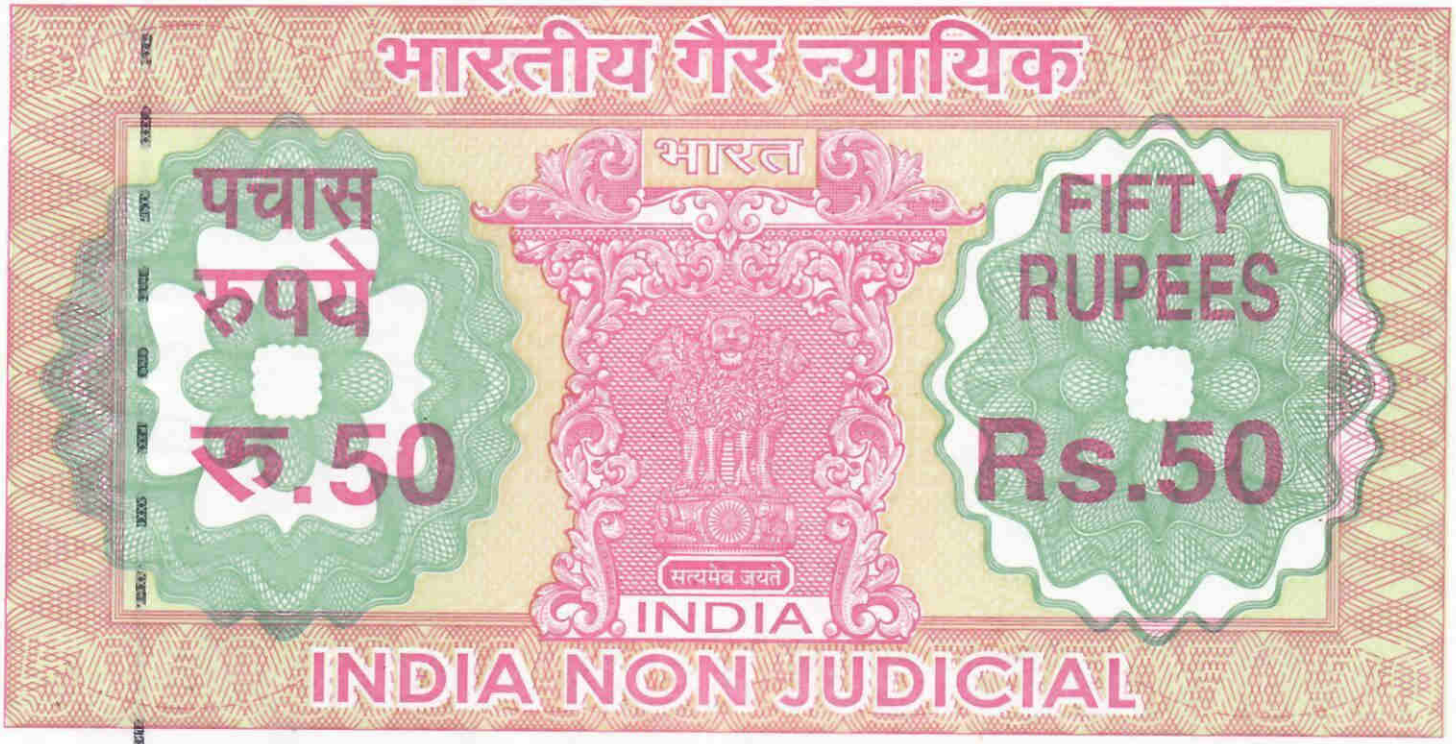
पचास रुपये रु.50

FIFTY RUPEES Rs.50

सत्यमेव जयते

INDIA

INDIA NON JUDICIAL



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CZ 150839

6. I / We certify that in regard to matters other than security and integrity of the country, we or any of our Associates have not been convicted by a Court of Law orindicted or adverse orders passed by a regulatory authority which would cast a doubt on our ability to undertake the Consultancy for the Project or which relatesto a grave offence that outrages the moral sense of the community.

8. I / We further certify that in regard to matters relating to security and integrity of the country, we have not been charge-sheeted by any agency of the Government or convicted by a Court of Law for any offence committed by us or by any of our Associates.

9. I / We hereby irrevocably waive any right or remedy which we may have at any stage at law or howsoever otherwise arising to challenge or question any decision taken by the ANERT (and/ or the Government of Kerala / India) in connection with the selection of Consultant or in connection with the Selection Process itself in respect of the above mentioned Project.

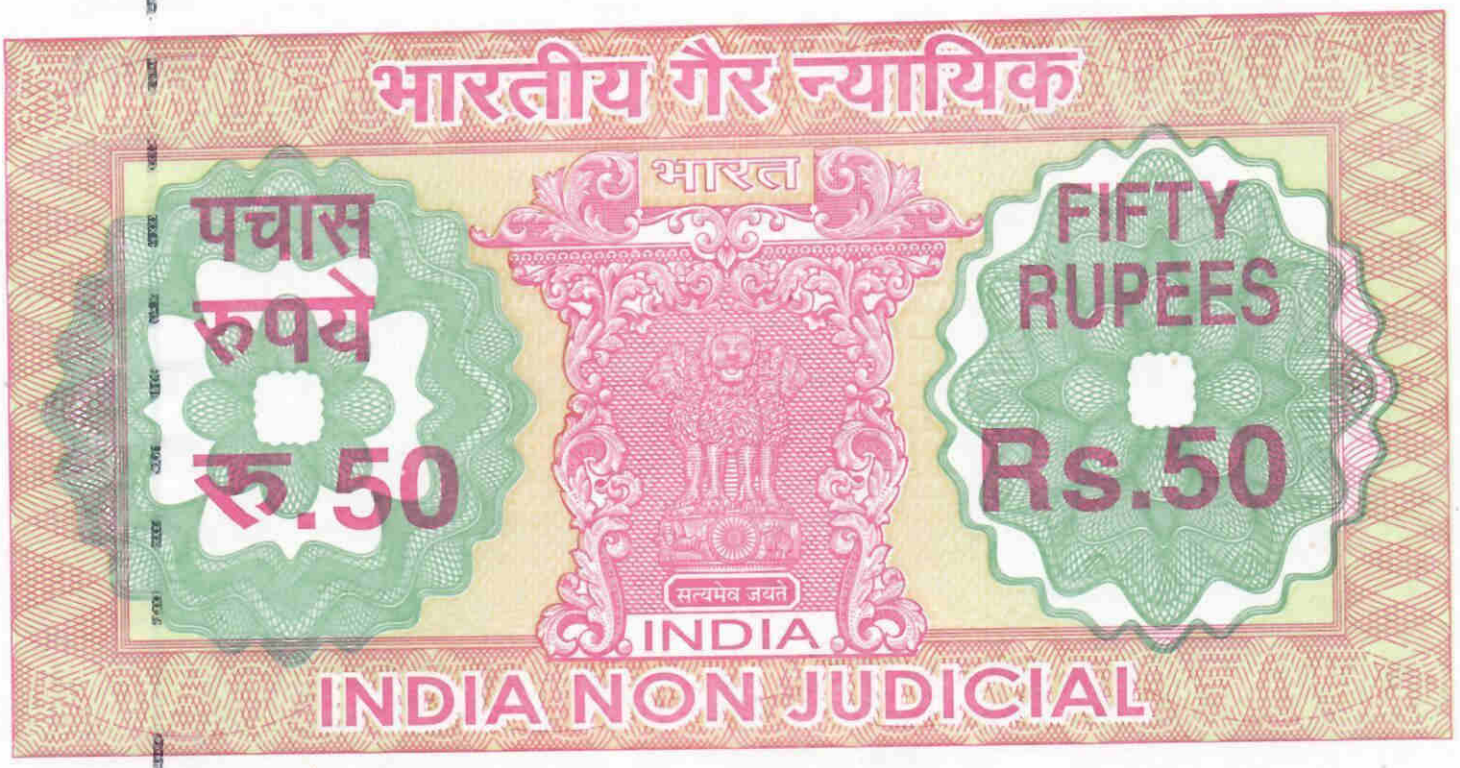
No. 28153
2/3/2024

Center Tech
Kochi

CENTER TEC CUSAT Main Road KOCHI-682 022

SINDHU.I.S
SASTHAMANGALAM VENDOR

PRINCIPAL STAMP VENDOR
22 FEB 2024



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3. I/We have not directly or indirectly or through an agent engaged or indulged in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice, as defined in the EOI document, in respect of any tender or request for proposal issued by or any agreement entered into with the ANERT or any other public sector enterprise or any Government, Central or State; and
4. I/We hereby certify that we have taken steps to ensure that in conformity with the provisions of this EOI, no person acting for us or on our behalf will engage in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice.
5. I / We understand that you may cancel the Selection Process at any time and thatANERT is neither bound to accept any Proposal that you may receive nor to select the Consultant, without incurring any liability to the Applicants in accordance with the EOI document.

No 2352
2/3/2024

Center Tech
Kochi

CENTER TEC
CUSAT Main Road
KOCHI-682

SINDHU.I.S
SASTHAMANGALAM VENDOR

PRINCIPAL ST. EAST FORT
22 FEB 2024

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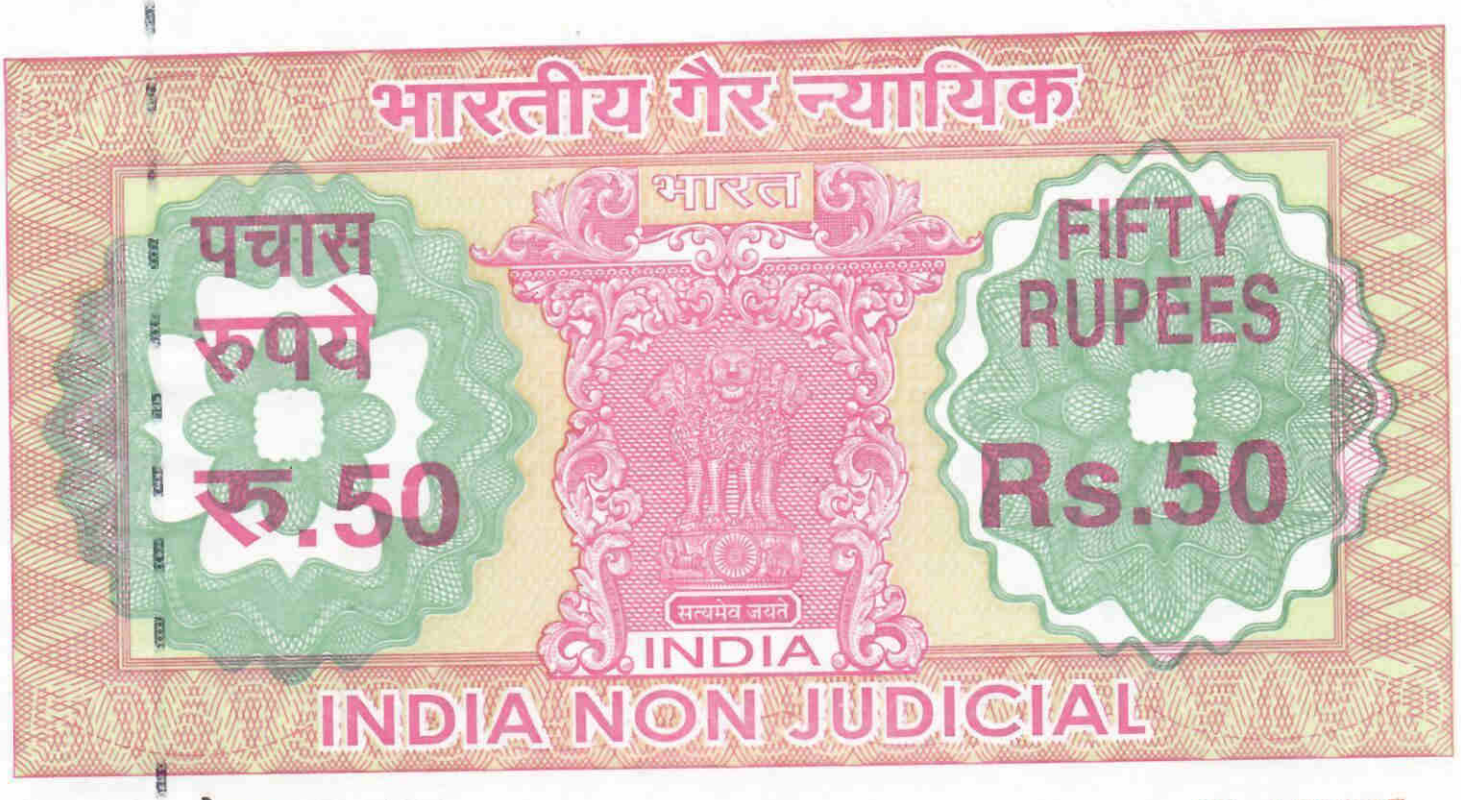

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4. I/We shall make available to ANERT any additional information it may deem necessary or require for supplementing or authenticating the Proposal.
5. I/We acknowledge the right of the ANERT to reject our application without assigning any reason or otherwise and hereby waive our right to challenge the same on any account whatsoever.
6. I/We certify that in the last three years, I/we have neither failed to perform on any contract, as evidenced by imposition of a penalty by an arbitral or judicial Court or a judicial pronouncement or arbitration award against us, nor have been expelled from any project or contract nor have had any contract terminated for breach on our part.
7. I/We declare that:
    1. I/We have examined and have no reservations to the EOI Documents, including any Addendum thereto, issued by the ANERT;
    2. I/We do not have any conflict of interest in accordance with provisions of the EOI Document;

No 23151
21/2/2024
Center Tech
Kochi

CENTER TEC ★ CUSAT Main Road ★ KOCHI-682

22 FEB 2024

SINDHU.I.S
SASTHAMANGALAM VENDOR

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10. I / We agree and understand that the proposal is subject to the provisions of the EOI document. In no case, shall I/we have any claim or right of whatsoever nature if the Consultancy for the Project is not awarded to me/us or our proposal is not opened or rejected.
11. I / We agree to keep this offer valid for (120) days from the date of opening of technical bid.
12. I/We have studied EOI and all other documents carefully. We understand that we shall have no claim, right or title arising out of any documents or information provided to us by the ANERT or in respect of any matter arising out of or concerning or relating to the Selection Process including the award of Consultancy.
13. The Technical Proposals and Financial Proposals are being submitted in separate Covers available in the etenders portal.
14. I/We agree and undertake to abide by all the terms and conditions of the EOI Document. In witness thereof, I/we submit this Proposal under and in accordance with the terms of the EOI Document.

For CENTER TEC

Managing Partner

CENTER TEC CUSAT Main Road KOCHI-682

Signed by Sri .....

(Date) .....

in the presence of witnesses

1. Nicheesh Chandran Nicheesh

2. Sudheesh K.S

Signed by Sri .....

(Date) .....

in the presence of witnesses

1.

2.

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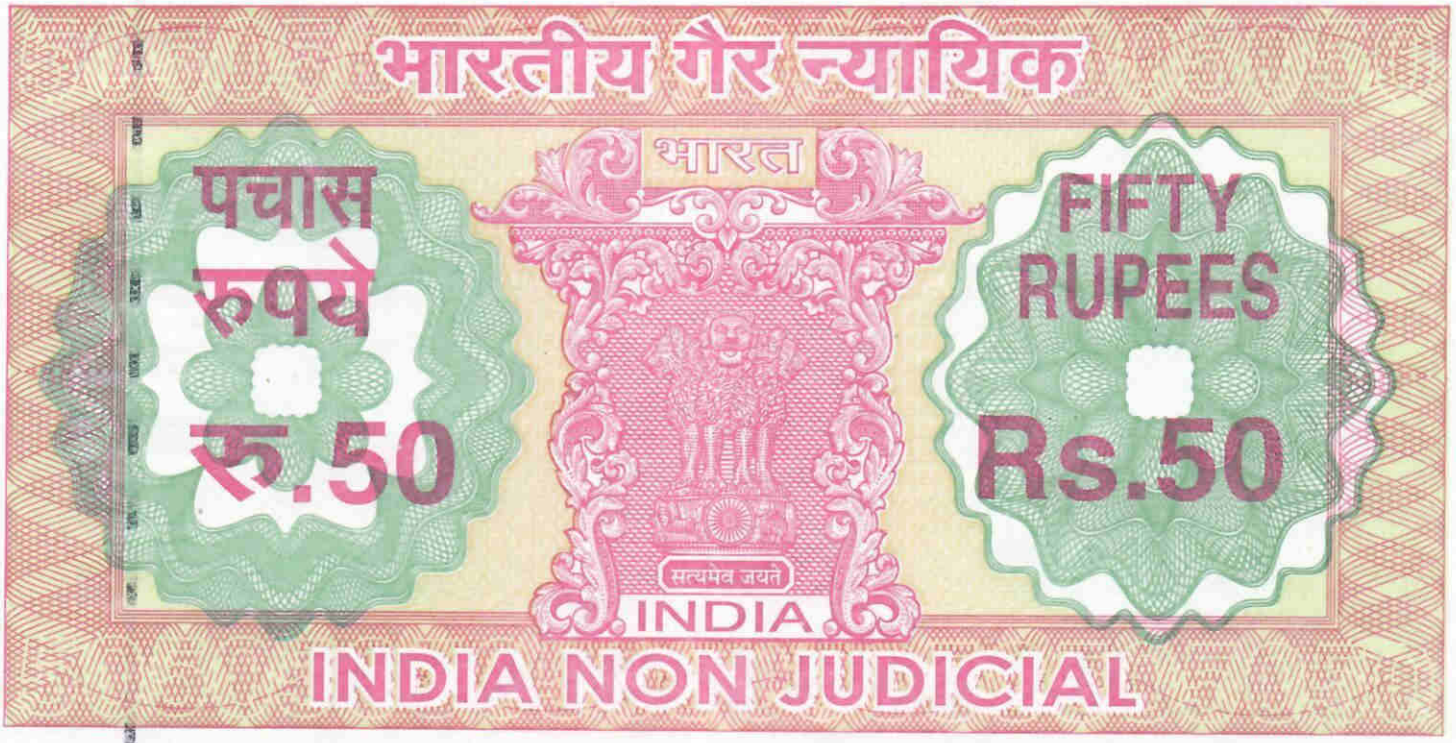

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CZ 150832

ANNEXURE C – POWER OF ATTORNEY

Know all men by these presents, we, M/s Centertec, Primus Tower, PKA Nagar, CUSAT Main Road, Cochin - 682022 do hereby constitute, nominate, appoint and authorize Mr. Nelson T son of Mr. Thankachan and presently residing at Kattil, 106 7th cross road, Mavelinagar, Changampuzha Nagar P.O Thrikkakara North, Ernakulam Kerala-682033, who is presently employed with us and holding the position of Managing Partner as our true and lawful attorney (Hereinafter referred to as the —Authorized Representative) to do in our name and on our behalf,

NOTARY
ANEEDA BEEGUM
KANAYANNUR TALUK
Reg. No: 01/2016/EKM
Expiry Date: 31/12/2025
GOVT. OF KERALA

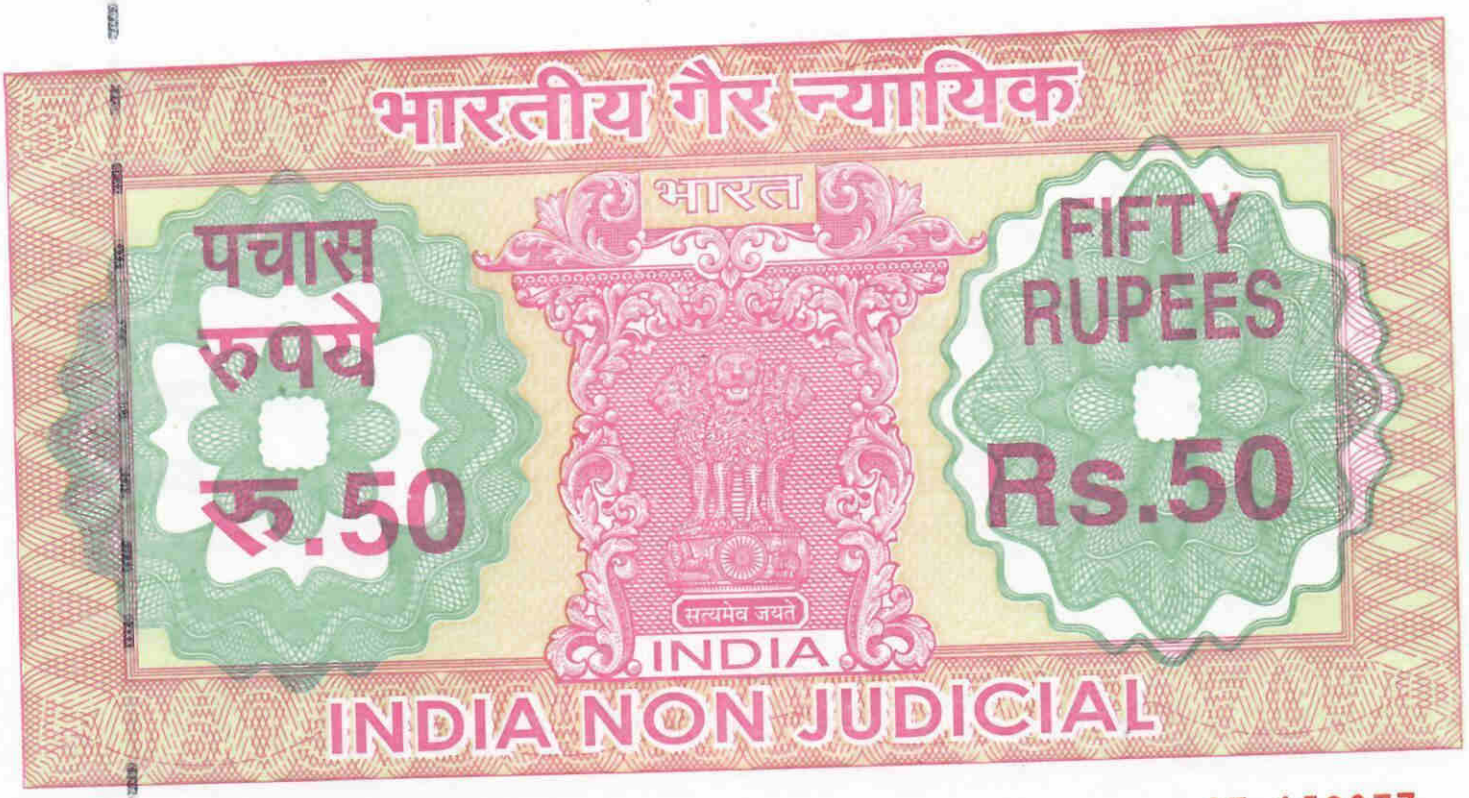
5/3/24
ANEEDA BEEGUM
ADVOCATE & NOTARY
Puthankattil Bldg., Near Varnam Studio
South Kalamassery
Roll No: K/1598/1999
Mob: 9020984844

CENTER TEC
CUSAT Main Road
KOCHI-682

No. 23146
5/3/2024
Center Tech
Kochi

285 SINDHU.I.S
SASTHAMANGALAM VENDOR

22 FEB 2024



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CZ 150833

all such acts, deeds and things as are necessary or required in connection withor incidental to submission of Expression of Interest (EoI) for the Selection of Agency for Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram including but not limited to signing and submission of all applications, proposals and other documents and writings, participating in pre-bid and other conferences and providing information/ responses to the ANERT, representing us in all matters before theANERT, signing and execution of all contracts and

5/3/24

ANEEDA BEEGUM
ADVOCATE & NOTARY
Puthankattil Bldg., Near Varnam Studio
South Kalamassery
Roll No: K/1598/1999
Mob: 9020984844

NOTARY
ANEEDA BEEGUM
KANAYANNUR TALUK
Reg. No: 01/2016/EKM
Expiry Date: 31/12/2025
GOVT. OF KERALA

No 23147
2/3/2024
Kochi

CENTRE TEC
CUSAT Main Road
KOCHI-682

PRINCIPAL ST.EAST FORT
22 FEB 2024

SINDHU.I.S
SASTHAMANGALAM VENDOR

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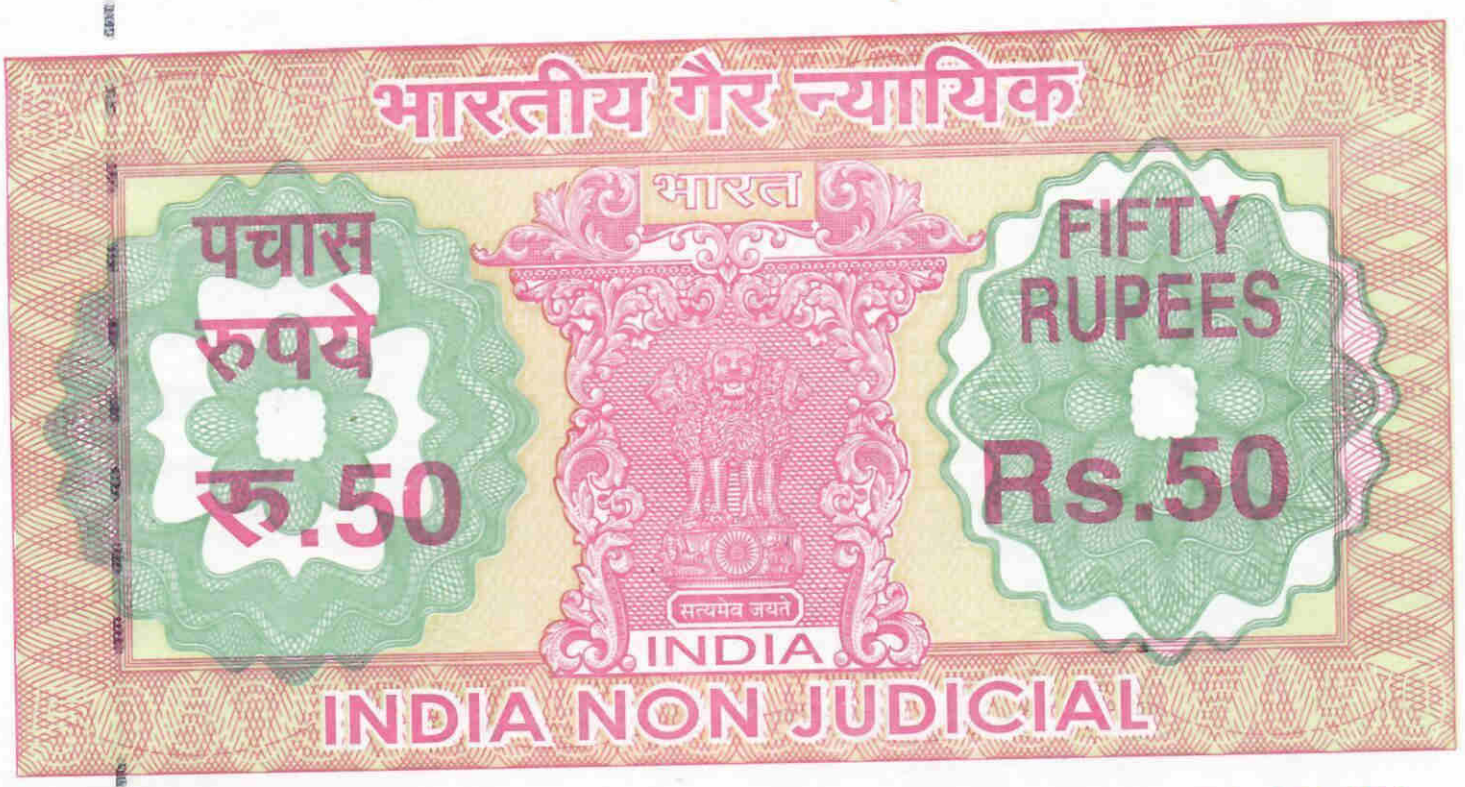

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CZ 150834

undertakings consequent to acceptance of our proposal and generally dealing with the Authority in all matters in connection withor relating to or arising out of our Proposal for the said Project and/or upon award thereofto us till the entering into of the Agreement with the ANERT.

AND, we do hereby agree to ratify and confirm all acts, deeds and things lawfully done or caused to be done by our said Authorized Representative pursuant to and in exercise of the powers conferred by this Power of Attorney and that all acts, deeds and things done by our said Authorized Representative in exercise of the powers hereby conferred shall and shall always be deemed to have been done by us.

5/3/24

ANEEDA BEEGUM
ADVOCATE & NOTARY
Puthankattil Bldg., Near Varnam Studio
South Kalamassery
Roll No: K/1598/1999
Mob: 9020984844

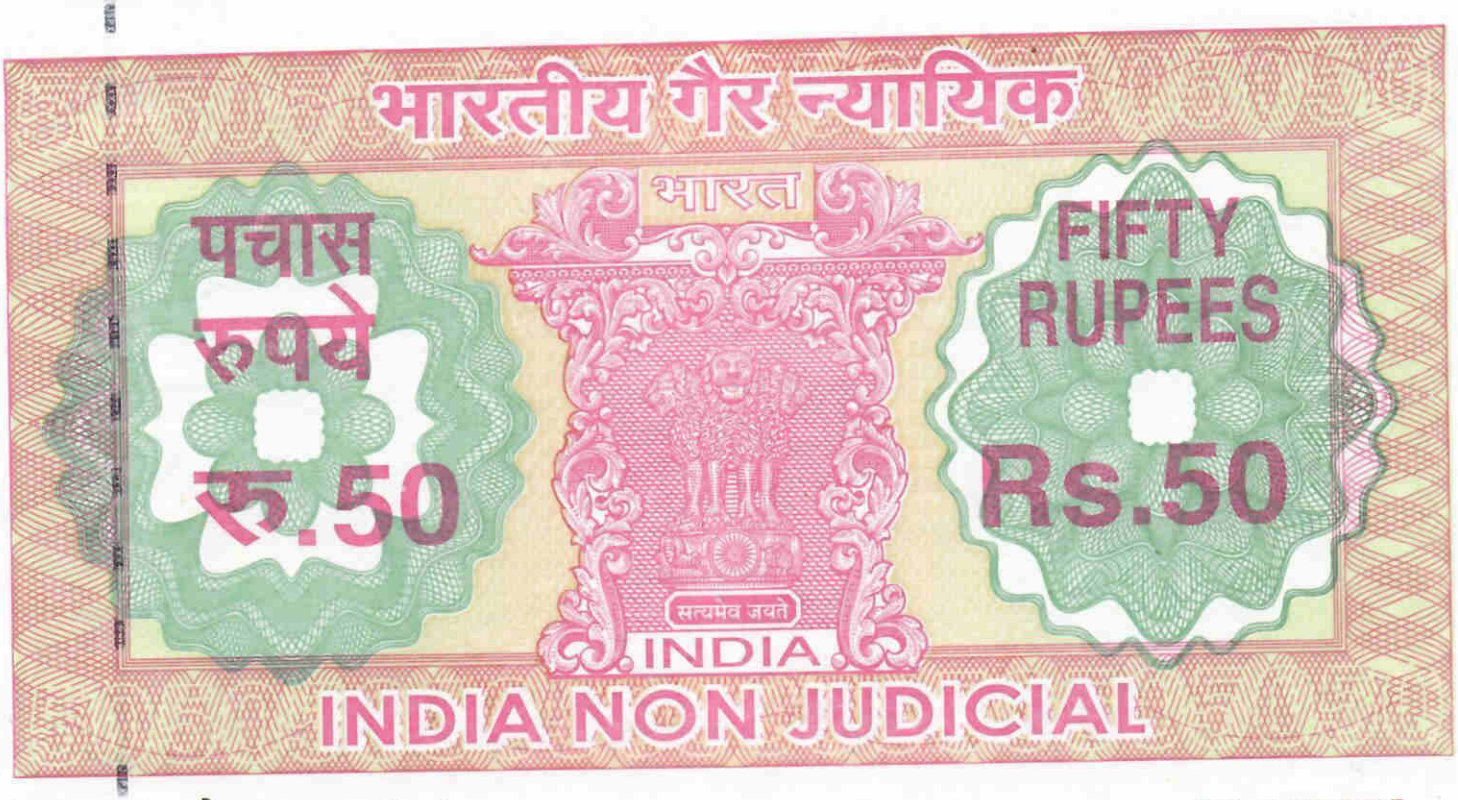
NOTARY
ANEEDA BEEGUM
KANAYANNUR TALUK
Reg. No: 01/2016/EKM
Expiry Date: 31/12/2025
GOVT. OF KERALA

No. 23148 Center Tech Kochi

CENTER TEC
CUSAT Main Road

SINDHU.I.S
SASTHAMANGALAM VENDOR

22 FEB 2024



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IN WITNESS WHEREOF WE, M/s CENTERTEC THE ABOVE - NAMED AUTHORISED REPRESENTATIVE HAVE EXECUTED THIS POWER OF ATTORNEY ON THIS 5th DAY OF MARCH 2024

For Centertec For CENTER TEC

Managing Partner

CENTER TEC CUSAT Main Road KOCHI-682

(Signature, name, designation and address)

Witnesses:

1. Nicheesh Chandran Nicheesh
2. Sudheesh K.S

Notarized

Accepted (Signature, name, designation and address of the Attorney)

5/3/24
ANEEDA BEEGUM
ADVOCATE & NOTARY
Puthankattil Bldg., Near Varnam Studio
South Kalamassery
Roll No: K/1598/1999
Mob: 9020984844

NOTARY ANEEDA BEEGUM KANAYANNUR TALUK Reg. No: 01/2016/ERN Expiry Date: 31/12/2025 GOVT. OF KERALA
SPECIAL ADHESIVE

No. 23/49
2/8/2024
Center Tech
Kochi

22 FEB 2024
SINDHU.I.S
SASTHAMANGALAM VENDOR

Center Tec

ANNEXURE D – DECLARATION BY THE BIDDER

e-EoI Notification No: ANERT-TECH/41/2024-PE1(RTS), dtd 27-02-2024 for Expression of Interest (EoI) for the Selection of Agency for Pilot Implementation ofBattery Energy Storage System at ANERT HQ, Thiruvananthapuram

To

The CEO

ANERT

We, the undersigned, declare that:

1. We have examined and have no reservations to the Bidding Document, including Addenda No. (if any) Dark corrigendum -1, Technical corrigendum - 1
2. We offer to supply in conformity with the Bidding Document and in accordance with the delivery schedule
3. Our Bid shall be valid for a period of 4 months from the date fixed as deadline for the submission of EoIs in accordance with the Bidding Document, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;
4. If our Bid is accepted, we commit to submit a Security Deposit in the amount of 3 percent of the Contract Price for the due performance of the Contract;
5. We are not participating, as Bidders, in more than one Bid in this bidding process;
6. Our firm, its affiliates or subsidiaries, including any subcontractors or suppliers forany part of the Contract, has not been declared ineligible by the ANERT or Government of Kerala;
7. We understand that this Bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract betweenus, until a formal Contract is prepared and executed.
8. Our firm has obtained the certifications from MNRE or NABL approved Test laboratories that the goods and services are satisfying the technical criteria specified in the bid.

Signature

Date: 05-03-2024

Name : **Nelson T**

CENTER TEC CUSAT Main Road KOCHI-682

24/78, Primus Tower,PKA Nagar, CUSAT Main road, Kalamassery,Cochin-682022
E mail: sales@centertec.in
Firm Reg. No. 2626/2015

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Center Tec

ANNEXURE E – DECLARATION OF RELATIONSHIP WITH ANERT EMPLOYEE

EoI Notification No.: ANERT-TECH/41/2024-PE1(RTS) dtd 27-02-2024
Expression of Interest (EoI) for the Selection of Agency for Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram

To

The CEO

ANERT

Name of the ANERT employee with Designation: **NONE**

Name of the bidder related to the employee: **NONE**

This is to put on record that NONE currently working as NONE in ANERT is related to, who is the bidder in the bid. We are aware of the Anti-corruption policy of ANERT and will observe the highest standards during the execution of contract and shall retain from corrupt, fraudulent, collusive or coercive practices on competing for the contract.

Signature

Name : **Nelson T**

Date : 05-03-2024

CENTER TEC CUSAT Main Road KOCHI-682

24/78, Primus Tower,PKA Nagar, CUSAT Main road, Kalamassery,Cochin-682022
E mail: sales@centertec.in
Firm Reg. No. 2626/2015

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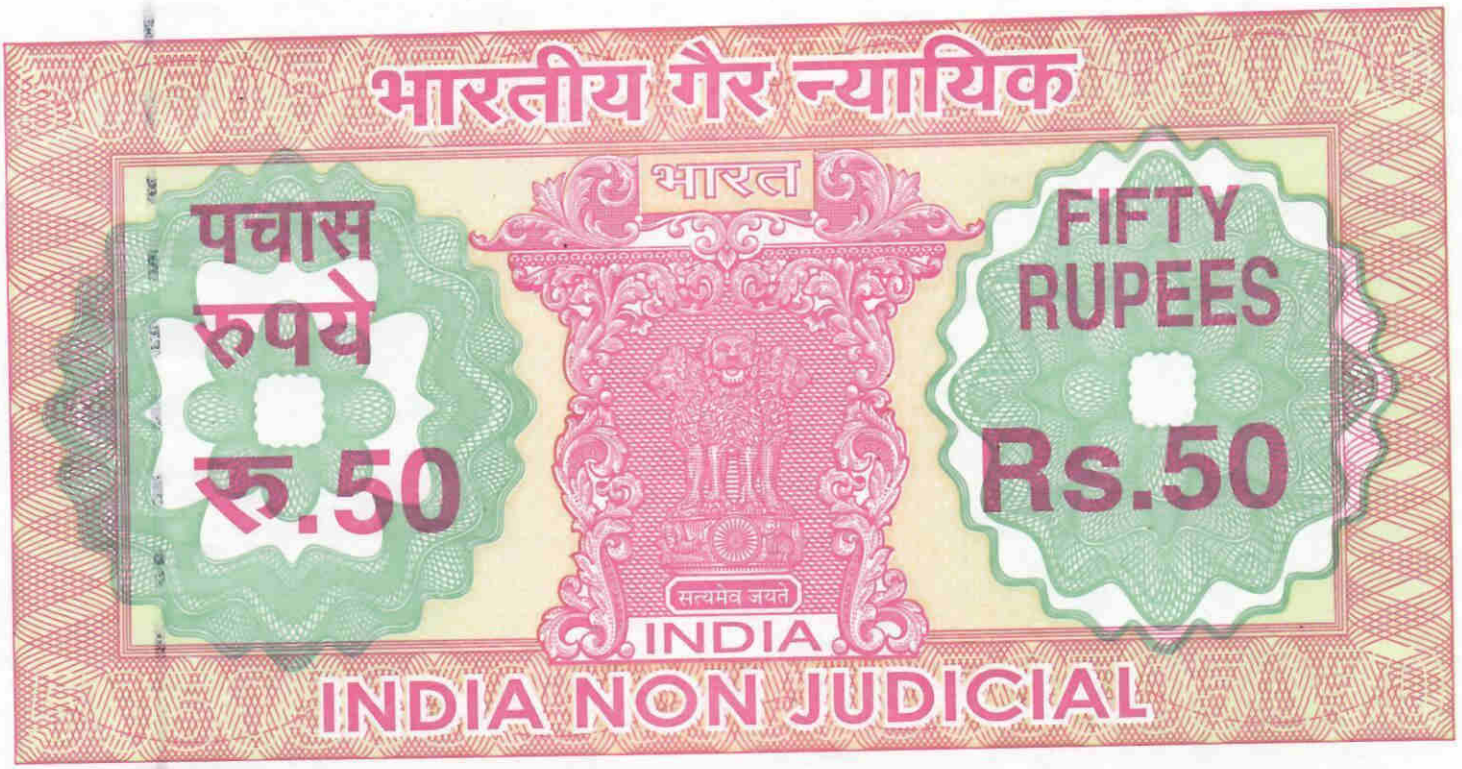

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ANNEXURE F – UNDERTAKING FOR NO BLACKLISTING & NO BANNING

Undertaking for No Blacklisting & No Banning

To

The CEO
ANERT

Sub: Expression of Interest (EoI) for the Selection of Agency for Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram

I / We hereby declare that presently our Company Partnership Firm is having unblemished record and is not declaredineligible for corrupt/fraudulent practices by any State/Central Government/PSU on thedate of Bid Submission.

I / We further declare that presently our Company Partnership Firm is not blacklisted and not declared ineligible for reasons other than corrupt/fraudulent practices by any State/Central Government/PSU on the date of Bid Submission.

CENTER TEC ★ CUSAT Main Road ★ KOCHI-682

KILIYALOOR MANI
PALAYAM VENDOR

PRINCIPAL Sub TREASURY Date

No. 60620
1/3/24
CENTER TECH
KOCHI

29 FEB 2024

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भारतीय गैर न्यायिक

भारत

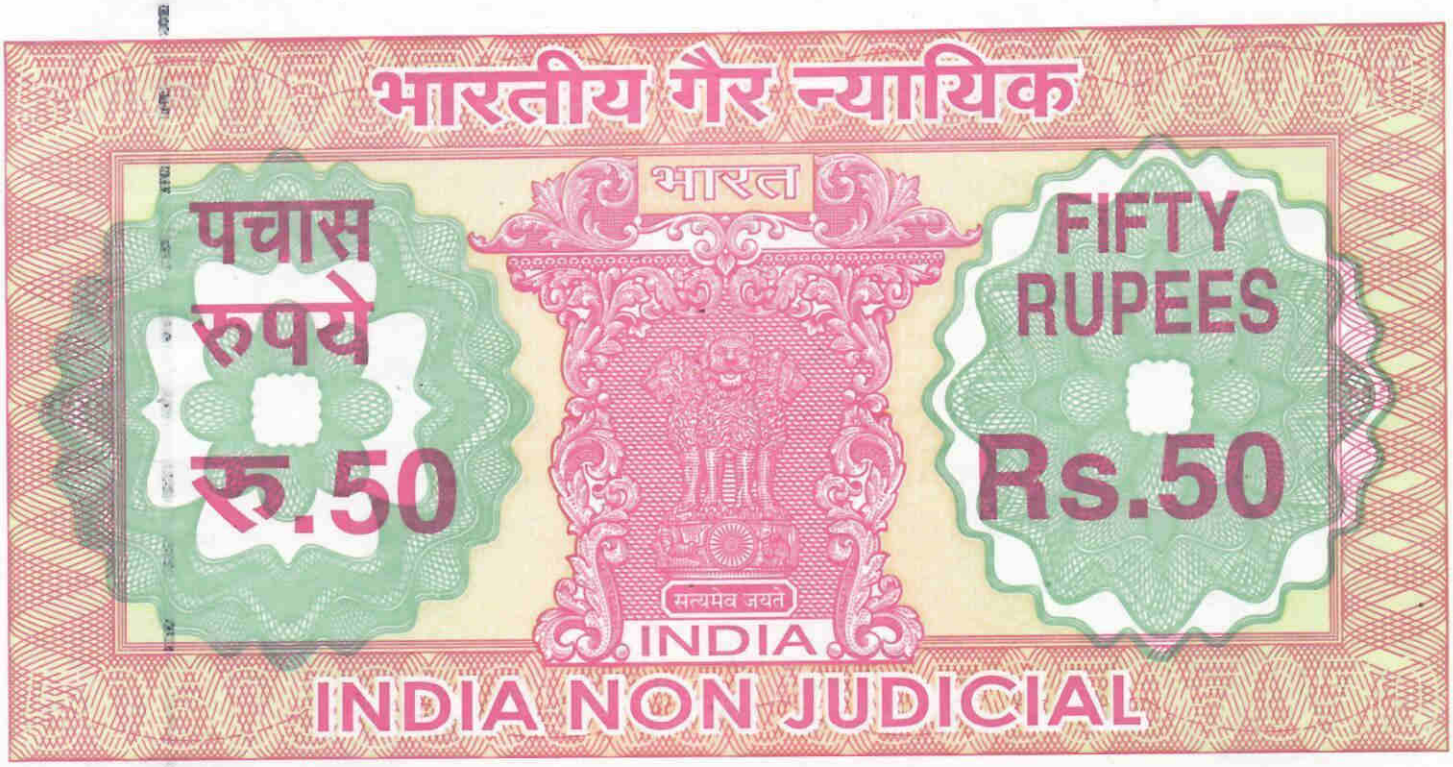
पचास रुपये रु.50

FIFTY RUPEES Rs.50

सत्यमेव जयते

INDIA

INDIA NON JUDICIAL



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DA 595809

If this declaration is found to be incorrect then without prejudice to any other action that may be taken, our security may be forfeited in full and the EoI if any to the extent accepted may be cancelled.

(Signature & Seal of Authorized Signatory for which POA attached)

For CENTER TEC

Name of Authorized Signatory: Managing Partner

Designation: Nelson T Managing Partner

Date: 05-03-2024

Place: Kochi

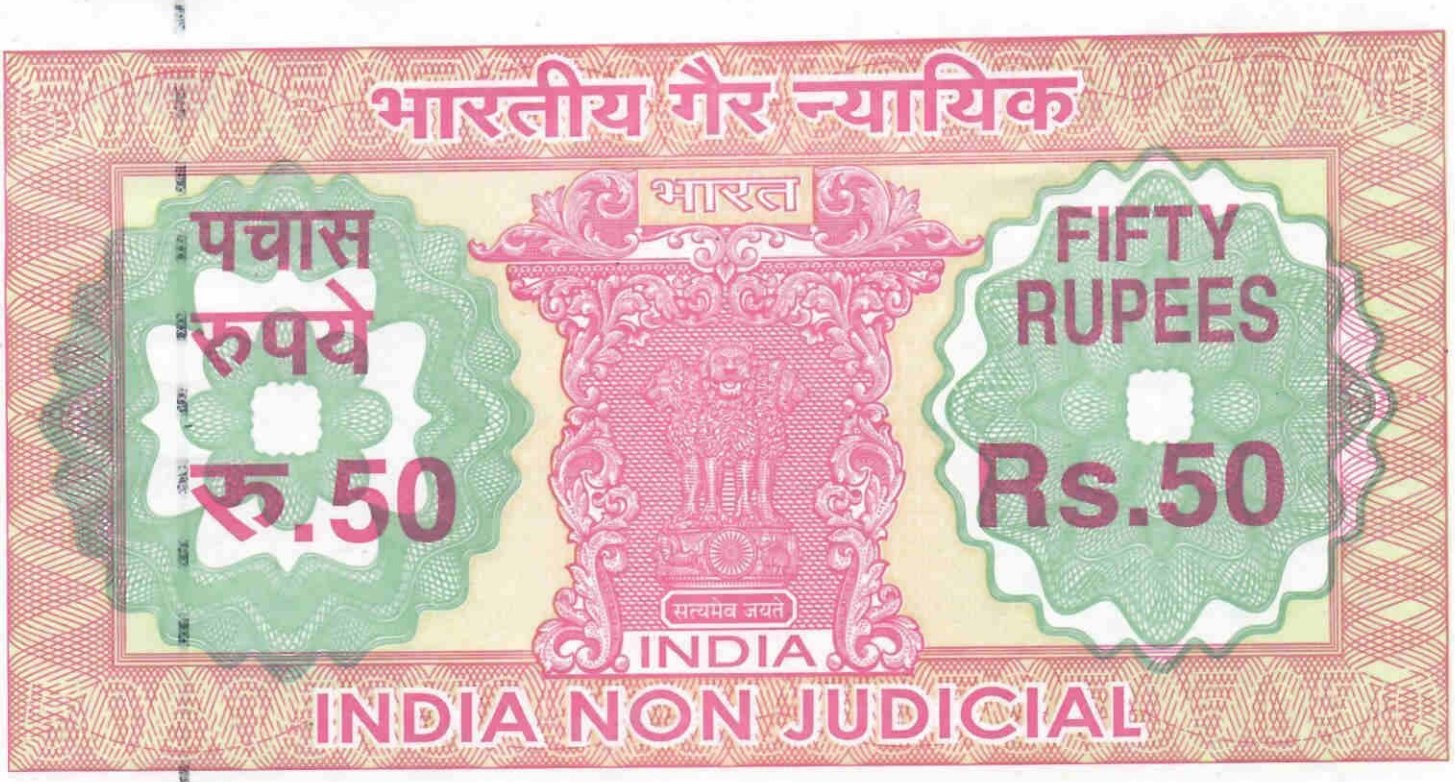
CENTER TEC CUSAT Main Road KOCHI-682

No. 60621
1/3/24
CENTER TECH
KOCHI

KILIYALLOOR MANI
PALAYAM VENDOR
India Institute of Commerce Bldg.,
Thiruvananthapuram-34

PRINCIPAL SUB TREASURY
Date.....

29 FEB 2024



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DA 595810

No. 66622
1/3/24
CENTER TECH
KOCHI

KUNNALLOOR MANI
PALAYAM VENDOR

PRINCIPAL SUB TREASURY
Date
29 FEB 2024

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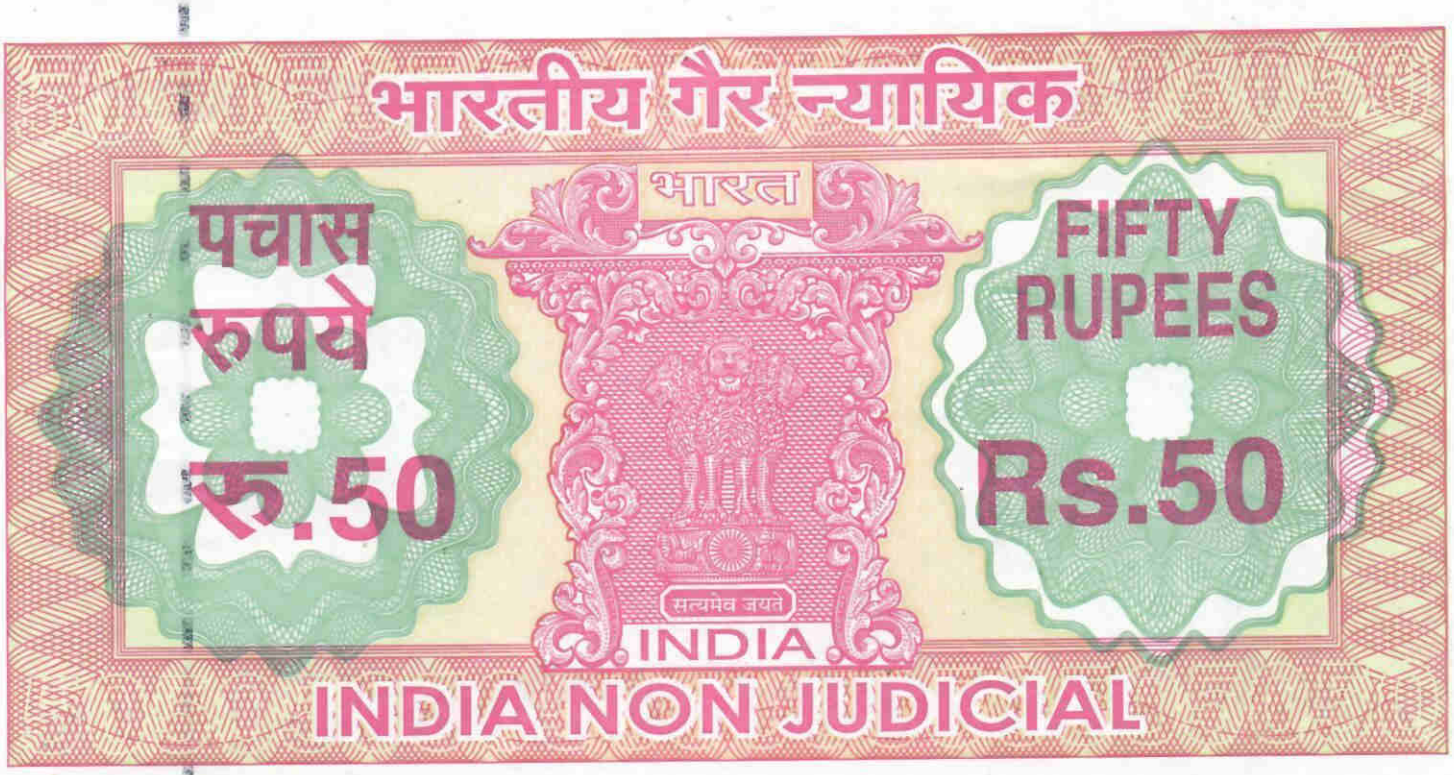

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DA 595811

No. 606 23
1/3/24
CENTER TECH
KOCHI

KILIYALLOOR MANI
PALAYAM VENDOR
Commerce Bldg.,

PRINCIPAL SUB TREASURY
Date.....

29 FEB 2024

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THE
QUALITY CHOICE
FOR ALL
YOUR POWER NEEDS

POM
Systems & Services Pvt. Ltd.

To,

POM/MAF/ANERT-2024-122
1.03.2024

The CEO
ANERT
THIRUVANATHAPURAM

Reference:- e-EoI Notification No: **ANERT-TECH/41/2024-PE1** dtd **27.02.2024** for Expression of Interest [EoI] for the Selection of Agency for Pilot Implementation of **Battery Energy Storage System** at **ANERT** HQ, Thiruvananthapuram

We, the undersigned, declare that:

We are authorised distributor for **M/s. Sicon Chat Union Electric Co. Ltd** located at Bldg. 14th & 15th No.319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, China manufacturers of **Energy storage Systems.**

We authorise **M/s. Centertec, Primus Tower, PKA Nagar, Cusat Main Road, Cochin 682 022** to participate and quote in the Tender No. **ANERT-TECH/41/2024-PO1[RTS]**

We, confirm herewith, if **M/s. Centertec** awarded the contract to install and maintain the above tendered item, we will support them, to meet and maintain all the equipment, supplied vide the above Tender number during the warranty and post warranty Annual Maintenance Period.

[Signature]

POM SYSTESMS & SERVICES PVT. LTD. ★ BENGALURU ★

Name I.B.Rao.
Managing Director
POM Systems & Services Pvt. Ltd
No.75, 6th Main, 3rd Phase,
Peenya Indl. Area, Bangalore 560 058

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THE
QUALITY CHOICE
FOR ALL
YOUR POWER NEEDS

POM
Systems & Services Pvt. Ltd.

To,

POM/MAF/ANERT-2024-121
1.03.2024

The CEO
ANERT
THIRUVANATHAPURAM

Reference:- e-EoI Notification No: **ANERT-TECH/41/2024-PE1** dtd **27.02.2024** for Expression of Interest (EoI) for the Selection of Agency for Pilot Implementation of **Battery Energy Storage System** at **ANERT** HQ, Thiruvananthapuram

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We, confirm herewith, if **M/s. Centertec** awarded the contract to install and maintain the above tendered item, we will support them, to meet and maintain all the equipment, supplied vide the above Tender number during the warranty and post warranty Annual Maintenance Period.

Signature
Name I.B.Rao.
Managing Director
POM Systems & Services Pvt. Ltd
No.75, 6th Main, 3rd Phase,
Peenya Indl. Area, Bangalore 560 058

Date 1.03.2024

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DEED OF PARTNERSHIP

This deed of partnership entered into at Kochi on this the 16th day of December 2011 between:

1. **Mr. T.Nelson** - S/o. L.Thankachan - aged 39 years, residing at 106, 7th cross road, Maveli Nagar, Changampuzha Nagar P.O, Ernakulurn – 682033 hereinafter called the party of the FIRST PART, on the One Part

2. **Ms. Lovely Nelson** -- Daughter of Mr. Abraham Jacob -- aged 36 years – residing at 106, 7th cross road, Maveli Nagar, Changampuzha Nagar PO, Ernakulum -- 682033 hereinafter called the party of the SECOND PART, on the Other Part.

No 43454 Date 16/12/2011
Value of Rs 1000/-
Sold to T. NELSON
CHANGAMPUZHA NAGAR
ERNAKULAM

P.K.RAMA VARMA
HIGH COURT VENDOR
ERNAKULAM

DISTRICT STAMP DEPOT
14 DEC 2011
ERNAKULAM

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Whereas the above mentioned parties are desirous of commencing and carrying on a business in partnership

And whereas the parties have thought it expedient to reduce the terms and conditions of their partnership into writing.

NOW THIS DEED SHALL WITNESSETH AS UNDER:

1. The partnership shall be deemed to have come into force with immediate effect.

2. The name of the partnership firm shall be **"Center Tec"**

3. The Principal place of business shall be at V/ 758 B, Room No 119, Alpha Towers, Club Junction, Edappally, Ernakulum -682024 and/or at such other places as may be agreed upon between the parties from time to time.

4. The business of the firm shall be to trade, deal, Supply and integration of products and systems related to IT (wired and wireless networking for Data, voice and video), safety (fire detection, Suppression, fire retardant, fire proof infrastructure components and systems)and security(Access control, surveillance, intrusion detection public address systems, physical security equipments like bollards, boom barriers, UVS, tyre killers etc.) domains and/or such other businesses as may be agreed upon between the parties from time to time.

5. The initial capital for the partnership business shall be fixed at Rs.1,00,000/- (Rupees One Lakh only) and the same shall be contributed by the partners in the following ratio.

T Nelson	Rs. 75000
Lovely Nelson	Rs. 25000

Any further sum as may be required for the partnership business may be contributed by the partners in such proportion as may be mutually agreed between the partners from time to time.

6. Both the parties shall devote their time and talent and be involved in the activities of the partnership business. The Party of the First Part shall be the Managing Partner and shall be in charge of overall administration and management of the business of the partnership. . However, it has been agreed that the Party of the Second Part shall also be actively involved in the day-to-day activities and management of the firm.

7. The partners shall be paid Interest @ 12% per annum on the balance standing to the credit of capital / current account of the partners. However, no interest shall be payable in the event of the operations of the business of the partnership resulting in loss before providing such interest. In the event of profits before charging interest not being adequate to provide interest @ 12% on the capital and current account, the interest payable shall be restricted to the availability of profits, before providing interest.

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Centretec.pdf

8. It is agreed to between the parties hereto that they shall devote their time and attention in the conduct of the affairs of the firm as circumstances and business needs may require.

The total remuneration payable to the parties hereto shall be worked out as under:

In case of loss or book profit up to To Rs. 3, 00,000 /- for the year	Rs.50,000/- or 90% of the book profit whichever is higher
On the amount of book profit exceeding Rs. 3,00,000/-	60% of the excess over Rs.3,00,000/-

Explanation for the purpose of this clause, the expression "Book Profits" shall mean the book profits as defined in section 40 (b) of the Income-tax Act, 1961 or any statutory modification or reenactment thereof for the time being in force.

(a) The total remuneration calculated in the manner specified above shall be distributed between the parties in the following ratio.

T Nelson	75%
Lovely Nelson	25%

(b) The remuneration payable to the parties hereto as calculated above shall be credited to their respective accounts on ascertainment of profits. The parties hereto shall be entitled to draw periodically against the remuneration payable to him and if the total withdrawals during the year exceed the amount of remuneration found payable to him, such excess shall be refunded by him to the firm.

(9) The books of account shall be closed to profit or loss on 31st March of every Year and the profit or loss arrived at after providing salary and interest as aforesaid shall be divided between the parties in the following ratio.

T Nelson	75%
Lovely Nelson	25%

(10) Bank accounts shall be opened in the name of firm with any scheduled bank and such account shall be operated upon by any one of the parties hereto.

(11) Loans as may be required for business operations, shall be raised from the firm's bankers or otherwise for the purpose of the business of the firm, on the security of the firm's property or otherwise under the signature of the parties hereto, jointly.

(12) Anyone of the parties hereto jointly or severally shall be competent to sign any document to be submitted to government authorities, firm's bankers etc., and do such other acts in the normal conduct of the business.

(13) The parties hereto shall maintain proper books of accounts which shall be kept at the principal place of business and both the parties shall have access to and inspection of the same at all reasonable times.

(14) The Parties hereby agree that neither of them will sell, pledge nor alienate in any manner his interest to any third party except with the written consent of the other party.

(15) The duration of the partnership shall be At Will.

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(16) If any partner shall, at any time during the continuance of the partnership be desirous of retiring from the firm he shall be competent to do so by giving at least 90 days notice of his intention to retire from the partnership.

(17) The business of the firm shall not be terminated by reason of retirement, insolvency, disability or death of any one of the partners and on happening of such events, the other partner shall be entitled to continue the business of the firm.

(18) Any of the above terms may be varied, altered, amended, substituted, added or deleted by mutual consent of all the partners in writing.

(19) Any difference which may arise between the partners or their representatives regarding the interpretation of these presents or regarding the rights and liabilities of either partner arising hereunder or any other matter or thing concerning the firm or the affairs thereof shall be referred to the arbitration and the provisions of the Indian Arbitration & Conciliation Act, 1996 or any statutory modification thereof shall be applicable thereon.

(20) In all other respects, this deed shall be governed by the provisions of the Indian Partnership Act, 1932 and any modification thereto.

IN WITNESS WHEREOF the parties hereto have put their respective hands on the day, month and year first above written.

WITNESS:

1. Rajesh Joseph S/o Joseph
Flat no. 9, majestic appartments,
Cochin University Road
Kalamassery

PARTNER OF THE FIRST PART

2.

PARTNER OF THE SECOND PART

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सत्यमेव जयते

Government of India

Form GST REG-06

[See Rule 10(1)]

Registration Certificate

Registration Number :32AAHFC7725R1ZZ

1.	**Legal Name**	CENTER TEC			
2.	**Trade Name, if any**	CENTER TEC			
3.	**Constitution of Business**	Partnership			
4.	**Address of Principal Place of Business**	24/78, Primus Tower, P.K.A.Nagar, CUSAT Main Road,Kochi, Ernakulam, Kerala, 682022			
5.	**Date of Liability**	01/07/2017			
6.	**Period of Validity**	From	01/07/2017	To	NA
7.	**Type of Registration**	Regular			
8.	**Particulars of Approving Authority**				
Signature					

Name	
Designation	
Jurisdictional Office	
9. Date of issue of Certificate	21/09/2017
Note: The registration certificate is required to be prominently displayed at all places of business in the State.	

This is a system generated digitally signed Registration Certificate issued based on the deemed approval of the application for registration

For CENTER TEC

Managing Partner

File No. ANERT-TECH/41/2024-PE1(RTS) (Computer No. 7540)

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सत्यमेव जयते

Annexure B

GSTIN	32AAHFC7725R1ZZ
Legal Name	CENTER TEC
Trade Name, if any	CENTER TEC

Details of Managing / Authorized Partners

1		Name	Nelson Thankachan
		Designation/Status	Managing Partner
		Resident of State	Kerala
2		Name	Lovely
		Designation/Status	Partner
		Resident of State	Kerala

For CENTER TEC

Managing Partner

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आयकर विभाग

भारत सरकार

INCOME TAX DEPARTMENT

GOVT. OF INDIA

CENTER TEC

16/12/2011

Permanent Account Number

AAHFC7725R

Signature

File No. ANERT-TECH/41/2024-PE1(RTS) (Computer No. 7540)

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भारत सरकार
Government of India
सूक्ष्म, लघु एवं मध्यम उद्यम मंत्रालय
Ministry of Micro, Small and Medium Enterprises

सूक्ष्म, लघु एवं मध्यम उद्यम
MICRO, SMALL & MEDIUM ENTERPRISES

UDYAM REGISTRATION CERTIFICATE

TYPE OF ENTERPRISE	**MICRO**	**SERVICES**
UDYAM REGISTRATION NUMBER	**UDYAM-KL-02-0008397**	
NAME OF ENTERPRISE	**CENTER TEC**	
SOCIAL CATEGORY OF ENTREPRENEUR	**General**	

NAME OF UNITS

SNo.	Units Name
1	Center Tec

OFFICAL ADDRESS OF ENTERPRISE

Flat/Door/Block No.	24/78	Name of Premises/ Building	Primus Tower
Village/Town	P K A Nagar	Block	Kalamassery
Road/Street/Lane	CUAST Main Road	City	Kochi
State	KERALA	District	ERNAKULAM , Pin 682022
Mobile	9447010309	Email:	nelson@centertec.in

DATE OF INCORPORATION / REGISTRATION OF ENTERPRISE	**16/12/2011**
DATE OF COMMENCEMENT OF PRODUCTION/BUSINESS	**16/12/2011**

NATIONAL INDUSTRY CLASSIFICATION CODE(S)

SNo.	NIC 2 Digit	NIC 4 Digit	NIC 5 Digit	Activity
1	62 - Computer programming, consultancy and related activities	6201 - Computer programming activities	62012 - Web-page designing	Services
2	62 - Computer programming, consultancy and related activities	6201 - Computer programming activities	62013 - Providing software support and maintenance to the clients	Services
3	62 - Computer programming, consultancy and related activities	6209 - Other information technology and computer service activities	62091 - Software installation	Services
4	62 - Computer programming, consultancy and related activities	6209 - Other information technology and computer service activities	62099 - Other information technology and computer service activities n.e.c	Services

DATE OF UDYAM REGISTRATION	**28/12/2020**

Disclaimer: This is computer generated statement, no signature required.
Printed from https://udyamregistration.gov.in

For any assistance, you may contact:

1. DIC **ERNAKULAM**
2. MSME-DI **THRISSUR**

File No. ANERT-TECH/41/2024-PE1(RTS) (Computer No. 7540)
https://udyamregistration.gov.in/PrintApplication.aspx?fudrn=c0VskqahL1CJDsf8C8R4eQ== 1/1
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Centretec.pdf

Center Tec
24/78, Primus Tower, CUSAT Main Road, Kalamassery - 682022

Balance Sheet as on 31st March 2019

(Amount in Rs)

Liabilities	Sch. No.	Amount	Assets	Sch. No.	Amount
Partners Account	1	6361975.07	**Fixed Assets**	3	3649528.00
HDFC Bank - Car Loan		1065937.52	**FD against Bank Guarentee**	4	1685770.20
KSFE		2050081.00	**Current Assets**	5	12834972.69
Current Liabilites	2	9159117.30	**Miscellaneous Expenditure**	6	466840.00
Total		18637110.89	Total		18637110.89

17/10/2019
Ernakulam

For Center Tec

Lovely
(Partner)

As per my audit report of even date
D D J & Associates
Chartered Accountants
Firm Regn. No. 019402S

Deepsur D. Jayan
Propx. M. No. 213201

D D J & Associates ★ Chartered Accountants ★ Firm Regn. No. 019402S

Center Tec

24/78, Primus Tower, CUSAT Main Road, Kalamassery - 682022

Profit and Loss account for the year ended 31st March 2019

(Amount in Rs.)

Particulars	Amount	Particulars	Amount
To Purchases	15338328.35	By Sale of goods & services	20398081.72
To Freight	118675.90	By Bank charges reversed this year	80879.91
To Power and fuel	210036.00	By Expenses payable of last year written back	2305301.00
To Rent	420000.00	By Interest	90121.10
To Compensation to employees		by Closing stock	1695000.00
Salaries and wages	1831522.00		
Contribution to PF	105774.00		
Contribution to ESI	38964.00		
Any other benefit	15021.00		
To Insurance	177202.00		
To Business promotion	64815.00		
To Hotel, Boarding and Lodging	405809.00		
To Traveling expenses	449065.00		
To Telephone expenses	86681.00		
To Audit fee	30000.00		
To Consultancy expenses	51000.00		
To Repairs	134103.71		
To Repairs - Building	16544.18		
To Courier Expenses	93410.10		
To Bank Charges	18614.25		
To Filing expenses	25000.00		
To Labour Charge Paid	1002094.50		
To Loading & Unloading charges	5900.00		
To Miscellaneous Expenses	200500.00		
To Office Expense	13625.00		
To Transportation Charge	60420.00		
To Tax on assessment - KVAT	48068.00		
To Water Charges	2007.00		
To Postage and Telegram	885.00		
To Printing and Stationery	15622.00		
To Server rent	20084.74		
To Interest	122592.78		
To Rates and taxes	1950.00		
To Motor car tax	42440.00		
To GST late fee	1700.00		
To IT of earlier year	36950.00		
To TDS & provision for CY	236737.60		
To Depreciation	606495.64		
To Donation	28000.00		
To Interest on Capital	641285.00		
To Remuneration	1380000.00		
To Fine	4815.00		
To Net profit	466645.98		
Total	24569383.73	Total	24569383.73

17/10/2019
Ernakulam

For Center Tec

Lovely
(Partner)

As per my audit report of even date
D D J & Associates
Chartered Accountants
Firm Regn. No. 019402S

Deepsur D. Jayan
Propx. M. No. 213201

D D J & Associates ★ Firm Regn. No. 019402S ★ Chartered Accountants

File No. ANERT-TECH/41/2024-PE1(RTS) (Computer No. 7540)

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INDIAN INCOME TAX RETURN ACKNOWLEDGEMENT

[Where the data of the Return of Income in Form ITR-1 (SAHAJ), ITR-2, ITR-3, ITR-4 , ITR-5, ITR-6,ITR-7 filed and verified electronically]

Assessment Year 2019-20

PERSONAL INFORMATION AND THE ACKNOWLEDGEMENT NUMBER

Name			PAN
CENTER TEC			AAHFC7725R
Flat/Door/Block No	**Name Of Premises/Building/Village**		**Form Number.** ITR-5
Primus Tower	24/78		
Road/Street/Post Office	**Area/Locality**		
P. K. A. Nagar	CUSAT Main Road		**Status** Firm
Town/City/District	**State**	**Pin/ZipCode**	**Filed u/s**
Kalamassery	KERALA	682022	139(1)-On or before due date
Assessing Officer Details (Ward/Circle)	NON CORP WARD 1(5) ,KOCHI		
e-filing Acknowledgement Number	204481821171019		

COMPUTATION OF INCOME AND TAX THEREON

1	Gross total income				1	772774
2	Total Deductions under Chapter-VI-A				2	14000
3	Total Income				3	758770
3a	Deemed Total Income under AMT/MAT				3a	758770
3b	Current Year loss, if any				3b	0
4	Net tax payable				4	236738
5	Interest and Fee Payable				5	9206
6	Total tax, interest and Fee payable				6	245944
7	Taxes Paid	a Advance Tax	7a	0		
		b TDS	7b	153365		
		c TCS	7c	0		
		d Self Assessment Tax	7d	92580		
		e Total Taxes Paid (7a+7b+7c +7d)			7e	245945
8	Tax Payable (6-7e)				8	0
9	Refund (7e-6)				9	0
10	Exempt Income	Agriculture			10	
		Others				

Income Tax Return submitted electronically on **17-10-2019 23:50:52** from IP address **103.85.206.94** and verified by

Lovely having PAN **AIPPL8459B** on **17-10-2019 23:50:52** from IP address **103.85.206.94** using **Digital Signature Certificate (DSC)**

DSC details: **15688538CN=e-Mudhra Sub CA for Class 2 Individual 2014,OU=Certifying Authority,O=eMudhra Consumer Services Limited,C=IN**

DO NOT SEND THIS ACKNOWLEDGEMENT TO CPC, BENGALURU

File No. ANERT-TECH/41/2024-PE1(RTS) (Computer No. 7540)

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CENTER TEC, KALAMASSERY, KOCHI

BALANCE SHEET AS AT 31.03.2020

	Sch No	Current Year	Previous Year
SOURCES OF FUNDS			
Partners' Capital Account	1	1,00,000	1,00,000
Partners' Current Account	2	2,14,34,049	62,61,975
Unsecured Loan (KSFE)		0	20,50,081
Secured Loan	3	4,71,853	10,65,938
Total		**2,20,05,902**	**94,77,994**
APPLICATION OF FUNDS			
Fixed Assets	15	31,88,857	36,49,528
CURRENT ASSETS, LOANS AND ADVANCES			
Deposits	4	79,080	79,080
Investments (KSFE)		3,25,055	0
Loans and Advances	5	35,49,654	8,32,994
Cash and Bank balances	6	46,49,934	90,26,123
Sundry Debtors	7	1,53,04,408	33,54,386
Inventories		13,88,953	16,95,000
		2,52,97,084	1,49,87,583
Less : Current Liabilities and Provisions	8	64,80,038	91,59,117
Net Current Assets		1,88,17,045	58,28,466
Total		**2,20,05,902**	**94,77,994**

This is the Balance Sheet referred to in our report of even date

JOSEPH MATHEW; ACA CHARTERED ACCOUNTANT A.M. ROAD KURUPPAMPADY M.No. 249615 CA

Place: Cochin
Date : 11.09.2020

For CENTER TEC

Managing Partner

JOSEPH MATHEW ; ACA
CHARTERED ACCOUNTANT
M.No. 249615
KOCHERY HOUSE, KURUPPAMPADY P.O.
A.M. ROAD, ERNAKULAM DISTRICT
KERALA - 683 545, INDIA

CENTER TEC CUSAT Main Road KOCHI-682 022

File No. ANERT-TECH/41/2024-PE1(RTS) (Computer No. 7540)

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CENTER TEC, KALAMASSERY, KOCHI

TRADING, PROFIT AND LOSS ACCOUNT FOR THE YEAR ENDED 31.03.2020

	Sch No	Current Year	Previous Year
INCOME			
Sales	9	7,32,76,160	2,03,98,082
Other Income	10	1,25,456	24,76,302
Closing Stock		13,88,953	16,95,000
Total		**7,47,90,569**	**2,45,69,384**
EXPENDITURE			
Opening Stock		16,95,000	-
Purchases	11	5,33,56,744	1,53,38,328
Direct Expenses	12	63,25,690	11,26,670
Other Expenses	13	76,84,655	45,95,064
Remuneration to Partners		15,94,000	13,80,000
Interest to Partners		16,92,646	6,41,285
Interest and bank charges	14	9,10,470	1,41,207
Depreciation	15	5,43,131	6,06,496
Total		**7,38,02,335**	**2,38,29,050**
Profit Before Tax		9,88,233	7,40,334
Less: Provision for Tax		3,24,333	2,73,688
Profit		**6,63,900**	**4,66,646**
Mr. Nelson T.	75%	4,97,925	3,49,984
Mrs. Lovely Nelson	25%	1,65,975	1,16,662

This is the Profit and Loss Account referred to in our report of even date

Place : Cochin
Date : 11.09.2020

For CENTER TEC

Managing Partner

JOSEPH MATHEW ; ACA
CHARTERED ACCOUNTANT
M.No. 249615
KOCHERY HOUSE, KURUPPAMPADY P.O.
A.M. ROAD, ERNAKULAM DISTRICT
KERALA - 683 545, INDIA

JOSEPH MATHEW; ACA
A.M. ROAD
KURUPPAMPADY
M.No. 249615
CHARTERED ACCOUNTANT

CENTER TEC
CUSAT Main Road
KOCHI-682 022

File No. ANERT-TECH/41/2024-PE1(RTS) (Computer No. 7540)

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INDIAN INCOME TAX RETURN ACKNOWLEDGEMENT

[Where the data of the Return of Income in Form ITR-1 (SAHAJ), ITR-2, ITR-3, ITR-4(SUGAM), ITR-5, ITR-6, ITR-7 filed and verified]

(Please see Rule 12 of the Income-tax Rules, 1962)

Assessment Year 2020-21

PAN	AAHFC7725R		
Name	CENTER TEC		
Address	24/78, PRIMUS TOWER, , CUSAT Main Road, Kalamassery, Thrikkakara North (Part), ERNAKULAM, KERALA, 682022		
Status	Firm	**Form Number**	ITR-5
Filed u/s	139(1)-On or before due date	**e-Filing Acknowledgement Number**	797018751091220

Taxable Income and Tax details	**Current Year business loss, if any**	1	0
	Total Income		1034220
	Book Profit under MAT, where applicable	2	0
	Adjusted Total Income under AMT, where applicable	3	1034220
	Net tax payable	4	322677
	Interest and Fee Payable	5	5222
	Total tax, interest and Fee payable	6	327899
	Taxes Paid	7	327900
	(+)Tax Payable /(-)Refundable (6-7)	8	0
Dividend Distribution Tax details	**Dividend Tax Payable**	9	0
	Interest Payable	10	0
	Total Dividend tax and interest payable	11	0
	Taxes Paid	12	0
	(+)Tax Payable /(-)Refundable (11-12)	13	0
Accreted Income & Tax Detail	**Accreted Income as per section 115TD**	14	0
	Additional Tax payable u/s 115TD	15	0
	Interest payable u/s 115TE	16	0
	Additional Tax and interest payable	17	0
	Tax and interest paid	18	0
	(+)Tax Payable /(-)Refundable (17-18)	19	0

Income Tax Return submitted electronically on **09-12-2020 14:10:56** from IP address **103.104.46.142** and verified by

NELSON THANKACHAN

having PAN **ADEPT3687M** on **09-12-2020 14:10:56** from IP address **103.104.46.142** using

Digital Signature Certificate (DSC).

DSC details: **19706585CN=e-Mudhra Sub CA for Class 2 Individual 2014,OU=Certifying Authority,O=eMudhra Consumer Services Limited,C=IN**

DO NOT SEND THIS ACKNOWLEDGEMENT TO CPC, BENGALURU

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CENTER TEC, KALAMASSERY, KOCHI

BALANCE SHEET AS AT 31.03.2020

	Sch No	Current Year	Previous Year
SOURCES OF FUNDS			
Partners' Capital Account	1	1,00,000	1,00,000
Partners' Current Account	2	2,14,34,049	62,61,975
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Total		**2,20,05,902**	**94,77,994**
APPLICATION OF FUNDS			
Fixed Assets	15	31,88,857	36,49,528
CURRENT ASSETS, LOANS AND ADVANCES			
Deposits	4	79,080	79,080
Investments (KSFE)		3,25,055	0
Loans and Advances	5	35,49,654	8,32,994
Cash and Bank balances	6	46,49,934	90,26,123
Sundry Debtors	7	1,53,04,408	33,54,386
Inventories		13,88,953	16,95,000
		2,52,97,084	1,49,87,583
Less : Current Liabilities and Provisions	8	64,80,038	91,59,117
Net Current Assets		1,88,17,045	58,28,466
Total		**2,20,05,902**	**94,77,994**

This is the Balance Sheet referred to in our report of even date

JOSEPH MATHEW, ACA
A.M. ROAD
KURUPPAMPADY
M.No. 249615
CHARTERED ACCOUNTANT

Place: Cochin
Date : 11.09.2020

For CENTER TEC

Managing Partner

JOSEPH MATHEW ; ACA
CHARTERED ACCOUNTANT
M.No. 249615
KOCHERY HOUSE, KURUPPAMPADY P.O.
A.M. ROAD, ERNAKULAM DISTRICT
KERALA - 683 545, INDIA

CENTER TEC
CUSAT Main Road
KOCHI-682 022

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CENTER TEC, KALAMASSERY, KOCHI

TRADING, PROFIT AND LOSS ACCOUNT FOR THE YEAR ENDED 31.03.2020

	Sch No	Current Year	Previous Year
INCOME			
Sales	9	7,32,76,160	2,03,98,082
Other Income	10	1,25,456	24,76,302
Closing Stock		13,88,953	16,95,000
Total		**7,47,90,569**	**2,45,69,384**
EXPENDITURE			
Opening Stock		16,95,000	-
Purchases	11	5,33,56,744	1,53,38,328
Direct Expenses	12	63,25,690	11,26,670
Other Expenses	13	76,84,655	45,95,064
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Interest and bank charges	14	9,10,470	1,41,207
Depreciation	15	5,43,131	6,06,496
Total		**7,38,02,335**	**2,38,29,050**
Profit Before Tax		9,88,233	7,40,334
Less: Provision for Tax		3,24,333	2,73,688
Profit		**6,63,900**	**4,66,646**
Mr. Nelson T.	75%	4,97,925	3,49,984
Mrs. Lovely Nelson	25%	1,65,975	1,16,662

This is the Profit and Loss Account referred to in our report of even date

Place : Cochin
Date : 11.09.2020

For CENTER TEC

Managing Partner

JOSEPH MATHEW ; ACA
CHARTERED ACCOUNTANT
M.No. 249615
KOCHERY HOUSE, KURUPPAMPADY P.O.
A.M. ROAD, ERNAKULAM DISTRICT
KERALA - 683 545, INDIA

JOSEPH MATHEW; ACA
A.M. ROAD
KURUPPAMPADY
M.No. 249615
CHARTERED ACCOUNTANT

CENTER TEC
CUSAT Main Road
KOCHI-682 022

File No. ANERT-TECH/41/2024-PE1(RTS) (Computer No. 7540)

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STATEMENT OF ACCOUNTING POLICIES

a) The firm maintains its accounts on historical cost method and follows accrual system of accounting.

b) All direct expenses incurred on the construction/installation of assets are included in the value of the respective asset and are capitalized at the time of installation or at the time the assets are put to use.

c) Depreciation on fixed assets is provided on written down value method at the rates as per Income Tax Rules. Expenditure incurred for substantial repairs, renewals and alteration on lease hold premises are capitalized and depreciated at the rates prescribed by Income Tax Rules.

d) Inventory is valued at cost or net realizable value whichever is less.

e) Sale of goods and services has been disclosed net of GST.

JOSEPH MATHEW: ACA
A.M. ROAD
KURUPPAMPADY
M.No. 249515
CA
CHARTERED ACCOUNTANT

NOTES TO ACCOUNTS

a) The figures in Balance Sheet, Profit and Loss Account have been rounded off to the nearest rupee.

b) The firm is an Infrastructure Build-up sector which takes care of IT, safety and security at Tower 24, Primus, 78, Cusat Main Road, PKA Nagar, Kochi, Kerala - 682022.

***

CENTER TEC
CUSAT Main Road
KOCHI-682 022

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CENTER TEC, KALAMASSERY, KOCHI

SCHEDULES

	Current Year	Previous Year
1 PARTNERS' CAPITAL ACCOUNT		
Mr. Nelson T.	75,000 Cr	75,000 Cr
Mrs. Lovely Nelson	25,000 Cr	25,000 Cr
TOTAL	**1,00,000 Cr**	**1,00,000 Cr**
2 PARTNERS' CURRENT ACCOUNT		
Mr. Nelson T.	1,80,46,442 Cr	33,75,281 Cr
Mrs. Lovely Nelson	33,87,608 Cr	28,86,694 Cr
TOTAL	**2,14,34,049 Cr**	**62,61,975 Cr**
3 SECURED LOAN		
Term Loan		
Audi Finance Limited - (Against Vehicle)	4,71,853	10,65,938
TOTAL	**4,71,853**	**10,65,938**
4 DEPOSITS		
Rent Deposit/Advance	75,000	75,000
VAT Deposit	4,080	4,080
TOTAL	**79,080**	**79,080**
5 LOANS AND ADVANCES		
GST input credit ledger	14,25,925	2,37,140
GST cash ledger	415	0
Retention Money	3,51,000	0
Disputed Taxes	3,68,911	0
Reimbursable Expenses	8,16,206	0
Staff advance	72,358	51,861
Unamortized Road Tax	4,24,400	4,66,840
TDS out of Pocket	6,990	0
Prepaid Expenses	83,449	77,153
TOTAL	**35,49,654**	**8,32,994**
6 CASH AND BANK BALANCE		
Cash in hand	11,213	11,233
Cash at Bank - Current & OD Account	29,45,295	73,29,119
- Fixed deposit	16,93,426	16,85,770
-(Margin money deposit for bank guarantee's and letter of credit)		
TOTAL	**46,49,934**	**90,26,123**

JOSEPH MATHEW, ACA
A.M. ROAD
KURUPAMPADY
M.No. 249515
CHARTERED ACCOUNTANT

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7 SUNDRY DEBTORS			
Accounts Officer,SDSC SHAR		1,16,50,444	
Accounts Officer,PCM Accounts		34,43,607	
Accounts Officer, Center Accounts (Unit III)		1,89,630	
Tablez Retail Pvt Ltd		8,850	
Muthoot Fincorp Limited		8,728	
Vikram Sarabhai Space Centre		3,120	
CS Creamery Pvt Ltd		28	
	TOTAL	**1,53,04,408**	
8 CURRENT LIABILITIES AND PROVISIONS			
Sundry Creditors - Suppliers		14,92,417	20,85,650
Creditors for Expenses		15,67,619	7,01,893
Caution Deposit		21,00,000	21,00,000
Statutory dues payable		1,39,368	86,102
Advance Tax & TDS (Net of Provisions)		10,402	83,373
Advance from customers		11,70,233	41,02,099
	TOTAL	**64,80,038**	**91,59,117**
9 SALES			
Sale of Goods		6,79,10,262	1,59,94,873
Sale of Services		53,65,898	44,03,209
	TOTAL	**7,32,76,160**	**2,03,98,082**
10 OTHER INCOME			
Interest on Fixed Deposit		1,25,456	77,381
Expenses written back		0	23,86,181
Miscellaneous income		0	12,740
	TOTAL	**1,25,456**	**24,76,302**
11 PURCHASES			
Purchase (Registered & Import)		5,27,55,021	1,52,40,763
Unregistered Purchase		6,01,723	97,565
	TOTAL	**5,33,56,744**	**1,53,38,328**
12 DIRECT EXPENSES			
Freight, Coolie & Insurance		16,50,974	1,24,576
Labour Expenses		44,41,208	10,02,095
Service Charge		1,05,729	0
Other Direct Expenses		1,27,779	0
	TOTAL	**63,25,690**	**11,26,670**

CENTER TEC * CUSAT Main Road * KOCHI-682 022

JOSEPH MATHEW; ACA A.M. ROAD KURUPPAMPADY M.No. 249615 CA

File No. ANERT-TECH/41/2024-PE1(RTS) (Computer No. 7540)

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13 OTHER EXPENSES

Employee Benefit Expenses	22,52,921	19,76,260
Staff welfare, Recruitment and training expense	32,587	15,021
Rental Expenses	4,87,136	4,40,085
Advertisement and Sales promotion	3,24,963	64,815
Postage, Telephone and Telegram	3,17,336	1,80,976
Printing and Stationery	28,142	15,622
Rates and Taxes	1,41,694	56,533
Electricity and water charges	20,168	27,043
Travelling expenses	19,23,317	10,39,874
Insurance	1,45,822	1,77,202
Repairs and maintenance	52,301	20,544
Audit fees	35,000	30,000
AMC Charges Paid	2,81,637	0
Bad Debts	13,771	0
Legal and professional charges	96,560	76,000
Late Delivery Charges	8,20,876	0
Donation	63,586	28,000
Transportation Charges	1,79,690	60,420
Vehicle Maintenance	2,60,042	1,30,104
Motor Car Tax Amortized	42,440	42,440
Office Expenses	1,21,099	13,625
General & Miscellaneous Exps	43,568	2,00,500
TOTAL	**76,84,655**	**45,95,064**

14 INTEREST AND BANK CHARGES

Interest to bank	68,475	3,039
Interest Others	69,899	1,19,554
Interest on Income Tax	14,515	0
Finance Cost on Chitty	1,40,671	0
Bank charges	6,16,909	18,614
TOTAL	**9,10,470**	**1,41,207**

For CENTER TEC

Managing Partner

Place : Cochin
Date : 11.09.2020

JOSEPH MATHEW ; ACA
CHARTERED ACCOUNTANT
M.No. 249615
KOCHERY HOUSE, KURUPPAMPADY P.O.
A.M. ROAD, ERNAKULAM DIST.
KERALA - 683 545, INDIA

JOSEPH MATHEW; ACA
A.M. ROAD
KURUPPAMPADY
M.No. 249615
CHARTERED ACCOUNTANT

CENTER TEC
CUSAT Main Road
KOCHI-682 022

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CENTER TEC, KALAMASSERY, KOCHI
DETAILS OF PARTNERS' CURRENT ACCOUNT

MR. NELSON T.

Balance as per Last Balance Sheet	**33,75,281 Cr.**
Add: Interest for year	13,35,207
Add: Rent for building (Net of TDS)	3,78,000
Add: Additions during the year	1,25,02,064
	1,75,90,553
Less: Remuneration for year (reversed)	4,500
Less: Drawings during the year (Health Insurance)	37,536
	1,75,48,517
Add : Profit for the year	4,97,925
	1,80,46,442 Cr.

MRS. LOVELY NELSON

Balance as per Last Balance Sheet	**28,86,694 Cr.**
Add: Interest for year	3,57,439
Add: Additions during the year	1,79,000
	34,23,133
Less: Remuneration for year (reversed)	2,01,500
	32,21,633
Add : Profit for the year	1,65,975
	33,87,608 Cr.

JOSEPH MATHEW & CO. CHARTERED ACCOUNTANT

Place : Cochin
Date : 11.09.2020

CENTER TEC CUSAT Main Road KOCHI-682 022

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CENTER TEC, KALAMASSERY, KOCHI

BALANCE SHEET AS AT 31.03.2021

	Sch No	Current Year	Previous Year
SOURCES OF FUNDS			
Partners' Capital Account	1	100,000	100,000
Partners' Current Account	2	21,247,717	21,434,049
Secured Loan	3	4,536,986	471,853
Total		**25,884,704**	**22,005,902**
APPLICATION OF FUNDS			
Fixed Assets	15	6,057,358	3,188,857
CURRENT ASSETS, LOANS AND ADVANCES			
Deposits	4	279,080	79,080
Investments (KSFE)		782,711	3,25,055
Loans and Advances	5	3,818,778	3,549,654
Cash and Bank balances	6	8,216,040	4,649,934
Sundry Debtors	7	10,872,879	15,304,408
Inventories		-	1,388,953
		23,969,489	25,297,084
Less : Current Liabilities and Provisions	8	4,142,142	6,480,038
Net Current Assets		19,827,346	18,817,045
Total		**25,884,704**	**22,005,902**

This is the Balance Sheet referred to in our report of even date

For CENTER TEC

Managing Partner

For AYKJ & Co. LLP
Chartered Accountants

CA JOSEPH MATHEW ACA
Partner (M. No. 249615)
Firm Registration No. S200373

AYKJ & Co. LLP ☆ Chartered Accountants ☆

Place: Cochin
Date : 04.10.2021

CENTER TEC ★ CUSAT Main Road ★ KOCHI-682 022

File No. ANERT-TECH/41/2024-PE1(RTS) (Computer No. 7540)

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CENTER TEC, KALAMASSERY, KOCHI

TRADING, PROFIT AND LOSS ACCOUNT FOR THE YEAR ENDED 31.03.2021

	Sch No	Current Year	Previous Year
INCOME			
Sales	9	37,791,365	73,276,160
Other Income	10	31,592	125,456
Closing Stock		-	1,388,953
Total		**37,822,957**	**74,790,569**
EXPENDITURE			
Opening Stock		1,388,953	1,695,000
Purchases	11	21,762,727	53,356,744
Direct Expenses	12	4,537,688	6,325,690
Other Expenses	13	7,769,234	7,684,655
Remuneration to Partners		1,060,000	1,594,000
Interest to Partners		-	1,692,646
Interest and bank charges	14	193,376	910,470
Depreciation	15	574,415	543,131
Total		**37,286,393**	**73,802,335**
Profit Before Tax		536,564	988,233
Less: Provision for Tax		174,007	324,333
Profit		**362,557**	**663,900**
Mr. Nelson T.	75%	271,918	497,925
Mrs. Lovely Nelson	25%	90,639	165,975

This is the Profit and Loss Account referred to in our report of even date

For CENTER TEC

Managing Partner

CENTER TEC CUSAT Main Road KOCHI-682 022

For AYKJ & Co. LLP
Chartered Accountants

CA JOSEPH MATHEW ACA
Partner (M. No. 249615)
Firm Registration No. S200373

AYKJ & Co. LLP Chartered Accountants

Place : Cochin
Date : 04.10.2021

File No. ANERT-TECH/41/2024-PE1(RTS) (Computer No. 7540)

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INDIAN INCOME TAX RETURN ACKNOWLEDGEMENT

[Where the data of the Return of Income in Form ITR-1 (SAHAJ), ITR-2, ITR-3, ITR-4(SUGAM), ITR-5, ITR-6, ITR-7 filed and verified]
(Please see Rule 12 of the Income-tax Rules, 1962)

Assessment Year
2021-22

PAN	AAHFC7725R		
Name	CENTER TEC		
Address	24/78, PRIMUS TOWER , CUSAT Main Road, Kalamassery , Thrikkakara North (Part) , ERNAKULAM , ERNAKULAM , Kochi University S.O , Kochi University S.O , 16-Kerala , 91-India , 682022		
Status	Firm	Form Number	ITR-5
Filed u/s	139(1) Return filed on or before due date	e-Filing Acknowledgement Number	307283000211221

Taxable income and Tax details	Current Year business loss, if any	1	0
	Total Income		5,63,290
	Book Profit under MAT, where applicable	2	0
	Adjusted Total Income under AMT, where applicable	3	5,63,290
	Net tax payable	4	1,75,746
	Interest and Fee Payable	5	0
	Total tax, interest and Fee payable	6	1,75,746
	Taxes Paid	7	2,34,465
	(+)Tax Payable /(-)Refundable (6-7)	8	(-) 58,719
Distribution Tax details	Dividend Tax Payable	9	0
	Interest Payable	10	0
	Total Dividend tax and interest payable	11	0
	Taxes Paid	12	0
	(+)Tax Payable /(-)Refundable (11-12)	13	0
Accreted Income & Tax Detail	Accreted Income as per section 115TD	14	0
	Additional Tax payable u/s 115TD	15	0
	Interest payable u/s 115TE	16	0
	Additional Tax and interest payable	17	0
	Tax and interest paid	18	0
	(+)Tax Payable /(-)Refundable (17-18)	19	0

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CENTER TEC, KALAMASSERY, KOCHI
BALANCE SHEET AS AT 31 ST MARCH, 2022

Particulars	Note	As at 31st March 2022 (Amount in Rs.)	As at 31st March 2021 (Amount in Rs.)
I **EQUITY AND LIABILITIES**			
(1) **Partner's Funds**			
(a) Partners' Capital Account			
(i) Partners' Contribution	2a	100,000	100,000
(ii) Partners Current Account	2b	19,936,970	21,247,717
(b) Reserve and Surplus	3	0	0
		20,036,970	21,347,717
(2) **Non Current Liabilities**			
(a) Long-term borrowings	4	5,045,939	4,536,986
(2) **Current Liabilities**			
(a) Trade Payables			
(i) Total outstanding dues of micro, small and medium enterprises	5	0	0
(ii) Total outstanding dues of creditors other than micro, small and medium enterprises		9,955,866	592,467
(b)Other Current Liabilities	6	2,510,995	3,549,675
		12,466,861	4,142,142
Total		**37,549,770**	**30,026,846**
II **ASSETS**			
(1) **Non-current assets**			
(a) Property, Plant & Equipment and Intangible Assets			
(i) Property, Plant & Equipment	7	6,332,037	6,057,358
		6,332,037	6,057,358
(2) **Current assets**			
(a) Inventories	8	712,958	0
(b) Trade Receivables	9	14,245,795	10,872,879
(c) Cash and Cash Equivalents	10	14,576,118	8,216,040
(d) Short term loans and Advances	11	1,603,783	3,818,778
(e) Other Current Assets	12	79,080	1,061,791
		31,217,734	23,969,489
Total		**37,549,770**	**30,026,846**

Accounting Policies and Notes 1 to 18 attached form part of the accounts — 1

This is the Balance Sheet referred to in our report of even date

For CENTER TEC

Managing Partner

For AYKJ & Co. LLP
Chartered Accountants

CA JOSEPH MATHEW ACA
Partner (M. No. 249615)
Firm Registration N

For CENTER TEC

Partner

Lovely Nelson

Place : Ernakulam
Date : 19.09.2022

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CENTER TEC, KALAMASSERY, KOCHI

STATEMENT OF PROFIT AND LOSS FOR THE ENDED 31st MARCH, 2022

Particulars	Note	For the year ended 31st March, 2022 (Amount in Rs.)	For the year ended 31st March, 2021 (Amount in Rs.)
Revenue from operations	13	25,117,599	37,791,365
Other Income	14	157,740	31,592
TOTAL REVENUE		**25,275,339**	**37,822,957**
Cost of Material consumed	15	19,311,912	27,689,368
Employee Benefits Expenses	16	2,246,922	2,348,836
Finance Costs	17	463,052	193,376
Depreciation and Amortisation Expenses	7	1,080,733	574,415
Other Expenses	18	2,140,755	5,420,398
TOTAL EXPENSES		**25,243,374**	**36,226,393**
Profit/(loss) before exceptional and extraordinary items, partners' remuneration and tax		**31,965**	**1,596,564**
Exceptional items (specify nature & provide note/delete if none)		0	0
Profit/(loss) before extraordinary items, partners' remuneration and tax (V-VI)		31,965	1,596,564
Extraordinary Items (specify nature & provide note/delete if none)		0	0
Profit before Partners' Remuneration and tax (VII-VIII)		**31,965**	**1,596,564**
Partners' Remuneration		0	1,060,000
Profit before Tax (IX-X)		**31,965**	**536,564**
Tax expense:			
Current tax		26,968	174,007
Deferred tax		0	0
		26,968	174,007
PROFIT/LOSS FOR THE YEAR		**4,997**	**362,557**

Accounting Policies and Notes 1 to 18 attached form part of the accounts 1

This is the Profit and Loss Account referred to in our report of even date

For CENTER TEC

Managing Partner

Nelson T

For AYKJ & Co. LLP
Chartered Accountants

CA JOSEPH MATHEW ACA
Partner (M. No. 249615)
Firm Registration No. S200373

For CENTER TEC

Partner

Lovely Nelson

Place : Ernakulam
Date : 19.09.2022

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INDIAN INCOME TAX RETURN ACKNOWLEDGEMENT

[Where the data of the Return of Income in Form ITR-1 (SAHAJ), ITR-2, ITR-3, ITR-4(SUGAM), ITR-5, ITR-6, ITR-7 filed and verified]
(Please see Rule 12 of the Income-tax Rules, 1962)

Assessment Year
2021-22

PAN	AAHFC7725R		
Name	CENTER TEC		
Address	24/78, PRIMUS TOWER , CUSAT Main Road, Kalamassery , Thrikkakara North (Part) , ERNAKULAM , ERNAKULAM , Kochi University S.O , Kochi University S.O , 16-Kerala , 91-India , 682022		
Status	Firm	Form Number	ITR-5
Filed u/s	139(1) Return filed on or before due date	e-Filing Acknowledgement Number	307283000211221

Taxable income and Tax details	Current Year business loss, if any	1	0
	Total Income		5,63,290
	Book Profit under MAT, where applicable	2	0
	Adjusted Total Income under AMT, where applicable	3	5,63,290
	Net tax payable	4	1,75,746
	Interest and Fee Payable	5	0
	Total tax, interest and Fee payable	6	1,75,746
	Taxes Paid	7	2,34,465
	(+)Tax Payable /(-)Refundable (6-7)	8	(-) 58,719
Distribution Tax details	Dividend Tax Payable	9	0
	Interest Payable	10	0
	Total Dividend tax and interest payable	11	0
	Taxes Paid	12	0
	(+)Tax Payable /(-)Refundable (11-12)	13	0
Accreted Income & Tax Detail	Accreted Income as per section 115TD	14	0
	Additional Tax payable u/s 115TD	15	0
	Interest payable u/s 115TE	16	0
	Additional Tax and interest payable	17	0
	Tax and interest paid	18	0
	(+)Tax Payable /(-)Refundable (17-18)	19	0

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CENTER TEC, KALAMASSERY, KOCHI
BALANCE SHEET AS AT 31 ST MARCH, 2023

Particulars	Note	As at 31st March 2023 (Amount in Rs.)	As at 31st March 2022 (Amount in Rs.)
I **EQUITY AND LIABILITIES**			
(1) **Partner's Funds**			
(a) Partners' Capital Account			
(i) Partners' Contribution	2a	1,00,000	1,00,000
(ii) Partners Current Account	2b	1,86,38,408	1,99,36,970
(b) Reserve and Surplus	3	0	0
		1,87,38,408	2,00,36,970
(2) **Non Current Liabilities**			
(a) Long-term borrowings	4	40,58,258	50,45,939
(2) **Current Liabilities**			
(a) Trade Payables			
(i) Total outstanding dues of micro, small and medium enterprises	5	0	0
(ii) Total outstanding dues of creditors other than micro, small and medium enterprises		1,33,13,571	99,55,866
(b) Other Current Liabilities	6	35,23,100	25,10,995
		1,68,36,671	1,24,66,861
Total		**3,96,33,337**	**3,75,49,770**
II **ASSETS**			
(1) **Non-current assets**			
(a) Property, Plant & Equipment and Intangible Assets			
(i) Property, Plant & Equipment	7	55,57,315	63,32,037
		55,57,315	63,32,037
(2) **Current assets**			
(a) Inventories	8	36,39,760	7,12,958
(b) Trade Receivables	9	2,60,39,405	1,42,45,795
(c) Cash and Cash Equivalents	10	13,68,743	1,45,76,118
(d) Short term loans and Advances	11	29,49,033	16,03,783
(e) Other Current Assets	12	79,080	79,080
		3,40,76,022	3,12,17,734
Total		**3,96,33,337**	**3,75,49,770**

Accounting Policies and Notes 1 to 18 attached form part of the accounts — 1

This is the Balance Sheet referred to in our report of even date

CENTER TEC * CUSAT Main Road * KOCHI-682 022

For CENTER TEC

Managing Partner
NELSON T

For AYKJ & Co. LLP
Chartered Accountants

CA JOSEPH MATHEW ACA
Partner (M. No. 249615)
Firm Registration No. S200373

Place : Ernakulam
Date : 20.09.2023

For CENTER TEC

Partner
LONELY NELSON

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CENTER TEC, KALAMASSERY, KOCHI

STATEMENT OF PROFIT AND LOSS FOR THE ENDED 31st MARCH, 2023

Particulars	Note	For the year ended 31st March, 2023 (Amount in Rs.)	For the year ended 31st March, 2022 (Amount in Rs.)
Revenue from operations	13	5,09,59,548	2,51,17,599
Other Income	14	1,15,532	1,57,740
TOTAL REVENUE		**5,10,75,080**	**2,52,75,339**
Cost of Material consumed	15	4,31,58,247	1,93,11,912
Employee Benefits Expenses	16	21,69,221	22,46,922
Finance Costs	17	5,04,361	4,63,052
Depreciation and Amortisation Expenses	7	9,29,450	10,80,733
Other Expenses	18	36,76,060	21,40,755
TOTAL EXPENSES		**5,04,37,339**	**2,52,43,374**
Profit/(loss) before exceptional and extraordinary items, partners' remuneration and tax		**6,37,741**	**31,965**
Exceptional items (specify nature & provide note/delete if none)		0	0
Profit/(loss) before extraordinary items, partners' remuneration and tax (V-VI)		6,37,741	31,965
Extraordinary Items (specify nature & provide note/delete if none)		0	0
Profit before Partners' Remuneration and tax (VII-VIII)		**6,37,741**	**31,965**
Partners' Remuneration		4,72,000	0
Profit before Tax (IX-X)		**1,65,741**	**31,965**
Tax expense:			
Current tax		70,228	26,968
Deferred tax		0	0
		70,228	26,968
PROFIT/LOSS FOR THE YEAR		**95,513**	**4,997**

Accounting Policies and Notes 1 to 18 attached form part of the accounts — 1

This is the Statement of Profit and Loss Account referred to in our report of even date

CENTER TEC CUSAT Main Road KOCHI-682 022

For CENTER TEC

Managing Partner

NELSON T

AYKI & Co. LLP Chartered Accountants

For AYKI & Co. LLP
Chartered Accountants

CA JOSEPH MATHE
Partner (M. No. 24
Firm Registration No. S

Place : Ernakulam
Date : 20.09.2023

For CENTER TEC

Partner

LOVELY NELSON

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STATEMENT OF ACCOUNTING POLICIES

a) The firm maintains its accounts on historical cost method and follows accrual system of accounting.

b) All direct expenses incurred on the construction/installation of assets are included in the value of the respective asset and are capitalized at the time of installation or at the time the assets are put to use.

c) Depreciation on fixed assets is provided on written down value method at the rates as per Income Tax Rules. Expenditure incurred for substantial repairs, renewals and alteration on lease hold premises are capitalized and depreciated at the rates prescribed by Income Tax Rules.

d) Inventory is valued at cost or net realizable value whichever is less.

e) Sale of goods and services has been disclosed net of GST.

NOTES TO ACCOUNTS

a) The figures in Balance Sheet, Profit and Loss Account have been rounded off to the nearest rupee.

b) The firm is an Infrastructure Build-up sector which takes care of IT, safety and security at Tower 24, Primus, 78, Cusat Main Road, PKA Nagar, Kochi, Kerala - 682022.

***

For CENTER TEC

Managing Partner

NELSON T

AYKJ & Co. LLP Chartered Accountants

For CENTER TEC

Partner

LOVELY NELSON

CENTER TEC CUSAT Main Road KOCHI-682 022

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CENTER TEC, KALAMASSERY, KOCHI
NOTES FORMING PART OF FINANCIAL STATEMENTS FOR THE YEAR ENDING 31st MARCH 2022

2a Partners Capital Account

Particulars	31.03.2023	31.03.2022
Mr. Nelson T.	75,000	75,000
Mrs. Lovely Nelson	25,000	25,000
Total of Partners Capital Account	**1,00,000**	**1,00,000**

Details of Partners Capital Account

Mr. Nelson T.

Particulars	31.03.2023	31.03.2022
Opening Balance	75,000	75,000
Add: Introduced/Contibuted During the year	0	0
Less: Withdrawal during the year	0	0
Closing Balance	**75,000**	**75,000**

Mrs. Lovely Nelson

Particulars	31.03.2023	31.03.2022
Opening Balance	25,000	25,000
Add: Introduced/Contibuted During the year	0	0
Less: Withdrawal during the year	0	0
Closing Balance	**25,000**	**25,000**

2b Partners Current Account

Particulars	31.03.2023	31.03.2022
Mr. Nelson T.	1,64,67,033	1,73,07,474
Mrs. Lovely Nelson	21,71,375	26,29,496
Total of Partners Current Account	**1,86,38,408**	**1,99,36,970**

Details of Partners Current Account

Mr. Nelson T.

Particulars	31.03.2023	31.03.2022
Opening Balance	1,73,07,474	1,80,49,470
Add: Remuneration for the year	3,54,000	0
Less: Withdrawals during the Year	12,66,076	7,45,745
Add: Share of Profit/Loss for the Year	71,635	3,748
Closing Balance	**1,64,67,033**	**1,73,07,474**

Mrs. Lovely Nelson

Particulars	31.03.2023	31.03.2022
Opening Balance	26,29,496	31,98,247
Add: Remuneration for the year	1,18,000	0
Less: Withdrawals during the Year	6,00,000	5,70,000
Add: Share of Profit/Loss for the Year	23,878	1,249

A.Y.K. & Co. LLP Chartered Accountants
CENTER TEC CUSAT Main Road KOCHI-682 022

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Closing Balance	21,71,375	26,29,496

3 Reserves and Surplus

Particulars	31.03.2023	31.03.2022
Surplus in Statement of Profit and Loss :-		
Opening Balance	0	0
Add: Balance from Statement of Profit and Loss	95,513	4,997
Less: Transfer to partners current account	95,513	4,997
Total of Reserves and Surplus	**0**	**0**

4 Long Term Borrowings

Particulars	31.03.2023	31.03.2022
Secured Loan		
Term loan from Federal Bank(Against Vehicle)	2,929,169	3,748,315
Term loan from Union Bank (Against Vehicle)	1,129,089	1,297,624
Total of Long Term Borrowings	**4,058,258**	**5,045,939**

5 Trade Payables

Particulars	31.03.2023	31.03.2022
Due to MSME		
To suppliers	0	0
For Services	0	0
Due to other than MSME		
To suppliers	13,313,571	9,955,866
For Services	0	0
Total of Trade Payables	**13,313,571**	**9,955,866**

6 Other Current Liabilities

Particulars	31.03.2023	31.03.2022
Creditors for Expenses	1,324,358	240,783
Caution Deposit	2,100,000	2,100,000
Statutory dues payable	98,742	170,212
Total of Other Current Liabilities	**3,523,100**	**2,510,995**

8 Inventories

Particulars	31.03.2023	31.03.2022
a) Stock-in-trade at cost	3,639,760	712,958
Total of Inventories	**3,639,760**	**712,958**

9 Trade Receivables

Particulars		31.03.2023	31.03.2022
Outstanding for less than 6 months			
a.	Secured Considered good	0	0
b.	Unsecured Considered good	23,675,250	10,612,410
c.	Doubtful	0	0
	Sub Total	**23,675,250**	**10,612,410**

AYKJ & Co. LLP Chartered Accountants

CENTRETEC CUSAT Main Road KOCHI-682 022

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CENTER TEC, KALAMASSERY, KOCHI
NOTE 7 - PROPERTY, PLANT AND EQUIPMENT AND INTANGIBLE ASSETS (OWNED ASSETS)

Particulars /Assets	Tangible Assets				
	Plant and Equipment @ 15%	Computer & Accessories@ 40%	Furniture And Fittings @ 10%	Leasehold Improvements @ 10%	Total
GROSS BLOCK					
At 1 April 2022	77,93,445	4,31,997	3,18,726	11,60,221	97,04,389
Additions	1,54,729	0	0	0	1,54,729
Deductions/ Adjustments	0	0	0	0	0
At 1 April 2021	64,38,033	4,31,997	3,18,726	11,60,221	83,48,977
Additions	13,55,412	0	0	0	13,55,412
Deductions/ Adjustments	0	0	0	0	0
At 31 March 2023	**79,48,174**	**4,31,997**	**3,18,726**	**11,60,221**	**98,59,117**
At 31 March 2022	**77,93,445**	**4,31,997**	**3,18,726**	**11,60,221**	**97,04,389**
Depreciation/Adjustments					
At 1 April 2022	22,87,616	4,00,829	1,40,275	5,43,632	33,72,352
Additions	8,37,479	12,467	17,845	61,659	9,29,450
Deductions/ Adjustments	0	0	0	0	0
At 1 April 2021	13,15,999	3,80,051	1,20,447	4,75,122	22,91,619
Additions	9,71,617	20,778	19,828	68,510	10,80,733
Deductions/ Adjustments	0	0	0	0	0
At 31 March 2023	**31,25,095**	**4,13,296**	**1,58,120**	**6,05,291**	**43,01,802**
At 31 March 2022	**22,87,616**	**4,00,829**	**1,40,275**	**5,43,632**	**33,72,352**
NET BLOCK					
At 31 March 2023	**48,23,079**	**18,701**	**1,60,606**	**5,54,930**	**55,57,315**
At 31 March 2022	**55,05,829**	**31,168**	**1,78,451**	**6,16,589**	**63,32,037**

AYKI & Co. LLP Chartered Accountants

CENTER TEC CUSAT Main Road KOCHI-682 022

Outstanding for more than 6 months			
a.	Secured Considered good	0	0
b.	Unsecured Considered good	2,364,156	3,633,385
c.	Doubtful	0	0
	Sub Total	**2,364,156**	**3,633,385**
	Total of Trade Receivables	**26,039,405**	**14,245,795**

10 Cash and Cash Equivalents

Particulars		**31.03.2023**	**31.03.2022**
Cash and Cash Equivalents			
	Cash in Hand	28,421	230,221
	Balance with Banks	844,620	12,947,399
	Fixed Deposits in Banks	495,702	1,398,498
	Total of Cash and Cash Equivalents	**1,368,743**	**14,576,118**

11 Short term loans and Advances

Particulars		**31.03.2023**	**31.03.2022**
Other loans and Advances			
	GST input credit receivable	979,025	74,166
	GST cash ledger	175,892	109,392
	Retention Money	1,113,410	382,255
	Staff advance	(884)	147,083
	Advance Tax & TDS (Net of Provisions)	144,150	208,497
	TDS out of Pocket	1,370	1,370
	Prepaid Expenses	536,071	681,020
	Total of Short term loans and Advances	**2,949,033**	**1,603,783**

12 Other current assets

Particulars		**31.03.2023**	**31.03.2022**
	Deposits	79,080	79,080
	Total of Other current assets	**79,080**	**79,080**

13 Revenue from operations

Particulars		**31.03.2023**	**31.03.2022**
	Sale of Goods	44,974,701	20,181,772
	Sale of Services	5,984,847	4,935,826
	Total of Revenue from operations	**50,959,548**	**25,117,599**

14 Other Income

Particulars		**31.03.2023**	**31.03.2022**
	Interest on Fixed Deposit	106,319	102,644
	Interest on Income tax refund	9,213	0
	Expenses Written Off	0	55,096
	Total of Other Income	**115,532**	**157,740**

P.AYKJ & Co. LLP Chartered Accountants

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15 Cost of Material consumed

Particulars	31.03.2023	31.03.2022
Opening Stock	7,12,958	0
Add: Purchases of stock-in-trade	4,06,09,229	1,88,03,365
Add: Direct Expenses	54,75,821	12,21,505
Less: Closing stock	36,39,760	7,12,958
Total of Cost of Material consumed	**4,31,58,247**	**1,93,11,912**

16 Employee Benefits Expenses

Particulars	31.03.2023	31.03.2022
Salary paid to employees	19,89,824	20,78,456
Contribution to Statutory Funds	1,77,397	1,64,131
Staff Welfare Expenses	2,000	4,335
Total of Employee Benefits Expenses	**21,69,221**	**22,46,922**

17 Finance Cost

Particulars	31.03.2023	31.03.2022
Interest to bank	4,01,430	3,83,072
Interest Others	1,125	312
Bank charges	1,01,806	79,557
Finance Cost on Chitty	0	111
Total of Finance Cost	**5,04,361**	**4,63,052**

18 Other Expenses

Particulars	31.03.2023	31.03.2022
Staff welfare, Recruitment and training expense	22,000	15,135
Rental Expenses	60,339	45,823
Advertisement and Sales promotion	1,00,000	0
Postage, Telephone and Telegram	3,51,260	73,170
Printing and Stationery	25,229	23,699
Rates and Taxes	65,248	9,899
Electricity and water charges	21,863	14,038
Travelling expenses	12,87,495	6,99,693
Insurance	2,16,561	2,65,673
Repairs and maintenance	40,270	15,864
Audit fees	40,000	35,000
AMC Charges Paid	3,75,000	2,33,785
Bad Debts	1,08,243	0
Legal and professional charges	51,112	57,974
Late Delivery Charges and Deductions	1,39,724	56,726
Transportation Charges	1,29,110	10,340
Vehicle Maintenance	5,11,783	2,21,624
Motor Car Tax	0	1,72,250
Office Expenses	70,046	1,13,155
General & Miscellaneous Exps	60,777	76,906
Total of Other Expenses	**36,76,060**	**21,40,755**

AYKJ & Co. LLP Chartered Accountants

For AYKJ & Co. LLP Chartered Accountants

CA JOSEPH MATHEW ACA Partner (M. No. 24961[illegible]) Firm Registration No. S[illegible]

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Acknowledgement Number:357156391300923 **Date of filing : 30-Sep-2023**

INDIAN INCOME TAX RETURN ACKNOWLEDGEMENT

[Where the data of the Return of Income in Form ITR-1(SAHAJ), ITR-2, ITR-3, ITR-4(SUGAM), ITR-5, ITR-6, ITR-7 filed and verified]
(Please see Rule 12 of the Income-tax Rules, 1962)

Assessment Year 2023-24

PAN	AAHFC7725R		
Name	CENTER TEC		
Address	24/78, PRIMUS TOWER, CUSAT Main Road, Kalamassery, Thrikkakara North (Part), ERNAKULAM , Kochi University S.O , 16-Kerala, 91-INDIA, 682022		
Status	Firm	Form Number	ITR-5
Filed u/s	139(1)-On or before due date	e-Filing Acknowledgement Number	357156391300923

Taxable Income and Tax Details	Current Year business loss, if any	1	0
	Total Income	2	2,25,090
	Book Profit under MAT, where applicable	3	0
	Adjusted Total Income under AMT, where applicable	4	2,25,090
	Net tax payable	5	70,228
	Interest and Fee Payable	6	0
	Total tax, interest and Fee payable	7	70,228
	Taxes Paid	8	2,14,378
	(+) Tax Payable /(-) Refundable (7-8)	9	(-) 1,44,150
Accreted Income and Tax Detail	Accreted Income as per section 115TD	10	0
	Additional Tax payable u/s 115TD	11	0
	Interest payable u/s 115TE	12	0
	Additional Tax and interest payable	13	0
	Tax and interest paid	14	0
	(+) Tax Payable /(-) Refundable (13-14)	15	0

This return has been digitally signed by NELSON THANKACHAN in the capacity of Managing Partner having PAN ADEPT3687M from IP address 178.248.115.113 on 30-Sep-2023 12:14:20 DSC SI.No & Issuer 3863268 & 24518002CN=e-Mudhra Sub CA for Class 3 Individual 2022,OU=Certifying Authority,O=eMudhra Limited,C=IN

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AGENCY FOR NEW & RENEWABLE ENERGY RESEARCH AND TECHNOLOGY (ANERT)
Department of Power, Government of Kerala
Thiruvananthapuram, Kerala – 695 033;
www.anert.gov.in , projects@anert.in

E-EOI DOCUMENT

Expression of Interest (EoI) for the Selection of Agency for Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram

Ref. No.: ANERT-TECH/41/2024-PE1(RTS)

PART – 1: GENERAL CONDITIONS

Date of Publishing of Bids : - **27/02/2024**

Last Date of Submission of Bids : - **06/03/2024**

CENTER TEC CUSAT Kalamassery KOCHI-682 022

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EOI NOTICE

EoIs in two cover system with Earnest Money Deposit (EMD) are invited from reputed Consultant Agencies / Consultants, with relevant experience in Government and Management Consultancy services in the ***Expression of Interest (EoI) for the Selection of Agency for Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram***. The e-EoI documents can be downloaded from the e-EoIing website of Govt. of Kerala – www.etenders.kerala.gov.in. The EoI form will not be available in any other form.

Thiruvananthapuram
27/02/2024

CEO

File No. ANERT-TECH/41/2024-PE1(RTS) (Computer No. 7540)

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ABSTRACT

Ref. No.	**ANERT-TECH/41/2024-PE1(RTS)**
Name of Work	**Expression of Interest (EoI) for the Selection of Agency for Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram**
Download of EoI Form	http://www.etenders.kerala.gov.in
Last date of submission of bids	07/03/2024 @ 1.00 PM
Date and Time of opening the bids	07/03/2024 @ 2.00 PM
Cost of EoI form	**Rs. 1,18,000/- (Including GST)**
Period of Warranty	7 Years from the date of Commercial operation
Availability of EoI Forms	Website http://www.etenders.kerala.gov.in
Place of opening of EoI	Office of CEO, ANERT Law College Road, Vikas Bhavan. PO, Thiruvananthapuram - 695 033, Kerala

Thiruvananthapuram
27/02/2024

Sd/-
CEO

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GENERAL TERMS AND CONDITIONS FOR E-PROCUREMENT

This e-EoI is being published by ANERT inviting Expression of Interest (EoI) for the Selection of Agency for Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram. The EoI is invited in two cover system through e-procurement portal of Government of Kerala (www.etenders.kerala.gov.in). The Prospective bidders willing to participate in this EoI shall necessarily register themselves with above mentioned e-procurement portal.

The EoI timeline is available in the critical date section of this EoI published in www.etenders.kerala.gov.in

1. ONLINE BIDDER REGISTRATION PROCESS:

1.1 Bidders should have a Class III or above Digital Signature Certificate (DSC) to be procured from any Registration Authorities (RA) under the Certifying Agency of India. Details of RAs will be available on www.cca.gov.in. Once, the DSC is obtained, bidders have to register on www.etenders.kerala.gov.in website for participating in this EoI. Website registration is a one-time process without any registration fees. However, bidders have to procure DSC at their own cost.

1.2 Bidders may contact e-Procurement support desk of Kerala State IT Mission over telephone at 0471- 2577088, 2577188, 2577388 or 0484 – 2336006, 2332262 - through email: helpeEoI@gmail.com/eEoIshelp@kerala.gov.in for assistance in this regard

2. ONLINE PROCESS:

The EoI process shall consist of the following stages:

i. Downloading of EoI document: The EoI document will be available for free download on www.etenders.kerala.gov.in. However, EoI document fees shall be payable at the time of bid submission as stipulated in this EoI document.

ii. Pre-bid meeting: (will be updated in ANERT website – www.anert.gov.in)

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iii. Publishing of Corrigendum: All corrigenda shall be published on www.etenders.kerala.gov.in and shall not be available elsewhere.

iv. Bid submission: Bidders have to submit their bids along with supporting documents to support their eligibility, as required in this EoI document on www.etenders.kerala.gov.in. No manual submission of bid is allowed and manual bids shall not be accepted under any circumstances.

v. In case bidder encounters any technical issues pertaining to e-Procurement system while acting on the EoI, computer screen shot of the error message with date & time stamp on the web-browser along with the query shall be e-mailed by the bidder to the help desk **(helpetenders@gmail.com/ etendershelp@kerala.gov.in)**, for resolution of the problem. At the same time, problem must be intimated to the concerned EoI Inviting Authority via email.

vi. The time taken to ascertain, evaluate and suggest a solution for the problem reported by bidder may vary from case to case. Hence bidders are advised to submit the bid **at least 2 working days before the due date** and time of bid submission to avoid any last-minute issues that may come up.

vii. Opening of Bid and Bidder short-listing: The single cover bids will be opened, evaluated and shortlisted as per the eligibility. Failure to submit the required documents online will attract disqualification. Price bids of the eligible bidder's will open the same day of opening and the work will be awarded.

3. DOCUMENTS COMPRISING BID:

3.1 (a) The First Stage - Pre- Qualification cum Technical Bid with Commercial terms

Technical proposal shall contain the scanned copies of the following documents which every bidder has to upload:

Cover 1 shall contain, Part-I (this document in PDF form)/scanned copies of:

i. EoI documents downloaded (signed with office seal)

ii. Summary of Bid qualification requirement (Annexure A)

iii. Undertaking of the agency in the prescribed format (Annexure B) on Govt. of Kerala stamp paper worth Rs.200/-

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iv. Power of Attorney for the authorised signatory to sign the documents on behalf on the Consultancy firm
v. Copy of Registration Certificate of the bidder firm
vi. Copy of GST Certificate
vii. Copy of PAN card / TAN
viii. Documents proving Previous Experience and Pre Qualification
ix. Declaration by the bidder (format as in Annexure – D)
x. Declaration of relationship with ANERT employee (format as in Annexure - E)
xi. Undertaking for No Blacklisting & No Banning (Annexure - F)

3.2 The department doesn't take any responsibility for any technical snag or failure that has taken place during document upload.

4. DOCUMENT FEES

4.1 The Bidder shall pay a fee of Rs. 50,000/-. MSMEs, MSEs or NSIC registered agencies are exempted from payment of this fee.

4.2 Online Payment modes: The fees can be paid in through e-Payment facility provided by the e-Procurement system. Bidders can make payment only via Internet banking facility.

State Bank of India Multi Option Payment System (SBI MOPS Gateway): Bidders are required to avail Internet Banking Facility in any of below banks for making EoI remittances in eProcurement System.

A) Internet Banking Options (Retail)			
1	Allahabad Bank	32	Kotak Mahindra Bank
2	Axis Bank	33	Lakshmi Vilas Bank
3	Andhra Bank	34	Mehsana Urban Co-op Bank
4	Bandan Bank	35	NKGSB Co-operative Bank
5	Bank of Bahrain and Kuwait	36	Oriental Bank of Commerce
6	Bank of Baroda	37	Punjab and Maharashtra Cooperative Bank
7	Bank of India	38	Punjab National Bank
8	Bank of Maharashtra	39	Punjab and Sind Bank

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9	Bassein Catholic Co-operative Bank	40	RBL Bank
10	BNP Paribas	41	Saraswat Cooperative Bank
11	Canara Bank	42	ShamraoVithal Cooperative Bank
12	Catholic Syrian Bank	43	South Indian Bank
13	Central Bank of India	44	Standard Chartered Bank
14	City Union Bank	45	State Bank of India
15	Corporation Bank	46	Syndicate Bank
16	Cosmos Bank	47	Tamilnad Mercantile Bank
17	DCB Bank	48	Tamilnadu Cooperative Bank
18	Dena Bank	49	The Kalyan Janata Sahakari Bank
19	Deutsche Bank	50	TJSB Bank
20	Dhanalaxmi Bank	51	UCO Bank
21	Federal Bank	52	Union Bank of India
22	HDFC Bank	53	United Bank of India
23	ICICI Bank	54	Vijaya Bank
24	IDBI Bank	55	YES Bank
25	Indian Bank		
26	Indian Overseas Bank		
27	IndusInd Bank		
28	Jammu & Kashmir Bank		
29	Janata Sahakari Bank		
30	Karnataka Bank		
31	Karur Vysya Bank		
B) Internet Banking Options (Corporate)			
1	Bank of Baroda	21	Laxmi Vilas Bank
2	Bank of India	22	Oriental Bank of Commerce
3	Bank of Maharashtra	23	Punjab & Maharashtra Coop Bank
4	BNP Paribas	24	Punjab & Sind Bank
5	Canara Bank	25	Punjab National Bank
6	Catholic Syrian Bank	26	RBL Bank

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7	City Union Bank	27	Shamrao Vitthal Co-operative Bank
8	Corporation Bank	28	South Indian Bank
9	Cosmos Bank	29	State Bank of India
10	Deutsche Bank	30	Syndicate Bank
11	Development Credit Bank	31	UCO Bank
12	Dhanalaxmi Bank	32	Union Bank of India
13	Federal Bank	33	UPPCL
14	HDFC Bank	34	Vijaya Bank
15	ICICI Bank	35	Axis Bank
16	Indian Overseas Bank		
17	Janta Sahakari Bank		
18	Jammu & Kashmir Bank		
19	Karur Vysya Bank		
20	Kotak Bank		

During the online bid submission process, bidder shall select ***SBI MOPS*** option and submit the page, to view the ***Terms and Conditions*** page. On further submitting the same, the e-Procurement system will re-direct the bidder to MOPS Gateway, where two options namely ***SBI*** and ***Other Banks**** will be shown. Here, Bidder may proceed as per below:

a) *SBI Account Holders* shall click ***SBI*** option to with its Net Banking Facility., where bidder can enter their internet banking credentials and transfer the EoI Fee and EMD amount.

b) *Other Bank Account Holders* may click ***Other Banks*** optionto view the bank selection page. Here, bidders can select from any of the 54 Banks to proceed with its Net Banking Facility, for remitting EoI payments.

**Transaction Charges for Other Banks vide SBI Letter No. LHO/TVM/AC/2016-17/47 – 1% of transaction value subject to a minimum of Rs. 50/- and maximum of Rs. 150/-*

** Bidders who are using Other Banks option under SBI MOPS Payment Gateway, are advised by SBI to make online payment 72 hours in advance before EoI closing time.*

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5. SUBMISSION PROCESS:

5.1 For submission of bids, all interested bidders have to register online as explained above in this document. After registration, bidders shall submit their Technical bid online on www.etenders.kerala.gov.in along with online payment of fees. They are also required to fill the form available in the ANERT website.

5.2 For page-by-page instructions on bid submission process, please visit www.etenders.kerala.gov.in and click "Bidders Manual Kit" link on the home page.

5.3 It is necessary to click on "Freeze bid" link/ icon to complete the process of bid submission otherwise the bid will not get submitted online and the same shall not be available for viewing/ opening during bid opening process.

6. BID VALIDITY

6.1 The bid will be valid for a period of 6 months from the date of opening of bids

7. DEVIATIONS

7.1 The offers with Deviations in Commercial terms and Technical Terms of the EoI Document are liable for rejection.

8. BLACK LIST

8.1 All the intending bidders shall agree that in the event of the documents furnished with the offer being found to be bogus or the documents contain false particulars, they shall be blacklisted for future EoIs/ association with ANERT

9. BIDDER'S LOCATION

9.1 The bidders are requested to furnish the exact location of their registered office with detailed postal address and pin code, telephone and fax nos. etc. in their EoIs to arrange inspection by ANERT, if considered necessary.

9.2 All communication shall be made to the registered email of the bidder in the e-tender systems and ANERT shall not be responsible for non-receipt or delay of any such communication.

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10. CORRUPT AND FRAUDULENT PRACTICES

ANERT requires compliance with its policy in regard to corrupt and fraudulent/prohibited practices as set forth in this proposal. In further pursuance of this policy, the selected service Provider(s) shall permit ANERT or its representatives to inspect the accounts, records and other documents relating to the submission of the Proposal and execution of the contract, in case of award, and to have the records inspected by ANERT.

11. CONFLICT OF INTEREST

i. The service Provider(s) is required to provide professional, objective, and impartial services, at all times holding ANERT‟s interests paramount, strictly avoiding conflicts with other assignments or its own corporate interests, and acting without any consideration for future work. The consultant has an obligation to disclose to ANERT any situation of actual or potential conflict that impacts its capacity to serve the best interest of ANERT. Failure to disclose such situations may lead to the disqualification of the supplier or the termination of its Contract and/or sanctions by the Government.

ii. Relationship with the ANERT staff: a service Provider (including its subsidiaries /partners) that has a close business or family relationship with a professional staff of the ANERT who are directly or indirectly involved in any part of the preparation of the Terms of Reference for the assignment, the selection process for the Contract, or the supervision of the Contract, may not be awarded a Contract, unless the conflict stemming from this relationship has been resolved in a manner acceptable to ANERT throughout the selection process and the execution of the Contract. Any other types of conflicting relationships as indicated in the EOI

12. CONFIDENTIALITY

i. From the time the Proposals are opened to the time the Contract is awarded, the agency (ies) should not contact any of the officials of ANERT on any matter related

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to its Technical Proposal. Information relating to the evaluation of Proposals and award recommendations shall not be disclosed to the agency (ies) who submitted the Proposals or to any other party not officially concerned with the process, until the publication of the Contract award information.

ii. Any attempt by the agency (ies) or anyone on behalf of the bidders to influence improperly ANERT in the evaluation of the Proposals or Contract award decisions may result in the rejection of its Proposal and may be subject to the application of prevailing Government sanctions procedures.

iii. Notwithstanding the above provisions, from the time of the Proposals‟ opening to the time of Contract award publication, if a agency (ies) intends to contact ANERT on any matter related to the selection process, it should do so only in writing.

iv. The Bids should be submitted only through the e-EoI portal www.etenders.kerala.gov.in. Agency (ies) shall upload all the necessary documents in the e EoI portal before the last date & time for online submission. Proposal received after the submission deadline will be treated as non-responsive and will be excluded from further evaluation process.

v. Proposals must be direct, concise, and complete. ANERT will evaluate bidder's proposal based on its clarity and the directness of its response to the requirements of the project as outlined in this EoI document. Bidders shall furnish the required information on their technical and financial proposals in the enclosed formats only. Any deviations in format or if the proper information is not provided properly, the EoI will be liable for rejection. EoI Evaluation committee may seek clarification, if required, while evaluating the proposal.

vi. The technical bid opening date, time and the address are as stated in the EoI document.

13. APPLICABLE LAW

This EoI shall be governed by the laws and procedures established by Government of Kerala, within the frame work of applicable legislation and enactment made from time to time concerning such commercial dealings. Any default in the terms and conditions of the document by the service provider will lead to rejection of work order.

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14. AMENDMENT OF EOI DOCUMENT

At any time prior to the deadline for submission of the EoI, ANERT may for any reason, modify the EoI document. The amendment document/ corrigendum shall be notified through the website www.etenders.kerala.gov.in and such amendments shall be binding on all the bidders.

15. GOVERNMENT OF KERALA – CORRUPT AND FRAUDULENT PRACTICES

ANERT follows the policy of the Government of Kerala for anti-corruption and fraudulent practices to maintain sound procurement principles of open competition, economy and efficiency, transparency, and fairness. ANERT requires the agency (ies) to observe the following Government manuals (amended from time-to-time) during the selection process and in execution of such contracts The Kerala Financial Code (KFC), 2008 (7th Edition, 1st Edition was in 1963), The Stores Purchase Manual (SPM), 2013.

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AGENCY FOR NEW & RENEWABLE ENERGY RESEARCH AND TECHNOLOGY (ANERT)
Department of Power, Government of Kerala
Thiruvananthapuram, Kerala – 695 033;
www.anert.gov.in , projects@anert.in

E-EOI DOCUMENT

Expression of Interest (EoI) for the Selection of Agency for Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram

Ref. No.: ANERT-TECH/41/2024-PE1(RTS)

PART – 2: REGISTRATION PROCEDURE

Date of Publishing of Bids : - 27/02/2024

Last Date of Submission of Bids : - 06/03/2024

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SELECTION OF AGENCY

16. GENERAL

16.1 This Expression of Interest is being invited by ANERT from competent and eligible agencies/firms who fulfil the eligibility criteria prescribed in this document for the Pilot implementation of Battery Energy Storage System (ESS) with PCU for powering the full load of ANERT HQ.

16.2 The applicant should not have any pending litigation with ANERT or any other Government agency within the Country.

16.3 ANERT will not have any liability to any prospective Consultancy Company / Firm/ Consortium / Entity or person under any laws (including without limitation the law of contract, tort), the principles of equity, restitution or unjust enrichment or otherwise for any loss, expense or damage which may arise from or be incurred or suffered in connection with anything contained in this EoI document, any matter deemed to form part of this EoI document, the award of the Assignment, the information and any other information supplied by or on behalf of ANERT or its employees, any consultants or otherwise arising in any way from the selection process. ANERT will also not be liable in any manner whether resulting from negligence or otherwise however caused arising from reliance of any Applicant upon any statements contained in this RFP.

17. INTRODUCTION

ANERT is planning to implement a 100 kW Battery Energy Storage System (BESS) on pilot mode, which would function as a reference / demo installation for all the stakeholders in the State. INDIA is moving aggressively towards Renewable Energy and for enabling Round the Clock (RTC) from Renewables, some sort of Energy Storage System is necessary. The city of Thiruvananthapuram is being developed as Solar City, and mere Solarisation through On Grid systems may help us in attaining the tag, for RTC to be ensured, BESS is an essential component.

In this context, a working Pilot installation in the Solar City is proposed at ANERT HQ,

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The system must be capable of providing complete back up to the HQ building, replacing the current Diesel generator, Charge the BESS from the existing Solar Power plants and must also have the feature of exporting from the storage at Peak Hours if required, with prior permission from KSEBL or concerned authorities.

18. SCOPE OF WORK

The Scope of Supply & Work includes all design & engineering, procurement & supply of equipment and materials, testing at manufacturers works, multi – level inspections, packing and forwarding, supply, receipt, unloading and storage at site, associated civil works, services, permits, licences, installation and incidentals, insurance at all stages, erection, testing and commissioning of Hybrid Battery Energy Storage System and performance demonstration with associated equipment and materials on turnkey basis at ANERT HQ, Thiruvananthapuram, Kerala.

i. The system proposed must have provision to include minimum three sources of power – Solar, Utility power & Backup DG. The PCU of the BESS system must have provision to manage the input source based on availability and must also be able to schedule based on ToD.

ii. The system will replace the existing Diesel Generator which is powering the ANERT building on black outs and Power cuts. The same is currently connected to the AMF panel, which need to be decommissioned and connected to the new PCU. The output of the PCU is to be connected to this AMF panel, which will act as the primary source of powering the building.

iii. The system shall consist of a 100 kW Bi-Directional PCS + Provision for connecting existing Solar through a Static Transfer Switch and 150 kWh Lithium Battery Storage System, which shall not provide uninterrupted power to the output even at failure of 30% of the battery modules. The total system shall be designed for mobile or stationary use in a modular container divided into battery room and PCS room with all requisite fire protecting equipment and Air conditioner based cooling.

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iv. The PCU part adopts advanced modular digital control technology, which optimizes the control performance, improves the reliability of the system, and realizes uninterrupted switching between modes such as grid-connected discharge, grid-connected charging, and system off-grid operation. The PCU system has a wide DC input range, which can better suit the charging and discharging requirements of different battery combinations. Under the same power output, the diversity of battery pack connections is increased, and the number of parallel battery packs is reduced. It can better manage the battery, improve the life of the battery and the economic benefits of the energy storage system.

v. The abandoned building near the electrical room can be used to house the BESS system. The requisite civil works for accommodating the system inside the building is under the scope of the bidder.

vi. The bidder is required to take necessary approvals from the Electrical Inspectorate and KSEBL as per norms to commission the system.

vii. All associated civil and electrical works are under the scope of the bidder.

19. QUALIFICATION CRITERIA

19.1.1 An undertaking in Rs.200/- Kerala stamp paper as per the format given in Annexure IC must be submitted along with e-EoI document.

19.1.2 Power of Attorney for signing the documents has to be provided by the bidder. The documents signed by this authority only will be accepted for Expression of Interest and other documents submitted under this project. If the agency desires to change this authority fresh PoA has to be submitted.

19.2 Eligibility Requirement

19.2.1 The detail of eligibility requirements is provided in the table below. The bidders are required to furnish the required supporting documents along with the Technical Bid.

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S. No.	Criteria	Documents Required
1.1	The Applicant should be a Legal Entity continuously operational since last 10 Years. i.e., Legal Entity of the firm i.e., • Sole Proprietorship Private Limited • Public Sector Undertaking • Limited Company • Partnership firm • LLP	a) In case of Company – Copy of Registration / Incorporation Certificate issued by MCA b) In case of LLP – Copy of Deed of Partnership along with registration certificate issued by MCA c) In case of Partnership – Copy of Deed of Partnership d) In case of Sole Proprietor – Duly notarized Undertaking from Sole proprietor
1.2	Bidder must have GST Registration	Copy of GST registration certificate with GSTIN.
1.3	The Bidder must have valid PAN Number	Copy of Pan Card
1.4	The bidder should have undertaken and completed at least one installation of BESS system within the Country	Copies of Work order and Completion Certificates to be submitted
1.5	If the bidder is not an OEM of BESS, authorization certificate along with a copy of agreement between bidder and OEM regarding service and maintenance support must be submitted. Further, at least two service engineers of the bidder, must have completed factory training to ensure timely rectification of complaints at the site.	Copy of MoU between OEM and bidder along with authorisation for bidding in the tender. Copy of successful training completion by service engineers along with their EPF / ESIC details.
1.6	The bidder should have a dedicated office in Thiruvananthapuram and personnel with Graduate Engineering degree with prior experience in Solar / BESS / UPS to attend any complaints. In case, the bidder is not having a dedicated office, an undertaking to open	Details of office in Thiruvananthapuram and profile of Engineer available at office.

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	an office within 30 days of award of work to be submitted.	
1.5	The Applicant entity should have a Minimum Average Annual Turnover of Rs. 5 Crores in any of two out of the last five financial years	Audited Statements of the Last 5 Financial years and Certificate as per Format
1.6	The bidder should be having unblemished record and must not be blacklisted or declared ineligible for corrupt & fraudulent practices by "any state/ central government" department/ company / entity" as on date of bid opening.	The bidder shall provide an Undertaking as per the format provided as Format A.

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CONDITIONS OF CONTRACT

20. GENERAL CONDITIONS

20.1 The bids should be submitted online at www.etenders.kerala.gov.in

20.2 The EoI should be as per the prescribed form which should be downloaded from the e-tender website. The cost of EoI forms if any, should be paid online, and once paid will not be refunded. EoI forms are not transferable. EoIs that are not in the prescribed form are liable to be rejected.

20.3 Intending bidders should submit their EoIs on or before the due date and time mentioned in the document. Late EoI will not be accepted.

20.4 EoIs subject to conditions will not be considered. They are liable to be rejected on that sole ground.

20.5 The final acceptance/rejection of the bids rests entirely with CEO, ANERT who do not bind themselves to accept the lowest or any EoI.

20.6 In case the contractor becomes insolvent or goes into liquidation, or makes or proposes to make any assignment for the benefit of his creditors or proposes any composition with his creditors for the settlement of his debts, carries on his business or the contract under inspection or behalf of or his creditors or in case any receiving order(s) for the administration of his estate are made against him or in case the contractor shall commit any act of insolvency or in case in which under any clause or clauses any act of insolvency or in case in which under any clause(s) of this contract the contractor shall have rendered himself liable to damages amounting to the whole of his security deposits, the contract shall, thereupon, after notice given by the Purchasing Officer to the contractor, be determined and ANERT may complete the contract in such time and manner and by such persons as ANERT shall think fit. But such determination of the contract shall be without any prejudice to any right or remedy of ANERT against the contractor or his sureties in respect of any breach of contract committed by the contractor. All expenses and damages caused to ANERT by any breach of contract by the contractor shall be paid by the contractor to ANERT and may be

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recovered from him under the provisions of the Revenue Recovery Act in force in the State.

20.7 In case the contractor fails to supply and deliver any of the said articles/services and things within the time provided for delivery of the same, or in case the contractor commits any breach of any of the covenants, stipulations and agreements herein contained, and on his part to be observed and performed, then and in any such case, it shall be lawful for ANERT (if they shall think fit to do so) to arrange for the purchase of the said articles and things from elsewhere of on behalf of ANERT by an order in writing under *the* hand of the CEO put an end to this contract and in case ANERT shall have incurred sustained or been put to any costs, damages or expenses by reason of such purchase or by reason of this contract having been so put an end to or in case any difference in price, compensation, loss, costs, damages, expenses or other moneys shall then or any time during the continuance of this contract be payable by the contractor to ANERT under and by virtue of this contract, it shall be lawful for ANERT from and out of any moneys for the time being payable or owing to the contractor from ANERT under or by virtue of this contract or otherwise to pay and reimburse to ANERT all such costs, damages and expenses they may have sustained, incurred or been put to by reason of the purchase made elsewhere or by reason of this contract having been so put an end to as aforesaid and also all such difference in price, compensation, loss, costs, damages, expenses and other moneys as shall for the time being payable by the contractor aforesaid.

20.8 Any sum of money due and payable to the contractor (including security deposit returnable to him) under this contract may be appropriated by the CEO or any other person authorised by ANERT and set off against any claim of ANERT for the payment of a sum of money arising out of or under any other contract made by the contractor with ANERT or any other person authorised by ANERT. Any sum of money due and payable to the successful tenderer from ANERT shall be adjusted against any sum of money due to ANERT from him under any other contracts.

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20.9 Every notice hereby required or authorised to be given may be either given to the contractor personally or left at his residence or last known place of abode or business, or may be handed over to his agent personally, or may be addressed to the contractor by post at his usual or last known place of abode or business and if so addressed and posted, shall be deemed to have been served on the contractor on the date on which in the ordinary course of post, a letter so addressed and posted would reach his place of abode or business.

20.10 **Conditions in the technical document, technical specifications and special conditions of this EoI document would override these General Conditions, wherever applicable.**

20.11 **ANERT, by notice sent to the successful, may terminate the contract, in whole or in part, at any time for its convenience. The notice of termination shall specify that termination is for ANERT's convenience, the extent to which performance of the Supplier under the contract is terminated, and the date upon which such termination becomes effective.**

20.12 **The EoI shall be opened at the time and date announced in the Kerala Tenders portal, and the date for opening of price bid will be updated in the portal in due course after evaluation of the technical bids.**

20.13 **In case any difference or dispute arises in connection with the contract, all legal proceedings relating to the matter shall be instituted in the Court within whose jurisdiction the CEO, ANERT voluntarily resides.**

20.14 **The Courts situated at the place where the headquarters of ANERT is situated viz, Thiruvananthapuram alone will have jurisdiction to entertain civil suits and all other legal pertaining to this contract.**

21. SELECTION PROCESS FOR BIDDER

There are two bid-opening events:

a) Pre-Qualification cum Technical Bid

b) Commercial Bid

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The Commercial Bids of only those bidders will be opened who score equal to or more than qualifying marks in Technical Bid as decided by ANERT.

21.1 PRE-QUALIFICATION PROCESS

a. The Bidders Pre-Qualification Proposal will be evaluated as per the requirements specified in the document and adopting the pre-qualification criteria spelt out. The Bidder is required to submit all required documentation in support of the pre-qualification criteria specified.
b. The Bidder shall meet all the mandatory compliance requirements. Failure in meeting the mandatory compliance requirements will result in disqualification of the Bidder.
c. An undertaking in Rs.200/- Kerala stamp paper as per the format given in Annexure B must be submitted online

21.2 Pre-Qualification Criteria

#	Criteria	Documents Required
1.1	The Applicant should be a Legal Entity continuously operational since last 10 Years. Consortium is not allowed to bid for this engagement i.e., Legal Entity of the firm i.e., • Sole Proprietorship Private Limited • Public Sector Undertaking • Limited Company • Partnership firm • LLP	a. In case of Company – Copy of Registration/ Incorporation Certificate issued by MCA b. In case of LLP – Copy of Deed of Partnership along with registration certificate issued by MCA c. In case of Partnership – Copy of Deed of Partnership d. In case of Sole Proprietor – Duly notarized Undertaking from Sole proprietor
1.2	Bidder must have GST Registration	Copy of GST registration certificate with GSTIN.
1.3	The Bidder must have valid PAN Number	Copy of PAN Card
1.4	The bidder should have undertaken and completed at least one installation of BESS system within the Country	Copies of Work order and Completion Certificates to be submitted

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1.5	If the bidder is not an OEM of BESS, authorization certificate along with a copy of agreement between bidder and OEM regarding service and maintenance support must be submitted. Further, at least two service engineers of the bidder, must have completed factory training to ensure timely rectification of complaints at the site.	Copy of MoU between OEM and bidder along with authorisation for bidding in the tender. Copy of successful training completion by service engineers along with their EPF / ESIC details.
1.6	The bidder should have a dedicated office in Thiruvananthapuram and personnel with Graduate Engineering degree with prior experience in Solar / BESS / UPS to attend any complaints. In case, the bidder is not having a dedicated office, an undertaking to open an office within 30 days of award of work to be submitted.	Details of office in Thiruvananthapuram and profile of Engineer available at office.
1.7	The bidder should be having unblemished record and must not be blacklisted or declared ineligible for corrupt & fraudulent practices by "any state/ central government" department/ company / entity" as on date of bid opening.	The bidder shall provide an Undertaking as per the format provided as Format A.

21.3 TECHNICAL QUALIFICATION

a. ANERT will review the Technical bids to determine whether the technical bids are substantially responsive. Bids that are not substantially responsive are liable to be disqualified at ANERT's discretion.

b. The bidder's technical solutions proposed in the bid document will be evaluated as per the requirements specified in this document

c. Each Technical Bid will be assigned a technical score out of a maximum of 100 marks. Only the bidders who get an aggregate Technical score of 50% or more will qualify for commercial evaluation stage. Failing to secure minimum marks shall lead to technical rejection of the Bid and Bidder

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21.4 Commercial Qualification

The Bidders shall quote for the entire scope of contract on an "overall responsibility" basis such that the total contract value covers all obligations of the Bidder mentioned in or to be reasonably inferred from the Bidding documents in respect of providing the services. The Financial Bid shall be submitted in the format given as in the e-portal.

Prices quoted by the Bidder shall remain firm during the entire contract period and shall not be subject to variation on any account except change in applicable tax rates. A Bid submitted with an adjustable price quotation will be treated as non-responsive and rejected.

22. EVALUATION PROCESS

ANERT shall evaluate the responses and scrutinize the supporting documentary evidence. Inability to submit the requisite supporting documents may lead to rejection. The decision of ANERT in the evaluation of proposals shall be final. No correspondence will be entertained outside the process of evaluation. Each of the responses/Proposals shall be evaluated as per the criteria and requirements specified in this tender document.

An Evaluation Committee will be constituted to evaluate the technical and financial proposals and recommend award of the works. The proposals will be evaluated in three stages.

22.1 Stage 1: - Pre-Qualification Cum Technical Bid

a. Each of the Pre-Qualification condition mentioned in Section24.1 is MANDATORY. In case the Bidder does not meet any one of the conditions, the bidder will be disqualified.
b. Response to the Pre-Qualification Requirements shall be evaluated in accordance with the requirements specified in this document; A checklist has to be created with proper page-wise indexing of all supporting documents
c. ANERT will review the technical bids of the short-listed bidders to determine whether the technical bids are substantially responsive. Bids that are not substantially responsive are liable to be disqualified.

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22.2 Stage 2: - Commercial Bid

a. The bid should include all taxes, duties, fees, levies, works contract tax and other charges as may be applicable in relation to the activities proposed to be carried out.

b. The taxes quoted in the offer should be as per the prevailing tax rates. Any subsequent increase in the tax rates or introduction of new tax will not be paid by ANERT. Similarly, if any benefits arising due to downward revision in tax rates, or any exemptions availed by the Bidders organization should be passed on to ANERT.

23 SPECIAL CONDITIONS

23.1 Each bidder should submit only one (1) bid. Any bidder who submits/participates in more than one bid for the work shall be disqualified.

23.2 If the due date for opening the EoI happens to be declared holiday, then the EoI will be received and opened on the very next day, for which no prior intimation will be given.

23.3 **During the EoI evaluation, ANERT may seek more clarifications/details from any or all of the bidders, if felt necessary.**

23.4 The ownership of all documents, reports, projects etc. being created as part of the assignment will vest with ANERT.

23.5 Any information furnished by the Bidder, if found to be incorrect at any stage, would render them being declared as ineligible.

23.6 Incomplete proposals may be summarily rejected. ANERT reserves the right to reject any or all the bid without assigning any reason thereof.

24. PAYMENT TERMS

24.1 No advance payment will be given. All the documents submitted should be certified by the concerned personnel of ANERT.

24.2 The terms of payment shall be:

i. Upon delivery of materials at the site, 60 % of the contract value against that site will be released as first part payment. The supplier shall submit the invoice for the materials (including serial numbers and delivery chalan) duly certified by

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the concerned District Office along with a report regarding the supply of materials.

ii. On completion of the installation of BESS system and filing application for connectivity, 20% of the contract value shall be released as second part payment. The supplier shall submit the invoice for the materials supplied and all documents related including the Project Completion Report to the completion of the work certified by the district office shall be submitted for the release of the amount. The PCR submitted will be used for conducting the pre-commissioning tests. Proof of the completion report submitted to the electrical inspectorate shall be submitted.

iii. After the Inspection and Approval of the Electrical Inspectorate, date of Energisation to the Grid by the DISCOM will be considered as the official Date of Commissioning (CoD) of the project and this will be treated as the commissioning of the system.

iv. On commissioning of the grid connected system, 10% of the remaining contract value will be released after proving the Key Performance Indexes. All documents related to the completion of the work including commissioning report shall be submitted for the release of the amount.

v. The balance 10% shall be retained as performance security and will be released in parts - 2% after 1 year of operation, 3% after 3 years of operation, 2% after 5 years of operation, 3% after 7 years of operation of warranty.

vi. The security deposit of 3% furnished along with the contract agreement shall be released on successful completion of supply, installation, and commissioning.

25. RIGHTS TO ACCEPT/REJECT ANY OR ALL PROPOSALS

ANERT reserves the right to accept or reject any proposal, and to annul the EoI process and reject all Bids at any time prior to award of Contract, without thereby incurring any liability to the affected Bidders or any obligation to inform the affected Bidders of the grounds for ANERT's action.

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26. FAILURE TO AGREE WITH THE TERMS & CONDITIONS /CONTRACT

Failure of the Bidder to agree with the Terms & Conditions of the EoI shall constitute sufficient grounds for the annulment of the award of contract. The contract may be awarded to the next most responsive bid among other bidders.

27. PERFORMANCE SECURITY

The successful bidder has to remit an amount @ 3% of the total amount quoted by the bidder per annum as performance security deposit in terms of e-Bank Guarantee/Deposit having validity for 3 years from the date of agreement. The bank guarantee/deposit will be released/refunded to the successful bidder after completion of the contract period after deducting the penalties if any.

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TECHNICAL SPECIFICATIONS

GRID BASED BATTERY ENERGY STORAGE SYSTEM

The Scope of Work covered under this specification shall be but not limited to the following.

28. INITIAL DESIGN AND FABRICATION

For the initial design and fabrication of the equipment, the Contractor shall

- Design, fabricate, and assemble a fully functional, transportable BESS that meets the requirements delineated herein. This shall include a control system that provides standard input/output channels and appropriate control actions for all required operational and protective features.
- Fully document the design and expected performance of the BESS by means of documents, drawings, reports, data, and other submittals, as required herein.
- Perform factory acceptance testing of the BESS.
- Conduct design review meetings during initial design and fabrication, in Consultation with the ANERT with special reference to the geographical/climatic conditions of the Project site.
- Obtain site-specific data in preparation for developing installation implementation plans.
- Develop site installation/construction drawings, specifications, and calculations.
- Supply any special equipment and tools required for maintenance of the BESS.
- Supply an initial complement of spare parts (at a to-be-determined level).
- Provide warranty for the entire BESS and its constituent equipment.

29. TRANSPORTATION AND SITE SETUP

Interconnection of the BESS with the grid is at the point of common connection (PCC). The Contractor shall be responsible for all equipment and installation activities up to the system side of the PCC. The Contractor will be responsible for completing the necessary work for the interconnection point.

For installation/interconnection, the Contractor shall

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- Develop drawings, specifications, and calculations for Contractor's scope of installation equipment and services (that is, up to the BESS side of the PCC).
- Obtain all permits necessary to transport the BESS to the site.
- Ship the BESS to the project site.
- Assemble BESS components on site to produce a functional system (as required).
- Perform start-up testing and SAT of the BESS.
- Provide on-site Contractor representative during installation and/or interconnection activities by the ANERT and during start-up and SAT of the BESS by Contractor.
- Obtain permits necessary to prepare the site and to install and interconnect the BESS to the grid.
- Provide a complete set of as-built drawings.
- Provide a training class for ANERT's technicians and maintenance personnel.

30. OPERATION AND MAINTENANCE

The operation and maintenance (O&M) of the BESS on comprehensive basis to the Contractor on turnkey for the 10 (Ten) years. The rates quoted by bidder for Comprehensive O&M of the Plant Facilities on yearly basis for 10 years shall be inclusive of the replacement costs if any.

31. DEFINITIONS

- PCC - Point of common connection – MSB Panel at ANERT HQ
- Utility - Kerala State Electricity Board Limited (KSEBL)
- Unit battery - A unit battery is the minimum field-replaceable stored energy component or assembly. It may consist of one or more electrochemical cells, electrically interconnected in any series and/or series-parallel configuration. A unit battery has one (and not more than one) set of positive and negative terminals, by which it is interconnected with the rest of the storage system.
- BESS - Transportable, containerized energy storage system based on commercially available electrochemical storage solutions, capable of receiving, it and / or balancing it.

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32. BESS INTERCONNECTION

The BESS will be interconnected with the KSEBL grid at PCC. It is expected that the PCC will be at the MSB panel at ANERT HQ. However, the same must be finalized by the Contractor after consultation with the KSEBL.

33. GRID CHARACTERISTICS

The BESS shall be capable of continuous operation under variable voltage, frequency and phase imbalance conditions at the PCC, as described in the Table below. Information on available fault current and other characteristics of the KSEBL grid will be provided by the KSEBL. The Contractor shall confirm, for each KSEBL site, that this information has been received and understood during the site-specific engineering phase.

Codes and Standards

IEC 62477	Secondary cells and batteries for renewable energy storage for On-grid applications: Non-chemistry Specific (applicable to all secondary battery types) Safety requirements for power electronic converter systems and equipment
IEC 61000	Electro Magnetic Compatibility of Lithium-Ion Battery Energy Storage System.
IEC 62485-2	Safety requirements for secondary batteries and battery installations – to meet requirements on safety aspects associated with the erection, use, inspection, maintenance, and disposal: Non-chemistry Specific (applicable to all secondary battery types)
IEC 61508 IEC 62620 / IEC 62619	Functional Safety of Electrical/Electronic/Programmable Electronic Safety- related Systems: Applicable for all Battery Energy Storage Systems OR Secondary cells and batteries containing alkaline or other non-acid electrolytes – Safety requirements for secondary lithium cells and batteries, for use in industrial applications
IEC 61850/ DNP3	Communications networks and management systems. (It shall be ensured that PV Plant SCADA and the BESS control system communicate with each other over the protocol and the combined parameters are accessible over a common HMI.)

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34. TECHNICAL SPECIFICATION OF BATTERY ENERGY STORAGE SYSTEM

34.1 Procurement-Specific Ratings and Requirements

Item Description	Requirement
Battery Technology	Any battery technology with totally Maintenance Free suitable for operation in site-specific climatic conditions can be used.
Rated No of Cycles (Minimum)	4000 cycles at rated energy capacity at 80%; Depth of Discharge (DoD) at 25°C and C/1 Rate of Discharge
Nameplate watt rating*, AC (A)	100 kW, continuous. The same shall comprise of two units of 50 kW each, for N+1 redundancy, with capability of extending up to 200kW in the future.
Nameplate watt-hour rating, ac (B)	150 kWh at 100 kW net ac output at the beginning of life and not less than 80% of this capacity at any point of time up to End of Battery Life
System AC-DC-AC efficiency*:	> 90%
Use case requirements	Peak Management Voltage Support Frequency Regulation (demonstration only) Intermittent Resource Support
Peak Management	Yes Morning and evening (preference to evening) No. of days per year: up to 365 In the Peak Management Use Case scenario, power generated during the early and midday periods shall be stored in the BESS and released later in the day, during peak demand. In this case, the BESS shall be discharged in the Peak Limiting profile in the late afternoon. To the extent that the total energy dispatched does not exceed the nameplate watt-hour rating, the BESS may be further discharged in Constant Power Mode after Part 01 (Solar PV Plant) is no more generating.

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Item Description	Requirement
	One discharge cycle per day is envisaged in this use case.
VAR compensation /voltage support (VC/VS)	Yes
Intermittent resource support (IRS)	Yes This use case is envisaged to be employed during the day, primarily to support variations in Solar PV generation. The days for operation in this use case shall be determined in consultation with the ANERT/KSEBL.
Black Start Capability	Yes
Ventilation System inside the Container	Should be such as to maintain minimum and maximum Temperature as recommended by the manufacturer for optimum performance of the batteries on continuous basis.
Grid Charging	Allowed with the discretion of grid operator. If the BESS is charged through the grid, the energy consumed shall be considered part of the Auxiliary power and shall be metered.
Over Loading Capacity	(105%) : continuous operation (105%~120%) :10min (120%) : stop operation

34.2 Additional Information and Requirements for Frequency Regulation Use Case

This Clause provides information regarding the anticipated energy dispatch under the frequency regulation use case, as described in Clause 35.4. However, the same may be altered as per Control Strategy proposed so as to allow minimum Energy Imbalances.

Table 3: Additional Information and Requirements for Frequency Regulation Use Case	
Item Description: Frequency Regulation Use Case	Requirement
Maximum BESS power level for	Discharging: 50% of nameplate watt rating

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frequency regulation	Charging: 50% of nameplate watt rating

34.3 Additional Information and Requirements for Intermittent Resource Support Use Case

This section provides information regarding the anticipated energy dispatch under the intermittent resource support use case, as described in Clause 35.5.

Table 4: Additional Information and Requirements for Intermittent Resource Support Use Case	
Item Description: Intermittent Resource Support Use Case	Requirement
Voltage flicker compensation:	Yes Compensate for all changes in intermittent resource output power level that exceed 10% per second and in which the new power level remains for at least 5 seconds. The Maximum system Power level for Voltage flicker compensation during discharging and discharging to be determined during detailed system design in terms of % of nameplate watt and VAR rating.
Ramp rate control: period of operation	To be specified in design
Ramp rate control (Power level of the BESS shall decrease at a linear rate)	75 kW/min Maximum BESS power level for charging and discharging to be determined at the time of detailed system design in terms of % of nameplate watt and VAR rating.
Intermittent resource generation following daily schedule and combined power output. Intermittent resource generation following: period of operation	Suggested Scheme (to be finalized during detailed design stage): Charging during morning up to noon and other off-peak periods Begin discharging in load following mode in the afternoon (coinciding with Peak Demand in the evening) Conclude discharging at 08.00

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	PM Combined Power output of Intermittent resources (Part 01 and Part 02) and BESS to be at unity power factor. Maximum BESS power level for charging and discharging to be determined at the time of detailed system design in terms of % of nameplate watt and VAR rating
Warranties	Seven (7) year parts and labour warranty for the entire BESS and its constituent equipment. 10-year warranty for Battery

34.4 Frequency Regulation

The BESS shall be capable of both charging and discharging, at the power level or levels specified in Table above, in response to an external signal (such as an automatic generation control signal). FR may occur for as much as 24 hours per day and for as much as 365 days per year. FR operation would not be simultaneous with any other real power discharge or charge, but it may occur simultaneously with supply of reactive power.

34.5 Intermittent Resource Support

The BESS will support the integration of solar PV plant into the grid by either eliminating or reducing undesirable voltage and power fluctuations on the KSEBL line or by firming the power delivered by the resource (that is, augmenting the power produced so that an expected output may reliably be achieved).

34.6 Nameplate Ratings

34.6.1 Overall System Real Power and Energy Ratings

During discharge, the BESS shall be rated to supply at the PCC the continuous net ac real power and ac energy output specified in *Table 2: Supply-Specific Ratings and Requirements* above. These ratings shall be referred to in all project documentation, including this specification, as the nameplate watt rating and the nameplate watt-hour rating. All nameplate ratings shall be achievable over the End of Battery life, as specified in this tender document. The nameplate watt rating and nameplate watt-hour rating shall be achievable during discharge for the full range of stated environmental conditions, provided that the battery is fully charged and the HVAC system (if

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incorporated in the BESS) has stabilized. In any case, the BESS shall be capable of being discharged at reduced power levels from that specified above. However, in no case will the energy discharged from the battery be greater than the nameplate watt-hour rating.

The Contractor shall clearly state in its O&M manual as well as during design review the expected efficiencies of the major subsystems (battery, PCS) as well as the expected losses from auxiliaries.

Note: There may be specific requirements regarding the attainable power level during charging, which the Contractor may need to identify in co-ordination with the grid operator/ANERT. However, unless otherwise specified in those sections, the real power level attainable during charging shall be at the Contractor's discretion, so long as the other charging requirements in this specification are met.

34.2.1 Overall System Reactive Power Rating

In accordance with the VAR-related control modes identified in Clause 23, the BESS shall be capable of dispatching both leading and lagging reactive power at the PCC, up to the rated VAR capacity specified in Table-2, regardless of whether the battery is being simultaneously discharged or charged. This rating shall be referred to in all project documentation, including this specification, as the nameplate VAR rating. The BESS shall be capable of simultaneously producing real and reactive power as long as no nameplate rating is exceeded. That is, the combination of operation at full nameplate watt rating and full nameplate VAR rating shall not exceed the nameplate VA rating.

35 BESS Use Cases

The BESS shall be capable of operating over its entire life in one or more of the use cases described in this section to meet the system requirements specified in Table-2, and further detailed in the tender document.

The possible use cases supported by this technical specification include the following:

- Peak management (PM)
- VAR compensation /voltage support (VC/VS)
- Frequency regulation (FR)

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- Intermittent resource support (IRS)

The use cases should not be interpreted as either operating modes or control functions. The requirements for the BESS control functions that are required to operate the BESS in a manner that supports these use cases as mentioned in this document. While Use cases describe what the BESS will be used for, whereas control functions describe how the equipment will be operated to achieve those uses. Mapping of the control functions to the use cases is provided in Clause 38.

The purpose for defining and describing the use cases is to provide the Contractor with essential information needed to ensure that the BESS will have the desired life and performance characteristics. In particular, the requirements listed in this section should support Contractor's efforts to accomplish the following:

- Determine other BESS subsystem performance capabilities
- Understand the various combinations of uses that the KSEBL may exercise

The operation of the BESS at the KSEBL site may also include some combination of the above use cases. The possible (or required) combinations are described in Clause 37.

Each use case description in the following subsections includes a capability requirement for a number of cycles and days per year of operation in that use case. On days of the year in which a particular use case is not being used, the BESS shall be considered available for operation in some other use case, so long as the nameplate ratings specified elsewhere are not exceeded. Simultaneous operation in two or more of the real power use cases (PM, FR, IRS) is not required, but it may be optionally provided at the discretion of the Contractor, so long as no nameplate rating is exceeded. In accordance with Clause 37, simultaneous operation in the VC/VS use case together with one of the other use cases is a required capability.

Important Note: The various use cases described below represent a wide range of battery and PCS capabilities. The BESS shall be designed to accommodate the most stringent of the intended operation scenarios so that any of the scenarios can be exercised without exception. The use cases described in this Clause 37 presuppose the provision of a suitably designed control system, as outlined in Clause 40 of this specification. Accordingly, the descriptions of the use cases must be read and understood in conjunction with the description of the control functions specified in Clause 40.

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35.1 Peak Management (PM)

In the PM use case, the BESS is controlled to reduce peak power demand on the KSEBL feeder to which the BESS is connected. The BESS would be discharged at any power level up to the maximum power level specified as the nameplate watt rating. The BESS shall support operation in this application for up to the number of times per year specified, if any, in Table-2. In this Use case, each daily operation is expected to consist of one discharge and charge cycle, in either a variable or a constant power output, as described below.

In that event that two discharges are required in a day, the maximum number of days per year that the system would operate with two daily discharges is one-half the number of days in single-daily-discharge mode. In the case of two discharges in a single day, it may be desirable for the KSEBL to charge the battery between the two discharges (opportunity charging) and the BESS shall permit such operation. For example, a morning and afternoon peak may be shaved, with a partial (or complete) recharge taking place during the day between the morning and evening peaks.

Note: Specification of the number of days per year for the two-daily-discharges scenario at half those for the single-daily-discharge mode assumes that opportunity charging between daily cycles would fully restore battery capacity, so that each of the two discharges in the day would take place at the full nameplate watt-hour rating. If each discharge were less than the nameplate watt-hour rating, the PM operation in a two-daily-discharges scenario could potentially occur on more days per year.

Two different power dispatch profiles during discharge are specified, as described in the following two subsections.

i. Constant Power

The BESS is discharged at a single, constant power level for a specified duration. The dispatch power level may be any value less than or equal to the nameplate watt rating. The duration of the constant power discharge may be any period of time (up to six hours), so

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long as the total energy dispatched to the load does not exceed the nameplate energy rating of the BESS or exceed any other operational or safety limits.

ii. Peak Limiting

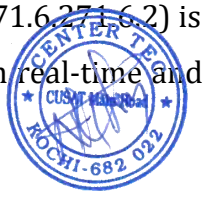
The BESS is discharged at a varying power level proportional to the amount by which the actual load on the KSEBL feeder or substation transformer exceeds a desired value. The dispatch of power from the BESS in this case would mirror the shape of the KSEBL load (which may be, generally, sinusoidal in shape). The duration of this discharge may be several hours, so long as the total energy dispatched to the load does not exceed the nameplate energy rating of the BESS or any other operational or safety limits. As an example, with the BESS installed at a distribution substation, the load on the secondary winding of the substation transformer would be monitored and sent to the control system. The KSEBL operator would enter a set point, and the BESS would operate so as to prevent or reduce overloading of the transformer by serving some (or all) of its entire peak load.

Actual discharge profiles may vary with respect to overall shape, number of peaks and valleys per day, ramp rate, and overall duration of discharge, including possible standby time between successive peaks. The Contractor shall specify all operational and warranty-specific limitations on the use of the battery for the two different power dispatch profiles.

35.2 VAR Compensation/Voltage Support (VC/VS)

The BESS shall be capable of supporting voltage on the KSEBL feeder to which it is connected by the injection or absorption of both real and reactive power (VARs). This operation shall be possible during real power discharge or charge and during standby. The operation may be dynamic (continuously varying reactive/real power output) or static (operation at a fixed power factor).

In this use, it shall be possible for the KSEBL to determine the priority of operation and/or the level of reactive power support desired, including different levels for leading and lagging VARs, as well as precedence of reactive power over real power or real power over reactive power. Specifically, it shall be possible to give either real power or reactive power the higher priority, so long as the nameplate VA rating (see Clause 71.6.27.1.6.2) is not exceeded. In this use, the BESS shall be capable of responding to both real-time and pre-programmed control signals (see Clause 74).



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i. VAR Compensation Option

The intent of VAR Compensation is that the BESS be capable of carrying out the basic functions of a synchronous generator having the option to include injection voltage control/reactive power consumption and limitation of active power when the effect of the reactive power is not sufficient. It uses a progressive curve, whereby the higher the deviation is from the target voltage, the greater is the effort to correct the deviation. It may be necessary to automatically disable over frequency or under frequency protection during operation in VC/VS mode. The Contractor shall coordinate this with the KSEBL.

35.3 Frequency Regulation (FR)

The BESS shall be capable of both charging and discharging, at the power level or levels specified in Table-2, in response to an external signal (such as an automatic generation control signal). FR may occur for as much as 24 hours per day and for as much as 365 days per year. FR operation would not be simultaneous with any other real power discharge or charge, but it may occur simultaneously with supply of reactive power.

35.4 Intermittent Resource Support

The BESS will support the integration of solar PV plant into the grid by either eliminating or reducing undesirable voltage and power fluctuations on the KSEBL feeder or by firming the power delivered by the resource (that is, augmenting the power produced so that an expected output may reliably be achieved).

In IRS use, the BESS shall respond to one of two classes of controlling signals: (1) the voltage at the electrical connection point or PCC and (2) the output power level of the intermittent resource (or some other power level signal). Several scenarios are possible, as described in the following paragraphs.

i. Voltage Flicker

In a voltage flicker control scenario, the BESS shall be dispatched to control rapid but small (such as 2% to 5%), potentially frequent changes in voltage on the utility feeder that produce voltage flicker at other customer loads on the feeder. The flicker standard to be implemented shall be determined during detailed design stage in consonance with the regulation of the jurisdiction having authority.

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The control signal is the power output level of the solar PV plant. Drops in power shall be compensated by a discharge of the BESS, whereas increases in power shall be compensated by a charge of the BESS in accordance with a specified scheme (to be finalized during detailed design stage). The BESS shall respond instantaneously for each qualifying power level change and then immediately begin a ramp to zero power with a specific ramp rate.

Depending on a number of factors—including the size of the intermittent resource compared to the native feeder load, the impedance of the feeder, and the location of the BESS and the intermittent resource relative to one another—voltage flicker may be improved by the BESS providing either real or reactive power or both in response to either variations in the voltage at the electrical connection point or variations in the output power level of an intermittent resource. The output of the BESS (either discharge or charge) shall be instantaneous in response to a change in the monitored quantity, followed by a ramp to zero over a settable period of time.

ii. Ramp Rate Control

In a ramp-rate-control scenario, the BESS shall be dispatched to limit the rate of power change up or down (ramp rate) from the intermittent resource so that large step changes in power output are smoothed over time to produce a controlled ramp (up or down). Ramp rate control is effectively the same as voltage flicker control from the point of view of power in or out of the storage system except that the goal, for example, is to limit the operation of automatic voltage regulators and tap changers on the feeder or at the substation that are caused by relatively larger changes in output of the intermittent resource.

The control signal is the power output level of solar PV plant. Drops in power shall be compensated by a discharge of the BESS, whereas increases in power shall be compensated by a charge of the BESS in accordance with a specified scheme (to be finalized during detailed design stage). The BESS shall respond instantaneously for each qualifying power level change and then immediately begin a ramp to zero power with a specific ramp rate.

The BESS shall be dispatched in response to variations in power at the point of concern, whether it is the feeder at the electrical connection point or the output terminals

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of the intermittent resource. The output of the BESS (either discharge or charge) shall be instantaneous in response to a change in the monitored quantity, followed by a ramp to zero over a settable period of time. The maximum output (either discharge or charge) of the BESS shall be specified in the detail design Scheme.

iii. Generation-Following

In the generation-following scenario, the BESS shall be dispatched to follow the output power from the intermittent resource(s) part of the Plant Facilities to compensate for its variability. The output from the BESS shall be controlled to produce a resultant power output level from the same. The desired level of the resultant power shall be settable. The BESS shall charge the battery with energy from the renewable sources, as determined in consultation with the Owner. The BESS shall discharge the battery so that the output of solar PV plant plus battery is a constant (see Table -2). During the recharge operation, the charging power level should be such that the net output of the array is kept more or less constant (that is, array power momentary dropouts should be compensated to the extent possible during recharge).

In the most general case, both discharge and charge operations will occur depending on the maximum power output capability of the solar PV plant relative to the battery storage system capability, the desired power set point, the window of operation of the storage, and the variations in output of the resource. Actual discharge profiles in the IRS use case may vary with respect to overall shape, number of peaks and valleys per day, ramp rate, and overall duration of discharge, including possible standby time between successive discharges or charges. The Contractor should specify all operational and warranty-specific limitations on the use of the battery for different dispatch profiles.

35.5 Combination Use Case Requirements

On days of the year in which a particular use is not active, the BESS shall be considered available for other uses, so long as the nameplate ratings specified elsewhere (see Clauses 37) are not exceeded. Simultaneous operation in two or more of the real power use cases (PM, FR, IRS) is not required but may be optionally provided at the discretion of the Contractor, so long as no nameplate rating is exceeded. In accordance with Section simultaneous provision of VAR support (VC/VS) with other use cases is a required capability. The BESS shall be capable of operating in several combinations of use

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cases, like Peak Limiting plus Frequency Regulation, Peak Limiting plus Voltage Flicker, Peak Limiting plus Ramp Rate Control. On any given day of the year, only one of these two dispatch profiles would be executed.

35.6 Charging Requirements

The control system shall allow the KSEBL to initiate a specified or programmed charge cycle. The Contractor shall work with each KSEBL to ensure that the KSEBL's requirements are met to the full capability of the BESS and that the battery is properly charged manner describe all charging requirements and shall guide the user in ensuring that charging of the battery is properly carried out.

36 DESIGN, FABRICATION, AND CONSTRUCTION REQUIREMENTS OF BESS

36.1 General

The methods and materials specified in this technical specification are intended to represent minimum requirements. Reliance thereon shall not diminish the responsibility for meeting performance and other requirements stated in this technical specification.

The design of the BESS shall incorporate the principle of modularity, with a view to reducing life-cycle costs and ease of replenishment of storage capacity while facilitating ease of maintenance, space requirements, and reliability. The design should also facilitate rapid and easy replacement of the unit batteries without significant downtime. Specifically, the BESS should be designed so that battery replacement is not necessitated within the first five years of operation considering the remoteness of the project sites. Overall, the design philosophy shall be to minimize and optimize all costs to the ANERT, not simply initial capital costs or low maintenance costs.

Life-cycle costs include the following: initial system cost, unit battery replacement cost, periodic equipment upgrades, maintenance costs, auxiliary system energy consumption, charging energy costs (that is, costs due to overall battery and PCS losses), and any other contributors to life-cycle energy cost.

36.2 System-Level Design and Performance Requirements

36.2.1 The major equipment items shall include a battery, battery management system (BMS), PCS, output/isolation transformer, and SCADA which is to be integrated

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with the solar plant SCADA system defined elsewhere in this document. Additional equipment shall include HVAC, wiring, connectors, protective devices, grounding, junction boxes and enclosures, instrumentation, enclosures, and all other items needed for a fully functional, grid-interactive BESS to meet the requirements set forth in this specification. All systems and components of systems—including electrical storage unit, switching devices in the PCS, components of monitoring and control systems, and components of auxiliary systems— must use proven and previously demonstrated technology. Electrochemical cells, PCS switching devices, and control system hardware and software must be commercially available and in use for other markets. Electrochemical cells must be replaceable (in small orders) with a maximum six-week lead time under normal business conditions. Designs using experimental or otherwise undocumented components are not permitted.

36.2.2 The BESS shall be characterized using language and methods consistent with IEEE 1679, "Recommended Practice for the Characterization and Evaluation of Emerging Energy Storage Technologies in Stationary Applications."

36.2.3 The BESS shall be IEEE 1547 (Standard for Interconnecting Distributed Resources with Electric Power Systems)-compliant, where possible.

36.2.4 The prudent design of the BESS should include careful consideration of resonance and Ferro-resonance.

36.3 Containerization and Transportability

36.3.1 The BESS shall be containerized, using either standard International Organization for Standardization (ISO) 668 shipping containers or custom-designed power equipment centres. The container or containers shall be designed to be drop-shipped onto a properly prepared pad or foundation (such as compacted soil, concrete pad or platform, and so on). When fully installed, all BESS components—including battery racks all auxiliaries, such as HVAC and fire suppression systems, (preferably Heptafluoropropane), step-up transformers to match grid, ac switchgear, and so on—and tools shall be enclosed in (or on) the containers, even if certain components must be separately shipped and installed at the site.

36.3.2 Containers shall be designed and constructed to meet IP54 and NEMA 3R

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requirements, which protect the equipment inside from harmful effects resulting from the ingress of water, dirt, dust, and wind. The design and installation of Containers shall meet relevant regulatory requirements for occupational safety and health under national and state legislations.

36.3.3 All containers and packaging of separately shipped components shall be suitable for land or sea transport, including offering suitable protection of the equipment inside against damage from weather and vibration or shock from transportation.

36.3.4 The containers and their contents shall be designed to be easily prepared for transport, shipped, connected and operated at site. The Contractor shall ensure that all required bracing and shipping stabilization equipment to enable transport is either kept at hand or brought to the site in a timely manner before transport.

36.4 Additional transportability requirements and/or clarifications

36.4.1 In designing for transportability of the lithium-ion batteries, the Contractor shall follow the relevant guidelines (Sub-section 38.3) set forth in the United Nations document "Recommendations on the Transport of Dangerous Goods—Manual of Tests and Criteria" (ST/SG/AC.10/11/Rev.5), with specific reference to obtaining UN38.3 and UN3480 certifications at the battery module and/or container level.

36.4.2 The BESS container or containers shall be of a size and weight to be capable of being transported to project sites with due consideration for the load bearing restrictions imposed by bridges, if any, and rarefied atmospheric conditions in the region.73.4.3 Containers shall incorporate standard lugs or other means for lifting by crane or shall be properly palletized for movement with forklift trucks, or both.

36.5 Design Life and Life-Cycle Costs

36.5.1 End of battery life - End of battery life is that point in time when the BESS can no longer meet the power and/or energy discharge requirements of this Specification due to age or non-repairable malfunction of the battery subsystem, and/or non-replaceable components. When the system is no longer able to provide these requirements, the system has reached its end of life. Battery End of

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life shall be not less than 10 years from the date of Commissioning.

36.5.2 It shall be the responsibility of the Contractor to make periodic replacements/replenishments of unit batteries, if and when required, up to the End of Battery Life as described above. Outage time as a result of replacement will also be counted as an "Accountable BESS Outage" for the purpose of computing BESS Availability.

36.6 Reliability, Availability, and Operability of the BESS

The BESS shall be designed for high reliability, defined in the following terms:

Starting reliability: (99% starting reliability means that the unit shall start in 99 of 100 attempts)

Mean-time-to-repair- The time taken from the time of notification of a need for repair to the time of completion of repairs (that is, inclusive of time for arrival of spare parts and repair personnel at the location of the BESS)

Availability

Availability is the percentage of hours that the BESS is available during the year. The availability guarantee shall begin upon facility commissioning. Annual availability shall be calculated as follows:

$$[1 - \left(\frac{\sum Accountable\ BESS\ Outage\ duration\ in\ hours}{8760}\right)\ ] \times 100$$

Where:

Accountable BESS outages are outages caused or necessitated by the BESS equipment that result in reduced capacity or loss of essential function of the BESS. These outages may be initiated by failure of components, loss of battery capacity (to the extent that End of Battery Life is not reached), operation of protective devices, alarms, or manual action. Such outages include both forced outages due to equipment problems and scheduled outages for BESS maintenance.

Accountable BESS outage duration is the elapsed time of accountable BESS outages from the instant the BESS experiences reduced capacity or is out of service to the instant it is returned to service or full capacity. If the BESS experiences reduced capacity but is determined by the ANERT to be available for service even if the ANERT elects not to

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immediately return the equipment to full capacity, such time will be discounted from the outage duration.

- The Procurement specific nameplate ratings shall be as defined in Clause 37 above. The BESS shall be considered to be under an accountable outage if any of those ratings cannot be met. The BESS shall also be considered to be under an accountable outage if a scheduled (or required) charge cycle cannot be completed.
- The data required for assessment of the availability of the BESS shall be collected through the Plant's integrated SCADA system.

36.6.1 It shall be possible to fully remove, repair, and replace in the field any failed or poorly performing component within a day, assuming that spare parts, test equipment, and maintenance personnel are on the site. This capability shall be demonstrated in the factory acceptance test (FAT) for unit batteries and other key components.

36.6.2 The BESS shall be capable of unattended operation, with provision of remote monitoring and control.

36.7 Planned Maintenance Outage

Up to 5 weeks each year will be permitted for a planned outage to perform any required maintenance. The Contractor shall provide a guarantee for the maximum length of time required for this type of maintenance operation.

36.8 Battery Subsystem Design Requirements

36.8.1 Electrochemical Cells

Only cells that are commercially available or for which suitable (not necessarily identical) replacement cells can be supplied on short notice will be allowed. *For both premature cell failures and end-of-battery-life replacement, the Contractor shall guarantee cell availability and the length of down time (hours or days) required to replace cells.* The cells may be supplied as separate, individual units or as group of cells combined into modules. The cells shall meet the seismic requirements for the planned location of the BESS. Cell and module design shall accommodate the anticipated vibrations and shocks associated with the transportation of the BESS and shall resist deterioration due to vibrations resulting from the same. Associated hardware and paraphernalia should also be able to withstand the

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rigors of transportation. The transport plan shall be shared with the ANERT and approved prior to dispatch.

36.8.2 Labelling of the cells or unit batteries shall include manufacturer's name, cell type, nameplate rating, and date of manufacture, in fully legible characters. All cells shall be traceable to the point of origin for purpose of addressing safety issues.

36.8.3 Electrochemical Storage System

36.8.3.1 The storage system may consist of one or more-unit batteries. If the storage system consists of more than one unit battery, these may be electrically interconnected in any desirable series and parallel configuration to achieve the overall system storage and power rating requirements.

36.8.3.2 Each electrically series-connected string of unit batteries shall include a means of disconnecting the string from the rest of the system and of providing over-current protection (during a fault). The means of disconnect shall provide for a physical interruption of the string electrical circuit, which shall be visible to anyone servicing the individual unit batteries in the string and shall be capable of being locked or secured in an open position.

36.8.3.3 If the disconnect means consists of removal of a unit battery, the storage system shall be designed to allow maintenance personnel to determine that there is no current flowing in the string and provisions to ensure that the PCS is off before the unit battery is removed. Procedures for maintenance and/or field replacement of unit batteries shall neither require nor recommend removal of the unit battery without first ensuring that no current is flowing in the string circuit.

36.8.3.4 Over-current protection, whether on the ac or dc side, in paralleled unit battery strings shall be sized and coordinated so that currents from other strings do not contribute to a fault in any unit battery string.

36.8.3.5 Where appropriate, dc wiring shall be braced for available fault currents. Protection shall include a dc breaker, fuse, or other current-limiting device on the battery bus. This protection shall be coordinated with the PCS capabilities and battery string protection and shall take into account switching or other transients and the inductance/resistance (L/R) ratio at

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the relevant areas of the dc system. The Contractor shall produce a fault analysis and protection coordination study for the battery dc subsystem during final design. *The ANERT reserves the right to withhold permission to ship the BESS until the fault analysis has been satisfactorily completed.*

36.8.3.6 Cells, wiring, switch gear, and all dc electrical components shall be insulated for the maximum expected voltages plus a suitable factor of safety.

36.8.3.7 The battery system shall include a system to detect and alarm excessive ground leakage current levels. Ground fault detection shall be enabled for the container or, if more than one electrical series string is installed in the container, for each series string. The detection/trip level shall be field adjustable. The Contractor shall have overall responsibility for the safety of the electrical design and installation of the battery, as well as all aspects of the BESS.

36.8.3.8 The battery system shall include a monitoring/alarm system and/or prescribed maintenance procedures to detect abnormal unit battery conditions and notify proper personnel of their occurrence.

36.8.3.9 Abnormal conditions shall include but not be limited to (1) weak unit batteries that could reasonably be expected to fail to provide rated capacity upon full discharge, (2) high- resistance or open-unit batteries, (3) high-resistance or open external unit battery connections, (4) unit batteries with temperatures exceeding operating thresholds, and (5) internally shorted unit batteries. Unit battery monitoring, whether automatic or manual, should be specified to alert the proper personnel in a timely manner that an abnormal unit battery condition exists or may exist. All alarms shall be part of the control system and shall include remote display or annunciation capability.

36.8.3.10 The unit batteries shall be racked or shall be housed in stackable modules. The unit batteries or cells shall be arranged and installed to permit easy access for equipment and personnel. The moveable units shall be arranged and installed to permit easy access for equipment and personnel to carry out unit removal and replacement activities. For all systems, it shall be

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possible to remove and replace a prematurely failed unit battery or cell (as appropriate), when system performance specifications cannot be met. The lengths and widths of all aisles and spaces into which personnel may enter in the field for operations and/or routine or unscheduled maintenance purposes, as well as egress routes from these aisles and spaces, shall conform to applicable codes and standards. All racks and metallic conductive members of stackable modules shall be grounded to earth. Racks shall meet the seismic load and road vibration requirements and shall include means to restrain cell movement during seismic events and transport. The Contractor shall furnish analyses and/or other data that show that the rack and cell designs are designed to meet all potential seismic and transport vibration requirements.

36.8.3.11 The design of all modules and racks shall specifically account for the anticipated vibrations and shocks associated with the periodic transportation of the BESS.

36.8.3.12 Cell/Battery Auxiliary Systems

The cells and battery system shall be supplied with all required and/or recommended accessories. This includes inter-cell connectors and monitoring devices for cell temperature and cell voltage, if required.

36.9 Power Conditioning System Design Requirements

39.1 General

39.1.1 The PCS is the interface between the DC battery system and the AC system and provides for charging and discharging of the battery. The PCS may consist of one or more parallel units. Paralleling may be at the DC or AC terminals. Line-commutated systems or systems that require the presence of utility voltage or current to develop an AC output are not acceptable. The PCS circuit topology shall be voltage source (that is, the PCS at its AC terminals shall appear to the grid as a voltage source rather than as a current source and, at its DC terminals, shall be capable of reversing current flow in the battery without reversing the polarity of the DC bus).

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39.1.2 All load-carrying cables within the PCS subsystem shall have a suitable load factor of safety. The PCS shall preferably be air-cooled suitable for the site climatic conditions, with final rejection of waste heat to the ambient air. The air-handling systems shall include filtering that is adequate to keep dust from the interior of the PCS system.

39.1.3 The PCS shall be housed within one or more appropriate weatherproof and dustproof enclosures, with provisions to prevent moisture condensation and to prevent the entrance of water, airborne salt or dust, rodents, insects, and/or similar materials or pests into air intake/exhaust ports.

39.1.4 **Power Conditioning System Rating**

The PCS shall be capable of delivering Real power as specified in Table-2. This rating shall be referred to in all project documentation, including this specification, as the nameplate VA rating. To account for losses in the PCS, the DC input power to the PCS will be higher than the rated PCS output power. The available DC input power will be the BESS nameplate watt rating divided by the PCS full load efficiency (as specified in the datasheet) during discharge.

39.1.5 Power Conditioning System Protection and Control

The PCS, in conjunction with the control system, shall be capable of completely automatic, unattended operation, including self-protection, synchronizing and paralleling with the grid, and disconnect. The control of the PCS shall be integrated with the overall BESS controls. The PCS shall include all necessary self-protective and self-diagnostic features to protect itself from damage in the event of component failure or the excursion of operating parameters beyond a safe or expected range. This includes excursions due to internal or external causes. The self-protective features shall prevent the PCS from being operated in a manner that may be unsafe or damaging. Faults due to malfunctions within the PCS, including commutation failures, shall be cleared by the PCS over-current protection device(s).

36.10 Power Conditioning System AC Interface with AC bus

36.10.1 The BESS must meet applicable harmonic current and voltage specifications in

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accordance with applicable standards. Harmonic suppression may be included with the PCS or at the BESS AC system level. However, the Contractor shall design the BESS electrical system to preclude unacceptable harmonic levels in the BESS auxiliary power system.

36.10.2 In addition to interconnection standards specified in this document, there may be specific requirements for interconnection, which need to be ascertained by the Contractor in coordination with the distribution utility at each site. The PCS transformer may be used to aid in harmonic cancellation and may include tertiary windings to supply BESS auxiliary power requirements. The transformer must be dry type. The PCS shall include provisions for disconnect on both its AC and DC terminals for maintenance work. Conductor separation must be clearly visible. The detailed maintenance procedure shall be addressed in the O&M manual.

36.10.3 Electromagnetic Interference

The PCS shall not produce electromagnetic interference (EMI) that will cause mis-operation of instrumentation, communications, or similar electronic equipment within the BESS.

36.10.4 Islanding

The PCS design shall include provisions to limit run-on and islanding as per applicable standards upon the loss of grid. This capability shall be demonstrated to the ANERT's satisfaction during the FAT.

36.11 AC System

The BESS AC system includes all switch gear, bus work, cable, connectors, transformers, and protective relaying required for connecting the BESS at the PCC. The Contractor shall design, procure, ship, and assemble on-site all ac interconnection equipment on the BESS side of the PCC. On-site assembly of Contractor supplied equipment shall be coordinated with the utility. The Contractor shall design, fabricate, ship and install all cabling required for connecting the BESS to the PCC. The BESS AC system shall include potential transformers, current transformers, and any other metering equipment so that the

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performance monitoring and documentation requirements of this specification can be met. Metering accuracy shall meet applicable standards.

36.12 Protection and Control

36.12.1 The power system (PCS), AC and DC switchgear/protective devices) shall be designed to provide safe, reliable operation with minimum interruption. Reliable operation shall be supported by a sensitive and properly coordinated protection system. The protection system shall be capable of monitoring significant operating parameters and sensing all abnormal operations or fault conditions. It shall isolate the faulted circuits or components without causing damage to other circuits and components of the system. The protection system shall also provide adequate indications and/or alarms for identification of the faulted circuits, components, and abnormal conditions, allowing preventive action and rapid restoration of service.

36.12.2 The grid may have its own protective schemes at the point of common connection (PCC) that will be the responsibility of the Contractor to be fulfil.

36.12.3 Integration of the protective relaying and metering into the BESS controls shall not circumvent normal protective relaying. Protection shall not be interlocked with the position of any isolating/interrupting devices.

36.12.4 The BESS shall provide breaker failure protection for the primary interrupting device (that is, breaker, high-voltage interconnect, low-voltage interconnect) that is responsible for disconnecting the BESS and/or high-voltage ground sources from the distribution system.

36.12.5 The BESS shall be capable of interrupting line-to-line fault currents and line-to-ground fault currents available at the PCC and flowing in the Contractor's equipment in either direction for faults on either side of the PCC. Faults due to malfunctions within the BESS shall be cleared by the BESS protective devices.

36.12.6 The BESS must have low-voltage ride-through capabilities according to extant technical guidelines on connectivity.

36.12.7 BESS and high-voltage ground sources should be disconnected from the distribution system and the system operators must be notified if any of the

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following occur:

- The BESS local interconnection protection system fails
- The interrupting device fails.
- The dc supply is lost
- The signal channel fails

The BESS interconnection protection must be capable of distinguishing between external faults on the distribution system and internal faults within the facility. The automatic reconnection scheme must be disabled for faults occurring within the facility.

The BESS shall include provisions to protect against transient voltage surges from switching, lightning, and similar causes, in accordance with applicable standards. The overall PCS design shall also limit surges on the dc bus to twice the normal maximum DC bus voltage.

36.13 Auxiliary Power

The BESS shall include an auxiliary power system (separate or same as the Solar Plant auxiliary system) derived from the utility AC bus, the PCS transformer low-side bus, PCS transformer tertiary winding, or similar means with metering. The auxiliary power system shall include all step-down transformers, breakers, fuses, motor starters, relaying, panels, enclosures, junction boxes, conduits, raceways, wiring, and similar equipment, as required for the BESS operation. The auxiliary power system shall include separate potential transformers and current transformers, so that auxiliary power consumption can be measured and electronically recorded in real time, independently of operation of the PCS or of net power flows to and from the battery. The auxiliary power system and/or control system design shall provide for whatever emergency power is necessary for an orderly system shutdown during abnormal conditions such as a loss of grid power. The auxiliary power system and/or control system design shall also provide for the capability to restart automatically after BESS shutdowns of several days.

37 CONTROL AND COMMUNICATION

37.1 Control System General Requirements

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The control system shall be designed to provide for automatic, unattended operation. The control system design shall provide for local manual operation and remote operation or dispatch from a remotely located computer. The control system shall be programmable for establishing or adjusting all parameters, set points, algorithms, limits, and so on that are required for effective operation as described in this specification. The control system shall be designed to prevent externally supplied, control panel or local signals from causing the BESS to operate in an unsafe manner or in a manner that may damage the BESS.

37.2 Control Functions and Protocols

37.2.1 To the extent possible, all BESS control functions, and operating modes shall be in accordance with standard functionalities for smart distributed resources, as documented in the IEC 61850-90-7.

37.2.2 The communication protocol for the BESS shall be according to IEEE 1815-2010, Standard for Electric Power Communications—Distributed Network Protocol (DNP3), as further developed in DNP3 Application Note AN2011-001, DNP3 Profile for Basic Photovoltaic Generation and Storage or IEC 61850.

37.2.3 If data points and/or control functions outside the standard point definitions in DNP3 AN2011- 001/IEC 61850 are created by the Contractor, the Contractor shall maintain a systematic log of the same for the purpose of maintaining/facilitating interoperability with future standards/protocols for distributed energy resources

37.3 Additional Control System Functions

37.3.1 Shutdown/Startup/Standby

The start and stop controls shall be as per DNP3 AN2011-001 standard specifications or IEC 61850. The control system shall use these controls for an orderly and safe shutdown, even in the absence of grid power. The control system shall also use these controls for an orderly startup sequence, which shall provide for a safe system reset from any standby or operating condition so that the unit goes through a normal startup sequence in the same way it would when being powered up after loss of power or being

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in a shutdown state. The control system shall include provisions for a standby state (that is, BESS but not charging or discharging), which shall be the end result of a normal startup sequence. It shall also be possible to enter the standby state from any of the other operating states except connect/disconnect.

37.3.2 Initiation of Shutdown

The control system shall initiate shutdown under the following conditions and shall remain in the shutdown state until a reset signal, either local or remote, is initiated. An appropriate alarm shall be set.

- Emergency trip switch.
- Loss of the low-voltage AC or utility grid voltage.
- An AC circuit breaker trip (either side of transformer).
- Door interlock: Initiate shutdown when the door is opened (with appropriate provision for maintenance work). Interlocks shall be self-resetting.
- Smoke/fire alarm.
- Control logic trouble.
- A DC ground fault (field-adjustable setting).
- Remote disable (no reset required).
- grid system faults (balanced and unbalanced; line-to-ground, line-to-line, and three- phase).
- Abnormal frequency
- Abnormal voltage
- Islanding condition.
- Protection or control scheme failures, including the following:
  - Failure of local interconnection protection system
  - Failure of critical breaker trip coil or interrupting device
  - Loss of DC supply

37.3.3 Reset Alarms

For all system-generated alarms, the control system shall provide for the resetting of those alarms. This function is intended for alarms that, after they are set (for example, by a fault condition, as listed above and elsewhere in this specification), must be cleared by operator intervention to allow normal operation to be restored.

37.3.4 Modify Storage Settings

The control system shall provide for modification of various set points and fixed operation/control settings associated with the various control functions.

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37.3.5 Event/History Logging

The control system shall provide for the automatic logging of the following information:

- All errors or failures
- All startup and shutdown actions
- All control actions
- All responses to control actions
- All limit violations, including returns within limits

37.3.6 Status Reporting

The control system shall provide for reading and reporting of various BESS-supplied status information in accordance with the data collection and reporting requirements specified in this technical specification.

37.3.7 Time Synchronization

The control system shall provide for synchronization of its real-time clock with a standard time source.

37.3.8 Change Operational Mode

The control system shall support the mechanisms inherent in DNP3 AN2011-001 for activating/deactivating control functions. The control functions are expected to be executed by command from a remote host but may also be scheduled according to the DNP3 standard.

37.3.9 Perform Self Diagnostics

The control system shall provide for self-diagnostic functions.

37.4 Control System Hardware Requirements

All local control and monitoring system components shall be housed in appropriate controlled environment enclosures either as separate arrangement or in conjunction with Solar Plant SCADA system.

37.5 Control System Self-Protection and Self-Diagnostic Features

37.5.1 The BESS shall include appropriate self-protective and self-diagnostic features to protect itself and the battery from damage in the event of BESS component

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failure or from parameters beyond the BESS's safe operating range due to internal or external causes. The self-protective features shall not allow local or remote signals to cause the BESS to be operated in a manner that may be unsafe or damaging to the BESS. All protective operations resulting in a shutdown shall be carried out in an orderly and safe manner, even in the absence of utility power.

37.5.2 Temperature sensors shall be incorporated in critical components within the BESS. The BESS shall alarm and go to standby/fault mode when an over-temperature condition is detected.

37.5.3 The BESS shall alarm upon detection of a DC ground fault. The alarm trip level shall be field adjustable.

37.5.4 Door interlock switches shall be provided for all BESS container doors. The BESS shall alarm and go to shutdown mode when an BESS door is opened. Doors shall be fitted with provisions for external locks.

37.5.5 The BESS shall alarm and go to shutdown mode upon detection of smoke.

37.5.6 Surge-protection devices shall be provided at the input and output terminals of the BESS.

37.6 Control Panel

- The BESS shall include a LCD touch display of Minimum10', which is easily accessible, on or within the BESS container. As a minimum, the following operator controls shall be located on the control panel:
- Trip/reset for the BESS AC circuit breaker or contactor.
- Trip/reset for DC circuit breaker(s)/contactor(s).
- PCS on/off.
- Reset toggle or push button. When reset is initiated, the control system shall resume control and proceed to the appropriate operating mode.
- Reset cut-out selector switch to disable remote or local reset signals.
- A selector switch to manually set the operating state (that is, the shutdown, disconnect, or operate state) and to have the control system set the operating state automatically.

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- A selector switch to manually set the operating mode and to have the control system set the operating mode automatically.
- The control panel or console shall also include meters, indicators, and displays.

37.7 Performance Monitoring and Data Acquisition

37.7.1 The BESS shall include a (Data Acquisition System) DAS to provide continuous monitoring and display of key operational parameters, as well as permanent archival of all measured parameters. The DAS shall include sensors, transducers, wiring, signal isolation and conditioning circuitry, and data acquisition and analysis hardware and software as required to perform the functions described in this section. The DAS shall be of standard commercial manufacture and shall use hardened components suitable for operation in the climatic conditions prevailing at site.

37.7.2 The DAS shall measure operational data, as described in this Clause, and shall record all data points to fixed and removable non-volatile memory. The DAS shall be capable of making all monitored data and events available through the DNP3 / IEC 61850 communication interface and shall permit display of current values and recent historical trends on a local screen for all recorded points. In addition, the DAS shall provide panel meter displays of certain operational parameters, as prescribed below.

37.7.3 Provision of monitoring and event data via the communication interface shall adhere to DNP3 AN2011-001 / IEC 61850 to the extent possible and capture at least the following data points:

- Frequency at the AC bus
- AC real power
- Power factor
- Real energy delivered
- Real energy received
- Auxiliary power
- Auxiliary energy
- DC power
- DC voltage
- DC current

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- Phase A voltage
- Phase A angle
- Phase B voltage
- Phase B angle
- Phase C voltage
- Phase C angle
- Battery state of charge
- Battery string currents
- Battery temperature

37.7.4 Digital displays, on each battery bank, shall be no less than 1 in. (2.54 cm) high and shall update at least once per second. The DAS shall be integrated with the Solar PV SCADA described elsewhere in this Technical Specification either as addendum or within an overall Energy Management System Interface. The DAS shall, at a minimum, provide remote data inquiry from personal computer- based platforms and data file export capabilities in ASCII format on independent media (such as a universal serial bus drive) that are readable on personal computer-based systems.

37.7.5 The DAS shall continuously measure or calculate the data points identified in 40.7.2 and shall make them available via the communication network as specified. All measured parameters shall also be permanently archived in all modes of operation. For continuously varying quantities, the Contractor shall propose for ANERT's review and approval an approach to data archiving that is suitable for each quantity measured. The final approach will be decided during product design.

37.7.6 The DAS shall provide unsolicited message capability for reporting critical alarms. The Contractor and the ANERT will agree on a list of alarms that are reported the instant they are detected. However, a minimum of following parameters shall be displayed on BESS local control panel, console, or SCADA computer:

- Main temperature Alarm (on system temperature exceeding a predetermined threshold)
- Smoke/fire Alarm (on system detection of smoke/fire)
- DC leakage current (battery leakage current to ground exceeding a predetermined threshold)

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- Breaker status (connect/disconnect switch)
- AC voltage OK (system ac voltage exceeding a predetermined threshold)
- Battery temperature alarm (battery temperature exceeding a predetermined threshold)
- Synchronization error shutdown
- PCS fault
- Weak Unit Battery Alarm
- AC system fault
- Control logic problem (problem with the BESS control logic)
- DC fuse blown
- Container door open (BESS container door opening)

37.7.7 The BESS shall include provisions for determining and storing in non-volatile memory the sequence of abnormal events, trips, and/or alarms that cause the BESS to go the disconnect or shutdown state. It is preferable that this function be implemented separately from the normal operations data acquisition function of the DAS so that failures in the latter (hardware/software failures or power interruptions) will not prevent the permanent logging of abnormal event sequences. The BESS shall include provisions to transmit, at a minimum, the data displayed on the panel meters and the alarm/status indicators to the remote computer.

38 GROUNDING

A suitable equipment grounding system shall be designed and installed for the BESS. This system shall be designed to be tied to an existing site grounding system. The system also shall be adequate for the detection and clearing of ground faults. All exposed non-current-carrying metal parts shall be solidly grounded. Particular attention shall be given to prevention of corrosion at the connection of dissimilar materials such as aluminium and steel.

39 WIRING

39.1 All wiring shall be continuous for each wiring run; splices are not acceptable.

39.2 Wiring that may be exposed to mechanical damage shall be placed in conduit or armoured.

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39.3 Wires shall have identifying labels or markings on both ends. The labels or markings shall be permanent and durable. Stick-on labels will not be allowed. All field wiring between separate equipment items supplied by the Contractor shall be color-coded according to appropriate standards.

39.4 In general, and where practicable, control and instrumentation wiring shall be separated from power and high voltage wiring by use of separate compartments or enclosures or by use of separate wireways and appropriate barrier strips within a common enclosure.

39.5 BESS and PCS control and instrumentation system wiring shall be bundled, laced, and otherwise laid in an orderly manner. Wires shall be of sufficient length to preclude mechanical stress on terminals. Wiring around hinged panels or doors shall be extra flexible and shall include loops to prevent mechanical stress or fatigue on the wires.

39.6 Insulation and jackets shall be flame retardant and self-extinguishing.

39.7 Wiring to terminal blocks shall be arranged as marked on wiring diagrams. Terminal groupings shall be in accordance with external circuit requirements.

39.8 Raceway and cable systems shall not block access to equipment by personnel. There shall be no exposed current-carrying or voltage-bearing parts.

40 CIVIL/STRUCTURAL

40.1 General Requirements

40.1.1 Soil bearing stresses shall not exceed the allowable stresses for the soil parameters, as determined by the Contractor. A minimum safety factor of 1.5 shall be provided against uplift, sliding, and overturning loads. Soil stresses shall be calculated using unfactored loads.

40.1.2 All structures and foundation designs must include suitable evidence to show that their design is commensurate with a minimum of 25-year life.

40.1.3 Unless specifically stated otherwise, the design of all structures, equipment, and foundations shall be based on applicable portions of IS codes, these specifications, and industry standards.

40.1.4 All components shall be painted, coated, or otherwise protected in a manner

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commensurate with at least 25-year design life. Particular attention shall be given to prevention of corrosion at the connections between dissimilar materials such as aluminium and steel, and steel and concrete.

40.1.5 All structures and foundations shall be designed to resist dead, live, wind, and seismic loads.

40.2 Requirements for Contractor Installation

40.2.1 The Contractor shall be responsible for obtaining all required permits and ensuring that all inspections by local authorities are completed as required.

40.2.2 Calculations based on applicable standards shall be supplied to show that the design of the entire BESS will withstand wind speed and/or gusts and other loads specific to the site and that the design meets all applicable structural and transportation codes.

40.2.3 Excavation spoils shall be disposed of as directed by the ANERT.

40.2.4 All reinforced concrete work shall be in accordance with relevant Indian Standards. All other materials and installation requirements shall be subject to ANERT approval.

41 MECHANICAL

41.1 All exposed surfaces of ferrous parts shall be thoroughly cleaned, primed, and painted or otherwise suitably protected to survive outdoor conditions for at least 25-year design life of the system.

41.2 Outdoor enclosures shall be weatherproof and capable of surviving intact under the site environmental conditions specified. Outdoor enclosures shall be equipped to prevent condensation.

41.3 Components mounted inside enclosures shall be clearly identified with suitable permanent designations that also shall serve to identify the items on drawings provided.

41.4 The site temperatures and the effect of temperature on component life shall be considered in developing the thermal design for all components, including the battery and PCS. Irrespective of the heat-removal system design the final rejection of all waste heat from the BESS shall be to the ambient air. Air-handling systems

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shall include filters to prevent dust intrusion into the BESS.

41.5 The BESS shall include an HVAC or ventilation system designed to maintain battery temperatures at levels acceptable to the Contractor's normal battery warranty conditions, conducive to acceptable battery life, and as required to maintain battery capacity for all seasons/climatic conditions at the site. The air handling/distribution system shall be designed to promote temperature uniformity within the battery.

42 OTHER DESIGN REQUIREMENTS

42.1 Noise Levels

The Contractor shall provide for and maintain noise mitigation devices like Noise mufflers at site, if required.

42.2 Fire Protection

The Contractor shall design and install a fire protection system that conforms to good engineering practice. The fire protection system design and associated alarms shall take into account that the BESS will be unattended. If required by the type of fire protection system provided, the Contractor shall calculate and take into account the heat content of the battery cell materials in designing an appropriate fire protection system. Separate fire protection systems may be used in the battery, PCS, and control areas.

42.3 Toxic Materials

If any toxic substance can be emitted from the equipment during a failure, fire, or emergency or protective operation, description of the toxic nature of the substances as well as treatment for exposure to it shall be included in the O&M manual. Their treatment and disposal shall be in accordance with the New Hazardous Waste Management Rules 2016 notified by the Government of India.

42.4 Spare Parts and Equipment

The Contractor shall evaluate the design with regard to expected failure rates, modes, and effects; overall BESS reliability; and planned mode of servicing. Based on this evaluation, the Contractor shall recommend and furnish an initial complement of spare parts that are not readily available. For example, these spare parts may include spare

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unit batteries and a small rectifier to maintain the unit batteries, as well as fuses, printed circuit boards, and switching devices (gate turnoff thyristors [GTOs], silicon-controlled rectifiers [SCRs], insulated gate bipolar transistors [IGBTs], and so on).

43 MAINTENANCE AND REPAIR

43.1 The Contractor shall supply all labour, equipment, and materials needed to maintain the BESS performance and safe operation, including all maintenance required to satisfy the warranty terms and conditions.

43.2 The Contractor shall list all maintenance activities to be carried out under the maintenance contract. For each maintenance item, the list shall include a description of the item, the expected frequency (maintenance interval), the time required to perform the maintenance, any anticipated parts replacement, and any potential problems in carrying out the maintenance.

44 FACTORY ACCEPTANCE TESTING OF BESS

44.1 The Contractor shall develop and submit to the ANERT for its review and approval a comprehensive FAT plan that shall demonstrate that the BESS will meet the requirements of the specification. The ANERT shall have the right to request reasonable changes to the test plan.

44.2 Where full-scale testing of larger systems at the factory may be difficult or impossible due to the large system, the FAT shall be carried out at a subsystem or module level and shall consist of tests of 100% of the subsystems or modules that comprise the complete BESS, to the extent possible. In the FAT plan, the Contractor shall clearly state what is being tested and shall fully explain any features or functions of the fully assembled BESS that would not be fully tested in the reduced-scale testing proposed. In such a case, the SAT plan shall further describe how the tests that could not be carried out in the factory will instead be carried out at the site.

44.3 After the Contractor determines that the BESS is fully operational, the Contractor shall conduct a FAT, witnessed by the ANERT and/or the ANERT's representative. The FAT shall consist of the Contractor demonstrating to the ANERT that the BESS

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is fully operational and performs as specified. This includes but is not limited to the following:

- Visual inspection of all provided equipment, including dimensions and overall design.
- Verification of proper mechanical construction such as electrical connection torques.
- Verification of sensors, metering, and alarms.
- Verification of all control functions, including remote control and monitoring, and communications interfaces.
- Verification of BESS performance at full and partial power and energy ratings.
- Verification of maintenance and replacement features for unit batteries and other key components.
- Verification of compliance with specifications.

44.4 During the FAT, the BESS shall meet the following:

- Be operated and function as specified and designed in all the operating states, use cases, and duty cycles specified herein
- Meet the power and energy requirements specified herein
- Be demonstrated to meet the safety and response to catastrophic failure requirements specified herein
- Have the efficiencies, response capabilities, and other features specified herein and/or proposed by the Contractor

44.5 Operation of all control, protective relaying, and instrumentation circuits shall be demonstrated by direct test, if feasible, or by simulating operating states for all parameters that cannot be directly tested. Automatic, local (control console), and remote operation of the controls shall be demonstrated. ANERT's site. If this is not possible for the full BESS at the manufacturing facility, independent laboratory certification of operation of critical components and subsystems in the battery, PCS, and control systems shall be submitted at the time of the FAT. The Contractor shall submit to the ANERT for approval, 90 days before the FAT, a list of components and subsystems for which independent lab testing certification will be sought.

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44.6 The Contractor shall perform any and all system modifications required during start-up and testing. The testing may be suspended as a result of a BESS malfunction and resumed only on rectification of problem items. Such suspension and resumption will occur at the sole discretion of the ANERT.

44.7 The BESS will not be accepted for shipment until all FATs have been successfully completed. In addition, the ANERT will verify that all provisions of the contract have been met, including verification of all required submittals, any spare parts delivery, and any required system modifications.

45 COMMISSIONING AND FUNCTIONAL GUARANTEE TEST PROCEDURE

45.1 The Contractor shall develop and submit to the ANERT for its review and approval a comprehensive SAT plan that shall demonstrate to the ANERT that the BESS will perform as specified at the ANERT's site. The ANERT shall have the right to request reasonable changes to the test plan.

45.2 The Contractor shall develop and perform SAT procedures to ensure that the BESS will perform as designed and that the system meets the performance criteria specified elsewhere in these specifications. The SAT plan shall include procedures to test operating scenarios described in the specification. These procedures may involve special requirements and/or witnessing by the local independent system operator. To the extent achievable, all use cases and operating modes described in the specification shall be tested.

45.3 After the Contractor has determined that the BESS is fully operational, the Contractor shall conduct the SAT, witnessed by the ANERT and/or the ANERT's representative. The tests shall include, as a minimum, the following:

- Verification of sensors, metering, and alarms
- Verification of all control functions, including automatic, local, and remote control
- Verification that the performance criteria in the specification can be met or exceeded
- Demonstration of all of the intended uses
- Demonstration of interface protection circuits and functions and control interfaces

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45.4 Tests shall demonstrate that the BESS capabilities, efficiencies, response, and features are as proposed by the Contractor.

45.5 Testing shall include, as a minimum, measurement of harmonic content and power factor at full and partial power levels for both charge and discharge.

45.6 Operation of all control, protective relaying, and instrumentation circuits shall be demonstrated by direct test, if feasible, or by simulating operating states for all parameters that cannot be directly tested. Automatic, local, and remote operation shall be demonstrated.

45.7 The SAT shall also specifically address discovery of problems or failures that may have occurred during or as a result of shipment.

45.8 The Contractor shall perform any required modifications and repairs identified by the testing, before acceptance by the ANERT.

45.9 The ANERT will not accept the BESS for commissioning until all acceptance tests have been successfully completed and all provisions of the contract have been met.

45.10 Functional Guarantee - Actual Operating Experience

Since it may not be possible, due to system constraints, to test all facets of the BESS function as part of the performance verification tests specified in the preceding sections the actual operating experience of the BESS during the performance guarantee period after initial startup shall be deemed an extension of the performance verification tests. The performance guarantee period shall not be construed as a substitute for the warranty requirements, as specified in the subsequent Clause. Actual operating experience will be documented through Contractor-furnished records, and other system monitoring equipment and associated BESS performance. Documented failure or malfunctions of any BESS component during the performance guarantee period shall be deemed a failure of the system commissioning test. The Contractor shall, at no cost to the ANERT, make the necessary repairs, replacements, modifications, or adjustments to prevent the same failure or malfunction from occurring again. The replacement of certain BESS components in response to a system failure may necessitate, at the discretion of the ANERT, the duplication of certain performance verification tests, which shall be performed at the Contractor's expense.

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46 WARRANTY

46.1 The Contractor shall provide a warranty for the entire BESS and its constituent equipment.

46.2 At a minimum, the Contractor shall provide an unconditional, 7 (Seven) -year parts and labour warranty on all BESS equipment except battery (unit or racks). An additional 3-year AMC must be provided by the bidder for the whole unit and the rate for the same is to be quoted separately. For the battery storage, 10-year warranty is to provided and the warranty shall cover parts warranty including battery nominal capacity ratings in order to meet the End of battery Life condition described in this specification.

46.3 Warranty replacement shall be required for individual unit batteries that degrade in performance to the point at which the BESS cannot meet the requirements specified in this specification up to the End of Battery Life and/or for unit batteries that materially degrade the availability, reliability, safety, or functionality of the BESS.

46.4 The warranty shall guarantee the availability of battery replacements delivered to the site within 2 weeks of notification during the battery warranty period. This period, shall, however, not be considered part of the Accountable Outage period for assessing BESS availability.

46.5 Additional warranty requirements are as follows:

- The warranty shall specify the terms and conditions of the warranty, including operating conditions requirements, procedures that must be followed, and all maintenance requirements. The warranty terms shall be easy to understand and shall be clearly stated.
- The warranty shall provide an explicit statement as to the warranted cycle life and the warranted calendar life of the battery.
- The warranty shall include a simple and easy to understand proration formula, if any, to be used in crediting the ANERT for unused life or capacity of equipment replaced or repaired.
- The warranty shall specify guaranteed battery replacement costs. The ANERT

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shall be provided the option to secure the guaranteed replacement cost at the time of the initial supply agreement.

- The warranty shall specify the scope of service associated with software updates.
- The warranty shall specify the scope of service included in replacement or repair of the equipment.
- The warranty shall specify all labour, materials, shipping charges, and other ANERT expenses not included in the warranty.
- The warranty shall specify the estimated time to complete the repairs/replacement required to restore the BESS to the warranted performance level. The time shall be given as the number of working days from the time of ANERT's notice to the Contractor that the BESS has failed to meet the performance requirements.

47 DOCUMENTATION AND SUBMITTALS

a. The Contractor shall furnish complete documentation that will be used for determination of contract compliance, as well as O&M of the BESS.

b. Review and acceptance of submittals shall not encumber the ANERT or the KSEBL with responsibility for the adequacy or safety of the Contractor's design.

c. Titles shall clearly indicate the function of the document, the ANERT and location of the facility.

d. At a minimum, Contractor's documentation shall consist of the following:

- Construction and installation drawings
- Construction materials submittal
- Equipment drawings and specifications
- Operation and maintenance manual
- Maintenance schedule
- Critical path method project schedule
- Master test plan and procedures
- Quality assurance manual
- Software documentation
- Study reports

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- Test reports
- Training manual

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FORMAT FOR COVERING LETTER

(This letter to be submitted on the official letter head of the bidder, signed by the authorised signatory.)

Sir,

I/We hereby e-tender to render the services under annexed terms and conditions of contract, the whole of the articles referred to and described in the attached specification and quantity decided by the Agency for New & Renewable Energy Research and Technology (ANERT), at the rates quoted against each item.

I am/We are remitting herewith the required amount of Rs. ..... towards the registration Fee by electronic payment vide transaction No ..... dtd.....

Yours faithfully,

Place:
Date:

Signature
Name
Designation

(Office Seal)

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ANNEXURE A – SUMMARY OF BID QUALIFICATION REQUIREMENTS

(To be filled in by the bidder in Letter Head)

1.	Name of the applicant and address with email, phone etc.	
2.	Main area of Business	
3.	Registered Office in Kerala	
4.	Details of Power of Attorney	
5.	Proof for Experience	

Documentary evidence for the bid qualification requirements are submitted along with this document and the details furnished above are true and correct.

Signature
of authorised signatory

Name
Designation

Date:

(Office seal)

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ANNEXURE B – AGREEMENT

(To be provided on Rs.200 Non-Judicial Kerala Stamp paper)

Subject: Selection of Consultant for Setting up the Project Management Unit (PMU) for Kerala Green Hydrogen Mission

With reference to the RFP Document for the captioned Project, I/we, I …….. (Name, Designation) authorised signatory of …….. (Name and full address of the bidder) having examined all relevant documents and understood their contents hereby undertake that the Proposal is unconditional and unqualified.

1. I/We confirm that I/we have examined the terms and conditions published in the EOI and accordingly submitting the Application. The proposal is unconditional and unqualified.
2. All information provided in the Proposal is true and correct and all documents accompanying such Proposal are true copies of their respective originals.
3. This statement is made for the express purpose of appointment Providing PMU services in terms of providing Consultancy and Technical Services
4. I/We shall make available to ANERT any additional information it may deem necessary or require for supplementing or authenticating the Proposal.
5. I/We acknowledge the right of the ANERT to reject our application without assigning any reason or otherwise and hereby waive our right to challenge the same on any account whatsoever.
6. I/We certify that in the last three years, I/we have neither failed to perform on any contract, as evidenced by imposition of a penalty by an arbitral or judicial Court or a judicial pronouncement or arbitration award against us, nor have been expelled from any project or contract nor have had any contract terminated for breach on our part.
7. I/We declare that:

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1. I/We have examined and have no reservations to the EOI Documents, including any Addendum thereto, issued by the ANERT;
2. I/We do not have any conflict of interest in accordance with provisions of the EOI Document;
3. I/We have not directly or indirectly or through an agent engaged or indulged in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice, as defined in the EOI document, in respect of any tender or request for proposal issued by or any agreement entered into with the ANERT or any other public sector enterprise or any Government, Central or State; and
4. I/We hereby certify that we have taken steps to ensure that in conformity with the provisions of this EOI, no person acting for us or on our behalf will engage in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice.

8. I / We understand that you may cancel the Selection Process at any time and that ANERT is neither bound to accept any Proposal that you may receive nor to select the Consultant, without incurring any liability to the Applicants in accordance with the EOI document.
9. I / We certify that in regard to matters other than security and integrity of the country, we or any of our Associates have not been convicted by a Court of Law or indicted or adverse orders passed by a regulatory authority which would cast a doubt on our ability to undertake the Consultancy for the Project or which relates to a grave offence that outrages the moral sense of the community.
10. I / We further certify that in regard to matters relating to security and integrity of the country, we have not been charge-sheeted by any agency of the Government or convicted by a Court of Law for any offence committed by us or by any of our Associates.
11. I / We hereby irrevocably waive any right or remedy which we may have at any stage at law or howsoever otherwise arising to challenge or question any decision taken by the ANERT (and/ or the Government of Kerala / India) in connection

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with the selection of Consultant or in connection with the Selection Process itself in respect of the above mentioned Project.

12. I / We agree and understand that the proposal is subject to the provisions of the EOI document. In no case, shall I/we have any claim or right of whatsoever nature if the Consultancy for the Project is not awarded to me/us or our proposal is not opened or rejected.
13. I / We agree to keep this offer valid for (120) days from the date of opening of technical bid.
14. I/We have studied EOI and all other documents carefully. We understand that we shall have no claim, right or title arising out of any documents or information provided to us by the ANERT or in respect of any matter arising out of or concerning or relating to the Selection Process including the award of Consultancy.
15. The Technical Proposals and Financial Proposals are being submitted in separate Covers available in the etenders portal.
16. I/We agree and undertake to abide by all the terms and conditions of the EOI Document. In witness thereof, I/we submit this Proposal under and in accordance with the terms of the EOI Document.

Signed by Sri	Signed by Sri .....
(Date)	(Date) .....
in the presence of witnesses	in the presence of witnesses
1.	1.
2.	2.

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ANNEXURE C – POWER OF ATTORNEY

(On Stamp Paper of requisite Stamp value)

Know all men by these presents, we, ... (name of Firm and address of the registered office) do hereby constitute,.....nominate, appoint and authorise Mr / Ms..... son/daughter/wife and presently residing at ....., who is presently employed with us and holding the position of.....as our true and lawful attorney (Hereinafter referred to as the —Authorized Representative) to do in our name and on our behalf, all such acts, deeds and things as are necessary or required in connection with or incidental to submission of our Proposal for and selection as the Consultant for _____

including but not limited to signing and submission of all applications, proposals and other documents and writings, participating in pre-bid and other conferences and providing information/ responses to the ANERT, representing us in all matters before the ANERT, signing and execution of all contracts and undertakings consequent to acceptance of our proposal and generally dealing with the Authority in all matters in connection with or relating to or arising out of our Proposal for the said Project and/or upon award thereof to us till the entering into of the Agreement with the ANERT.

AND, we do hereby agree to ratify and confirm all acts, deeds and things lawfully done or caused to be done by our said Authorised Representative pursuant to and in exercise of the powers conferred by this Power of Attorney and that all acts, deeds and things done by our said Authorised Representative in exercise of the powers hereby conferred shall and shall always be deemed to have been done by us.

IN WITNESS WHEREOF WE, ... THE ABOVE - NAMED AUTHORISED REPRESENTATIVE HAVE EXECUTED THIS POWER OF ATTORNEY ON THIS ..... DAY OF ....., 2023

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For

(Signature, name, designation and address)

Witnesses:

1.

2.

Notarized

Accepted (Signature, name, designation and address of the Attorney)

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ANNEXURE D – DECLARATION BY THE BIDDER

e-EoI Notification No: ....., dtd ..... for Expression of Interest (EoI) for the Selection of Agency for Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram

To

The CEO

ANERT

We, the undersigned, declare that:

1. We have examined and have no reservations to the Bidding Document, including Addenda No.: ..... (if any)
2. We offer to supply in conformity with the Bidding Document and in accordance with the delivery schedule
3. Our Bid shall be valid for a period of 4 months from the date fixed as deadline for the submission of EoIs in accordance with the Bidding Document, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;
4. If our Bid is accepted, we commit to submit a Security Deposit in the amount of 3 percent of the Contract Price for the due performance of the Contract;
5. We are not participating, as Bidders, in more than one Bid in this bidding process;
6. Our firm, its affiliates or subsidiaries, including any subcontractors or suppliers for any part of the Contract, has not been declared ineligible by the ANERT or Government of Kerala;
7. We understand that this Bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal Contract is prepared and executed.
8. Our firm has obtained the certifications from MNRE or NABL approved test laboratories that the goods and services are satisfying the technical criteria specified in the bid.

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Signature

Date

Name

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ANNEXURE E – DECLARATION OF RELATIONSHIP WITH ANERT EMPLOYEE

(to be signed and submitted by the bidder along with the bid)

EoI Notification No.: ……..

Expression of Interest (EoI) for the Selection of Agency for Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram

To

The CEO

ANERT

Name of the ANERT employee with Designation:

Name of the bidder related to the employee:

This is to put on record that Shri/Smt …….. currently working as …….. in ANERT is related to ……., who is the bidder in the bid. We are aware of the Anti-corruption policy of ANERT and will observe the highest standards during the execution of contract and shall retain from corrupt, fraudulent, collusive or coercive practices on competing for the contract.

Signature

Date

Name

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ANNEXURE F – UNDERTAKING FOR NO BLACKLISTING & NO BANNING

(To be provided on Rs.200 Non-Judicial Stamp paper. In Case of JV the following format is to be provided by Each Member of the Joint Venture on their respective letterhead, signed by respective authorized Signatory along with Authorized Signatory for which POA is attached with Bid))

Undertaking for No Blacklisting & No Banning

To

The CEO
ANERT

Sub: Expression of Interest (EoI) for the Selection of Agency for Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram

I / We hereby declare that presently our Company/Limited Liability Partnership/ Partnership Firm/ Sole Proprietorship is having unblemished record and is not declared ineligible for corrupt/fraudulent practices by any State/Central Government/PSU on the date of Bid Submission.

I / We further declare that presently our Company/Limited Liability Partnership/ Partnership Firm/ Sole Proprietorship is not blacklisted and not declared ineligible for reasons other than corrupt/fraudulent practices by any State/Central Government/PSU on the date of Bid Submission.

If this declaration is found to be incorrect then without prejudice to any other action that may be taken, our security may be forfeited in full and the EoI if any to the extent accepted may be cancelled.

(Signature & Seal of Authorized Signatory for which POA attached)

Name of Authorized Signatory:

Designation:

Date:

Place:

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ANNEXURE G – CERTIFICATE OF FINANCIAL QUALIFICATION

(On Letterhead of the respective entity for which the below details are provided.)

Financial Qualification Certificate

(Rupees in Crores)

S/N	Financial parameters	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23
1.	**Net Worth**					
a)	Paid up Capital					
b)	Free Reserves and Surplus*					
c)	Misc expenses to the extent not written off					
	Net Worth (a+b-c)					
2.	**Annual Turnover ****					

** Free Reserve and Surplus shall be Exclusive of Revaluation Reserve, written back of Depreciation Provision and Amalgamation.*

*** Annual total Income/ turnover as incorporated in the Profit and Loss Account excluding non-recurring income, i.e., sale of fixed asset etc.*

It is certified that all the figures are based on audited accounts read with auditors report and Notes to Accounts etc.

(Signature & Seal of Authorized Signatory

Name of Authorized Signatory: **Certifying Chartered Accountant:**

Designation: **Name of Firm:**

Date: **UDIN No:**

Place: **Date:**

Place:

Note:

1. *In addition to above certificate from Chartered Accountant, Bidder is required to submit Firm's Annual Audit Report, Balance sheet, Profit & Loss and Income Tax Returns / CA certificate for last Five years i.e., F.Y: 2017-18, 2018-19, 2019-20, 2020-21 & 2021-22.*

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KOCHI-682 022

AGENCY FOR NEW & RENEWWABLE ENERGY RESEARCH AND TECHNOLOGY (ANERT)

Department of Power, Government of Kerala

CORRIGENDUM

Corrigendum Type	:	Date Corrigendum - 1
Tender ID	:	2024_ANERT_664557_1
Tender Name	:	Expression of Interest (EoI) for the Selection of Agency for Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram

1. The last date for bid submission stands extended till 11/03/2024

Thiruvananthapuram
05/03/2024

Sd/-
CEO

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AGENCY FOR NEW & RENEWWABLE ENERGY RESEARCH AND TECHNOLOGY (ANERT)

Department of Power, Government of Kerala

CORRIGENDUM

Corrigendum Type	:	Technical Corrigendum - 1
Tender ID	:	2024_ANERT_664557_1
Tender Name	:	Expression of Interest (EoI) for the Selection of Agency for Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram

1. The Page Numbers mentioned from 'Page 51 of 50' till 'Page 82 of 50' to be read as 'Page 51 of 82' to 'Page 82 of 82'.
2. The subject mentioned in Agreement – B, to be replaced with "Expression of Interest (EoI) for the Selection of Agency for Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram", while printing in Kerala Non-Judicial Stamp Paper.

Thiruvananthapuram
05/03/2024

Sd/-
CEO

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A Y K J & Co. LLP
Chartered Accountants

CERTIFICATE OF FINANCIAL QUALIFICATION

This certificate has been issued for Pre-Qualification for Expression of Interest (EoI) for the Selection of Agency for Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram. Ref. No.: ANERT-TECH/41/2024-PE1(RTS)

(Rupees In Crores)

Sl. No.	Financial Parameters	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23
1.	**Net Worth**					
a)	Partner's Capital and Current account balance/Paid up Capital*	0.64	2.15	2.13	2.00	1.87
b)	Free Reserves and Surplus**	0.00	0.00	0.00	0.00	0.00
c)	Misc expenses to the extent not written off	0.05	0.04	0.00	0.00	0.00
	Net Worth (a+b-c)	**0.59**	**2.11**	**2.13**	**2.00**	**1.87**
2.	**Annual Turnover *** **	**2.04**	**7.33**	**3.78**	**2.51**	**5.10**

** Since the entity for which this certificate is prepared is a partnership firm we have considered the total of balances in their capital and current account in this row.*

*** Free Reserve and Surplus shall be Exclusive of Revaluation Reserve, written back of Depreciation Provision and Amalgamation.*

**** Annual total Income/ turnover as incorporated in the Profit and Loss Account excluding non-recurring income, i.e., sale of fixed asset etc.*

It is certified that all the figures are based on audited accounts read with auditors report and Notes to Accounts etc.

For AYKJ & Co. LLP
Chartered Accountants

AYKJ & Co. LLP Chartered Accountants

CA JOSEPH MATHEW ACA
Partner (M. No. 24[illegible]15)
Firm Registration No. S200373

Date : 09.03.2024
Place : Ernakulam
UDIN : 24249615BKEGSU3873

(Disclaimer: This certificate can be used only for the purposes mentioned above)

Registered Office
58/2712, Vidya Vihar Road, Near S.H. College, Thevara, Kochi – 682013

Branch Office
1st Floor, Chandraprabha, A M Road, Perumbavoor, Kerala – 683542
Email id : office@aykjglobal.com
Phone No. : +91 8075817482

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TESTING AND MEASURING EQUIPMENT/ALLOWED SUBCONTRACTING
IEC 62620:2014, Edition 1.0
Secondary cells and batteries containing alkaline or other non-acid electrolytes – Secondary lithium cells and batteries for use in industrial applications

Report Number.....:	STE20110103S
Date of issue.....:	June 20, 2019
Total number of pages.....:	19 pages
Name of Testing Laboratory preparing the Report.....:	Shenzhen STE Testing Laboratory Co., Ltd
Applicant's name.....:	Sicon Chat Union Electric Co., Ltd.
Address.....:	Bldg.14&15, No. 319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, 050035, China.
Test specification:	
Standard.....:	IEC62620:2014, AMD1:2015
Test procedure.....:	IEC62620
Non-standard test method.....:	N/A
Test Report Form No.....:	IEC62620C
Test Report Form(s) Originator.....:	DEKRA Certification B.V.
Master TRF.....:	Dated 2018-12-21

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General disclaimer:

The test results presented in this report relate only to the object tested.

This report shall not be reproduced, except in full, without the written approval of the Issuing Testing Laboratory. The authenticity of this Test Report and its contents can be verified by contacting the Testing Laboratory, responsible for this Test Report.

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Test item description.....:	Li-ion battery energy storage system
Trade Mark.....:	N/A
Manufacturer.....:	Same as the applicant
Model/Type reference.....:	EBC480/100-LFP-ABMS, details see the model list
Ratings.....:	DC 480V, 100A

☒	**Testing Laboratory:**	Shenzhen STE Testing Laboratory Co., Ltd	
Testing location/ address.....:		Room 301(left side), Building 9, Dehong Factory Building, No. 63 Yuchang Road, Niuhu Community, Guanlan Street, Longhua District, Shenzhen, China	
Tested by.....:		Hunter Liang / Project Handler	
Check by.....:		Todd Qian / Reviewer	

List of Attachments (including a total number of pages in each attachment):

Attachment No. 1: Report of photobiological safety of lamps according to standard IEC TR 62778:2014.

Summary of testing:

All test items are applied to the model EBC480/100-LFP-ABMS, which is considered representative and give the most unfavourable test result, the other models had been tested with construction cheek, temperature rise test and cap interchangeability on the provided samples.

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Tests performed (name of test and test clause):	Testing location:
IEC 62620:2011+A1:2015	Shenzhen STE Testing Laboratory Co., Ltd Room 301(left side), Building 9, Dehong Factory Building, No. 63 Yuchang Road, Niuhu Community, Guanlan Street, Longhua District, Shenzhen, China
Clause: Measurement/testing	

Summary of compliance with National Differences:

List of countries addressed

☒ The product fulfils the requirements of Germany and European Group differences

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Copy of marking plate:

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

Li-ion battery energy storage system
Model: EBC480/100-LFP-ABMS
DC 480V, 100A

Sicon Chat Union Electric Co., Ltd.
Bldg.14&15, No. 319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, 050035, China.
Importer: xxxx
Address: xxxx
Made In China

Remarks:

1. Representative markings of EBC480/100-LFP-ABMS, markings of all models are identical except for the model name and power.

2. Height of CE mark is 5mm, height of WEEE symbol is 7mm, height of other marks is 5mm, height of letters and numerals is 2mm.

Test item particulars..... :	
Classification of application..... :	☒ Stationary application ☐ Motive application
Discharge rate type..... :	☐ S (Very low rate long-time discharge type) ☒ E (Low rate long-time discharge type) ☐ M (Medium rage discharge type) ☐ H (High rate discharge type)
Possible test case verdicts:	
- test case does not apply to the test object..... :	N/A
- test object does meet the requirement..... :	P (Pass)
- test object does not meet the requirement..... :	F (Fail)
Testing..... :	
Date of receipt of test item..... :	June 20, 2019
Date (s) of performance of tests..... :	June 01, 2019 - June 20, 2019

General remarks:

This report shall not be reproduced except in full without the written approval of the testing laboratory.

The test results presented in this report relate only to the item tested.

"(See Enclosure #)" refers to additional information appended to the report.
"(See appended table)" refers to a table appended to the report.

Throughout this report a ☒ comma / ☐ point is used as the decimal separator.

Modified Information

Version	Report No.	Revision Date	Summary
V1.0	STE20110103S	/	Original Version

Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:

The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided..... :	☐ **Yes** ☒ **Not applicable**

When differences exist; they shall be identified in the General product information section.

Name and address of factory (ies)..... :	Same as manufacturer' name and address

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General product information:

1. All models have similar construction and appearance but different power, size and lamp cap.
2. Unless otherwise specified, the models EBC480/100-LFP-ABMS were chosen as representative model to perform all test

The supply connector via with power cord used for all models.

Model list:

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Model	voltage	Input Current(A)	Output Current(A)
ECM-48B100N	48V	100A	100A
EBC48/30-LFP-ABMS	48V	60A	90A
EBC48/50-LFP-ABMS	48V	100A	150A
EBC48/100-LFP-ABMS	48V	100A	100A
EBC51.2/100-LFP-ABMS	51.2V	100A	100A
EBC240/10-LFP-ABMS	240V	20A	40A
EBC480/10-LFP-ABMS	480V	20A	40A
EBC480/20-LFP-ABMS	480V	40A	80A
EBC480/30-LFP-ABMS	480V	60A	120A
EBC480/50-LFP-ABMS	480V	50A	100A
EBC480/100-LFP-ABMS	480V	100A	200A
EBC480/150-LFP-ABMS	480V	150A	300A
EBC480/200-LFP-ABMS	480V	200A	400A
EBC480/280-LFP-ABMS	480V	140A	140A
EBC480/40-LFP-ABMS	480V	80A	200A
EBC480/80-LFP-ABMS	480V	160A	400A
EBC480/120-LFP-ABMS	480V	240A	480A
EBC480/160-LFP-ABMS	480V	320A	480A
EBC768/40-LFP-ABMS	768V	80A	240A
EBC768/80-LFP-ABMS	768V	160A	400A
EBC768/120-LFP-ABMS	768V	240A	480A
EBC768/160-LFP-ABMS	768V	320A	480A
EBC768/50-LFP-ABMS	768V	50A	100A
EBC768/100-LFP-ABMS	768V	100A	200A
EBC768/150-LFP-ABMS	768V	150A	300A
EBC768/200-LFP-ABMS	768V	200A	400A
EBC768/280-LFP-ABMS	768V	140A	140A
EBC768/100-LFP-ABMS-M	768V	100A	200A
EBC768/40-LFP-ABMS-F	768V	80A	240A
EBC768/80-LFP-ABMS-F	768V	160A	400A
EBC768/120-LFP-ABMS-F	768V	240A	480A
EBC768/160-LFP-ABMS-F	768V	320A	480A
EBC768/50-LFP-ABMS-F	768V	50A	100A
EBC768/100-LFP-ABMS-F	768V	100A	200A
EBC768/150-LFP-ABMS-F	768V	150A	300A
EBC768/200-LFP-ABMS-F	768V	200A	400A
EBC768/280-LFP-ABMS-F	768V	140A	140A

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4	**PARAMETER MEASUREMENT TOLERANCES**		--
	Parameter measurement tolerances		--

5	**CELL DESIGNATION AND MARKING**		P
5.1	**Marking**		P
	Marking items shown in Table 1 are indicated on the cell, battery system or instruction manual		P
	When marked on the cell or battery system, each cell or battery system that is installed or maintained carries clear and durable markings giving the information		P
	The following options are allowed: - If there are designations on a battery system, designations are not necessary on the battery pack, module or cell		P
	- If there are designations on a battery pack, designations are not necessary on the module and cell		N/A
	- If there are designations on a module, designations are not necessary on the cell		P
	However, for a transportable unit (i.e. a unit that is being shipped), it is necessary to provide the marking information on the main transportable unit or in its instruction manual		P
	Furthermore, if there is a marking matter of arrangement between the purchaser and the manufacturer, it complies with the agreement		P
	Each cell or battery that is installed or maintained carries clear and durable markings giving the following information		P
	Secondary (rechargeable) Li or Li-ion.....:		P
	Polarity (can be deleted if there is an agreement between cell and pack manufacturer) ..... :		N/A
	Date of manufacture (which may be in code).....:		--
	Name or identification of manufacturer or supplier.....:	Same as the applicant	P
	Rated capacity.....:	100Ah	P
	Nominal voltage..... :	480V	P
	Appropriate caution statement.....:		P
	Model name and manufacturing traceability marked on the cell and battery surface		--

	The other items listed above is marked on the smallest package or supplied with the cell or the battery		P
	Following information marked on or supplied with the cell or the battery		N/A
	Disposal instructions..... :		P
	Recommended charge instructions..... :		N/A
	The following information was marked on the cell or when there was no marking place on the cell, it was marked in the manual		P
	cell designation as specified in 5.2..... :		P
5.2	**Cell designation**		--
	Cell designated in the form of A1A2A3/N2/N3/N4/A4/TLTH/NC in accordance with the conventions of this sub-clause		--
5.3	**Battery designation**		--
5.3.1	**General**		P
	Battery designated in the form of A1A2A3/N2/N3/N4/[S1]A4/TLTH/NC in accordance with the conventions of this sub-clause		P
5.3.2	**Battery structure formulation**		P
	Battery designation includes the breakdown structure of the battery and the descriptive path followed to formulate the battery is from the smallest entity to the largest one		P
	a) It describes the number of cells in the minimum constitutive entity and on the right side of the number describes their connection mode in series (S) or in parallel (P)		P
	b) In case that the minimum constitutive entities are connected in series or in parallel, it describes the number of the minimum constitutive entities, and on the right side of the number describes their connection mode in series (S) or in parallel (P)		N/A
	c) In case of the larger constitutive entities, it describes the symbols on the right side in the same way as mentioned above		P
	When some constitutive entities can be divided for ease of handling or transportation, these entities can be distinguished from other entities by bracketing		P
6	**ELECTRICAL TESTS**		P

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6.1	**General**		P
	Electrical tests are applied to cells and/or batteries		P
	If the battery is divided in smaller units, the unit can be tested as the representative of the battery and manufacturer clearly declared the tested unit		P
	Manufacturer added, to the tested unit, functions which are present in the final battery.		N/A
	Manufacturer used “cell block(s)” instead of “cell(s)” at any test that specifies “cell(s)” as the test unit in this document and the cell manufacturer clearly declared the test unit for each test.		--
	Charge and discharge currents for the tests was based on the value of the rated capacity (Cn Ah) and expressed as a multiple of It A, where: It A = Cn Ah/1 h		--
6.2	**Charging procedure for test purposes**		P
	Prior to charging, the cell or battery discharged at 25 °C ± 5 °C at a constant current of 1/n It A, down to a specified final voltage		P
	Unless otherwise stated in this standard, cells or batteries charged, in an ambient temperature of 25 °C ± 5 °C, using the method declared by the manufacturer		P
6.3	**Discharge performance**		P
6.3.1	Discharge performance at 20 °C (rated capacity)		P
	This test verifies the rated capacity of a cell or battery Step 1 – The cell or battery was fully charged in accordance with 6.2 Step 2 – The cell or battery was stored in an ambient temperature of 25 °C ± 5 °C, for not less than 1 h and not more than 4 h Step 3 – The cell or battery was then discharged in the same ambient temperature and as specified in Table 2 to the final voltage specified by the manufacturer in 6.2 Step 4 – The capacity (Ah), delivered during step 3, was not less than that specified for this characteristic in Table 2	(See Table 6.3.1)	
6.3.2	Discharge performance at low temperature		P
	This test identifies the temperature at which a capacity of not less than 70 % of the rated capacity can be achieved		P

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	This test verifies the discharge performance at low temperature of the cell or battery. It was be measured in accordance with the following steps		P
	Step 1 – The cell or battery was fully charged in accordance with 6.2 Step 2 – The cell or battery was stored for not less than 16 h and not more than 24 h at an ambient “target” test temperature which was specified by the manufacturer Step 3 – The cell or battery was then discharged at the same target test temperature and at the discharge rates specified in Table 3 to the manufacturer’s declared final voltage as defined in 6.2 Step 4 – The capacity (Ah), delivered during step 3 was not less than that specified for the cell type and discharge currents in Table 3	(See Table 6.3.2)	P
	The cell or battery’s low temperature discharge performance was declared at 10 °C intervals, such as +10 °C, 0 °C, -10 °C and -20 °C and declared temperature should be in the range of the target test temperature and target test temperature plus 10 °C		P
6.3.3	High rate permissible current		P
6.3.3.1	General		P
	Test is to evaluate the ability of an “H” or “M” type cell or battery to withstand high currents		P
6.3.3.2	Test method		P
	Step 1 – The cell or battery fully charged in accordance with 6.2 Step 2 – The cell or battery stored for not less than 1 h and not more than 4 h in an ambient temperature of 25 °C ± 5 °C Step 3 – It then be discharged for 5 ± 0,1 s at 25 °C ± 5 °C and at the currents specified in Table 4 and during the discharge the terminal voltage was recorded Step 4 – The capacity at 0,2It A of the cell or battery was measured according to 6.3.1		P
6.3.3.3	Acceptance criterion	(See Table 6.3.3)	P
	No fusing, no deformation of the cell or battery case, and no leakage was observed		P
	In addition, the cell or battery voltage during the discharge showed no discontinuity		P
	Capacity of the cell or battery was not less than 95 % of the rated capacity		P

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6.4	**Charge (capacity) retention and recovery**		N/A
6.4.1	General		N/A
	This test determines firstly the capacity which a cell retains after storage for an extended period of time, and secondly the capacity that can be recovered by a subsequent recharge		N/A
6.4.2	Test method		N/A
	Step 1 – The cell charged in accordance with 6.2. Step 2 – The cell stored in an ambient temperature of 25 °C ± 5 °C, for 28 days Step 3 – The cell discharged in an ambient temperature of 25 °C ± 5 °C, at a constant current of 0,2 It A, until its voltage is equal to the specified final voltage in accordance with 6.2. Step 4 – The cell then charged in accordance with 6.2, within 24 h following the discharge of step 3. Step 5 – The cell stored, in an ambient temperature of 25 °C ± 5 °C, for not less than 1 h and not more than 4 h. Step 6 – The cell discharged, in an ambient temperature of 25 °C ± 5 °C, at a constant current of 0,2 It A, until its voltage is equal to the specified final voltage in accordance with 6.2.		N/A
6.4.3	Acceptance criterion	(See Table 6.3.1)	N/A
	The charge retention value which is the value of the discharged capacity obtained at Step 3 was not less than 85 % of the rated capacity		N/A
	The charge recovery value which is the value of the discharged capacity obtained at Step 6 was not less than 90 % of the rated capacity		N/A
6.5	**Cell and battery internal resistance**		P
6.5.1	General		P
	Alternating current (a.c.) method is only applied for the cell. The direct current (d.c.) method is applied for the cell and for the battery		P
	It was not necessary to discharge and charge the cell for re-adjusting the charge level between conducting the a.c. and d.c. measurements		P
	Cell or battery charged in accordance with 6.2 and stored, in an ambient temperature of 25 °C ± 5 °C, for not less than 1 h and not more than 4 h		P

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	Cell or battery discharged at 25 °C ± 5 °C until the capacity discharged becomes equal to 50 % ± 10 % of the rated capacity (Ah)		P
	Measurement of internal resistance was performed in accordance with 6.5.2(cell only) and 6.5.3 in an ambient temperature of 25 °C ± 5 °C		P
6.5.2	Measurement of the internal a.c. resistance		N/A
6.5.2.1	Measurement		N/A
	Alternating r.m.s. voltage, Ua, was measured while applying an alternating r.m.s current, Ia, at the frequency of 1,0 kHz ± 0,1 kHz, to the cell, for a period of 1 s to 5 s		N/A
	The internal a.c. resistance, Rac, is given by, $R_{ac} = \frac{U_a}{I_a} (\Omega)$ .....:		N/A
6.5.2.2	Acceptance criterion		N/A
	Internal a.c. resistance of the cell was not greater than the value of Rac, declared by the manufacturer..... :		N/A
6.5.3	Measurement of the internal d.c. resistance		P
6.5.3.1	Measurement		P
	Test verifies the internal d.c. resistance of the cell or battery measured in accordance with the following steps		P
	Step 1 – The cell or battery discharged at a constant current of value I1 as specified in Table 5. At the end of a discharge period of 30 ± 0,1 s, the discharge voltage U1 under load was measured and recorded.....:		P
	Step 2 – The discharge current then be immediately increased to a value of I2 as specified in Table 5 and the corresponding discharge voltage U2 measured under load and recorded again at the end of a discharge period of 5,0 ± 0,1 s .....:		P
	Internal d.c. resistance, Rdc, of the cell or battery was calculated using the following Formula, $R_{dc} = \frac{U_1 - U_2}{I_2 - I_1}$ .....:		P
6.5.3.2	Acceptance criterion		P
	Internal d.c. resistance of the cell or battery was not greater than the value of Rdc, declared by the manufacturer.....:		

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6.6	**Endurance**		P
6.6.1	Endurance in cycles	4000	P
6.6.1.1	General		P
	This test conducted on cells or batteries which are designed for cycle applications (discharge and charge repeating them by turns)		P
	This test verifies the capacity of the cell after 500 cycles. It was measured in accordance with the following steps		N/A
6.6.1.2	Measurement	600*750*2000	P
	Step 1 – The cell or battery was discharged at 25 °C ± 5 °C at a constant current of 1/n It A, down to a specified final voltage. The final voltage was the same as that declared by the manufacturer according to 6.2 Step 2 – The cell or battery was charged, in an ambient temperature of 25 °C ± 5 °C, using the method declared by the manufacturer Step 3 – The cell or battery was discharged, in an ambient temperature of 25 °C ± 5 °C, at a constant current of 1/n It A, until its voltage was equal to the specified final voltage. The final voltage was the same as that declared by the manufacturer according to 6.2 NOTE 1 If the manufacturer would like to shorten the time to conduct step 3, the following discharge currents are declared and used: 0,5 It A * for E type cell or battery, 1,0 It A * for M and H type cell or battery Step 4 – Steps 2 and 3 were repeated for 500 cycles Step 5 – After completing 500 cycles, the capacity measured in discharge at 1/n It A was determined according to 6.3.1 Step 6 – The retention rate was calculated from the rated capacity and the capacity measured in step 5(%)		P
6.6.1.3	Acceptance criterion		--
	Capacity of the cell or battery was not less than 60 % of the rated capacity after 500 cycles	(See Table 6.6.1)	--
6.6.2	Endurance in storage at constant voltage (permanent charge life)	30days	--
6.6.2.1	General		P

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	Test conducted on cells or batteries which are designed for stand-by applications.		P
	Test verifies the upper limit of the storage temperature specified by the manufacturer in which a minimum capacity of 85 % of the rated capacity is maintained after 90 days of storage at a constant voltage corresponding to a 100 % state of charge (SOC)		P
6.6.2.2	Measurement		P
	Step 1 – Cell or battery was discharged at 25 °C ± 5 °C at a constant current of 1/n It A, down to a specified final voltage Step 2 – Cell or battery was charged at the target test temperature using the method declared by the manufacturer Step 3 – Cell or battery was kept at the target test temperature during 90 days in charge at constant voltage corresponding to 100 % state of charge Step 4 – Cell or battery was stored for not less than 8 h and not more than 16 h, in open circuit, in an ambient temperature of 25 °C ± 5 °C Step 5 – Capacity measured in discharge at 1/n It A is determined according to 6.3.1 Step 6 – Percentage of rated capacity was calculated from the rated capacity and the capacity measured in step 5(%)		P P
6.6.2.3	Acceptance criterion	(See Table 6.6.2)	--
	Capacity of the cell or battery was not less than 85 % of the rated capacity after 90days		P
	Declared temperature was in the range of the target test temperature and target test temperature minus 10 °C		--

7	**TYPE TEST CONDITIONS**		P
7.1	**General**		P
	Type test conditions and protocol were agreed between the manufacturer and the customer. When this is not the case, the following type test conditions applied		P
7.2	**Sample size**	483mm*650mm*156mm	P

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	Tests were made with the number of cells, cell blocks or batteries specified in Table 6, using cells or batteries stored under the condition specified by the manufacturer and that were not more than six months old. Unless otherwise specified, tests were carried out in an ambient temperature of 25 °C ± 5 °C		P
7.3	**Conditions for type approval**		P
7.3.1	Dimensions		P
	Dimensions of the cell, cell block or battery do not exceed the manufacturer specified values including tolerances		P
7.3.2	Electrical tests		N/A
7.3.2.1	Manufacturer declared the rated capacity (C5 Ah) of the cell, cell block or battery based on its performance under the conditions specified in 6.3.1 and Table 6	2C	--
7.3.2.2	In order to meet the requirements of this standard, all samples met all the performances specified in Table 6 and minimum levels for meeting the requirements of the electrical tests was expressed as percentages of the rated capacity		--
7.3.2.3	The test results were replaced by the results performed under the more severe condition which are specified in Table 7		N/A

6.3.1	TABLE: Discharge performance at 20 °C				
Model/Sample	**End-of-discharge voltage (V)**	**Discharge current (A)**	**Fully charged voltage (V)**	**Capacity (Ah)**	**Results**
EBC480/100-LFP-ABMS	480	200A	520	100Ah	P
Supplementary information: --					

6.3.2	TABLE: Discharge performance at low temperature				
Model/Sample	**End-of-discharge voltage (V)**	**Discharge current (A)**	**Target test temperature (°C)**	**Capacity (Ah)**	**Results**
EBC480/100-LFP-ABMS	480	200	30	100	P
Supplementary information: --					

6.3.3	TABLE: High rate permissible current			
Model/Sample	**Discharge current for 5 ± 0,1 s (A)**	**Terminal voltage during discharge (V)**	**Capacity (Ah)**	**Results**
EBC480/100-LFP-ABMS	200	480	100	P
Supplementary information: --				

6.4	TABLE: Charge (capacity) retention and recovery				
Model/Sample	**Charge retention Capacity (Ah)**	**Charge recovery Capacity (Ah)**	**Charge retention value (%)**	**Charge recovery value (%)**	**Results**
EBC480/100-LFP-ABMS	90	95	90	95	P
Supplementary information: --					

6.6.1	Endurance in cycles				
Model/Sample	**End-of-discharge voltage (V)**	**Discharge current for cycles (A)**	**Capacity after 500 cycles (Ah)**	**Retention rate (%)**	**Results**
EBC480/100-LFP-	480	200	98	98	P

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ABMS					
Supplementary information: --					

6.6.2	**Endurance in storage at constant voltage**				
Model/Sample	**Target test temperature (°C)**	**Fully charged voltage (V)**	**Capacity after 90 days (Ah)**	**Percentage of rated capacity (%)**	**Results**
EBC480/100-LFP-ABMS	30	480	90	90	P
Supplementary information: --					

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Details of: Overview of model EBC480/100-LFP-ABMS

Remark:

-------- End of Test Report --------

Attestation of Compliance

STE Testing

Reference No.	:	**STE21092602E**
Applicant	:	**Sicon Chat Union Electric Co., Ltd.**
Address	:	**Bldg.14&15, No. 319, Xiangjiang Street, High-Tech Zone, Shijiazhuang, 050035, China**
Trade Mark	:	**N/A**
Product	:	**Energy storage Power Conversion System（PCS）**
Model(s)	:	**EPCS-250, EPCS50, EPCS100, EPCS150, EPCS200, EPCS250, EPCS300, EPCS400, EPCS500, EPCS600, EHPCS-250/50, EHPCS-200/50, EHPCS-150/50, EHPCS-100/50, EHPCS-50/50**
Tested according to	:	**EN 61000-6-4: 2007+A1: 2011** **EN 61000-3-2: 2014** **EN 61000-3-3: 2013** **EN 61000-6-2: 2005**

The submitted products have been tested by us with the listed standards.

This Attestation of Compliance is issued according to the council Directive 2014/30/EU, Referred to as the Electromagnetic Compatibility. It confirms that the listed product complies with all essential requirements of the EMC directive and applies only to the sample and its technical documentation submitted to Shenzhen STE Testing Laboratory Co., Ltd for testing.

After preparation of the necessary technical documentation as well as the EC conformity declaration the required CE marking can be affixed on the product.Other relevant Directives have to be observed.

CE

Date of issue: September 28, 2021

STE TESTING LABORATORY
STE
APPROVED

Manager

Shenzhen STE Testing Laboratory Co., Ltd.
Room 301(left side), Building 9, Dehong Factory Building, No. 63 Yuchang Road, Niuhu Community, Guanlan Street, Longhua District, Shenzhen

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TÜV NORD

Certificate

of Conformity

Registered No.:

COCPVP08104/21E-02

File reference	Test report No.	Date of issue
PVP08104/21E-02	TRPVP08104/21E/02	2021-12-21

On the basis of the tests undertaken, the samples of the below product(s) have been found to comply with the essential requirements of the referenced specifications at the time the tests were carried out:

Applicant:	**Sicon Chat Union Electric Co., Ltd.** Bldg.14&15, No. 319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, Hebei, China (050035)
Manufacturer:	**Sicon Chat Union Electric Co., Ltd.** Bldg.14&15, No. 319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, Hebei, China (050035)
Factory:	**Sicon Chat Union Electric Co., Ltd.** Bldg.14&15, No. 319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, Hebei, China (050035)
Product:	EPCS-Series modular power conversion system
Type designation:	EPCS 50, EPCS 100, EPCS 150, EPCS 200, EPCS 250, EPCS 300, EPCS 400, EPCS 500, EPCS 600
Certification program:	BOS-P-01 Rev. 00
Certification fundamental(s):	EN 50549-1:2019+AC:2019-04 with national network and system protection for Norway into consideration See test report for detailed information.

This document is based on the evaluation of the samples of the above mentioned product(s). It does not imply an assessment of the mass-production of the product(s), and it does not permit the use of a TÜV NORD mark. The holder of this document may use it in connection with the related test report(s).

Renewable Energy

CNAS 中国认可 产品 PRODUCT CNAS C183-P

TÜV NORD (HANGZHOU) CO., LTD.
Member of TÜV NORD Group
Tel: +86-571-85386989
Fax: +86-571-85386986
www.tuv-nord.com/cn
P.R. China

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Certificate

of Conformity

Registered No.:

COCPVP08104/21E-01

File reference	Test report No.	Date of issue
PVP08104/21E-01	TRPVP08104/21E/01	2021-12-21

On the basis of the tests undertaken, the samples of the below product(s) have been found to comply with the essential requirements of the referenced specifications at the time the tests were carried out:

Applicant:	**Sicon Chat Union Electric Co., Ltd.** Bldg.14&15, No. 319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, Hebei, China (050035)
Manufacturer:	**Sicon Chat Union Electric Co., Ltd.** Bldg.14&15, No. 319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, Hebei, China (050035)
Factory:	**Sicon Chat Union Electric Co., Ltd.** Bldg.14&15, No. 319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, Hebei, China (050035)
Product:	EPCS- Series modular power conversion system
Type designation:	EPCS 50, EPCS 100, EPCS 150, EPCS 200, EPCS 250, EPCS 300, EPCS 400, EPCS 500, EPCS 600
Certification program:	BOS-P-01 Rev. 00
Certification fundamental(s):	Engineering Recommendation G99 Issue 1 – Amendment 6 See test report for detailed information.

This document is based on the evaluation of the samples of the above mentioned product(s). It does not imply an assessment of the mass-production of the product(s), and it does not permit the use of a TÜV NORD mark. The holder of this document may use it in connection with the related test report(s).

Renewable Energy

ESS-1-011-COC

CNAS 中国认可 产品 PRODUCT CNAS C183-P

TÜV NORD (HANGZHOU) CO., LTD.
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Fax: +86-571-85386986
www.tuv-nord.com/cn
P.R. China

Attestation of Compliance

STE Testing

Reference No.	:	**STE21092601S**
Applicant	:	**Sicon Chat Union Electric Co., Ltd.**
Address	:	**Bldg.14&15, No. 319, Xiangjiang Street, High-Tech Zone, Shijiazhuang, 050035, China**
Product	:	**Energy storage Power Conversion System (PCS)**
Trade Mark	:	**N/A**
Model(s)	:	**EPCS50, EPCS100, EPCS150, EPCS200, EPCS250, EPCS300, EPCS400, EPCS500, EPCS600, EHPCS-250/50, EHPCS-200/50, EHPCS-150/50, EHPCS-100/50, EHPCS-50/50**
Parameters	:	**DC: 550V-850V⎓, MAX 454A AC: 380V~, 50/60Hz, MAX 362A**
Tested according to	:	**EN 62477-1: 2012+A11: 2014+A1: 2017**

The submitted products have been tested by us with the listed standards.

This Attestation of Compliance is issued according to the council Directive 2014/35/EU, Referred to as the Low Voltage Directive. It confirms that the listed product complies with all essential requirements of the LVD Directive and applies only to the sample and its technical documentation submitted to Shenzhen STE Testing Laboratory Co., Ltd. for testing.

After preparation of the necessary technical documentation as well as the EC conformity declaration the required CE marking can be affixed on the product.Other relevant Directives have to be observed.

CE

Date of issue:September 29, 2021

STE TESTING LABORATORY
STE
APPROVED
Manager

Shenzhen STE Testing Laboratory Co., Ltd.
Room 301(left side), Building 9, Dehong Factory Building, No. 63 Yuchang Road, Niuhu Community, Guanlan Street, Longhua District, Shenzhen, Guangdong, China

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Sicon Chat Union Electric Co., Ltd.
Add: Bldg.14 & 15, No.319 Xiangjiang Street, High-Tech Zone, Shijiazhuang, China
Email: enquiry@scupower.com
Tel:86-311-85903762 Fax:86-311-85903718 Post: 050035

To whom-so-ever it may concern

We M/s. Sicon Chat Union Electric Co. ltd, Bldg: 14 & 15, No.319, Xiangjiang Street, Hi-tech Zone, Shijiazhuang, 050035, China, Manufacturer of EV Chargers, Modular UPS, PCS, Modular Energy Storage System with Lithium Batteries in Containers have global supplied Energy Storage Containers. Our Partners M/s.POM Systems and Services Pvt. Ltd is the Important Distributor and Service Provider of SCU in India.

The following Individuals are trained at our Factory during the month of December 2023, from M/s. POM Systems and Services Pvt. Ltd, 75, 6th Main, 3rd Phase, Peenya Industrial Area, Bangalore 560058 India. They are the only Authorized Engineers who has been trained and permitted to install our list of Products, at present, in India.

1. Mr. Sudhindra
2. Mr. Ramesh
3. Mr. Vasanthan
4. Mr. Sreejith

We are committed to support them for the entire Design, Supply, Installation and Commission of the entire products manufactured by us, supplied in India during the warranty and AMC period.

Best Regards,

Sherry Tsui
Sales Manager

(Authorised Signatory)

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Best Regards,

Sherry Tsui
Sales Manager

(Authorised Signatory)

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Sicon Chat Union Electric Co., Ltd.
Add: Bldg.14 & 15, No.319 Xiangjiang Street, High-Tech Zone, Shijiazhuang, China
Email: enquiry@scupower.com
Tel:86-311-85903762 Fax:86-311-85903718 Post: 050035

29th February 2024

To,
The CEO,
ANERT,
Trivandrum

Ref. No. ANERT-TECH/41/2024-PE-1 (RTS)

We refer your tender and confirm here with, that we have installed Battery Energy Storage System, as per your specifications in a factory environment at Bangalore, and it's running successfully for the last two months.

You may requested to visit the premises and inspect all parameters with immediate effect.

Best regards,

Sherry Tsui
Sales Manager

Authorised Signatory
Sicon Chat Union Electric Co. Ltd

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TEST REPORT
IEC 62477-1
Safety requirements for power electronic converter systems and equipment
Part 1: General

Report Reference No.....:	STE21092601S
Date of issue.....:	2021-09-29
Total number of pages .....:	75 pages
Name of Testing Laboratory preparing the Report.....:	Shenzhen STE Testing Laboratory Co., Ltd Room 301(left side), Building 9, Dehong Factory Building, No. 63 Yuchang Road, Niuhu Community, Guanlan Street, Longhua District, Shenzhen, China
Applicant's name.....:	Sicon Chat Union Electric Co., Ltd.
Address.....:	Bldg.14&15, No. 319, Xiangjiang Street, High-Tech Zone, Shijiazhuang, 050035, China
Test specification:	
Standard.....:	IEC 62477-1:2012+AMD1: 2016
Test procedure.....:	CE-LVD
Non-standard test method.....:	N/A
Test Report Form No.....:	IEC62477_1C
Test Report Form(s) Originator.....:	VDE Testing and Certification Institute
Master TRF.....:	Dated 2018-08-14

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General disclaimer:

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing CB Testing Laboratory. The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.

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Test item description.....:	Energy storage Power Conversion System (PCS)
Trade Mark.....:	N/A
Manufacturer.....:	Sicon Chat Union Electric Co., Ltd. Bldg.14&15, No. 319, Xiangjiang Street, High-Tech Zone, Shijiazhuang, 050035, China
Model/Type reference.....:	EPCS50, EPCS100, EPCS150, EPCS200, EPCS250, EPCS300, EPCS400, EPCS500, EPCS600, EHPCS-250/50, EHPCS-200/50, EHPCS-150/50, EHPCS-100/50, EHPCS-50/50
Ratings.....:	DC: 550V-850V⎓, MAX 454A AC: 380V~, 50/60Hz, MAX 362A

Testing procedure and testing location:

Testing Laboratory:	Shenzhen STE Testing Laboratory Co., Ltd
Testing location/ address.....:	Room 301(left side), Building 9, Dehong Factory Building, No. 63 Yuchang Road, Niuhu Community, Guanlan Street, Longhua District, Shenzhen, China
Tested by.....:	Hunter Liang / Project Handler
Review by.....:	Todd Qian / Reviewer
Approved by.....:	Fly Li / Technical Director

List of Attachments (including a total number of pages in each attachment):

Attachment No.1:

Photo documentation (4 pages).

Summary of testing:

Tests performed (name of test and test clause):	**Testing location:**
The submitted samples were found to comply with the requirements of: ➢ Electrical safety IEC 62477-1:2012+AMD1: 2016; EN 62477-1: 2012+A11: 2014+A1: 2017.	Shenzhen STE Testing Laboratory Co., Ltd Room 301(left side), Building 9, Dehong Factory Building, No. 63 Yuchang Road, Niuhu Community, Guanlan Street, Longhua District, Shenzhen, China

Summary of compliance with National Differences (List of countries addressed):

List of countries addressed: EU Group Differences

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Copy of marking plate

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

Energy storage Power Conversion System (PCS)

Model: EPCS250

Rating:

DC: 550V-850V⎓, MAX 454A

AC: 380V~, 50/60Hz, MAX 362A

Sicon Chat Union Electric Co., Ltd.

Made in China

Remark:

1. Representative markings of model: EPCS250, markings of all models are identical except for model name.

2. The height dimension of CE mark should not less than 5mm, the height dimension of WEEE symbol should not less than 7mm, height of other marks at least 5mm, height of letters and numerals at least 2mm.

Test item particulars..... :	
Classification of installation and use.....:	For building-in
Supply Connection.....:	Permanent connection
.....:	
Possible test case verdicts:	
- test case does not apply to the test object.....:	N/A
- test object does meet the requirement.....:	P (Pass)
- test object does not meet the requirement.....:	F (Fail)
Testing..... :	
Date of receipt of test item.....:	2021-09-26
Date (s) of performance of tests.....:	From 2021-09-26 to 2021-09-29

General remarks:

"(See Enclosure #)" refers to additional information appended to the report.
"(See appended table)" refers to a table appended to the report.

Throughout this report a ☐ comma / ☒ point is used as the decimal separator.

Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:

The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided.....:	☐ **Yes** ☒ **Not applicable**

When differences exist; they shall be identified in the General product information section.

Name and address of factory (ies).....: Same as manufacturer

General product information and other remarks:

1. The text of standard IEC 62477-1:2012+AMD1:2016 was approved as European Standard EN 62477-1: 2012+A11: 2014+A1: 2017 without any modification. The product complies with EN 62477-1: 2012+A11: 2014+A1: 2017.
2. The appliance used indoor only.
3. The maximum ambient temperature specified by manufacturer is 40°C.
4. All models are identical except for the model name and appearance, all tests were conducted on the model EPCS250.

Additional test item particulars :	
Equipment mobility:	☐ movable ☐ hand-held ☒ stationary ☐ fixed ☐ transportable ☐ for building-in
Connection to the mains :	☐ pluggable equipment ☐ direct plug-in ☒ permanent connection ☐ for building-in
Environmental category :	☐ outdoor ☒ indoor ☐ indoor unconditional conditional
Over voltage category Mains :	☐ OVC I ☐ OVC II ☒ OVC III ☐ OVC IV
Over voltage category PV :	☐ OVC I ☐ OVC II ☐ OVC III ☐ OVC IV
Mains supply tolerance (%) :	-85 / +115 %
Tested for power systems :	Non-mains supply system voltage
IT testing, phase-phase voltage (V) :	--
Class of equipment :	☒ Class I ☐ Class II ☐ Class III ☐ Not classified
Mass of equipment (kg) :	1350kg
Pollution degree :	II
IP protection class :	IP20
For more information: see table 4 :	--

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IEC 62477-1			
Clause	Requirement – Test	Result – Remark	Verdict
4	**PROTECTION AGAINST HAZARDS**		
4.1	General		P
4.2	Fault and abnormal conditions	See Table 4.2 to 4.3	P
4.3	Short-circuit and overcurrent protection	See Table 4.2 to 4.3	P
4.3.1	General		P
4.3.2	Specification of prospective short-circuit current		P
4.3.2.1	General		P
	The interrupting capability of the overcurrent protective device shall be equal or greater than the prospective short circuit current of the mains supply.		P
	For pluggable equipment type A, either the PECS shall be designed so that the building installation provides short circuit backup protection, or additional short circuit backup protection shall be provided as part of the equipment.		N/A
	For permanently connected equipment or pluggable equipment type B, it is permitted for short circuit backup protection to be in the building installation.		P
4.3.2.2	Input ports short-circuit withstand strength		P
	For co-ordination and selection of internal or external protective devices, the PECS manufacturer shall specify: - a maximum allowable prospective short circuit current for each input port of the PECS; and -a minimum required prospective short circuit current in order to ensure proper operation of the protective device.		P
	If external protective devices are specified or provided the characteristics of those shall be specified by the manufacturer.		N/A
4.3.2.3	Output short circuit current ability		P
	The output short circuit current ratings apply to a.c. and d.c. power output ports and to other ports for which overcurrent protection is necessary. For all output ports, short circuit evaluation to determine the minimum and maximum output short circuit current shall be performed according to 5.2.4.4 and the output short circuit current available from the PECS shall be specified as in 5.2.4.4 and 6.2. Internal electronic output short circuit protection is considered acceptable as an output short circuit protection device of the PECS, when compliance is		

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IEC 62477-1			
Clause	Requirement – Test	Result – Remark	Verdict
	shown by test in 5.2.4.4.		
4.3.2.4	Combined input and output ports		N/A
	For ports which are both input and output ports the applicable requirements of both 4.3.2.1 and 4.3.2.3 apply.		N/A
4.3.3	Short-circuit coordination (backup protection)		P
	Protective devices provided or specified shall have adequate breaking capability to interrupt the maximum prospective short circuit current specified for the port to which they are connected. If internal protection of the PECS is not rated for the prospective short circuit current, the installation instructions shall specify an upstream protective device, rated for this prospective short circuit current of that port, which shall be used to provide backup protection. Analysis shall ensure the protection coordination between the external and internal protective device.		P
	Compliance shall be checked by inspection and by the tests of 5.2.4.4 and 5.2.4.5.		P
4.3.4	Protection by several devices		N/A
	Where protective devices that require manual replacement or resetting are used in more than one pole of a supply to a given load, those devices shall be located together. It is permitted to combine two or more protective devices in one component. Compliance shall be checked by inspection.		N/A
4.4	Protection against electric shock		P
4.4.1	General		P
4.4.2	Decisive voltage classification		P
4.4.2.1	General	Considered	P
4.4.2.2	Determination of decisive voltage class		P
4.4.2.2.1	General		P
	For protection against the ventricular fibrillation body reaction, DVC can be selected from Table 2.		P
4.4.2.2.2	Selection tables for contact area and skin humidity condition		P
	In order to protect against ventricular fibrillation, the appropriate conditions from Table 3 and Table 4 shall be selected.		P
4.4.2.2.3	Limits of the working voltage for the DVC		P
4.4.2.3	Requirements for protection against electric shock		P

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IEC 62477-1			
Clause	Requirement – Test	Result – Remark	Verdict
4.4.3	Provision for basic protection		P
4.4.3.1	General	Considered	P
4.4.3.2	Protection by means of insulation of live parts	Considered	P
	Live parts shall be completely surrounded with insulation if their working voltage is greater than DVC As or if they do not have protective separation from adjacent circuits of DVC C.		P
	Basic insulation may be provided by solid insulation or air clearance.		P
	The insulation shall be rated according to the impulse voltage, temporary overvoltage or working voltage (see 4.4.7.2.1), whichever gives the most severe requirement. It shall not be possible to remove the insulation without the use of a tool or key.		P
4.4.3.3	Protection by means of enclosures or barriers	Considered	P
	Live parts with voltage higher than DVC As shall be: - arranged in enclosures or located behind enclosures or barriers, which meet at least the requirements of the Protective Type IPXXB according to Clause 7 of IEC 60529:1989; - located at the top surfaces of enclosures or barriers which are accessible when the equipment is energized shall meet at least the requirements of the protective type IP3X with regard to vertical access only.		P
	For moveable equipment with no defined top and bottom this requirement of protective Type IP3X applies to all sides.		N/A
	If the PECS is installed in a restricted access area, IPXXB instead of IP3X applies.		N/A
	Product committees using this document as reference document might consider less requirement for equipment having openings in the top of an enclosure with a height exceeding 1,8 m.		N/A
	Compliance is shown by test of 5.2.2.2.		N/A
	It shall only be possible to open enclosures or remove barriers: • with the use of a tool or key; or • after de-energization of these live parts.		N/A
	Where the enclosure is required to be opened and the PECS energized during installation or maintenance: a) accessible live parts of voltage higher than		N/A

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IEC 62477-1			
Clause	Requirement – Test	Result – Remark	Verdict
	DVC As shall be protected by at least IPXXA; b) live parts of voltage higher than DVC As that are likely to be touched when making adjustments shall be protected by at least IPXXB; c) it shall be ensured that persons are aware that live parts with voltage higher than DVC As are accessible.		
4.4.3.4	Protection by means of limitation of touch current and charge		P
	The limitation of touch current and discharge energy shall not exceed: - a value of 3,5 mA a.c. or 10 mA d.c. for the limitation of touch current; and - a value of 50 µC for the limitation of discharge energy.		P
4.4.3.5	Protection by means of limited voltages		P
	The voltage between simultaneously accessible parts shall not be greater than DVC As as determined in 4.4.2.2.		P
4.4.4	Provision for fault protection		P
4.4.4.1	General		P
	Fault protection shall be provided by one or more of the following measures: • Protective equipotential bonding in 4.4.4.2 in combinations with the PE conductor in 4.4.4.3; • Automatic disconnection of supply in 4.4.4.4; • Supplementary insulation in 4.4.4.5; • Simple separation between circuits in 4.4.4.6; • Electrically protective screening in 4.4.4.7. Fault protection shall be independent and additional to those for basic protection.		P
4.4.4.2	Protective equipotential bonding		P
4.4.4.2.1	General		P
	Protective equipotential bonding shall be provided between accessible conductive parts of the equipment and the means of connection for the PC conductor, except: a) accessible conductive parts that are protected by one of the measures in 4.4.6.4; or b) when accessible conductive parts are separated from *live parts* using *double* or		P

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IEC 62477-1			
Clause	Requirement – Test	Result – Remark	Verdict
	reinforced insulation.		
	Electrical contact to the means of connection of the PE conductor shall be achieved by one or more of the following means: • through direct metallic contact; • through other accessible conductive parts or other metallic components which are not removed when the PECS is used as intended; • through a dedicated protective equipotential bonding conductor.		N/A
4.4.4.2.2	Rating of protective equipotential bonding		P
	Protective equipotential bonding shall either be: a) sized in accordance with the requirements for the PE conductor in 4.4.4.3 and the means of connection for the PE conductor in 4.4.4.3.2 to ensure no voltage drop exceeding the values from 4.4.2.2.3 during a fault; or b) sized • to withstand the highest stresses that can occur to the PECS item(s) concerned when they are subjected to a fault connecting to accessible conductive parts; and • to remain effective for as long as a fault to the accessible conductive parts persists or until an upstream protective device removes power from the part; and • to ensure no voltage drop exceeding the values from 4.4.2.2.3 during normal operation and during a fault. Compliance shall be checked with the type tests in 5.2.3.11		P
4.4.4.3	PE conductor		N/A
4.4.4.3.1	General		N/A
	A PE conductor shall be connected at all times when power is supplied to the PECS, unless the PECS complies with the requirements of protective class II (see 4.4.6.3) or protective class III. Unless local wiring regulations state otherwise, the PE conductor cross-sectional area shall be determined from Table 7 or by calculation according to 543.1 of IEC 60364-5-54:2011.		N/A
	If the PE conductor is routed through a plug and socket, or similar means of disconnection, it shall not be possible to disconnect it unless power is simultaneously removed from the part to be protected.		N/A
	The cross-sectional area of every PE conductor		N/A

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	that does not form part of the supply cable or cable enclosure shall, in any case, be not less than: • 2,5 mm2 if mechanical protection is provided; or • 4 mm2 if mechanical protection is not provided.		
	Provisions within cord-connected equipment shall be made so that the PE conductor in the cord shall, in the case of failure of the strain-relief mechanism, be the last conductor to be interrupted. For special system topologies, the PECS designer shall verify the PE conductor cross-section required.		N/A
4.4.4.3.2	Means of connection for the PE conductor		N/A
	PECS shall have a means of connection for the PE conductor, located near the terminals for the respective live conductors. The means of connection shall be corrosion-resistant and shall be suitable for the connection of conductors according to Table 7 and of cables in accordance with the wiring rules applicable at the installation. The means of connection for the PE conductor shall not be used as a part of the mechanical assembly of the equipment or for other connections. Connection and bonding points shall be designed so that their current-carrying capacity is not impaired by mechanical, chemical, or electrochemical influences. Where enclosures and/or conductors of aluminium or aluminium alloys are used, particular attention should be given to the problems of electrolytic corrosion. Compliance shall be checked by inspection.		N/A
4.4.4.3.3	Touch current in case of failure of PE conductor		N/A
	For all other PECS, one or more of the following measures shall be applied, unless the touch current can be shown to be less than the limits specified in 4.4.3.4: a) Use of a fixed connection and • a cross-section of the PE conductor of at least 10 mm^2 Cu or 16 mm^2 Al; or • automatic disconnection of the supply in case of discontinuity of the PE conductor; or • provision of an additional terminal for a second PE conductor of the same cross-sectional area as the original PE conductor; or b) Use of a pluggable type B connection with a		N/A

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	minimum PE conductor cross-section of 2,5 mm^2 as part of a multi-conductor power cable. Adequate strain relief shall be provided.		
	Compliance is checked by inspection and by test of 5.2.3.7.		N/A
4.4.4.4	Automatic disconnection of supply		N/A
	For automatic disconnection of supply: • a protective equipotential bonding system shall be provided; and • a protective device operated by the fault current shall disconnect one or more of the line conductors supplying the equipment, system or installation, in case of a failure of basic insulation. The protective device shall interrupt the fault current within a time as specified in Figure 1, Figure 2 or Figure 3 in 4.4.2.2.3.		N/A
4.4.4.5	Supplementary insulation	Considered	P
4.4.4.6	Simple separation between circuits		P
	If any component is connected between the separated circuits, that component shall withstand the electric stresses specified for the insulation which it bridges. If any component is connected between a circuit and a circuit connected to earth, its impedance shall limit the current flow through the component to the steady-state touch current values indicated in 4.4.3.4.		P
4.4.4.7	Electrically protective screening		P
	Electrically protective screening interposed between hazardous live parts of a PECS, shall consist of a conductive screen connected to the protective equipotential bonding of the PECS whereby the screen is separated from live parts by at least simple separation. The protective screen and the connection to the protective equipotential bonding system of the PECS and that interconnection shall comply with the requirements of 4.4.4.2.		P
4.4.5	Enhanced protection		P
4.4.5.1	General		P
	Enhanced protection shall provide both basic and fault protection and can be achieved by means of: • Reinforced insulation in 4.4.5.2; • Protective separation between circuits in 4.4.5.3; • Protection by means of in 4.4.5.4.		P

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4.4.5.2	Reinforced insulation		P
	Reinforced insulation shall be so designed as to be able to withstand electric, thermal, mechanical and environmental stresses with the same reliability of protection as provided by double insulation. (basic insulation and supplementary insulation, see 4.4.3.2 and 4.4.4.5)		P
4.4.5.3	Protective separation between circuits		P
	Protective separation between a circuit and other circuits shall be achieved by one of the following means: • double insulation (basic insulation and supplementary insulation in 4.4.3.2 and 4.4.4.5); • reinforced insulation in 4.4.5.2; • electrically protective screening in 4.4.4.7; • a combination of these provisions.		P
	If conductors of the separated circuit are contained together with conductors of other circuits in a multi-conductor cable or in another grouping of conductors, they shall be insulated, individually or collectively, for the highest voltage present, so that double insulation is achieved. If any component is connected between the separated circuits, that component shall comply with the requirements for protective impedance devices (see 4.4.5.4)		P
4.4.5.4	Protection by means of protective impedance		P
	Protective impedance shall be arranged so that under both normal and single fault conditions the current and discharge energy available shall be limited according to 4.4.3.4.		P
	The protective impedances shall be designed and tested to withstand the impulse voltages and temporary overvoltages for the circuits to which they are connected. See 5.2.3.2 and 5.2.3.4 for tests.		P
	Compliance with the requirement for the limitation of touch current is checked by test of 5.2.3.6.		P
	Compliance with the requirement for the discharge energy shall be checked by performing calculations and/or measurements to determine the voltage and capacitance. NOTE A protective impedance designed according to this subclause is not considered to be a galvanic connection.		P

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4.4.6	Protective measures		P
4.4.6.1	General		P
4.4.6.2	Protective measures for protective class I equipment		N/A
	Protective class I equipment shall meet the requirements for: • basic protection in 4.4.3; and • fault protection in 4.4.4.2 and 4.4.4.3 with respect to equipotential bonding and PE conductor.		N/A
4.4.6.3	Protective measures for protective class II equipment		P
	Protective class II equipment shall meet the requirements for enhanced protection according to 4.4.5 and the enclosure shall meet the requirement for basic protection in 4.4.3 with respect to accessibility to hazardous live parts. Protective class II equipment shall not have means of connection for the PE conductor. This does not apply if a PE conductor is passed through the equipment to equipment series-connected beyond it. In the latter case the PE conductor and its means for connection shall be separated from: • accessible surface of the equipment; and • circuits which employ protective separation with at least simple separation according to the requirement in 4.4.4.6. The simple separation shall be designed according to the rated voltage of the series-connected equipment. Equipment of protective class II may have provision for the connection of an earthing conductor for functional reasons or for the damping of overvoltages. In this case, the functional earthing conductor shall be separated from: • accessible surface of the equipment; and • circuits which employ protective separation according to 4.4.5.3 with at least protective separation according to the requirement in 4.4.5.3. Equipment of protective class II shall be marked according to 6.3.7.3.3. Compliance is checked by inspection.		P
4.4.6.4	Protective measures for protective class III equipment		N/A

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4.4.6.4.1	General		N/A
	Protective measures shall be achieved by protective separation by one of the following means: • basic insulation and supplementary insulation (double insulation) according to 4.4.3.2 and 4.4.4.5; • reinforced insulation according to 4.4.5.2; • electrically protective screening and simple separation according to 4.4.4.7; or • a combination of these provisions; used in combination with one of the following means: • protective impedance according to 4.4.5.4 comprising limitation of discharge energy and of current; or • limitation of voltage according to 4.4.3.5.		N/A
	The protective separation shall be fully and effectively maintained under all conditions of intended use of the PECS.		N/A
4.4.6.4.2	Connection to PELV and SELV circuits		P
	If a port is intended for connection of an external PELV or SELV circuit with a higher voltage than DVC As: • measures to limit the voltage to that of DVC As shall be taken (see Annex A); or • basic protection shall be provided. For connectors containing pins with very small contact area (< 1 mm²), the next higher voltage level for DVC As, of Table 5, is permitted. Example: if DVC A1 is DVC As, then DVC A2 is permitted at pins of signal connectors. The connection of external PELV or SELV circuits to an internal circuit is permitted with the following consideration: • without measures: only if the DVC of the PELV and SELV voltage are lower than or equal to the DVC selected from Table 5 for the internal circuit under consideration; and • with measures: if the DVC of the PELV and SELV voltage are higher than the DVC selected from Table 5 for the internal circuit under consideration. The possibility of an addition of the voltages of the circuits under consideration to a higher level under fault conditions shall be considered. For marking, see 6.3.7.1. Consideration needs to be given to factors such as whether the circuits involved are earthed or not,		P

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	what the voltages involved are, whether or not direct contact with live parts is possible, single faults in either equipment or the interconnections, etc.		
4.4.7	Insulation		P
4.4.7.1	General		P
4.4.7.1.1	Influencing factors		P
	This subclause gives minimum requirements for insulation, based on the principles of IEC 60664.		P
	Insulation shall be selected after consideration of the following influences: - pollution degree; - overvoltage category; - supply system earthing; - impulse withstand voltage, temporary overvoltage and working voltage; - location of insulation; - type of insulation.		P
	Verification of insulation shall be made according to 5.2.2.1, 5.2.3.2, 5.2.3.4 and 5.2.3.5.		P
4.4.7.1.2	Pollution degree		P
	Insulation, especially when provided by clearances and creepage distances, is affected by pollution which occurs during the expected lifetime of the PECS. The micro-environmental conditions for insulation shall be applied according to Table 8.		P
	The pollution degree shall be determined according to the environmental condition for which the product is specified. See Table 18 for selection of pollution degree according to environmental classification of the installation.		P
	The insulation may be determined according to pollution degree 2 if one of the following applies: a) instructions are provided with the PECS indicating that it shall be installed in a pollution degree 2 environment; or b) the specific installation application of the PECS is known to be a pollution degree 2 environment; or c) the PECS enclosure or coatings applied within the PECS according to 4.4.7.8.4.2 or 4.4.7.8.6 provide adequate protection against what is expected in pollution degree 3 and 4 (conductive pollution and condensation).	Instructions are provided with the PECS indicating that it shall be installed in a pollution degree 2 environment	P
	The PECS manufacturer shall state in the documentation the pollution degree for which the	Pollution degree II	P

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	PECS has been designed.		
	If operation in a pollution degree 4 environment is required, protection against conductive pollution shall be provided by means of a suitable enclosure.		N/A
4.4.7.1.3	Overvoltage category (OVC)		P
	The measures for reduction of the impulse voltage shall ensure that the temporary overvoltages that could occur are sufficiently limited so that their peak value does not exceed the relevant rated impulse voltage of Table 9 and shall meet the requirement of 4.4.7.2.2, 4.4.7.2.3 and 4.4.7.3 as applicable.		P
	Four categories are considered. • Equipment of overvoltage category IV (OVC IV) is for use at the origin of the installation. • Equipment of overvoltage category III (OVC III) is equipment in fixed installations and for cases where the reliability and the availability of the equipment are subject to special requirements. • Equipment of overvoltage category II (OVC II) is energy-consuming equipment to be supplied from the fixed installation. • Equipment of overvoltage category I (OVC I) is equipment for connection to circuits in which measures are taken to limit transient overvoltages to an appropriately low level.	OVC III	P
4.4.7.1.4	Supply earthing systems		N/A
	The following three basic types of system earthing are described in IEC 60364-1. • TN system: has one point directly earthed, the accessible conductive parts of the installation being connected to that point by protective conductors. Three types of TN system, TN-C, TN-S and TN-C-S, are defined according to the arrangement of the neutral and protective conductors. • TT system: has one point directly earthed, the accessible conductive parts of the installation being connected to earth electrodes electrically independent of the earth electrodes of the power system. • IT system: has all live parts isolated from earth or one point connected to earth through an impedance, the accessible conductive parts of the installation being earthed independently or collectively to the system earthing.		N/A
4.4.7.1.5	Determination of impulse withstand voltage and temporary overvoltage		P
	Table 9 uses the system voltage (see 4.4.7.1.6)		P

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	and overvoltage category of the circuit under consideration to determine the impulse withstand voltage. The system voltage is also used to determine the temporary overvoltage. A PECS having more than one input or output shall be evaluated according to the input or output which gives the most severe requirements.		
4.4.7.1.6	Determination of the system voltage		P
4.4.7.1.6.1	For mains supply		N/A
4.4.7.1.6.2	For non-main supply		P
	For PSCS supplied by non-mains a.c. or d.c., the system voltage is the r.m.s. value of the supply voltage between phases.		P
4.4.7.1.7	Components bridging insulation		N/A
	Components bridging insulation shall comply with the requirements of the level of insulation (e.g. basic, reinforced, double) they are bridging.		N/A
4.4.7.2	Insulation to the surroundings		P
4.4.7.2.1	General		P
4.4.7.2.2	Circuits connected to mains supply		N/A
	Insulation between the surroundings and circuits which are connected directly to the mains supply shall be designed according to the impulse withstand voltage, temporary overvoltage, or working voltage, whichever gives the most severe requirement.		N/A
4.4.7.2.3	Circuits connected to Non-mains supply		P
	Insulation between the surroundings and circuits supplied from a non-mains supply shall be designed according to: • the impulse withstand voltage determined from Table 9 using the system voltage; • the working voltage; • the temporary overvoltage if known to exist due to the nature of the supply; whichever gives the more severe requirement.		P
	Temporary overvoltage on a non-mains supply shall be determined as follows: • Without detailed knowledge of the temporary overvoltage, it shall be according to Table 9. • If the temporary overvoltage is known this value shall be used.		N/A
	By the determination of temporary overvoltages on non-mains supply, following situations should be		N/A

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	considered: • loss of the neutral in a non-mains low-voltage system; • accidental earthing of a non-mains low voltage IT system; and • short circuit in the non-mains low voltage installation.		
4.4.7.2.4	Insulation between circuits		P
	Insulation between two circuits shall be designed according to the circuit having the more severe requirement. For the design of simple and protective separation between circuits the insulation shall be designed according to: • the circuit having the more severe requirement; or • the working voltage between the circuits; whichever gives the most severe requirement.		P
4.4.7.3	Functional insulation		P
	If the failure of functional insulation does not produce a hazard (electrical, thermal, fire), no specific requirements apply for the dimensioning of functional insulation. In other cases the following requirements apply. Testing is not required, except where the circuit analysis required by 4.2 shows that failure of the insulation could result in a hazard. For parts or circuits that are significantly affected by external transients, functional insulation shall be designed according to the impulse withstand voltage of overvoltage category II, except that overvoltage category III shall be used when the PECS is connected at the origin of the installation. Where measures are provided that reduce transient overvoltages within the circuit from category III to values of category II, or values of category II to values of category I, functional insulation may be designed for the reduced values. Where the circuit characteristics can be shown by testing (see 5.2.3.2) to reduce impulse voltages, functional insulation may be designed for the highest impulse voltage occurring in the circuit during the tests. For parts or circuits that are not significantly affected by external transients, functional insulation shall be designed according to the working voltage across the insulation.		P
4.4.7.4	Clearance distance		P

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Clause	Requirement – Test	Result – Remark	Verdict
4.4.7.4.1	Determination	See Table 4.4.7.4	P
	Clearances for functional, basic and supplementary insulation shall be dimensioned according to Table 10 (see Annex D for examples of the evaluation of clearance distances). Interpolation is permitted, when clearance is determined from temporary overvoltage or working voltage. Clearances for reinforced insulation shall be dimensioned to withstand an impulse voltage one step higher than the impulse withstand voltage, or 1,6 times the peak temporary overvoltage or peak working voltage, required for basic insulation. Clearance distances for use in altitudes between 2 000 m and 20 000 m shall be calculated using a correction factor according to Table A.2 of IEC 60664-1:2007, which is reproduced as Table E.1. A correction factor selected from Table F.2 is also used for determination of clearance distances for approximately homogenous fields when frequencies are greater than 30 kHz, as given in Annex F.		P
	Compliance shall be checked by visual inspection (see 5.2.2.1) or by performing the impulse voltage test of 5.2.3.2 and the a.c. or d.c. voltage test of 5.2.3.4.		P
4.4.7.4.2	Electric field homogeneity		P
	The dimensions in Table 10 correspond to the requirements of an inhomogeneous electric field distribution across the clearance, which are the conditions normally experienced in practice. If a homogeneous electric field distribution is known to exist, the clearance distance for basic or supplementary insulation may be reduced to not less than that required by Table F.2 (Case B) of IEC 60664-1:2007. In this case, however, the impulse voltage test of 5.2.3.2 shall be performed across the considered clearance. If the withstand against steady state voltages, recurring peak or temporary overvoltages according to Table 10 is decisive for the dimensioning of clearance and if these clearances are smaller than the values of Table 10 then an a.c. or d.c. voltage test according to 5.2.3.4 is required. Clearance distances for reinforced insulation shall not be reduced for homogeneous fields.		P
4.4.7.4.3	Clearance to conductive enclosures		P
	The clearance between any non-insulated live part and the walls of a metal enclosure shall be in accordance with 4.4.7.4.1 during and following the		P

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	deflection tests of 5.2.2.4.2.		
	Compliance is checked by inspection and by test of 5.2.2.4.2.		P
	If the design clearance distance is at least 12,7 mm and the clearance distance required by 4.4.7.4.1 does not exceed 8 mm, the deflection tests may be omitted.		P
4.4.7.5	Creepage distance		P
4.4.7.5.1	Insulating material groups		P
	Creepage distance requirements for PWBs exposed to pollution degree 3 environmental conditions shall be determined based on Table 11 pollution degree 3 under “Other insulators”.		P
	For inorganic insulating materials, for example glass or ceramic, which do not track, the creepage distance may equal the associated clearance distance, as determined from Table 10.		P
4.4.7.5.2	Determination	See Table 4.4.7.5	P
	Creepage distances for functional, basic and supplementary insulation shall be dimensioned according to Table 11. Interpolation is permitted. Creepage distances for reinforced insulation shall be twice the distances required for basic insulation.		P
	When the creepage distance requirement determined from Table 11 is less than the clearance distance required by 4.4.7.4.1 or the clearance distance determined by impulse testing (see 5.2.3.2), then the creepage distance shall be increased to the clearance distance.		P
	Compliance of creepage distances shall be checked by measurement or inspection (see 5.2.2.1) (see Annex D for examples of the evaluation of creepage distances).		P
4.4.7.6	Coating		N/A
	A coating may be used to provide insulation, to protect a surface against pollution, and to allow a reduction in creepage and clearance distances (see 4.4.7.8.4.2 and 4.4.7.8.6)		N/A
4.4.7.7	PWB spacings for functional insulation		P
	Spacings for functional insulation shall comply with the requirement of 4.4.7.4 and 4.4.7.5.		P

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	Decreased spacings on PWB are permitted when all the following are satisfied: • the PWB has flammability rating of V-0 (see IEC 60695-11-10); • the PWB base material has a minimum CTI of 100; • the equipment complies with the PWB short circuit test (see 5.2.4.7). Decreased spacings for components assembled on PWB are permitted when used in: • pollution degree 1 or 2 environment; and • not more than overvoltage category I. In this case the manufacture specification may be used. Compliance is checked by inspection and by test of 5.2.4.7 if applicable.		P
4.4.7.8	Solid insulation		P
4.4.7.8.1	General		P
	Materials selected for solid insulation shall be able to withstand the stresses occurring. These include mechanical, electrical, thermal, climatic and chemical stresses which are to be expected in normal use. Insulation materials shall also be resistant to ageing during the expected lifetime of the PECS. Tests shall be performed on components and sub-assemblies using solid insulation, in order to ensure that the insulation performance has not been compromised by the design or manufacturing process.		P
4.4.7.8.2	Material requirements		P
	The insulating material shall have a CTI of 100 or greater. The insulating material shall be suitable for the maximum temperature it attains as determined by the temperature rise test of 5.2.3.10. Consideration shall be given as to whether or not the insulating material additionally provides mechanical strength and whether or not the part can be subject to impact during use.		P
	The insulating material in contact with live parts higher than DVC As shall comply with: • the glow-wire test described in 5.2.5.3 at a test temperature of 850 °C; or • the glow-wire test described in 5.2.5.3, at a lower test temperature, but not less than 550 °C, depending on the classification of the use of the		P

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	PECS, according to Table A.1 of IEC 60695-2-11:2011; or • the alternative hot wire ignition test of 5.2.5.4.		
	Thermoplastic insulating materials used in contact with live parts higher than DVC As or used as part of the enclosure shall comply with the ball pressure test as abnormal heat test according to IEC 60695-10-2.		P
	Where an insulating material is used in a PECS that incorporates switching contacts, and is within 12,7 mm of the contacts, it shall comply with the high current arcing ignition test of 5.2.5.2.		P
	In case the manufacturer of the insulating material provides data to demonstrate compliance with the above requirements no further testing is required. No further evaluation is required when generic materials are used according to Table 12.		N/A
	Compliance is checked by inspection and by test of 5.2.3.10 and 5.2.5.3 or 5.2.5.2.		P
4.4.7.8.3	Thin sheet or tape material		P
4.4.7.8.3.1	General	See Table 4.4.7.8.3.2	P
	4.4.7.8.3 applies to the use of thin sheet or tape materials in assemblies such as wound components and bus-bars. Insulation consisting of thin (less than 0,75 mm) sheet or tape materials is permitted, provided that it is protected from damage and is not subject to mechanical stress under normal use. Where more than one layer of insulation is used, there is no requirement for all layers to be of the same material. NOTE 1 One layer of insulation tape wound with more than 50 % overlap is considered to constitute two layers. NOTE 2 Basic, supplementary and double insulation can be applied as a pre-assembled system of thin materials.		P
4.4.7.8.3.2	Material thickness ≥ 0,2 mm		P
	Basic or supplementary insulation shall consist of at least one layer of material, which will meet the requirements of 4.4.7.8.1 and 4.4.7.10.1.		P
	Double insulation shall consist of at least two layers of material, each of which will meet the requirements of 4.4.7.8.1, 4.4.7.10.1, and the partial discharge requirements of 4.4.7.10.2, and both layers together will meet the impulse and a.c.		P

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	or d.c. voltage requirements of 4.4.7.10.2.		
	Reinforced insulation shall consist of a single layer of material, which will meet the requirements of 4.4.7.8.1 and 4.4.7.10.2.		P
	NOTE The requirements of this subclause indicate that double insulation can be at least 0,4 mm thick, while reinforced insulation is permitted to be 0,2 mm thick.		P
4.4.7.8.3.3	Material thickness less than 0,2 mm		P
	Basic or supplementary insulation shall consist of at least two layers of material, which will meet the requirements of 4.4.7.8.1 and 4.4.7.10.1.		P
	Double insulation shall consist of at least three layers of material. Each layer shall meet the requirements of 4.4.7.8.1 and 4.4.7.10.1, and any two layers together shall meet the requirements of 4.4.7.10.2.		P
	Reinforced insulation consisting of a single layer of material is not permitted.		P
4.4.7.8.3.4	Compliance		P
	Compliance shall be checked by the tests described in 5.2.3.1 to 5.2.3.5. When a component or sub-assembly makes use of thin sheet insulating materials, it is permitted to perform the tests on the component rather than on the material.		P
4.4.7.8.4	Printed wiring boards (PWBs)		P
4.4.7.8.4.1	General		P
	Insulation between conductor layers in double-sided single-layer PWBs, multi-layer PWBs and metal core PWBs, shall meet the requirements of 4.4.7.8.1. Basic, supplementary, double and reinforced insulation shall meet the appropriate requirements of 4.4.7.10.1 or 4.4.7.10.2. Functional insulation in PWBs shall meet the requirements of 4.4.7.7. For the inner layers of multi-layer PWBs, the insulation between adjacent tracks on the same layer shall be treated as either: • a creepage distance for pollution degree 1 and a clearance as in air (see Example D.14); or • solid insulation, in which case it shall meet the requirements of 4.4.7.8.1 and 4.4.7.10.		P
4.4.7.8.4.2	Use of coating materials		N/A
	A coating material used to provide functional, basic,		N/A

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Clause	Requirement – Test	Result – Remark	Verdict
	supplementary and reinforced insulation shall meet the requirement as specified below.		
	Type 1 protection (as defined in IEC 60664-3) improves the microenvironment of the parts under protection. The clearance and creepage distance of Table 10 and Table 11 for pollution degree 1 apply under the protection. Between two conductive parts, it is a requirement that one or both conductive parts, together with all the spacing between them, are covered by the protection.		N/A
	Type 2 protection is considered to be similar to solid insulation. Under the protection, the requirements for solid insulation specified in 4.4.7.8 are applicable, including the coating material itself, and spacings shall not be less than those specified in Table 1 of IEC 60664-3:2003. The requirements for clearance and creepage in Table 10 and Table 11 do not apply. Between two conductive parts, it is a requirement that both conductive parts, together with the spacing between them, are covered by the protection so that no air gap exists between the protective material, the conductive parts and the printed boards.		N/A
	The coating material used to provide Type 1 and Type 2 protection shall be designed to withstand the stresses anticipated to occur during the expected lifetime of the PECS. A type test on representative PWBs shall be conducted according to Clause 5 of IEC 60664-3:2003. For the cold test (5.7.1 of IEC 60664-3:2003), a temperature of -25 °C shall be used, and for the rapid change of temperature test (5.7.3 of IEC 60664-3:2003): -25 °C to +125 °C. No routine test is required.		N/A
4.4.7.8.5	Wound components		N/A
	Varnish or enamel insulation of wires shall not be used for basic, supplementary, double or reinforced insulation. Wound components shall meet the requirements of 4.4.7.8.1 and 4.4.7.10. The component itself shall pass the requirements given in 4.4.7.8.1 and 4.4.7.10.2. If the component has reinforced or double insulation, the a.c. or d.c. voltage test of 5.2.3.4 shall be performed as a routine test.		N/A
4.4.7.8.6	Potting materials		P
	A potting material may be used to provide solid insulation or to act as a coating to protect against pollution.		P

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Clause	Requirement – Test	Result – Remark	Verdict
	If used as solid insulation, it shall comply with the requirements of 4.4.7.8.1 and 4.4.7.10.		P
	If used to protect against pollution, the requirements for Type 1 protection in 4.4.7.8.4.2 apply.		P
4.4.7.9	Connection of parts of solid insulation (Cemented joints)		N/A
	The creepage and clearance path in the presence of a cemented joint between two insulating parts, are determined as follows. • Type 1 or type 2 protection as described in 4.4.7.8.4.2 apply. • A cemented joint that is not evaluated as providing protection of type 1 or type 2, is neither considered solid insulation nor to reduce pollution degree. The clearance and creepage distances of Table 10 and Table 11 apply for the pollution degree of the environment around the joint. See 5.2.5.7 for test.		N/A
4.4.7.10	Requirements for electrical withstand capability		P
4.4.7.10.1	Basic or supplementary insulation	See Table 4.4.7.10	P
	Test with impulse withstand voltage according to 5.2.3.1		P
	Test with a.c. or d.c. voltage according to 5.2.3.4		P
4.4.7.10.2	Double and reinforced insulation	See Table 4.4.7.10	P
	Double or reinforced insulation shall be tested as follows: • Test with impulse withstand voltage according to 5.2.3.2; and • Test with a.c. or d.c. voltage according to 5.2.3.4.		P
	For solid insulation, the partial discharge test according to 5.2.3.5 shall be performed in addition to the above tests, if the recurring peak working voltage across the insulation is greater than 750 V and the voltage stress on the insulation is greater than 1 kV/mm. The partial discharge test shall be performed as a type test on all components, sub-assemblies and PWB. In addition, a sample test shall be performed if the insulation consists of a single layer of material.		P
	Double insulation shall be designed so that failure of the basic insulation or of the supplementary insulation will not result in reduction of the insulation capability of the remaining part of the insulation.		P

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Clause	Requirement – Test	Result – Remark	Verdict
4.4.7.11	Insulation requirements above 30 kHz		P
4.4.8	Compatibility with residual current-operated protective devices		P
	To ensure the intended work of an RCD provided by the installation PECS shall satisfy one of the following conditions. a) A Pluggable Type A single-phase PECS, shall be designed so that, under normal and fault conditions any resulting d.c. component of the current in the PE conductor does not exceed the d.c. current withstand requirements in IEC 60755 for RCD of type A. b) For PECS that are Pluggable Type B or intended for permanent connection, d.c. current in the PE conductor is not limited if the information and marking requirements of 6.3.7.4 are complied with.		P
	Compliance with RCD provided by the installation shall be checked by simulation or calculation of current in the PE conductor under normal and single fault conditions according to the guideline provided in Annex H.		P
4.4.9	Capacitor discharge		P
	For protection against shock hazard, capacitors within a PECS shall be discharged to a voltage less than DVC As, or to a residual charge less than 50 µC, after the removal of power from the PECS: • For pluggable PECS type A and B the discharge time shall not exceed 1 s or the hazardous live parts shall be protected against direct contact by at least IPXXB (see 4.4.3.3). • For permanently connected PECS the discharge time shall not exceed 5 s. For pluggable PECS type A and B and permanently connected PECS, which do not meet the above requirements, access shall only be possible by means of a tool or key and the information and marking requirements of 6.5.2 apply. Compliance is checked by test of 5.2.3.8.		P
4.5	Protection against electrical energy hazards		P
4.5.1	Operator Access Areas		P
4.5.1.1	General		P
	Equipment shall be so designed that there is no risk of electrical energy hazard in operator access areas from accessible circuits by fulfilling requirement of 4.2. A risk of injury due to an electrical energy hazard exists if it is likely that two or more bare parts (one		P

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Clause	Requirement – Test	Result – Remark	Verdict
	of which may be earthed) between which a hazardous energy level exists, will be bridged by a metallic object. The likelihood of bridging the parts under consideration is determined by means of the test finger of Figure 1 of IEC 60529:1989, in a straight position. If it is possible to bridge the parts with this test finger, a hazardous energy level shall not exist. Barriers, guards, and similar means preventing unintentional contact may be provided as an alternative to limiting the energy.		
	Compliance is checked by inspection or test of 5.2.2.2.		P
4.5.1.2	Determination of hazardous energy level		P
	A hazardous electrical energy level is considered to exist if: • the voltage is 2 V or more; and • power available exceeds 240 VA after 60 s; or • the energy exceeds 20 J. Compliance shall be checked with the test in 5.2.3.9 or by calculation.		P
4.5.2	Service Access Areas		P
	Capacitors within a PECS shall be discharged to an energy level less than 20 J, as in 4.5.1.2, within 5 s after the removal of power from the PECS. If this requirement is not achievable for functional or other reasons, the information and marking requirements of 6.5.2 apply.		P
	If the capacitor discharge time cannot be accurately calculated, the discharge time shall be measured.		N/A
4.6	Protection against fire and thermal hazards		P
4.6.1	Circuits representing a fire hazard		N/A
	The following types of circuits are considered a fire hazard: - circuits directly connected to the mains - circuits that are not directly connected to the mains but exceed the limits for limited power sources in 4.6.5 - components having unenclosed arcing parts		N/A
4.6.2	Components representing a fire hazard		P
4.6.2.1	General		P
	Compliance with 4.6.2 and 4.6.3 shall be confirmed by inspection of component and material data sheets and, where necessary, by test.		P

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Clause	Requirement – Test	Result – Remark	Verdict
4.6.2.2	Components within a circuit representing a fire hazard		P
	Inside fire enclosures, materials for components and other parts and all materials in contact with such parts shall comply with flammability class V-2 as classified in IEC 60695-11-10 or flammability class HF-2 as classified in ISO 9772 or better.		P
	The above requirement does not apply to any of the following: • electrical components which do not present a fire hazard under abnormal operating conditions when tested according to 5.2.4.6; • materials and components within an enclosure of 0,06 m^3 or less, consisting totally of metal and having no ventilation openings, or within a sealed unit containing an inert gas; • electronic components, such as integrated circuit packages, opto-coupler packages, capacitors and other small parts that are mounted on material of flammability class V-1 or better; • wiring, cables and connectors insulated with PVC, TFE, PTFE, FEP, neoprene or polyimide; • the following parts, provided that they are separated from electrical parts (other than insulated wires and cables) which under fault conditions are likely to produce a temperature that could cause ignition, by at least 13 mm of air or by a solid barrier of material of flammability class V-1 or better: – other small parts which would contribute negligible fuel to a fire, including, labels, mounting feet, key caps, knobs and the like; – tubing for air or any fluid systems, containers for powders or liquids and foamed plastic parts, provided that they are of flammability class HB.		P
4.6.2.3	Components within a circuit not representing a fire hazard		P
	For components within a circuit not representing a fire hazard 4.6.2 does not apply.		P
4.6.3	Fire enclosures		N/A
4.6.3.1	General		N/A
	Fire enclosures are used to reduce the risk of fire to the environment, independent of the location where they are installed. A fire enclosure shall be provided for all PECS unless: • the product committee specifies that a fire		N/A

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Clause	Requirement – Test	Result – Remark	Verdict
	enclosure is not required; or • there is an agreement between the user and the manufacturer; or • the PECS is intended to be used only in areas without combustible materials and is marked according to 6.3.5.		
4.6.3.2	Flammability of enclosure materials		P
	Materials used for fire enclosures of PECS shall meet the flammability test requirements of 5.2.5.5, except for those portions of the enclosure that enclose only circuits not representing a fire hazard.		P
	Materials are considered to comply without test if, in the minimum thickness used, the material is of flammability class 5VA or better, according to IEC 60695-11-20.		N/A
	Metals, ceramic materials, and glass which is heat-resistant tempered, wired or laminated, are considered to comply without test.		N/A
	Materials for components that fill an opening in a fire enclosure shall: • be of at least V-1 class material and no larger than 100 mm in any dimension; or • be of at least V-2 class material and either – not larger than 25 mm in any dimension; or – not larger than 100 mm in any dimension and located at least 100mm from any part that is a source of fire hazard; or • be of at least V-2 class material and there is a barrier or device(s) that forms a barrier made of a V-0 class material between the part and a source of fire hazard; or • comply with a relevant IEC component standard that includes flammability requirements for components that are intended to form part of, or fill openings in, a fire enclosure.		N/A
	Polymeric materials that serve as the outer enclosure and have surface area greater than 1 m^2 or a single dimension larger than 2 m, shall have a maximum flame spread index of 100 as determined by ASTM E162 or ANSI/ASTM E84.		N/A
	The manufacturer may provide data from the fire enclosure material supplier to demonstrate compliance with the above requirements. In this case, no further testing is required.		N/A
	Compliance shall be checked by visual inspection and, where necessary, by test.		N/A
4.6.3.3	Openings in fire enclosures		N/A

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Clause	Requirement – Test	Result – Remark	Verdict
4.6.3.3.1	General		N/A
4.6.3.3.2	Openings in the top and the side of fire enclosures		N/A
	Openings in the top surfaces of fire enclosures shall be designed to prevent an external object falling vertically or at up to 5° from vertically from entering the enclosure in an area that could lead to a fire hazard. This requirement applies to all sides of moveable equipment with no defined top and bottom, unless top and bottom surfaces can be suitably demonstrated in the installation instructions. Compliance shall be checked by test of 5.2.2.2.		N/A
	Openings in the top surfaces of fire enclosures not located vertically above or within 5° from vertical of a circuit representing a fire hazard as defined in 4.6.1 are not subject to the test of 5.2.2.2 and can be of any construction if the construction prevents access to parts greater than DVC As with the IP3X probe as detailed in 4.4.3.3. Where a portion of the side of a fire enclosure falls within the area traced out by the 5° angle in Figure 6, the limitations in 4.6.3.3.3 regarding openings in bottoms of fire enclosures also apply to this portion of the side. Compliance shall be checked by visual inspection.		N/A
4.6.3.3.3	Openings in the bottom of fire enclosures		N/A
	Compliance is checked by inspection or with the hot flaming oil test in 5.2.5.6, in case the fire enclosure is designed differently than as described in this subclause.		N/A
4.6.3.3.4	Doors of covers in fire enclosures		N/A
	If part of a fire enclosure consists of a door or a cover leading to an operator access area, it shall comply with one of the following requirements: • the door or cover shall be provided with a safety interlock; or • a door or cover, intended to be routinely opened by the user, shall comply with both of the following conditions: – it shall not be removable from other parts of the fire enclosure by the user; and – it shall be provided with a means to keep it closed during normal operation. A door or cover intended only for occasional use by an installer, such as for the installation of accessories, is permitted to be removable provided that the equipment instructions include directions		N/A

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	for correct removal and reinstallation of the door or cover. Compliance is checked by inspection.		
4.6.4	Temperature limits		P
4.6.4.1	Internal parts	See table 4.6.4	P
	Equipment and its component parts shall not attain temperatures in excess of those in Table 14 when tested in accordance with the ratings of the equipment. Compliance is checked by test of 5.2.3.10.		P
4.6.4.2	Accessible parts		P
	When surface temperatures of the PECS, close to mounting surfaces, exceed the limit of Table 15, a warning according to 6.3.5 shall be provided.		N/A
4.6.5	Limited power sources		N/A
	Where a limited power source is required, the source shall comply with Table 16 or Table 17 as applicable.		N/A
	A limited power source shall comply with one of the following requirements: a) the output is inherently limited in compliance with Table 16; or b) a linear or non-linear impedance limits the output in compliance with Table 16. If a positive temperature coefficient device (e.g. PTC) is used, it shall pass the applicable tests specified in IEC 60730-1; or c) a regulating network limits the output in compliance with Table 16, both with and without a single fault in the regulating network; or d) an overcurrent protective device is used and the output is limited in compliance with Table 17.		N/A
	Compliance to determine the maximum available power is checked by test of 5.2.3.9.		N/A
4.7	Protection against mechanical hazards		P
4.7.1	General		P
	Failure of any component within the PECS shall not release sufficient energy to lead to a hazard, for example, expulsion of material into an area occupied by personnel.		P
4.7.2	Specific requirements for liquid cooled PSCS		N/A
4.7.2.1	General		N/A
4.7.2.2	Coolant		N/A

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Clause	Requirement – Test	Result – Remark	Verdict
	Coolant temperature in operation shall not exceed the limit specified in Table 14.		N/A
	Compliance is checked by inspection and test of 5.2.3.10.		N/A
4.7.2.3	Design requirements		N/A
4.7.2.3.1	General		N/A
	The liquid containment system components shall be compatible with the liquid to be used. Equipment using liquids shall be so constructed that it is unlikely that either a dangerous concentration of these materials or a hazard in the meaning of this standard will be created by condensation, vaporization, leakage, spillage or corrosion during normal operation, storage, filling or emptying. Compliance is checked by inspection. The flexible hoses should be made of material free of conductive contaminants such as carbon.		N/A
4.7.2.3.2	Corrosion requirements		N/A
	All cooling system components shall be suitable for use with the specified coolant. They shall be corrosion resistant and shall not corrode as a result of prolonged exposure to the coolant and/or air. Compliance is checked by inspection.		N/A
4.7.2.3.3	Tubing, joints and seals		N/A
	Cooling *system* tubing, joints and seals shall be designed to prevent leakage during excursions of pressure over the life of the equipment. The entire cooling *system* including tubing shall satisfy the requirements of the hydrostatic pressure test of 5.2.7.		N/A
4.7.2.3.4	Provision for condensation		N/A
	Where internal condensation occurs during normal operation or maintenance, measures shall be taken to prevent degradation of insulation. In those areas where such condensation is expected, clearance and creepage distances of Table 10 and Table 11 shall be evaluated at least for a pollution degree 3 environment (see Table 8), and provision shall be made to prevent accumulation of water (for example by providing a drain). Compliance is checked by inspection.		N/A
4.7.2.3.5	Leakage of coolant		N/A
	During a leakage measures has to ensure that coolant will not result in wetting of live parts or electrical insulation.		N/A

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Clause	Requirement – Test	Result – Remark	Verdict
4.7.2.3.6	Loss of coolant		N/A
	Loss of coolant form the cooling system shall not result in thermal hazards, explosion, or shock hazard. The requirements of the Loss of coolant test of 5.4.3.9.4 shall be satisfied.		N/A
4.7.2.3.7	Conductivity of coolant		N/A
	When the coolant is intentionally in contact with live parts (for example non-earthed heatsinks), the conductivity of the coolant shall be continuously monitored and controlled, in order to avoid hazardous current flow through the coolant.		N/A
4.7.2.3.8	Insulation requirements for coolant hoses		N/A
	When the coolant is intentionally in contact with live parts (for example non-earthed heatsinks), the coolant hoses form a part of the insulation system. Depending on the location of the hoses, the requirements of 4.4.7 for functional or simple or protective separation shall be applied where relevant.		N/A
4.8	Equipment with multiple sources of supply		N/A
	Equipment with more than one supply; design shall be: - separate means of connection are provided for different circuits; and - supply plug connections, if any, are not interchangeable if a hazard could be created by incorrect plugging; and - hazards, within the meaning of this standard, shall not be present under normal or single fault conditions due to the presence of multiple sources of supply. Actions such as disconnection or de-energizing of a supply are considered a normal condition. Compliance is checked by the evaluation of 4.2		N/A
	Examples of the types of hazards that should be considered are: a) Backfeed prevention – preventing voltage or energy available within the PECS or one of its sources from being fed back to any of the input terminals for another source, either directly or by a leakage path. b) Protection against unintentional islanding. c) Touch current levels may be higher with multiple sources connected simultaneously. d) Hazard resulting from damage to one or more connected sources due to energy		N/A

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	from another source, for example the mains. e) Damage to wiring due to currents higher than the wiring is designed for flowing from another source.		
4.9	Protection against environmental stresses		N/A
	The manufacturer has to specify the following conditions for operation, storage and transportation according to IEC 60721: - Coolant temperature (min/max); - Ambient temperature (min/max); - Humidity (min/max) - Pollution degree; - Vibration; - U.V. resistance; - Over voltage category (OVC); - Altitude for thermal consideration, if rated for operation above 1000 m; - Altitude for insulation coordination considerations, if rated for operation above 2000 m.		N/A
	The manufacturer shall state the environmental service condition for the PECS according to Table 18.		N/A
4.10	Protection against Sonic Pressure Hazards		P
4.10.1	General		P
4.10.2	Sonic pressure and sound level		P
	If the measured sound pressure exceeds 70 dBA (except that sounds from alarms are not included) the documentation shall provide information regarding the sound level of the equipment.		P
4.11	Wiring and connections		P
4.11.1	General		P
	The wiring and connections between parts of the equipment and within each part shall be protected from mechanical damage during installation. The insulation, conductors and routing of all wires of the equipment shall be suitable for the electrical, mechanical, thermal and environmental conditions of use. Conductors which are able to contact each other shall be provided with insulation rated for the DVC requirements of the relevant circuits. The compliance with 4.11.2 to 4.11.8 shall be checked by inspection (see 5.2.1) of the overall construction and datasheets if applicable.		P

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Clause	Requirement – Test	Result – Remark	Verdict
4.11.2	Routing		N/A
	A hole through which insulated wires pass in a sheet metal wall within the enclosure of the equipment shall be provided with a smooth, well-rounded bushing or grommet or shall have smooth, well-rounded surfaces upon which the wires bear to reduce the risk of abrasion of the insulation.		N/A
	Wires shall be routed away from sharp edges, screw threads, burrs, fins, moving parts, drawers, and similar parts, which abrade the wire insulation. The minimum bend radius specified by the wire manufacturer shall not be violated.		N/A
	Clamps and guides, either metallic or non-metallic, used for routing stationary internal wiring shall be provided with smooth, well-rounded edges. The camping action and bearing surface shall be such that abrasion or deformation of the insulation does not occur. If a metal clamp is used for conductors having thermoplastic insulation less than 0,8 mm thick, non-conduction mechanical protection shall be provided.		N/A
4.11.3	Colour coding		P
	Insulated conductors, other than those which are integral of ribbon cable or multi-cord signal cable, identified by the colour green with or without one or more yellow stripes shall only be used for protective bonding.		P
4.11.4	Splices and connections		P
	All splices and connections shall be mechanically secured and shall provide electrical continuity. Electrical connections shall be soldered, welded, crimped, or otherwise securely connected. A soldered joint, other than a component on a PWB, shall additionally be mechanically secured. *NOTE Stranded wire should not be consolidated with solder where secured in a terminal that relies on pressure for contact or equivalent* When stranded internal wiring is connected to a wire-binding screw, the construction shall be such that loose strands of wire do not contact: • other uninsulated live parts not always of the same potential as the wire; • de-energized metal parts. When screw terminal connections are used, the resulting connections may require routine maintenance (tightening). Appropriate reference shall be made in the maintenance manual (see 6.5.1).		P

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Clause	Requirement – Test	Result – Remark	Verdict
4.11.5	Accessible connections		P
	In addition to measures given in 4.4.6.4 it shall be ensured that neither insertion error nor polarity reversal of connectors can lead to a voltage on an accessible connection higher than the maximum of DVC As. This applies for example to plug-in sub-assemblies or other plug-in devices which can be plugged in without the use of a tool or key or which are accessible without the use of a tool or key. This does not apply to equipment intended to be installed in restricted access areas. If relevant, non-interchangeability and protection against polarity reversal of connectors, plugs and socket outlets shall be confirmed by inspection and trial insertion.		P
4.11.6	Interconnections between parts of the PSCS		P
	In addition to complying with the requirements given in 4.11.1 to 4.11.5, the means provided for the interconnection between parts of the PECS shall comply with the following requirements or those of 4.11.7. Cable assemblies and flexible cords provided for interconnection between sections of equipment or between units of a system shall be suitable for the service or use involved. Cables shall be protected from physical damage as they leave the enclosure and shall be provided with mechanical strain relief. Misalignment of male and female connectors, insertion of a multipin male connector in a female connector other than the one intended to receive it, and other manipulations of parts which are accessible to the operator shall not result in mechanical damage or a risk of thermal hazards, electric shock, or injury to persons. When external interconnecting cables terminate in a plug which mates with a receptacle on the external surface of an enclosure, no risk of electric shock shall exist at accessible contacts of either the plug or receptacle when disconnected. *NOTE An interlock circuit in the cable to de-energize the accessible contacts whenever an end of the cable is disconnected meets the intent of these requirements.*		P
4.11.7	Supply connections		P
	The connection points provided shall be of appropriate construction to preclude the possibility of loose strands reducing the spacing between conductors when careful attention is paid to installation.		P

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Clause	Requirement – Test	Result – Remark	Verdict
4.11.8	Terminals		P
4.11.8.1	Construction requirements		P
	All parts of terminals which maintain contact and carry current shall be of metal having adequate mechanical strength. Terminal connections shall be such that the conductors can be connected by means of screws, springs or other equivalent means so as to ensure that the necessary contact pressure is maintained. Terminals shall be so constructed that the conductors can be clamped between suitable surfaces without any significant damage either to conductors or terminals. Terminals shall not allow the conductors to be displaced or be displaced themselves in a manner detrimental to the operation of equipment and the insulation shall not be reduced below the rated values. The requirements of this subclause are met by using terminals complying with IEC 60947-7-1 or IEC 60947-7-2, as appropriate.		P
4.11.8.2	Connecting capacity		P
	Terminals shall be provided which accommodate the conductors specified in the installation and maintenance manuals (see 6.3.6.4) and cables in accordance with the wiring rules applicable at the installation. The terminals shall meet the temperature rise test of 5.2.3.10.		P
	Information regarding the permitted wire sizes shall be given in the installation manual.		P
4.11.8.3	Connection		P
	Terminals for connection to external conductors shall be readily accessible during installation. Sets of terminals for connection to the same input or output shall be grouped together and shall be located in proximity to each other and to the main protective earthing terminal, if any. If the installation instructions provide detail on the proper earthing of the system, the protective earthing terminal need not be placed in proximity to the terminals. Clamping screws and nuts shall not serve to fix any other component although they may hold the terminals in place or prevent them from turning.		P
4.11.8.4	Wire bending space for wires 10 mm² and greater		N/A
	The distance between a terminal for connection to the main supply, or between major parts of the PECS (for example a transformer), and an		N/A

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IEC 62477-1			
Clause	Requirement – Test	Result – Remark	Verdict
	obstruction toward which the wire is directed upon leaving the terminal shall be at least that specified in Table 19.		
4.12	Enclosures		P
4.12.1	General		P
4.12.2	Handles and manual controls		N/A
	Handles, knobs, grips, levers and the like shall be reliably fixed so that they will not work loose in normal use, if this could result in a hazard. Sealing compounds and the like, other than self-hardening resins, shall not be used to prevent loosening. If handles, knobs and the like are used to indicate the position of switches or similar components, it shall not be possible to fix them in a wrong position if this could result in a hazard.		N/A
4.12.3	Cast metal		N/A
	Die-cast metal, except at threaded holes for conduit, where a minimum of 6,4 mm thickness is required, shall be: • not less than 2,0 mm thick for an area larger than 155 cm2 or having any dimension larger than 150 mm; • not less than 1,2 mm thick for an area of 155 cm2 or less and having no dimension larger than 150 mm. The area under evaluation may be bounded by reinforcing ribs subdividing a larger area. Malleable iron or permanent-mould cast aluminium, brass, bronze, or zinc, except at threaded holes for conduit, where a minimum of 6,4 mm thickness is required, shall be: • at least 2,4 mm thick for an area greater than 155 cm2 or having any dimension more than 150 mm; • at least 1,5 mm thick for an area of 155 cm2 or less having no dimension more than 150 mm. A sand-cast metal enclosure shall be a minimum of 3,0 mm thick except at locations for threaded holes for conduit, where a minimum of 6,4 mm is required.		N/A
4.12.4	Sheet metal		N/A
4.12.5	Stability		P
	Under conditions of normal use, units and equipment shall not become physically unstable to the degree that they could become a hazard to an operator or to a service person. If units are designed to be fixed together on site and not used individually, the stability of each		P

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	individual unit is exempt from the requirements of 4.12.5. The requirements of 4.12.5 are not applicable if the installation instructions for a unit specify that the equipment is to be secured to the building structure before operation. Under conditions of operator use, a stabilizing means, if needed, shall be automatic in operation when drawers, doors, etc., are opened. During operations performed by a service person, the stabilizing means, if needed, shall either be automatic in operation, or a marking shall be provided to instruct the service person to deploy the stabilizing means. Compliance is checked by test of 5.2.2.5.		
5	**TEST REQUIRMENTS**		P
5.1	General		P
5.1.1	Test objectives and classification		P
5.1.2	Selection of test samples		P
5.1.3	Sequence of tests		P
5.1.4	Earthing conditions		P
5.1.5	General conditions for tests		P
5.1.5.1	Application of tests		P
	Unless otherwise stated, upon conclusion of the tests, the equipment need not be operational.		P
5.1.5.2	Test samples		P
5.1.5.3	Operating parameters for tests		P
5.1.6	Compliance		P
5.1.7	Test overview		P
5.2	Test specifications		P
5.2.1	Visual inspections (type test, sample test and routine test)		P
	Before type testing, a check shall be made that the PECS delivered for the test is as expected with respect to supply voltage, input and output ranges, etc.		P
5.2.2	Mechanical tests		P
5.2.2.1	Clearances and creepage distance (type test)		P
	It shall be verified by measurement or visual inspection that the clearance and creepage distances comply with 4.4.7.4 and 4.4.7.5.		P

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Clause	Requirement – Test	Result – Remark	Verdict
	Where this verification is impossible to perform, an impulse voltage test (see 5.2.3.2) shall be performed between the considered circuits.		P
5.2.2.2	Non-accessibility test (type test)		P
	This test is intended to show that live parts, protected by means of enclosures and barriers in compliance with 4.4.3.3, are not accessible.		P
	This test shall be performed as a type test of the enclosure of a PSCS as specified in IEC 60529 for the enclosure classification for protection against access to hazardous parts.		P
	Except as noted below: •The test probe for IP3X shall not penetrate the top surface of the enclosure when probed from the vertical direction ± 5° only.		P
5.2.2.3	Ingress protection test (IP rating) (type test)		P
	The claimed IP rating of the enclosure shall be verified. This test shall be performed as a type test of the enclosure of a PSCS as specified in IEC 60529 for the enclosure classification.		P
5.2.2.4	Enclosure integrity test (type test)		P
5.2.2.4.1	General		P
	The integrity tests apply to PSCS, and also where PSCS are intended for operation without a further enclosure in restricted access areas. After completion of the integrity test, the PSCS shall pass the tests of 5.2.3.2 and 5.2.3.4 and shall be inspected to confirm that:		P
	- no degradation of any safety-relevant component of the PSCS has occurred.		P
	- live parts have not become accessible (see 4.4.3.3).		P
	- enclosures show no cracks or openings which could cause a hazard.		P
	- clearances are not less than their minimum permitted values and other insulation is undamaged.		P
	- barriers have not been damaged or loosened.		P
	- no moving parts which could cause a hazard are exposed.		P
	The integrity tests shall be performed at the worst case point on representative accessible face(s) of the enclosure.		P

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Clause	Requirement – Test	Result – Remark	Verdict
	The PSCS is not required to be operational after testing and the enclosure may be deformed to such an extent that its original IP rating is not maintained.		P
5.2.2.4.2	Deflection test (type test)		P
5.2.2.4.2.1	General		P
	If requested by 4.12.1 the test in 5.2.2.4.2.2 and 5.2.2.4.2.3 applies, for metallic enclosure, as applicable.		N/A
5.2.2.4.2.2	Steady force test, 30 N		P
5.2.2.4.2.3	Steady force test, 250 N		P
5.2.2.4.3	Impact test (type test)		P
5.2.2.4.4	Drop		P
	Transportable equipment ≤ 18 kg Drop three times from 1000 mm on a horizontal surface at locations where they provide the most adverse results.		P
5.2.2.4.5	Stress relief		N/A
5.2.2.5	Stability test		P
5.2.2.6	Wall or ceiling mounted equipment		N/A
5.2.2.7	Handles and manual controls securement		N/A
5.2.3	Electrical tests		P
5.2.3.1	General		P
	The electrical tests described in 5.2.3.2 to 5.2.3.5 are applicable to basic, supplementary and reinforced insulation. Before performing these tests, preconditioning according to 5.2.6.3.1 and 5.2.6.3.2 is required.		P
	When performing electrical and preconditioning tests, the preferred procedure is to test the entire equipment; however it is acceptable to test the components or sub-assemblies providing the basic and reinforced insulation. When components or sub-assemblies are tested, test conditions shall simulate the least favourable conditions occurring inside the equipment at the place of installation.		P
5.2.3.2	Impulse voltage test (type test and sample test)	See Table 4.4.7.10	P
5.2.3.3	Alternative to Impulse voltage test (type test and sample test)		P
	An a.c. or d.c. voltage test according to 5.2.3.4 may be used as an alternative method to the impulse voltage test of 5.2.3.2.		P

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Clause	Requirement – Test	Result – Remark	Verdict
	For an a.c. voltage test the peak value of the a.c. test voltage shall be equal to the impulse test of Table 25 and applied for three cycles of the a.c. test voltage.		P
	For a d.c. voltage test the average value of the d.c. test voltage shall be equal to the impulse test voltage of Table 25 and applied three times for 10 ms in each polarity.		N/A
	See IEC60664-1 clause 6.1.2.2.2 for further information.		P
5.2.3.4	A.C. or d.c. voltage test (type test and routine test)		P
5.2.3.4.1	Purpose of test		P
	The test is used to verify that the clearances and solid insulation of components and of assembled PSCS has adequate dielectric strength to resist temporary overvoltage conditions.		P
5.2.3.4.2	Value and type of test voltage		P
	The values of the test voltage for circuits connected to mains supply are determined from column 2 or 3 of Table 26. The voltage test shall be performed with a sinusoidal voltage at 50 Hz or 60 Hz. If the circuit contains capacitors the test may be performed with a d.c. voltage of a value equal to the peak value of the specified a.c. voltage.		P
5.2.3.4.3	Performing the voltage test	See table 4.4.7.10	P
	a) Test (1) between accessible conductive part 8connected to earth) and each circuit sequentially (except DVC As circuits). Test voltage according to Table 26, or Table 27, column 2, corresponding to voltage of considered circuit under test. Test (2) between accessible surface (nonconductive or conductive but not connected to earth9 and each circuit sequentially (except DVC As circuits). Test voltage according to Table 26 or Table 27, column 3 (for type test) or column 2 (for routine test), corresponding to voltage of considered circuit under test.		P
	b) Test between each considered circuit sequentially and the other adjacent circuits connected together. Test voltage according to Table 26 or Table 27, column 2, corresponding to voltage of considered circuit under test.		P

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Clause	Requirement – Test	Result – Remark	Verdict
	c) Test between DVC As circuit and each adjacent circuit sequentially. Test voltage according to Table 26 or Table 27, column 3 (for type test) or column 2 (for routine test), corresponding to the circuit with the higher voltage. Either the adjacent circuit or the DVC As circuit may be earthed for this test. It is necessary to test functional insulation between PELV and SELV circuits, but it is not necessary to test functional insulation between adjacent PELV or adjacent SELV circuits.		P
5.2.3.4.4	Duration of the a.c. or d.c. voltage test		P
	The duration of the test shall be at least 60 s for the type test and 1 s for the routine test. The test voltage may be applied with increasing and/or decreasing ramp voltage but the full voltage shall be maintained for 60 s and 1 s respectively for type and routine tests.		P
5.2.3.4.5	Verification of the a.c. or d.c. voltage test		P
	The test is successfully passed if no electrical breakdown occurs during the test.		P
5.2.3.5	Partial discharge test (type test, sample test)		N/A
	The partial discharge test shall confirm that the solid insulation (see 4.4.7.8) used in components and subassemblies for protective separation of electrical circuits remains partial-discharge-free within the specified voltage range (see Table 28).		N/A
	This test shall be performed as a type test and a sample test. It may be omitted for insulating materials which are not degraded by partial discharge, for example ceramics. The partial discharge inception and extinction voltage are influenced by climatic factors (e.g. temperature and moisture), equipment self-heating, and manufacturing tolerance. These influencing variables can be significant under certain conditions and shall therefore be taken into account during type testing.		N/A
5.2.3.6	Protective impedance (type test and routine test)		P
	A type test shall be performed to verify that the current through a protective impedance under normal operating or single-fault conditions does not exceed the values given in 4.4.3.4. The test shall be performed using the circuit of IEC 60990:1999, Figure 4. NOTE IEC 60990 states that the use of a single network for the measurement of a.c. combined with		

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Clause	Requirement – Test	Result – Remark	Verdict
	d.c. has not been investigated, but no suggestion is made for measurement in such cases. The value of the protective impedance shall be verified as a routine test.		
5.2.3.7	Touch current measurement (type test)		P
	The touch current shall be measured to determine if the measures of protection need not be taken (see 4.4.4.3.3). The PECS shall be set up in an insulated state without any connection to the earth and shall be operated at rated voltage. Under these conditions, the touch current shall be measured between the means of connection for the PE conductor and the PE conductor itself with the test circuit of Figure 4 of IEC 60990:1999.		P
	• For a PSCS to be connected to an earthed neutral system, the neutral of the mains of the test site shall be directly connected to the protective earthing conductor.		N/A
	• For a PSCS to be connected to an earthed neutral system, the neutral shall be connected through a resistance of 1 kΩ to the protective earthing conductor which shall be connected to each input phase in turn. The highest value will be taken as the definitive result.		N/A
	• For a PSCS to be connected to a corner earthed system, the protective earthing conductor shall be connected to each input phase in turn. The highest value will be taken as the definitive result.		N/A
	• For a PSCS with a particular earthing system, this system shall operate as intended during the test.		N/A
	• If a PSCS is intended to be connected to more than one system network, each of these different system networks (or the worst-case, if that can be determined) shall be used to make the touch current measurement.		N/A
5.2.3.8	Capacitor discharge (type test)		P
	The capacitor discharge time as required by 4.4.3.4 may be verified by a type test and/or by calculation taking into account the relevant tolerances.		P
5.2.3.9	Limited power source test (type test)		N/A
	When required by 4.6.5 a limited power circuit shall be tested as below, with the equipment operating under normal operating conditions. In case the limited power source requirement depends on overcurrent protective device(s), the device(s) shall be short-circuited. With the equipment operating under normal		N/A

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Clause	Requirement – Test	Result – Remark	Verdict
	operating conditions, a variable resistive load is connected to the parts under consideration and adjusted to obtain a level required limited VA power. Further adjustment is made, if necessary, to maintain the limited VA power for a period specified by 4.6.5. A variable resistive load is connected to the circuit under consideration and adjusted to obtain the limit of apparent power as indicated in Table 16 or Table 17, as applicable. Further adjustment is made, if necessary, to maintain the limit of apparent power for the time period indicated in Table 16 or Table 17, as applicable. The test is passed, if after the test period the available apparent power does not exceed the limits indicated in Table 16 or Table 17, as applicable. In case the limited power source requirement depends on overcurrent protective device(s), the current rating of at least one of the protective device(s) in the current path shall not exceed the limit in Table 17.		
5.2.3.10	Temperature rise test (type test)		P
	If possible the PECS must operate in the worst conditions of the rated power and the output current.		P
	Equipment, in which the heating or cooling quantity depends on the temperature, the temperature measurement must be carried out under the most unfavourable conditions of ambient temperature within the range specified by the manufacturer.		P
	The PECS shall be tested with at least 1,2 m of wire attached to each field wiring terminal. The wire shall be of the smallest size intended to be connected to the PECS as specified by the manufacturer for installation. When there is only provision for the connection of bus-bars to the PECS, they shall be of the minimum size intended to be connected to the PECS as specified by the manufacturer, and they shall be at least 1,2 m in length.		P
	The test shall be maintained until thermal stabilization has been reached. That is, when three successive readings, taken at intervals of 10 % of the previously elapsed duration of the test and not less than 10 min. intervals, indicate no change in temperature, defined as ± 1 °C between any of the three successive readings, with respect to the ambient temperature.		P

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	The temperature of an electrical insulation (other than that of windings) is measured on the surface of the insulation at a point close to the heat source, if a failure of this insulation could cause a hazard. If temperatures of windings are measured by the thermocouple method, the thermocouple shall be located on the surface of the winding assuming the hottest part due to surrounding heat emitting components. See also notes in Table 14.		P
	The maximum temperature attained shall be corrected to the rated ambient temperature of the PSCS by adding the difference between the ambient temperature during the test and the maximum rated ambient temperature.		P
	No corrected temperature shall exceed the rated temperature of the material or component measured.		P
	During the test, thermal cut-out, overload detection functions and devices shall not operate.		P
5.2.3.11	Protective bonding tests (type tests and routine test)		P
5.2.3.11.1	General		P
	Each conductive accessible part under consideration shall be tested separately, to determine if the protective equipotential bonding path for that part is adequate to withstand the test current that the bonding path may be subjected to under fault conditions. The circuit under consideration shall be selected from amongst those circuits adjacent to the accessible part under consideration and separated from it by only basic or functional insulation. All of these selected circuits have to be analysed regarding prospective short circuit current and the associated protective element(s): - If the circuit under consideration exceeds the 5 s disconnection time requirement of IEC 60364-4-41, the protective equipotential bonding impedance test of 5.2.3.11.2 and the protective equipotential bonding short circuit test of 5.2.3.11.3 have to be performed. - If the circuit under consideration meets the 5 s disconnection time requirement of IEC 60364-4-41, the protective equipotential bonding short circuit test of 5.2.3.11.3 has to be performed. - If the circuit under consideration meets the disconnection time requirement of IEC 60364-4-41:2005, Table 41.1, as		P

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Clause	Requirement – Test	Result – Remark	Verdict
	applicable, depending on the earthing system of the installation, no type test is required.		
	For pluggable equipment type A only the protective equipotential bonding impedance test of 5.2.3.11.2 have to be performed.		P
5.2.3.11.2	Protective bonding impedance test (type test)		N/A
5.2.3.11.2.1	Test Conditions		N/A
	Where required by 4.4.4.2.2 and 5.2.3.11.2.1, the impedance of protective equipotential bonding means shall be checked by passing a test current through the bond for a period of time. The test current is based on the rating of the overcurrent protection for the equipment or part of the equipment under consideration, as follows: • for pluggable equipment type A, the overcurrent protective device is that provided external to the equipment (for example, in the building wiring, in the mains plug or in an equipment rack); • for pluggable equipment type B and permanently connected equipment, the maximum rating of the overcurrent protective device specified in the equipment installation instructions to be provided external to the equipment; • the rating of the provided overcurrent device for a circuit or part of the equipment for which an overcurrent protective device is provided as part of the equipment.		N/A
5.2.3.11.2.2	Test current, duration, and acceptance criteria:		P
	a) For PECS with an overcurrent protective device rating of 16 A or less, this test may be omitted, if an impedance not exceeding 0,1 Ω can be demonstrated.		P
	b) As an alternative to Table 29, where the time-current characteristic of the overcurrent protective device that limits the fault current in the protective equipotential bonding means is known because the device is either provided in the equipment or fully specified in the installation instructions, the test duration may be based on that specific device's time-current characteristic. The tests are conducted for a duration corresponding to the 200 % current value on the time-current characteristic.		N/A
	c) For PECS with an overcurrent protective device rating of more than 460 A, calculations or simulations according to IEC 60949 shall be used		P

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	to show the ability of the prospective short circuit current to fulfil the requirements. The protective equipotential bonding continuity routine test of 5.2.3.11.4 shall be performed to show that the impedance of the protective equipotential bonding means during and at the end of the test shall not exceed the expected value.		
	Acceptance criteria: The test current is 200 % of the overcurrent protective device rating and the duration of the test is as shown in Table 29. The voltage drop in the protective equipotential bonding means, during and at the end of the test, shall not exceed DVC As, as determined from Table 2 and Table 5 with respect to the accessible surface of the enclosure.		P
	After the tests, visual inspection shall show no damage to the *protective equipotential bonding* means.		P
5.2.3.11.3	Protective bonding short circuit withstand test (type test)		N/A
	As required by 5.2.3.11.2.1, the short circuit test in 5.2.4.3 shall be performed to ensure that protective bonding has the ability to withstand the prospective short circuit current that it may be subjected to under fault conditions.		N/A
	The testing shall include an individual test of the protective bonding path for each conductive accessible part unless analysis shows that the short circuit withstand capability of the path is adequate, or that the results of one combination are representative of the anticipated results of another combination.		N/A
5.2.3.11.4	Protective bonding continuity test (routine test)		P
5.2.4	Abnormal operation and simulated faults tests		P
5.2.4.1	General	See table 4.2 and 4.3	P
5.2.4.2	Pass criteria		P
	As a result of the abnormal operation tests, the PSCS shall comply with the following: • there shall be no emission of flame, burning particles or molten metal; • the surgical cotton indicator shall not have ignited; • the earth connection and protective bonding of the PSCS shall not have opened; • doors and cover shall remain in place; • during and after the test, accessible DVC As, SELV and PELV circuits and		P

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	accessible conductive parts shall not exhibit voltages greater than the time dependent voltages of Figure 1, Figure 2 or Figure 3, as appropriate and shall be separated from live parts at voltages greater than DVC As with at least basic insulation. Compliance shall be checked by the a.c./d.c. insulation test of 5.2.3.4 for basic insulation; • during and after the test, live parts at voltages greater than DVC As shall not become accessible.		
	The PSCS is not required to be operational after testing and it is possible that the enclosure can become deformed. Overcurrent protection integral to the PECS, or required to be used with the PECS, is allowed to open.		P
5.2.4.3	Protective bonding short circuit withstand test (type test)		P
5.2.4.3.1	General		P
	When required by 5.2.3.11.2.1, a protective bonding path shall be subjected to the following short-circuit withstand test.		P
5.2.4.3.2	Test conditions		P
	The equipment under test shall be supplied with power and the output port shall be operating as intended in 5.2.4.1 prior to closing the switching means that applied will be more severe.		P
	The protective bonding short circuit test shall be performed with the PSCS working with light load, unless analysis shows that higher short circuit currents are available under higher loading conditions.		P
	A new sample may be used for each short-circuit test.		P
5.2.4.3.3	Protective equipotential bonding short-circuit test method	Considered	P
5.2.4.3.4	Pass criteria	Considered	P
5.2.4.4	Output Short-circuit test (type test)		P
5.2.4.4.1	Load conditions		P
	The short circuit test shall be performed with the PSCS at full load or light load whichever creates the more severe condition.		P
5.2.4.4.2	Short-circuit test method		P
	In addition to determining compliance with the criteria of 5.2.4.2, this test is used to determine the		P

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	output short circuit current rating of the port under consideration, in accordance with 4.3.2.3. An oscilloscope or other suitable instrument shall be used to measure the peak current during the test, and to measure or calculate the r.m.s. value of the current.		
	The value(s) to be recorded and to be provided with the PECS instructions, in accordance with 6.2, are the peak current, and the highest of the r.m.s. current values measured or calculated over a time period as follows: a) for a.c. signals, three cycles of the nominal a.c. frequency for the port under consideration, in which case the value is to be stated as the 3-cycle r.m.s. value; b) for all signals, the duration of the short circuit from the time the short circuit is applied, until the time the short circuit current is interrupted by a protective device or other mechanism, in which case the value stated is to include the r.m.s. value and the time period in seconds; c) for short circuit tests that result in a continuous non-zero value, the steady-state r.m.s. value, in which case the value is to be stated as a continuous r.m.s value. For PECS with internal short circuit protection according to 4.3.2.3, which protects the output port within some few µs, the requirements in a), b) and c) are not applicable.		P
5.2.4.5	Output Overload test (type test)	Considered	P
5.2.4.6	Breakdown of components test (type test)		P
5.2.4.6.1	Load conditions	See table 4.2 and 4.3	P
	The breakdown of a component, identified as a result of the circuit analysis of 4.2, shall be tested with the PSCS at full load or light load whichever creates the more severe condition.		P
5.2.4.6.2	Application of short-circuit or open-circuit		P
	The short circuit shall be applied with cable of a cross-section appropriate for the current that normally flows through the component, but no less than 2.5 mm². The length of the loop shall be as short as practical to perform the test. Short circuits and open circuits are applied using an appropriate switching device.		P
	Each identified component shall be subjected to only one breakdown of components test unless both open- and short-circuit failure modes are likely in that component.		P

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Clause	Requirement – Test	Result – Remark	Verdict
5.2.4.6.3	Test sequence		P
	For the Breakdown of components test, identified components shall be short-circuited or open-circuited, whichever creates the worst hazard, one at a time.		P
5.2.4.7	PWB short-circuit test (type test)		P
	On PWBs, functional insulation provided by spacings which are less than those specified in Table 10 and Table 11 (see 4.4.7.7) shall be type tested as described below.		P
	The decreased spacings shall be short-circuited one at a time, on representative samples, and the short-circuit shall be maintained until no further damage occurs.		P
5.2.4.8	Loss of phase (type test)		N/A
	A multi-phase PSCS shall be operated with each line (including neutral, if used) disconnected in turn at the input. The test shall be performed by disconnecting one line with the power conversion equipment operating at its maximum normal load and shall be repeated by initially energizing the device with on lead disconnected.		N/A
	The test shall continue until terminated by a protective mechanism, a component failure occurs, or the temperature stabilizes.		N/A
	This particular requirement may be simulated for PSCS with rated input current greater than 500 A.		N/A
5.2.4.9	Cooling failure tests (type test)		N/A
5.2.4.9.1	General and pass criteria		N/A
	For PSCS having a combination of cooling mechanisms, all relevant tests shall be performed. It is not necessary to perform the tests simultaneously. The test shall continue, - until the temperature stabilizes, in which case the temperature limits of 4.6.4.2 apply; or - until terminated by a protective mechanism or a component failure occurs, in which case the temperature limits of 4.6.4.2 may be exceeded by not more than 5°C. If this is not possible a warning statement shall be provided in the user documentation.		N/A
	NOTE The temperature increase of 5 °C with regard to the steady state limits reflect the spread of the burn threshold given in IEC Guide 117.		N/A

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Clause	Requirement – Test	Result – Remark	Verdict
5.2.4.9.2	Inoperative blower motor		N/A
	A PSCS having forced ventilation shall be operated at rated load with fan or blower motor or motors made inoperative, singly or in combination from a single fault, by physically preventing their rotation.		N/A
5.2.4.9.3	Clogged filter		N/A
	Enclosed PSCS having filtered ventilation openings shall be operated with the openings blocked to represent clogged filters. The test shall be performed initially with the ventilation openings blocked 50 %. The test shall be repeated under full blocked condition.		N/A
5.2.4.9.4	Loss of coolant		N/A
	A liquid cooled PSCS shall be operated at rated load. Loss of coolant shall be simulated by draining the coolant, blocking the flow or disabling the system coolant pump.		N/A
	If the PSCS is shut down due to the operation of a thermal device located inside the coolant, then the test shall be repeated with the coolant drained out of the system.		N/A
	NOTE: It is presumed that the thermal device will be inoperative if not surrounded by coolant liquid.		N/A
5.2.5	Material tests		P
5.2.5.1	General		P
	When requested by 4.4.7.8.2, the manufacturer shall test the flammability properties of the materials used for insulating purposes, as defined in 5.2.5.2, 5.2.5.3 and 5.2.5.4. When requested by 4.6.3.2 the manufacturer shall test the flammability properties of the materials used for fire enclosure, as defined in 5.2.5.5.		P
5.2.5.2	High current arcing ignition test (type test)		N/A
5.2.5.3	Glow-wire test (type test)		P
	The glow-wire test shall be made under the conditions specified in 4.4.7.8.2 according to IEC 60695-2-10 and IEC 60695-2-13.		P
5.2.5.4	Hot wire ignition test (type test – alternative to Glow-wire test)		N/A
5.2.5.5	Flammability test (type test)		N/A
5.2.5.6	Flaming oil test (type test)		N/A
5.2.5.7	Test of cemented joints (type test)		P
	When required by 4.4.7.9 representative samples		P

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	of cemented joints providing protection of type 1 or type 2 as defined in IEC 60664-3:2003 shall be tested as a type test as follows. The samples shall be subjected to the conditioning procedure specified in 5.7 of IEC 60664-3:2003, using the following parameters: for the cold test (5.7.1), a temperature of -25 °C shall be used, and for the rapid change of temperature test (5.7.3): – 25 °C to +125 °C. After the conditioning the samples shall pass the following tests in the prescribed order: a) The mechanical strength of the joint shall be evaluated by loading the joint using the forces anticipated to be present under normal conditions. There shall be no separation of the parts. b) The insulation resistance between the conductive parts separated by the joint shall be measured according to 5.8.3 of IEC 60664-3:2003. c) Cemented joints shall be treated as to be thin sheet material and shall be tested according 4.4.7.8.3. d) The sectioning of the joint shall not show any cracks, voids or separation.		
5.2.6	Environmental tests (type test)		P
5.2.6.1	General		P
	Compliance is shown by conducting test of 5.2.6.3, 5.2.6.4, 5.2.6.5 and 5.2.6.6 according to Table 30 as applicable for the environmental conditions specified by the manufacture.		P
5.2.6.2	Acceptance criteria		P
	The following acceptance criteria shall be satisfied: - no degradation of any safety-relevant component of the PSCS; - no potentially hazardous behaviour of the PSCS during the test; - no sign of component overheating; - no live part shall become accessible; - no cracks in the enclosure and no damaged or loose insulators; - pass routine a.c. or d.c. voltage test 5.2.3.4; - pass protective bonding test 5.2.3.11.2; - no potentially hazardous behaviour when the PSCS is operated following the test.		P
5.2.6.3	Climatic tests		P

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5.2.6.3.1	Dry heat test (steady state)		P
	To prove the ability of components and equipment to be operated, transported or stored at high temperatures the dry heat (steady state) test shall be performed according to the conditions specified in Table 31.		P
5.2.6.3.2	Damp heat test (steady state)		P
	To prove the resistance to humidity, the PSCS shall be subjected to a Damp heat test (steady state) according to Table 32.		P
5.2.6.4	Vibration test (type test)		P
	To verify the mechanical vibration strength the PECS in combination with its installation shall be evaluated by: a) tests defined in this section according to the conditions specified in Table 33; or b) calculation or simulation based on tests, as defined in this section, on a representative model of PECS. For PSCS with a mass more than 100 kg, this test may be performed on sub-assemblies. NOTE For large equipment, the possibility of using a shock test as an alternative to a vibration test is under consideration.		P
5.2.6.5	Salt mist (type test)		N/A
	To verify the resistance against salt mist, the PECS in combination with its installation shall be evaluated by tests defined in this section according to the conditions specified in Table 34. For PSCS with a mass more than 100 kg, this test may be performed on sub-assemblies.		N/A
5.2.6.6	Dust and sand (type test)		N/A
	To verify the mechanical strength against dust and sand the PECS in combination with its installation shall be evaluated by tests defined in this section under the conditions specified in Table 35. For PSCS with a mass more than 100 kg, this test may be performed on sub-assemblies.		N/A
5.2.7	Hydrostatic pressure (type test and routine test)		N/A
	For type tests, the pressure inside the cooling system of a liquid cooled PSCS (see 4.7.2.3.3) shall be increased at a gradual rate until a pressure relief mechanism (if provided) operates, or until a pressure of twice the operating value or 1,5 times		N/A

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	the maximum pressure rating of the system is achieved, whichever is the greater. *NOTE: for the purpose of this test the coolant pump may be disabled.* For routine tests, the pressure shall be increased to the maximum pressure rating of the system. The pressure shall be maintained for at least one minute. There shall be no thermal, shock, or other hazard resulting from the test. There shall be no significant leakage of coolant or loss of pressure during the test, other than from a pressure relief mechanism during a type test. After the hydrostatic pressure type test the PSCS shall pass the a.c. or d.c. voltage test 5.2.3.4.		
6	**INFORMATION AND MARKING REQUIREMENTS**		P
6.1	General		P
6.2	Information for selection		P
	Each part of a PSCS hat is supplied as a separate product shall be provided with information relating to its function, electrical characteristics, and intended environment, so that its fitness for purpose and compatibility with other parts of the PSCS can be determined. This information includes, but is not limited to:		P
	The name or trademark of the manufacturer, supplier or importer		P
	Catalogue number or equivalent		P
	Electrical ratings for each power port: • maximum nominal input voltage; • maximum nominal output voltage; • maximum nominal output current or nominal output power rating; • maximum nominal input current rms for dimensioning overload protective elements and wiring; • Number of phases; • Frequency range , protective class (I,II,III)		P
	The type of electrical supply system to which the PSCS may be connected		P
	prospective short circuit current rating(s) in accordance with 4.3.2.2 and 5.2.4.4;		P
	output short circuit current accordance with 4.3.2.3		P
	Prospective short-circuit current rating(s) and		P

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	protective device characteristics, in accordance with 4.3.2 and 5.2.4.4		
	Field supply requirements (if any)		P
	Coolant type and design pressure for liquid cooled product		N/A
	IP rating		P
	Operating and storage environment		P
	Reference(s) to relevant international Standard(s) for manufacture, test, or use		P
	Reference to instructions for installation, use and maintenance		P
6.3	Information for installation and commissioning		P
6.3.1	General		P
6.3.2	Mechanical considerations		P
	The following drawings shall be prepared by the manufacturer: - Dimensional drawing, including mass information - Mounting drawing		P
6.3.3	Environment		P
	In accordance with 4.9 the following environmental conditions shall be specified, for operation, transportation and storage:		P
	Climatic (temperature, humidity, altitude, pollution, ultra-violet light, etc.)		P
	Mechanical (vibration, shock, drop, topple, etc.)		P
	Electrical (overvoltage category)		P
6.3.4	Handling and mounting		P
	In order to prevent injury or damage, the installation documents shall include warnings of any hazards which can be experienced during installation. Where necessary, instructions shall be provided for: - packing and unpacking; - moving; - lifting; - strength and rigidity of mounting surface; - fastening; - provision of adequate access for operation, adjustment and maintenance.		P
6.3.5	Enclosure temperature		P

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	When surface temperatures of the PECS, close to mounting surfaces, exceed the limit of 4.6.4.2, the installation manual shall contain a warning to consider the combustibility of the mounting surface.		P
	Where required by 4.6.3.1, the following marking shall appear on the PECS and in the installation instructions: “suitable for mounting on concrete or other non-combustible surfaces only”.		P
6.3.6	Connections		P
6.3.6.1	General		P
	Information shall be provided to enable the installer to make safe electrical connection to the PSCS. This shall include information for protection against hazards (for example, electric shock or availability of energy) that may be encountered during installation, operation or maintenance.		P
6.3.6.2	Interconnection and wiring diagrams		P
	The installation and maintenance manuals shall include details of all necessary connections, together with a suggested interconnection diagram.		P
6.3.6.3	Conductor (cable) selection		P
	The Installation manual shall define the voltage and current levels for all connections to the PSCS, together with cable insulation requirements. These shall be worst-case values, taking into account overcurrent and overload conditions and the possible effects of non-sinusoidal currents.		P
6.3.6.4	Terminal capacity and identification		P
	The installation and maintenance manuals shall indicate the range of acceptable conductor sizes and types (solid or stranded) for all terminals, and also the maximum number of conductors which can simultaneously be connected.		P
	For field wiring terminals, the manuals shall specify the requirements for tightening torque values and also the insulation temperature rating requirements for the conductor or cable.		P
	The identification of all field wiring terminals shall be marked on the PSCS, either directly or by label attached close to the terminals.		P
	The installation and maintenance manuals shall identify all external terminals relating to circuits protected by one of the methods of 4.4.6.4.		P
6.3.7	Protection requirements		P
6.3.7.1	Accessible parts circuits		P

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	The installation, users and maintenance manuals shall identify any accessible parts at voltages greater than DVC As, and shall describe the insulation and separation provisions required for protection.		P
	The manuals shall also indicate the precautions to be taken to ensure that the safety of DVC As connections maintained during installation.		P
	Where a hazard is present after the removal of a cover, a warning label shall be placed on the equipment. The label shall be visible before the cover is removed.		P
	The manual of a PSCS shall state the maximum voltage allowed to be connected to each port.		P
	The manuals shall provide instructions for the use of PELF circuits within a zone of equipotential bonding.		P
6.3.7.2	Type of electrical supply system		P
	The installation manual or the PECS shall specify requirements for safe earthing including the permitted earthing system of the installation (see 4.4.7.1.4)		P
	The unacceptable earthing systems shall be indicated as: - not permitted; or - with modification of values and/or safety levels which shall be quantified through type test.		N/A
6.3.7.3	Protective class		P
6.3.7.3.1	General		P
	The installation manual of the PECS shall declare the protective class specified for the PECS and the product shall be marked according to the requirement of 6.3.7.3.2, 6.3.7.3.3, and 6.3.7.3.4.		P
6.3.7.3.2	Protective class I equipment		N/A
	Terminals for connection of the PE conductor shall be clearly and indelibly marked with one or more of the following:		N/A
	The symbol IEC 60417-5019 (2011-01)		N/A
	With the letters PE		N/A
	The colour coding green or green-yellow		N/A
6.3.7.3.3	Protective class Íl equipment		P
	Equipment of protective class II shall be marked with symbol IEC 60417-5172 (2011-01) (see Annex C). Where such equipment has provision for the connection of an earthing conductor for functional		P

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	reasons (see 4.4.6.3) it shall be marked with symbol IEC 60417-5018 (2011-01) (see Annex C).		
6.3.7.3.4	Protective class III equipment		N/A
	No marking is required on the product.		N/A
6.3.7.4	Touch current marking		P
	Where the touch current in the PE conductor exceeds the limits given in 4.4.4.3.3., this shall be stated in the installation and maintenance manuals. In addition, a warning symbol ISO 7010- W001 (2011-06) (see Annex C) shall be placed on the product, and a notice shall be provided in the installation manual to instruct the user that the minimum size of the PE conductor shall comply with the local safety regulations for high PE conductor current equipment.		P
6.3.7.5	Compatibility with RCD marking		P
	The installation and maintenance manuals shall indicate compatibility with RCDs (see 4.4.8). When 4.4.8 b) applies, a caution notice and the symbol ISO 7010-W001 (2011-06) (see Annex C) shall be provided in the user manual, and the symbol shall be placed on the product. The caution notice shall be the following or equivalent: “This product can cause a d.c. current in the PE conductor. Where a residual current-operated protective device (RCD) is used for protection against electrical shock, only an RCD of Type B is allowed on the supply side of this product.” (See 6.4.3 for general requirements for labels, signs and signals.)		P
6.3.7.6	Cable and connection		N/A
	Any particular cable and connection requirements shall be identified in the installation and maintenance manuals.		N/A
6.3.7.7	External protection devices		P
	Where external devices are necessary to protect against hazards, the installation manual shall specify the required characteristics (see also 5.2.4 and 4.3.2.1)		P
6.3.8	Commissioning		N/A
	If commissioning tests are necessary to ensure the electrical and thermal safety of a PSCS, information to support these tests shall be provided for each part of the PSCS. This information can depend on the specific installation, and close cooperation between manufacturer, installer, and user can be required. Commissioning information shall include references to hazards that might be encountered during		N/A

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	commissioning, for example those mentioned in 6.4. and 6.5.		
6.4	Information for use		P
6.4.1	General		P
	The user's manual shall include all information regarding the safe operation of the PSCS. In particular, it shall identify any hazardous materials and risks of electrical shock, overheating, misuse of the PSCS.		P
	The manual should also indicate any hazards which can result from reasonably foreseeable misuse of the PSCS.		P
6.4.2	Adjustment		P
	The user's manual shall give details of all safety-relevant adjustments intended for the user. The identification or function of each control or indicating device and fuse shall be marked adjacent to the item. Where it is not possible to do this on the product, the information shall be provided pictorially in the manual.		P
	Maintenance adjustments may also be described in this manual, but shall be made clear that they should only be made by qualified personnel.		P
	Clear warnings shall be provided where excessive adjustment could lead to a hazardous state of the PSCS.		P
	Any special equipment necessary for making adjustments shall be specified and described.		P
6.4.3	Labels, signs and signals		P
6.4.3.1	General		P
	Labelling shall be in accordance with good ergonomic principles so that notices, controls, indications, test facilities, fuses, etc., are sensibly placed and logically grouped to facilitate correct and unambiguous identification. All safety related equipment labels shall be located so as to be visible after installation or readily visible by opening a door or removing a cover. Where a symbol is used, the information provided with the PSCS shall contain an explanation of the symbol and its meaning.		P
	Labels shall: • wherever possible, use international symbols as given by ISO 3864-1, ISO 7000 or IEC 60417; • if no international symbol is available, be worded in		P

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	an appropriate language or in a language associated with a particular technical field; • be concise and unambiguous; • be conspicuous, legible and durable; • state the hazards involved and give ways in which risks can be reduced.		
	When instructing the person(s) concerned as to • what to avoid: the wording should include “no”, “do not”, or “prohibited”; • what to do: the wording should include “shall”, or “must”; • the nature of the hazard: the wording should include “caution”, “warning”, or “danger”, as appropriate; • the nature of safe conditions: the wording should include the noun appropriate to the safety device.		P
	Safety signs shall comply with ISO 3864-1.		P
	The signal words indicated hereinafter shall be used and the following hierarchy respected: • DANGER to call attention to a high risk, for example: “High voltage”. • WARNING to call attention to a medium risk, for example: “This surface can be hot.” • CAUTION to call attention to a low risk, for example: “Some of the tests specified in this standard involve the use of processes imposing risks on persons concerned.” Danger, warning and caution markings on the PECS shall be prefixed with the word “DANGER”, “WARNING”, or “CAUTION” as appropriate in letters not less than 3,2 mm high. The remaining letters of such markings shall be not less than 1,6 mm high.		P
6.4.3.2	Isolators		P
	Where an isolating device is not intended to interrupt load current, a warning shall state: DO NOT OPEN UNDER LOAD.		P
	The following requirements apply to any supply isolating device which does not disconnect all sources of power to the PSCS.		P
	If the isolating device is mounted in an equipment enclosure with the operating handle externally operable, a warning label shall be provided adjacent to the operating handle starting that it does not disconnect all power to the PSCS.		P
	Where a control circuit disconnector can be		P

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	confused with power circuit disconnectors due to size or location, a warning label shall be provided adjacent to the operating handle of the control disconnector stating that it does not disconnect all power to the PSCS.		
6.4.3.3	Visual and audible signals		N/A
	Visual signals such as flashing lights, and addible signals such as sirens, may be used to warn of an impending hazardous event such as the driven equipment start-up and shall be identified. It is essential that these signals: - are unambiguous; - can be clearly perceived and differentiated from all other signals used; - can be clearly recognized by the user; - are emitted before the occurrence of the hazardous event. It is recommended that higher frequency flashing lights be used for information. Note: IEC 60073 provides guidance on recommended flashing rates and on/off ratios.		N/A
6.4.3.4	Hot surfaces		N/A
	Where required by 4.6.4.2 the warning symbol W017 of ISO 7010 shall be marked on or adjacent to parts exceeding the touch temperature limits of Table 15.		N/A
6.4.3.5	Equipment marking		P
	The Identification of each control or indicating device and fuse shall be marked adjacent to the item. Replaceable fuses shall be marked with their rating and time characteristics. Where it is not possible to do this on the product, the information shall be provided pictorially in the manual. Appropriate identification shall be marked on or adjacent to each movable connector. Test points shall be individually marked with the circuit diagram reference. The polarity of any polarized devices shall be marked adjacent to the device. The diagram reference and if possible the function shall be marked adjacent to each pre-set control in a position where it is clearly visible while the adjustment is being made.		P
6.5	Information for maintenance		P
6.5.1	General		P
	The PECS shall be marked with the date code, or serial number from which the date of manufacture		P

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IEC 62477-1			
Clause	Requirement – Test	Result – Remark	Verdict
	can be determined.		
	Safety information shall be provided in the installation and maintenance manuals including appropriate, the following:		P
	• Preventive maintenance procedures and schedules		P
	• Safety precautions during maintenance		P
	• Location of live parts that can be accessible during maintenance (for example, when covers are removed9		P
	• Adjustment procedures		P
	• Subassembly and component repair and replacement procedures		P
	• Any other relevant information		P
6.5.2	Capacitor discharge		P
	When the requirements 4.4.9 are not met, the warning symbol W012 of ISO 7010 and an indication of the discharge time (for example, 45 s, 5 min) shall be placed in a clearly visible position on the enclosure, the capacitor protective barrier, or at a point close to the capacitor(s) concerned (depending on the construction). The symbol shall be explained and the time required for the capacitors to discharge after the removal or the power from the PSCS shall be stated in the installation and maintenance manuals.		P
6.5.3	Auto restart/bypass connection		N/A
	If a PSCS can be configured to provide automatic restart or bypass connection, the installation, user and maintenance manuals shall contain appropriate warning statements.		N/A
	A PSCS which is set to provide automatic restart or bypass connection, after the removal of power, shall be clearly identified at the installation.		N/A
6.5.4	Other hazards		P
	The manufacturer shall identify any components and materials of a PSCS which require special procedures to prevent hazards.		P
6.5.5	Equipment with multiple sources of supply		P
	In accordance with 4.8, where there is more than one source of supply energizing the PSCS, information shall be provided to indicate which disconnect device or devices are required to be operated in order to completely isolate the equipment.		P

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IEC 62477-1			
Clause	Requirement – Test	Result – Remark	Verdict

IEC 62477-1			
Clause	Requirement – Test	Result – Remark	Verdict

4	TABLE: mains supply electrical data in normal condition					P
Type	U (V) DC	I (A) DC	P (kW) DC	U (V) grid	I (A) AC	P (kW) AC
EPCS250	550	454.2	249.9	--	--	--
EPCS250	850	295.1	250.8	--	--	--

4.2 to 4.3	TABLE: fault condition tests						P
	ambient temperature (°C) .....:			25			—
No.	component No.	fault	test voltage (V)	test time	fuse No.	fuse current (A)	result
1	E1	SC	850V	10S	F1	0A	F1 opened immediately after short circuit. No hazard.
2	E2	SC	850V	10S	F1	0A	F1 opened immediately after short circuit. No hazard.
3	DC1	SC	850V	10S	F1	0A	F1 opened immediately after short circuit. No hazard.
4	DC2	SC	850V	10S	F1	0A	F1 opened immediately after short circuit. No hazard.
5	Output	SC	850V	10mins	F1	0.02A	Unit shut down immediately, No damaged, No hazard.
supplementary information							
See technical documentation.							

IEC 62477-1			
Clause	Requirement – Test	Result – Remark	Verdict

4.6.4	**TABLE: heating temperature rise measurements**		P
	test voltage (V) ..... :	See below	—
	t1 (°C)..... :	See below	—
	t2 (°C) ..... :	See below	—

temperature rise dT of part/at:	dT (K)		permitted dT (K)
	550V	850V	
PCB near DC1	22.7	16.5	T130-40=90
PCB near DC2	27.2	24.0	T130-40=90
Capacitor, E1	26.8	24.4	T105-40=65
Capacitor, E2	26.4	23.0	T105-40=65
Relay, K7	30.9	25.9	T85-40=45
Relay, K8	31.9	24.3	T85-40=45
PCB near Q3	39.6	37.3	T130-40=90
Winding of transformer T3	32.0	29.3	110-40=70
Core of transformer T3	35.6	29.8	110-40=70
Capacitor, C8	32.8	29.7	T105-40=65
Enclosure inside near T3	28.6	23.3	Ref.
Ambient	40.2	40.0	--
supplementary information			

IEC 62477-1			
Clause	Requirement – Test	Result – Remark	Verdict

4.4.7.4 to 4.4.7.5	TABLE: clearance and creepage distance measurements					P
clearance cl and creepage distance dcr at / of:	Up (V)	U r.m.s. (V)	required cl (mm)	cl (mm)	required dcr (mm)	dcr (mm)
L to N	850	850	1.5	>3.0	2.77	>3.0
Two terminals between Fuse	850	850	1.5	>3.0	2.77	>3.0
Live part to outside enclosure	850	850	3.0	>7.0	6.3	>7.0
T1 primary winding to secondary pin	850	850	3.0	>7.0	6.3	>7.0
T1 core to secondary pin	850	850	3.0	>7.0	6.3	>7.0

4.4.7.8.3.2 to 4.4.7.9	TABLE: distance through insulation measurement			P
distance through insulation di at/of:	U r.m.s. (V)	test voltage (V)	required di (mm)	di (mm)
Enclosure	850	4700	0.7	0.92

4.4.7.10	TABLE: electric strength measurements, impulse voltage test and partial discharge test (for OVC II)			P
test voltage applied between:	test voltage (V)	impulse withstand voltage (V)	partial discharge extinction voltage (V)	result
Between live parts and output circuit	3000	4000	850	Pass
Between live parts and external enclosure	3000	4000	850	Pass
Between primary winding of transformer and secondary winding of transformer (T1)	3000	4000	850	Pass
Between core of transformer and secondary winding of transformer (T1)	3000	4000	850	Pass
Live parts of different polarity	3000	2500	850	Pass

14	TABLE: list of critical components				P
object/part No.	manufacturer/ trademark	type/model	technical data	standard	mark(s) of conformity[1])
DC breaker DC1~DC4	Shanghai Liangxin Electrical Co.,Ltd	NDM3Z-125	1000VDC 125A	IEC 62477-1	Test with appliance

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IEC 62477-1			
Clause	Requirement – Test	Result – Remark	Verdict

14	TABLE: list of critical components				P
object/part No.	manufacturer/ trademark	type/model	technical data	standard	mark(s) of conformity[1])
AC breaker AC1~AC4,SPS	Shanghai Liangxin Electrical Co.,Ltd	NDM3-125L	450VAC 125A	IEC 62477-1	Test with appliance
AC breaker Load,Grid	Shanghai Liangxin Electrical Co.,Ltd	NDM3-630L	450VAC 630A	--	VDE
Isolation transformer	Shijiazhuang Xiangyang Group Co.,Ltd	LC-BY-0461	250KVA 380/400VAC	IEC 62477-1	Test with appliance
Internal wire	Jiangsu Shangshang Cable Group Co.,Ltd	ZB-RV-70mm2	450V 105°C	--	UL
terminal	Shenzhen Anfeite Technology Development Co.,Ltd	DJ-36T	75A -55~125°C 108*44mm°C	--	VDE
Power module: PCM50					
terminal	Shenzhen Anfeite Technology Development Co.,Ltd	DJ-36Z	75A -55~125°C 108*44mm	--	VDE
DC contactor	LS	GPR-M150	1000V 150A DC24V	IEC 62477-1	Test with appliance
Internal wire	Shanghai Shenyuan High Temperature Cable Co.,Ltd	8AWG-BLACK	600V -55~200°C	--	UL
fan	NINGBO SHENGJIU THERMAL TECH CO.,LTD	SB240838BSC RR002-A	24VDC, 1.4A	IEC 62477-1	Test with appliance
IC	TI	TME320F28335 ZJZA	--	IEC 62477-1	Test with appliance
U1 board(SM011911009)					

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IEC 62477-1			
Clause	Requirement – Test	Result – Remark	Verdict

14	TABLE: list of critical components				P
object/part No.	manufacturer/ trademark	type/model	technical data	standard	mark(s) of conformity[1])
15V transformer, T3	Shenzhen Gaochengjie Electrical Co.,Ltd	LC-BY-0369	--	IEC 62477-1	Test with appliance
24V transformer, T1	Shenzhen Gaochengjie Electrical Co.,Ltd	LC-BY-0319	--	IEC 62477-1	Test with appliance
Heat sink SRQ1	Changzhou xinyan machinery co.,ltd	PCM50-YF-SRQ-06-V1.00	--	IEC 62477-1	Test with appliance
IGBT Q62~Q65	infineon	IKW40N120H3	1200V, 40A	IEC 62477-1	Test with appliance
inductance L1	Shenzhen Gaochengjie Electrical Co.,Ltd	LC-DG-0177	--	IEC 62477-1	Test with appliance
hall HA1，HA2	LEM Electrical Co.,Ltd	HX50-P	50A 1:400	IEC 62477-1	Test with appliance
relay K8	Xiamen Hong fa Group Co.,Ltd	HF116F-80/24-1HTF	80A 24VDC	IEC 61810-1	VDE/TUV
relay K2,K7	OMRON	G5Q-1A4	277VAC 3A 24V DC	IEC 61810-1	VDE/TUV
U2board(SM011903007)					
IGBT Q1，Q3，Q5	infineon	F3L150R07W2E3_B11	1200V 150A	IEC 62477-1	Test with appliance
capacitance E1~E22	Nantong Jianghai Capacitor Co.,Ltd	CD294	500V 680u	IEC 62477-1	Test with appliance
capacitance C5~C8，C11~C14，	Xiamen Faratronic Co.,Ltd	C37	630VDC 3.3u	IEC 62477-1	Test with appliance
U3board(SM011904008)					
capacitance C1~C9	SHENZHENG CRC NEW ENERGY CO.,LTD	MKP-300VAC/6.6uF	300VAC 6.6uF	IEC 62477-1	Test with appliance

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IEC 62477-1			
Clause	Requirement – Test	Result – Remark	Verdict

14	TABLE: list of critical components				P
object/part No.	manufacturer/ trademark	type/model	technical data	standard	mark(s) of conformity[1])
fuse F1~F6	XI'an Sinofuse Electric Co.,Ltd	RS308-HB-4G	690VAC/550VDC, 80A	IEC 60127-1	VDE
inductance L1~L3	Huizhou MP Newenergy Technology Co.,Ltd	LC-DG-0221	--	IEC 62477-1	Test with appliance
SCR Q1~Q6	WeEn Semiconductors	BT155W-1200T-ween	1200V, 50A	IEC 62477-1	Test with appliance
relay K1~K3	Xiamen Hong fa Group Co.,Ltd	HF116F-80/24-1HTF-HF	690VAC/550VDC, 80A	IEC 61810-1	VDE/TUV
relay K4~K6	OMRON	G5Q-1A4-DC24V-OMRON	277VAC 3A 24V DC	IEC 61810-1	VDE/TUV
Mutual inductor CT4~CT6	Shenzhen Gaochengjie Electrical Co.,Ltd	LC-BY-0318	--	IEC 62477-1	Test with appliance
hall CT1~CT3	LEM Electrical Co.,Ltd	HX50-P	50A 1:400	IEC 62477-1	Test with appliance
[1]) an asterisk indicates a mark which assures the agreed level of surveillance					

Attachment No.1 Photo Documentation

Figure 1 External View

Attachment No.1 Photo Documentation

Figure 2 External View

Figure 3 External View

Attachment No.1 Photo Documentation

Figure 4 External View

Figure 5 Power unit View

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Attachment No.1 Photo Documentation

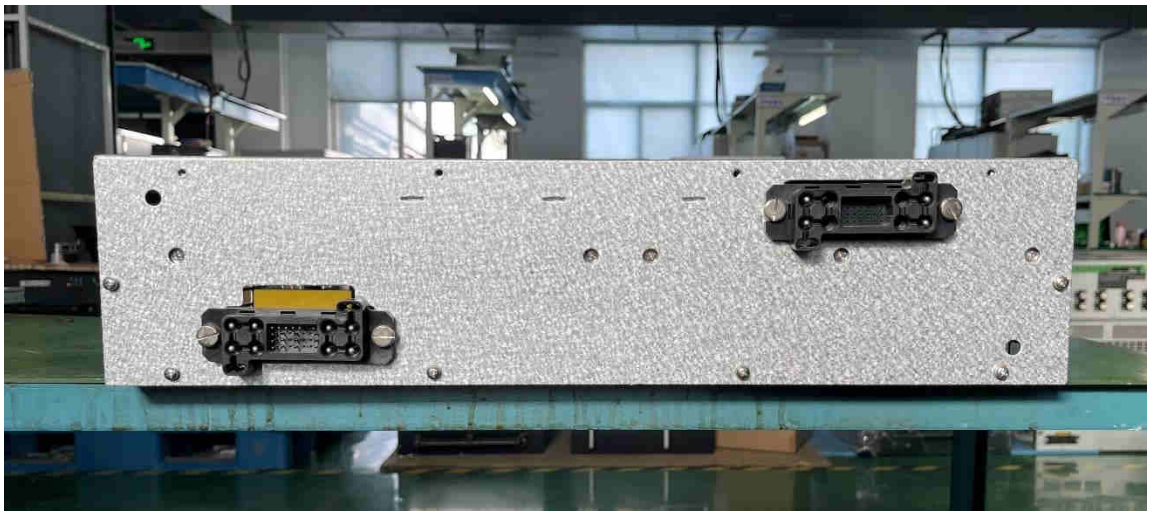

Figure 6 Power unit View

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EMC TEST REPORT

For

Sicon Chat Union Electric Co., Ltd.

Energy storage Power Conversion System（PCS）

Model No.: EPCS-250

Additional Model No.: EPCS50, EPCS100, EPCS150, EPCS200, EPCS250, EPCS300, EPCS400, EPCS500, EPCS600, EHPCS-250/50, EHPCS-200/50, EHPCS-150/50, EHPCS-100/50, EHPCS-50/50

Prepared for	:	Sicon Chat Union Electric Co., Ltd.
Address	:	Bldg.14&15, No. 319, Xiangjiang Street, High-Tech Zone, Shijiazhuang, 050035, China
Prepared by	:	Shenzhen STE Testing Laboratory Co., Ltd
Address	:	Room 301(left side), Building 9, Dehong Factory Building, No. 63 Yuchang Road, Niuhu Community, Guanlan Street, Longhua District, Shenzhen
Date of receipt of test sample	:	September 26, 2021
Number of tested samples	:	1
Serial number	:	Prototype
Date of Test	:	September 26, 2021 ~ September 28, 2021
Date of Report	:	September 28, 2021

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EMC TEST REPORT
EN 61000-6-4: 2007+A1: 2011
Electromagnetic compatibility (EMC) -- Part 6-4: Generic standards - Emission standard for industrial environments
EN 61000-6-2: 2005
Electromagnetic compatibility (EMC)-- Part 6-2: Generic standards - Immunity for industrial environments

Report Reference No. .....:	**STE21092602E**
Date Of Issue.....:	September 28, 2021
Testing Laboratory Name.....:	**Shenzhen STE Testing Laboratory Co., Ltd**
Address.....:	Room 301(left side), Building 9, Dehong Factory Building, No. 63 Yuchang Road, Niuhu Community, Guanlan Street, Longhua District, Shenzhen
Testing Location/ Procedure.....:	Full application of Harmonised standards ■ Partial application of Harmonised standards ☐ Other standard testing method ☐
Applicant's Name.....:	**Sicon Chat Union Electric Co., Ltd.**
Address.....:	Bldg.14&15, No. 319, Xiangjiang Street, High-Tech Zone, Shijiazhuang, 050035, China
Test specification:	
Standard.....:	EN 61000-6-4: 2007+A1: 2011, EN 61000-3-2: 2014 EN 61000-3-3: 2013, EN 61000-6-2: 2005
Test Report Form No.....:	EMC-1.0
TRF Originator.....:	Shenzhen STE Testing Laboratory Co., Ltd
Master TRF.....:	Dated 2017-08

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Test Item Description.....:	**Energy storage Power Conversion System（PCS）**
Trade Mark.....:	N/A
Model/ Type Reference.....:	EPCS-250
Ratings.....:	Input: AC 380V, 50/60Hz, MAX:362A Output: DC 550/850V, MAX:454A
Result .....:	**Positive**

Compiled by:	Supervised by:	Approved by:
Hunter Liang	Todd Qian	Fly Li
Hunter Liang/ File administrators	Todd Qian/ Technique principal	Fly Li/Manager

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EMC -- TEST REPORT

Test Report No. : STE21092602E	September 28, 2021 Date of issue

Type / Model.....	:	EPCS-250
EUT.....	:	Energy storage Power Conversion System（PCS）
Applicant.....	:	**Sicon Chat Union Electric Co., Ltd.**
Address.....	:	Bldg.14&15, No. 319, Xiangjiang Street, High-Tech Zone, Shijiazhuang, 050035, China
Telephone.....	:	/
Fax.....	:	/
Manufacturer.....	:	**Sicon Chat Union Electric Co., Ltd.**
Address.....	:	Bldg.14&15, No. 319, Xiangjiang Street, High-Tech Zone, Shijiazhuang, 050035, China
Telephone.....	:	/
Fax.....	:	/
Factory.....	:	**Sicon Chat Union Electric Co., Ltd.**
Address.....	:	Bldg.14&15, No. 319, Xiangjiang Street, High-Tech Zone, Shijiazhuang, 050035, China
Telephone.....	:	/
Fax.....	:	/

Test Result according to the standards on page 8: **Positive**

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

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Revision History

Revision	Issue Date	Revisions	Revised By
000	September 28, 2021	Initial Issue	Fly Li

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1. SUMMARY OF STANDARDS AND RESULTS

1.1.Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below.

EMISSION (EN 61000-6-4: 2007+A1: 2011)			
Description of Test Item	**Standard**	**Limits**	**Results**
Conducted disturbance at mains terminals	EN 61000-6-4: 2007+A1: 2011	Class A	PASS
Conducted disturbance at telecommunication port	EN 61000-6-4: 2007+A1: 2011	Class A	N/A
Radiated disturbance	EN 61000-6-4: 2007+A1: 2011	Class A	PASS
Harmonic current emissions	EN 61000-3-2: 2014	Class A	PASS
Voltage fluctuations & flicker	EN 61000-3-3: 2013	--------	PASS

IMMUNITY (EN 61000-6-2: 2005)			
Description of Test Item	**Basic Standard**	**Performance Criteria**	**Results**
Electrostatic discharge (ESD)	EN 61000-4-2: 2009	B	PASS
Radio-frequency, Continuous radiated disturbance	EN 61000-4-3: 2006+A1: 2010	A	PASS
Electrical fast transient (EFT)	EN 61000-4-4: 2012	B	PASS
Surge (Input a.c. power ports)	EN 61000-4-5: 2014	B	PASS
Surge (Telecommunication ports)		B	N/A
Radio-frequency, Continuous conducted disturbance	EN 61000-4-6: 2014	A	PASS
Power frequency magnetic field	EN 61000-4-8: 2010	A	PASS
Voltage dips, >95% reduction	EN 61000-4-11: 2004	B	PASS
Voltage dips, 30% reduction		C	PASS
Voltage interruptions		C	PASS
N/A is an abbreviation for Not Applicable.			

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1.2.Description of Performance Criteria

General Performance Criteria

Examples of functions defined by the manufacturer to be evaluated during testing include, but are not limited to, the following:

— essential operational modes and states;
— tests of all peripheral access (hard disks, floppy disks, printers, keyboard, mouse, etc.);
— quality of software execution;
— quality of data display and transmission;
— quality of speech transmission.

1.2.1.Performance criterion A

The equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed below a performance level specified by the manufacture when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be driver from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.

1.2.2.Performance criterion B

After the test, the equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed, after the application of the phenomena below a performance level specified by the manufacture, when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance.

During the test, degradation of performance is allowed. However, no change of operation state or stored data is allowed to persist after the test.

If the minimum performance level (or the permissible performance loss) is not specified by the manufacturer, then either of these may be driver from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.

1.2.3.Performance criterion C

Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacture's instructions.

Functions, and/or information stored in non-volatile memory, or protected by a battery backup, shall not be loss.

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2. GENERAL INFORMATION

2.1.Description of Device (EUT)

EUT : Energy storage Power Conversion System（PCS）

Trade Mark : N/A

Model Number : EPCS-250

Power Supply : Input: AC 380/400V, 50/60Hz, 32.4KW
Output: AC 220/230V, 50/60Hz

EUT Clock Frequency : ≤108MHz

2.2.Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. To CISPR 16 – 4 "Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements" and is documented in the STE quality system acc. To DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

2.3.Measurement Uncertainty

Test Item	Frequency Range	Expanded uncertainty (Ulab)	Expanded uncertainty (Ucispr)
Conducted Emission	(9kHz to 150kHz)	2.63 dB	4.0 dB
	(150kHz to 30MHz)	2.35 dB	3.6 dB
Radiated Emission	(9kHz to 30MHz)	3.68 dB	N/A
Radiated Emission	(30MHz to 1000MHz)	3.48 dB	5.2 dB
Radiated Emission	(above 1000MHz)	3.90 dB	N/A
Mains Harmonic	Voltage	0.510%	N/A
Voltage Fluctuations & Flicker	Voltage	0.510%	N/A

(1) Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus.

(2) The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor of k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

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3. MEASURING DEVICES AND TEST EQUIPMENT

3.1.Conducted Disturbance

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal/ Due date
1	EMI Test Receiver	ROHDE & SCHWARZ	ESR 3	102312	2020-06-11
2	10dB Attenuator	SCHWARZBECK	MTS-IMP136	261115-001-00 32	2021-03-02
3	Artificial Mains	ROHDE & SCHWARZ	ESH2-Z5	100030	2021-03-02
4	EMI Test Software	Farad	EMC	N/A	N/A
5	ISN	SCHWARZBECK	NTFM 8158	NTFM 8158 0120	2021-03-02

3.2.Radiated Disturbance (Electric Field)

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal/ Due date
1	3m Semi Anechoic Chamber	Maorui	/	/	2021-02-02
2	EMI Test Receiver	ROHDE & SCHWARZ	ESR 3	102312	2020-06-11
3	Log per Antenna	ROHDE & SCHWARZ	VULP9118	873	2020-06-12
4	EMI Test Software	Farad	EMC	N/A	N/A
5	Positioning Controller	MF	MF-7082	/	N/A

3.3.Harmonic Current

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal/ Due date
1	Power Analyzer Test System	Voltech	PM6000	20000670053	2020-06-17

3.4.Voltage fluctuation and Flicker

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal/ Due date
1	Power Analyzer Test System	Voltech	PM6000	20000670053	2020-06-17

3.5.Electrostatic Discharge

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal/ Due date
1	ESD Simulator	TESEQ	NSG437	1211	2020-06-12

3.6.RF Field Strength Susceptibility

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal/ Due date
1	SIGNAL GENERATOR	R&S	SMB100A	105942	2020-06-12
2	RF Power Amplifier	BONN Elektronik	BLWA0830-160/1 00/40D	128740	2020-06-12
3	Log-periodic Antenna	SCHWARZBECK	STLP9128D	043	2020-06-12
4	Power Meter	R&S	102031	16829	2020-06-12

3.7.Electrical Fast Transient/Burst

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal/ Due date
1	Surge test system	EM test	UCS 500 M4	0101-34	2021-03-02

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3.8.Surge

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal/ Due date
1	Surge test system	EM test	UCS 500 M4	0101-34	2021-03-02

3.9.Conducted Susceptibility

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal/ Due date
1	Simulator	FRANKONIA	CIT-10	A126A1195	2020-06-17
2	CDN	FRANKONIA	CDN-M2	5100100100	2020-06-17
3	CDN	FRANKONIA	CDN-M3	0900-11	2020-06-17
4	Attenuator	FRANKONIA	ATT6	0010222A	2020-06-17
5	Infuse tongs	EMTEST	EM-Clamp	0513A031201	2020-06-17

3.10.Power Frequency Magnetic Field Susceptibility

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal/ Due date
1	Power frequency mag-field generator System	EVERFINE	EMS61000-8K	906003	2020-06-17

3.11.Voltage Dips

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal/ Due date
1	Voltage dips and up generator	3CTEST	VDG-1105G	EC0171014	2020-06-17

3.12.Voltage Short Interruptions

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal/ Due date
1	Voltage dips and up generator	3CTEST	VDG-1105G	EC0171014	2020-06-17

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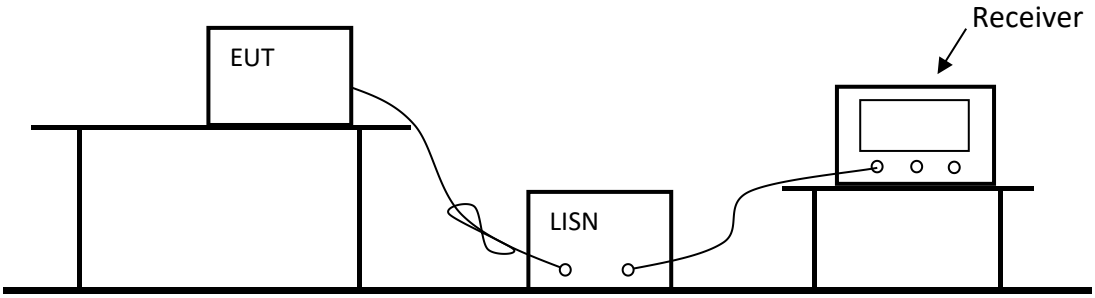
4. POWER LINE CONDUCTED EMISSION MEASUREMENT

4.1. Block Diagram of Test Setup



Ground

4.2. Measuring Standard

EN 61000-6-4: 2007+A1: 2011 (EN 55011: 2010)
Power Line Conducted Emission Limits (Class A)

Frequency (MHz)	Limit (dBμV)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	79	66*
0.50 ~ 5.00	73	60
5.00 ~ 30.00	73	60
NOTE1-The lower limit shall apply at the transition frequencies. NOTE2-The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz.		

4.3. EUT Configuration on Test

The following equipments are installed on Conducted Emission Measurement to see EN 55011 requirements and operating in a manner which tends to maximize its emission characteristics in normal application.

4.4.Operating Condition of EUT

4.4.1.Setup the EUT as shown on Section 4.1.

4.4.2.Turn on the power of all equipments.

4.4.3.Let the EUT work in measuring mode (work) and measure it.

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4.5. Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and connected to the AC mains through Line Impedance Stability Network (L.I.S.N). This provided 50-ohm coupling impedance for the tested equipments. Both sides of AC line are investigated to find out the maximum conducted emission according to the EN 55011 regulations during conducted emission measurement.

The bandwidth of the field strength meter is set at 9kHz in 150kHz~30MHz and 200Hz in 9kHz~150kHz.

The frequency range from 150kHz to 30MHz is investigated

4.6. Test Results

PASS.

The scanning waveforms is in the next page.

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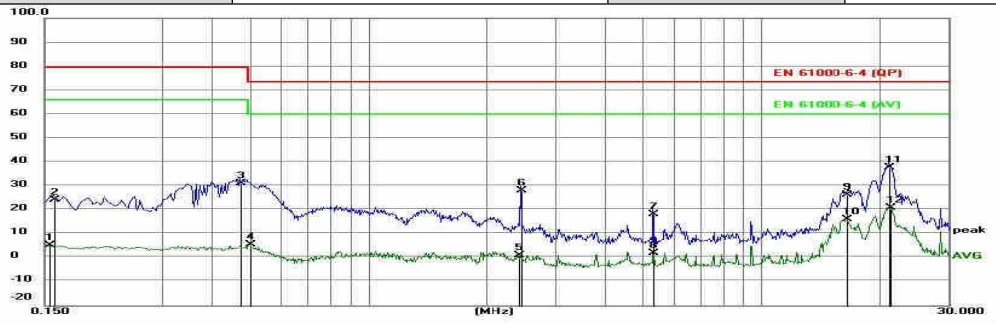
Model No.	EPCS-250	**Test Mode**	work
Environmental Conditions	24.0℃, 69.1% RH	**Test Engineer**	Feng Zhang
Pol	Line 1		



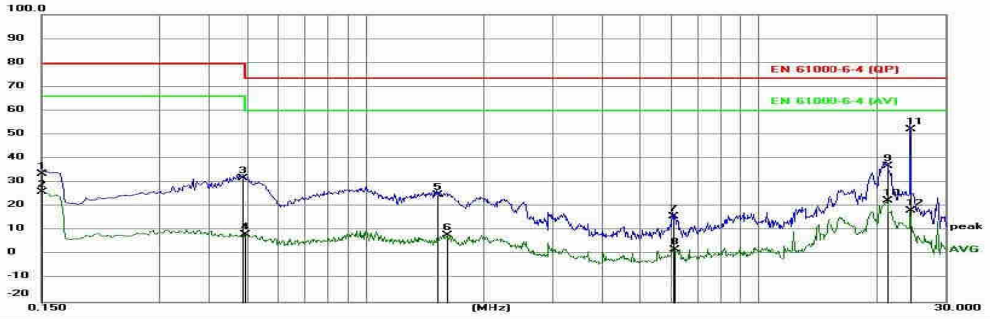
Site: LAB
Limit: EN 61000-6-4 (QP)
EUT:
M/N: EPCS-250/50
Mode: WORK
Note: Energy storage Power Conversion System

Phase: L1
Power: AC380V/50Hz

Temperature: 24.0
Humidity: 69.1 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz		dB	dBuV	dBuV	dB	Detector	Comment
1		0.1544	-4.71	10.00	5.29	66.00	-60.71	AVG	
2		0.1590	14.25	10.00	24.25	79.00	-54.75	QP	
3		0.4740	20.98	10.18	31.16	79.00	-47.84	QP	
4		0.5010	-4.67	10.19	5.52	60.00	-54.48	AVG	
5		2.4269	-8.90	10.16	1.26	60.00	-58.74	AVG	
6		2.4539	17.93	10.15	28.08	73.00	-44.92	QP	
7		5.3295	7.24	10.97	18.21	73.00	-54.79	QP	
8		5.3295	-8.84	10.97	2.13	60.00	-57.87	AVG	
9		16.6290	16.14	10.35	26.49	73.00	-46.51	QP	
10		16.6290	5.67	10.35	16.02	60.00	-43.98	AVG	
11	*	21.1650	27.51	10.25	37.76	73.00	-35.24	QP	
12		21.4080	10.80	10.23	21.03	60.00	-38.97	AVG	

Model No.	EPCS-250	**Test Mode**	work
Environmental Conditions	24.0℃, 69.1% RH	**Test Engineer**	Feng Zhang
Pol	Neutral		



Site: LAB
Limit: EN 61000-6-4 (QP)
EUT:
M/N: EPCS-250/50
Mode: WORK
Note: Energy storage Power Conversion System

Phase: N
Power: AC380V/50Hz

Temperature: 24.0
Humidity: 69.1 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz		dB	dBuV	dBuV	dB	Detector	Comment
1		0.1500	23.44	9.99	33.43	79.00	-45.57	QP	
2		0.1500	16.05	9.99	26.04	66.00	-39.96	AVG	
3		0.4875	21.44	10.18	31.62	79.00	-47.38	QP	
4		0.4965	-1.71	10.18	8.47	66.00	-57.53	AVG	
5		1.5270	14.61	10.28	24.89	73.00	-48.11	QP	
6		1.6169	-2.33	10.28	7.95	60.00	-52.05	AVG	
7		6.0720	5.71	10.03	15.74	73.00	-57.26	QP	
8		6.1350	-7.83	10.02	2.19	60.00	-57.81	AVG	
9		21.3225	25.87	10.84	36.71	73.00	-36.29	QP	
10		21.3225	11.50	10.84	22.34	60.00	-37.66	AVG	
11	*	24.4140	41.81	10.34	52.15	73.00	-20.85	QP	
12		24.4140	7.87	10.34	18.21	60.00	-41.79	AVG	

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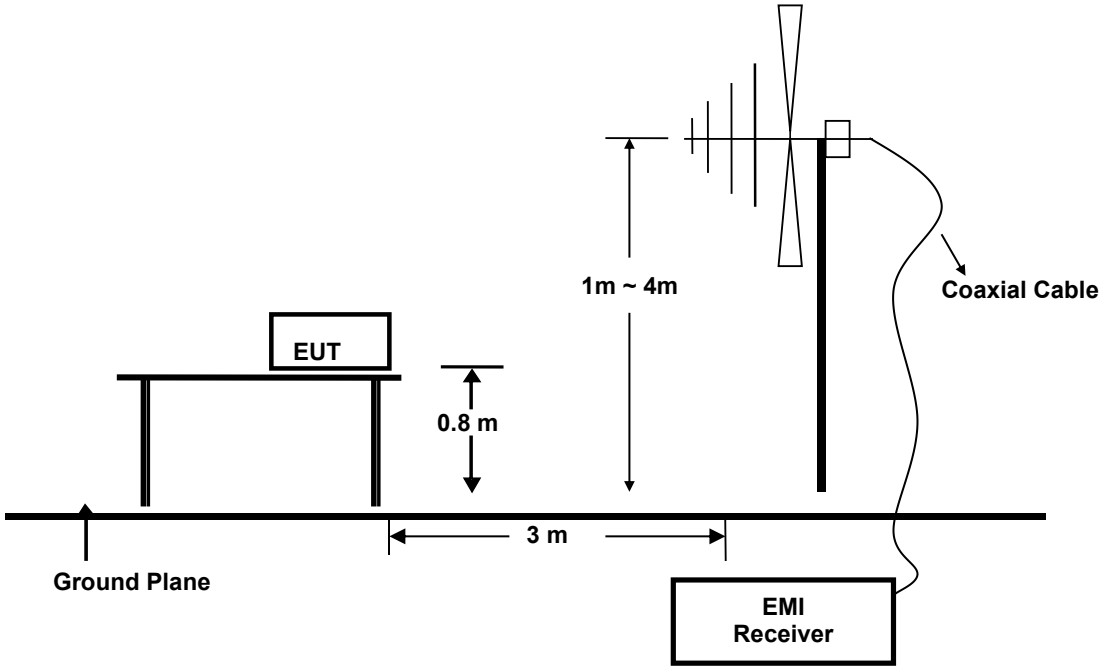
5. RADIATED EMISSION MEASUREMENT

5.1.Block Diagram of Test Setup



5.2.Measuring Standard

EN 61000-6-4: 2007+A1: 2011 (EN 55011: 2010)

5.3.Radiated Emission Limits

All emanations from a class device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified below:

FREQUENCY (MHz)	DISTANCE (Meters)	FIELD STRENGTHS LIMIT (dBμV/m)
30 ~ 230	3	50
230 ~ 1000	3	57

Note: (1) The smaller limit shall apply at the combination point between two frequency bands.

(2) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the EUT.

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5.4.EUT Configuration on Test

The EN 55011 regulations test method must be used to find the maximum emission during radiated emission measurement.

5.5.Operating Condition of EUT

5.5.1.Turn on the power.

5.5.2.Let the EUT work in test mode and measure it.

5.6.Test Procedure

The EUT is placed on a turntable, which is 0.8 meter high above the ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. By-log antenna (calibrated by Dipole Antenna) is used as a receiving antenna. Both horizontal and vertical polarization of the antenna is set on test.

The bandwidth of the Receiver is set at 120kHz.

All the scanning waveform is in next page.

5.7.Test Results

PASS.

The frequency range from 30MHz to 1000MHz is investigated.

The scanning waveforms is in the next page.

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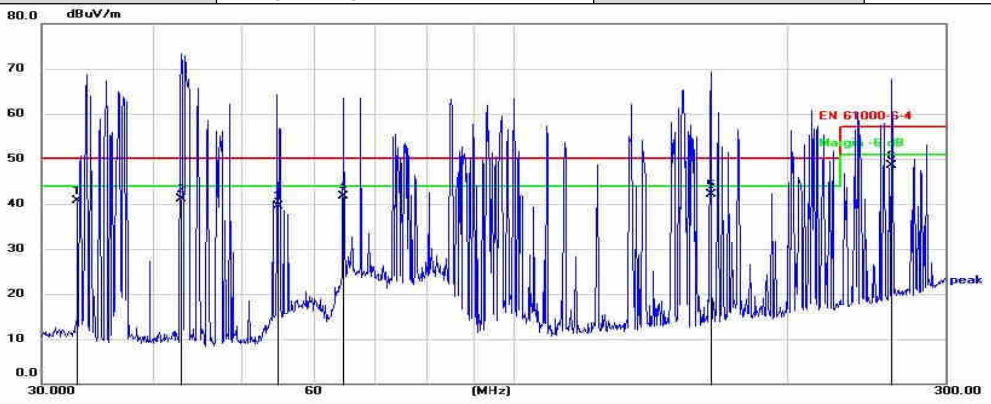
Model No.	EPCS-250	**Test Mode**	work
Environmental Conditions	23.0℃, 65.1% RH	**Detector Function**	Quasi-peak
Pol	Vertical	**Distance**	3m
Test Engineer	Feng Zhang		



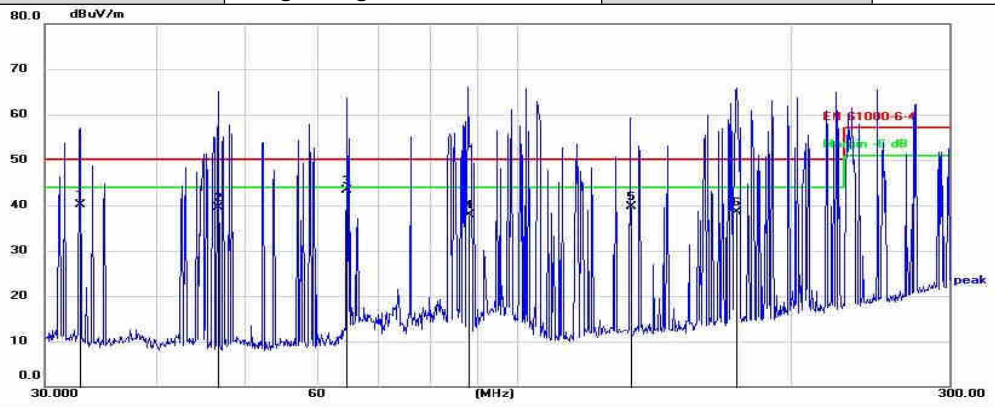
Site: LAB
Limit: EN 61000-6-4
EUT:
M/N: EPCS-250/50
Mode: WORK
Note: Energy storage Power Conversion System

Polarization: *Vertical*
Power: AC380V/50Hz

Temperature: 23.0(C)
Humidity: 65.1 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector	Comment
1		32.8186	28.05	12.75	40.80	50.00	-9.20	QP	
2		42.8668	28.52	12.68	41.20	50.00	-8.80	QP	
3		54.7169	27.64	11.96	39.60	50.00	-10.40	QP	
4		64.7321	29.91	11.79	41.70	50.00	-8.30	QP	
5	*	164.8623	26.23	15.97	42.20	50.00	-7.80	QP	
6		261.8914	26.95	21.55	48.50	57.00	-8.50	QP	

Model No.	EPCS-250	**Test Mode**	work
Environmental Conditions	23.0℃, 65.1% RH	**Detector Function**	Quasi-peak
Pol	Horizontal	**Distance**	3m
Test Engineer	Feng Zhang		



Site: LAB
Limit: EN 61000-6-4
EUT:
M/N: EPCS-250/50
Mode: WORK
Note: Energy storage Power Conversion System

Polarization: *Horizontal*
Power: AC380V/50Hz

Temperature: 23.0(C)
Humidity: 65.1 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector	Comment
1		32.8186	27.49	12.61	40.10	50.00	-9.90	QP	
2		46.6790	27.15	12.45	39.60	50.00	-10.40	QP	
3	*	64.7321	31.70	11.60	43.30	50.00	-6.70	QP	
4		87.9268	25.54	12.36	37.90	50.00	-12.10	QP	
5		133.0826	25.05	14.65	39.70	50.00	-10.30	QP	
6		174.2293	22.06	16.54	38.60	50.00	-11.40	QP	

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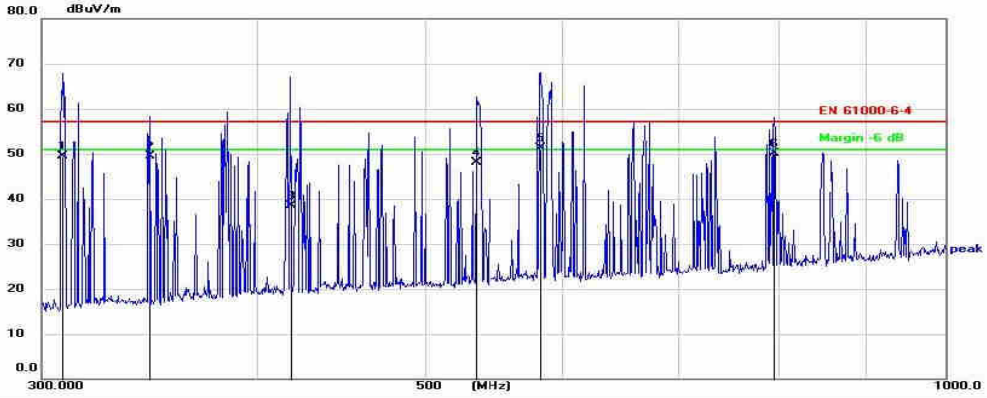
Model No.	EPCS-250	**Test Mode**	work
Environmental Conditions	23.0℃, 65.1% RH	**Detector Function**	Quasi-peak
Pol	Vertical	**Distance**	3m
Test Engineer	Feng Zhang		



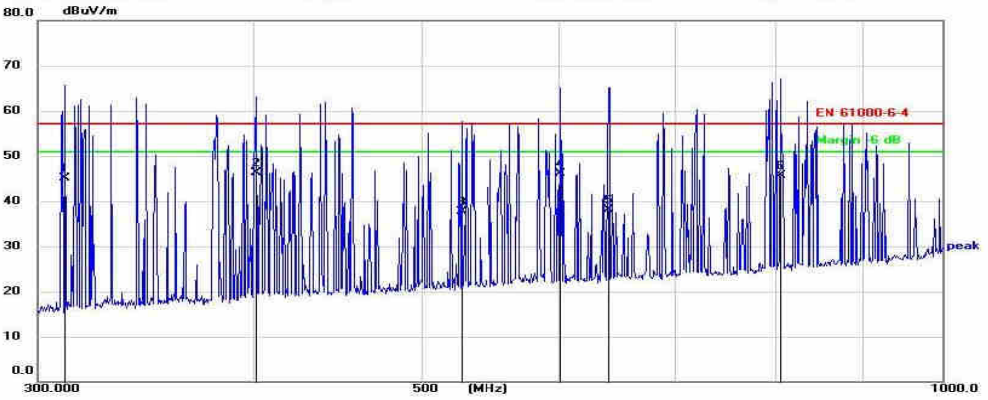
Site: LAB
Limit: EN 61000-6-4
EUT:
M/N: EPCS-250/50
Mode: WORK
Note: Energy storage Power Conversion System

Polarization: *Vertical*
Power: AC380V/50Hz

Temperature: 23.0(C)
Humidity: 65.1 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector	Comment
1		308.4234	31.21	18.29	49.50	57.00	-7.50	QP	
2		347.0479	30.41	19.19	49.60	57.00	-7.40	QP	
3		417.7466	17.32	21.18	38.50	57.00	-18.50	QP	
4		535.3353	25.23	22.97	48.20	57.00	-8.80	QP	
5	*	583.1098	27.69	23.61	51.30	57.00	-5.70	QP	
6		795.5235	23.32	26.78	50.10	57.00	-6.90	QP	

Model No.	EPCS-250	**Test Mode**	work
Environmental Conditions	23.0℃, 65.1% RH	**Detector Function**	Quasi-peak
Pol	Horizontal	**Distance**	3m
Test Engineer	Feng Zhang		



Site: LAB
Limit: EN 61000-6-4
EUT:
M/N: EPCS-250/50
Mode: WORK
Note: Energy storage Power Conversion System

Polarization: *Horizontal*
Power: AC380V/50Hz

Temperature: 23.0(C)
Humidity: 65.1 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector	Comment
1		311.0338	26.60	18.50	45.10	57.00	-11.90	QP	
2	*	401.4743	25.20	21.03	46.23	57.00	-10.77	QP	
3		527.0217	15.05	22.75	37.80	57.00	-19.20	QP	
4		601.6517	22.20	23.90	46.10	57.00	-10.90	QP	
5		641.2948	13.68	24.52	38.20	57.00	-18.80	QP	
6		805.1593	18.98	26.82	45.80	57.00	-11.20	QP	

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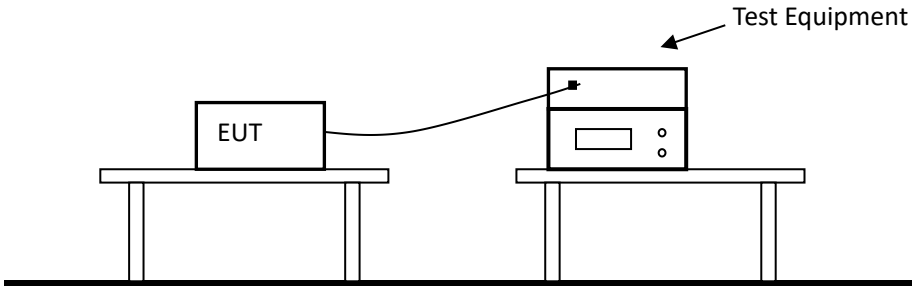
6. HARMONIC CURRENT EMISSION MEASUREMENT

6.1.Block Diagram of Test Setup



6.2.Test Standard

EN 61000-3-2: 2014

6.3.Operation Condition of EUT

Same as Section 4.4, except the test setup replaced as Section 6.1.

6.4.Test Results

PASS.

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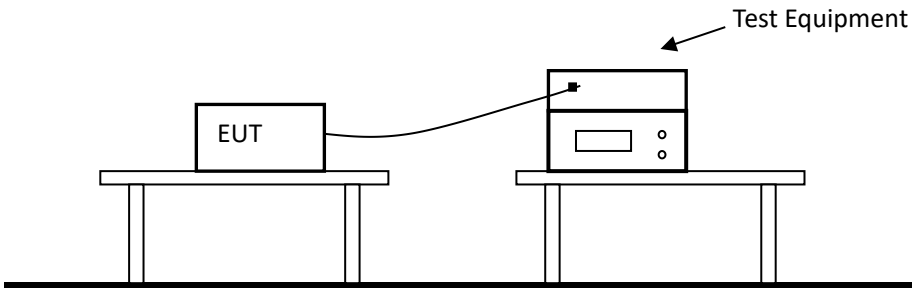
7. VOLTAGE FLUCTUATION AND FLICKER MEASUREMENT

7.1.Block Diagram of Test Setup



7.2.Measuring Standard

EN 61000-3-3: 2013

7.3.Operation Condition of EUT

Same as Section 4.4, except the test setup replaced as Section 7.1.

7.4.Test Results

PASS.

Test Model	**EPCS-250**	**Test Engineer**	**Feng Zhang**
Test Voltage	**AC 230V/50Hz**		

Overall Result:

PASS

Notes:
Measurement method - Voltage

	Pst	dc (%)	dmax (%)	d(t) > 3.3%(ms)
Limit	1.000	3.300	4.000	500
Reading 1	0.101	0.061	0.238	0

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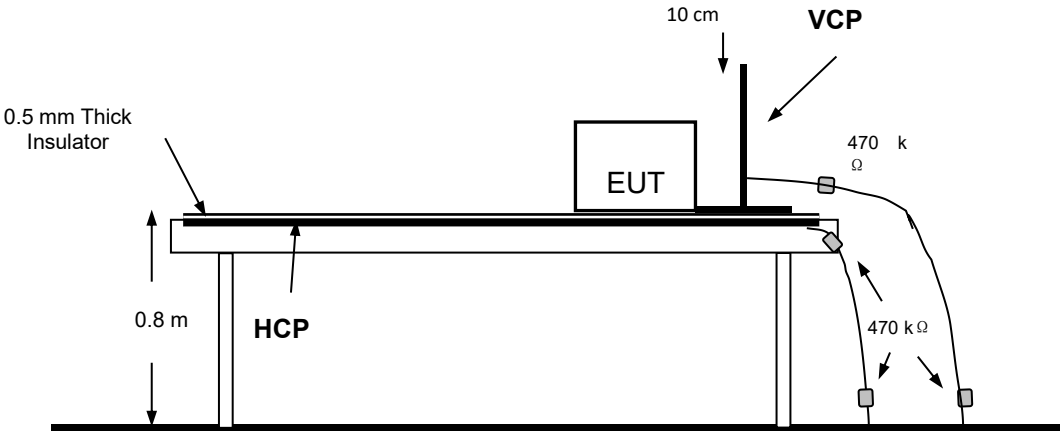
8. ELECTROSTATIC DISCHARGE IMMUNITY TEST

8.1.Block Diagram of Test Setup



8.2.Test Standard

EN 61000-6-2: 2005 (EN 61000-4-2: 2009,
Severity Level: 3 / Air Discharge: ±8KV, Level: 3 / Contact Discharge: ±6KV)

8.3.Severity Levels and Performance Criterion

8.3.1.Severity level

Level	Test Voltage Contact Discharge (KV)	Test Voltage Air Discharge (KV)
1.	±2	±2
2.	±4	±4
3.	±6	±8
4.	±8	±15
X	Special	Special

8.3.2.Performance Criterion: **B**

8.4.EUT Configuration on Test

The configuration of EUT is listed in Section 3.7.

8.5.Operating Condition of EUT

Same as conducted emission measurement, which is listed in Section 4.4. Except the test set up replaced by Section 8.1.

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8.6.Test Procedure

8.6.1.Air Discharge

This test is done on a non-conductive surface. The round discharge tip of the discharge electrode shall be approached as fast as possible to touch the EUT.
After each discharge, the discharge electrode shall be removed from the EUT.
The generator is then re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed

8.6.2.Contact Discharge

All the procedure shall be same as Section 8.6.1. Except that the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

8.6.3.Indirect Discharge For Horizontal Coupling Plane

At least 10 single discharges (in the most sensitive polarity) shall be applied at the front edge of each HCP opposite the center point of each unit (if applicable) of the EUT and 0.1m from the front of the EUT. The long axis of the discharge electrode shall be in the plane of the HCP and perpendicular to its front edge during the discharge.

8.6.4.Indirect Discharge For Vertical Coupling Plane

At least 10 single discharge (in the most sensitive polarity) shall be applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m X 0.5m, is placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges shall be applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.

8.7.Test Results

PASS.

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Electrostatic Discharge Test Results

Standard	☐ IEC 61000-4-2 ☑ EN 61000-4-2		
Applicant	Sicon Chat Union Electric Co., Ltd.		
EUT	Energy storage Power Conversion System （PCS）	**Temperature**	22.5℃
M/N	EPCS-250	**Humidity**	51.9%
Criterion	B	**Pressure**	1021mbar
Test Mode	work	**Test Engineer**	Feng Zhang

Air Discharge

Test Points	Test Levels			Results		
	± 2KV	± 4KV	±8K	Passd	FAIL	Performance Citerio
Front	☒	☒	☒	☒	☐	☐ A ☒ B
Back	☒	☒	☒	☒	☐	☐ A ☒ B
Left	☒	☒	☒	☒	☐	☐ A ☒ B
Right	☒	☒	☒	☒	☐	☐ A ☒ B
Top	☒	☒	☒	☒	☐	☐ A ☒ B
Bottom	☒	☒	☒	☒	☐	☐ A ☒ B

Contact Discharge

Test Points	Test Levels		Results		
	± 2 KV	±4 KV	Passed	Fail	Performance Criterion
Front	☒	☒	☒	☐	☐ A ☒ B
Back	☒	☒	☒	☐	☐ A ☒ B
Left	☒	☒	☒	☐	☐ A ☒ B
Right	☒	☒	☒	☐	☐ A ☒ B
Top	☒	☒	☒	☐	☐ A ☒ B
Bottom	☒	☒	☒	☐	☐ A ☒ B

Discharge To Horizontal Coupling Plane

Side of EUT	Test Levels		Results		
	± 2 KV	± 6 KV	Passed	Fail	Performance Criterion
Front	☒	☒	☒	☐	☐ A ☒ B
Back	☒	☒	☒	☐	☐ A ☒ B
Left	☒	☒	☒	☐	☐ A ☒ B
Right	☒	☒	☒	☐	☐ A ☒ B

Discharge To Vertical Coupling Plane

Side of EUT	Test Levels		Results		
	± 2 KV	± 6 kV	Passed	Fail	Performance Criterion
Front	☒	☒	☒	☐	☐ A ☒ B
Back	☒	☒	☒	☐	☐ A ☒ B
Left	☒	☒	☒	☐	☐ A ☒ B
Right	☒	☒	☒	☐	☐ A ☒ B

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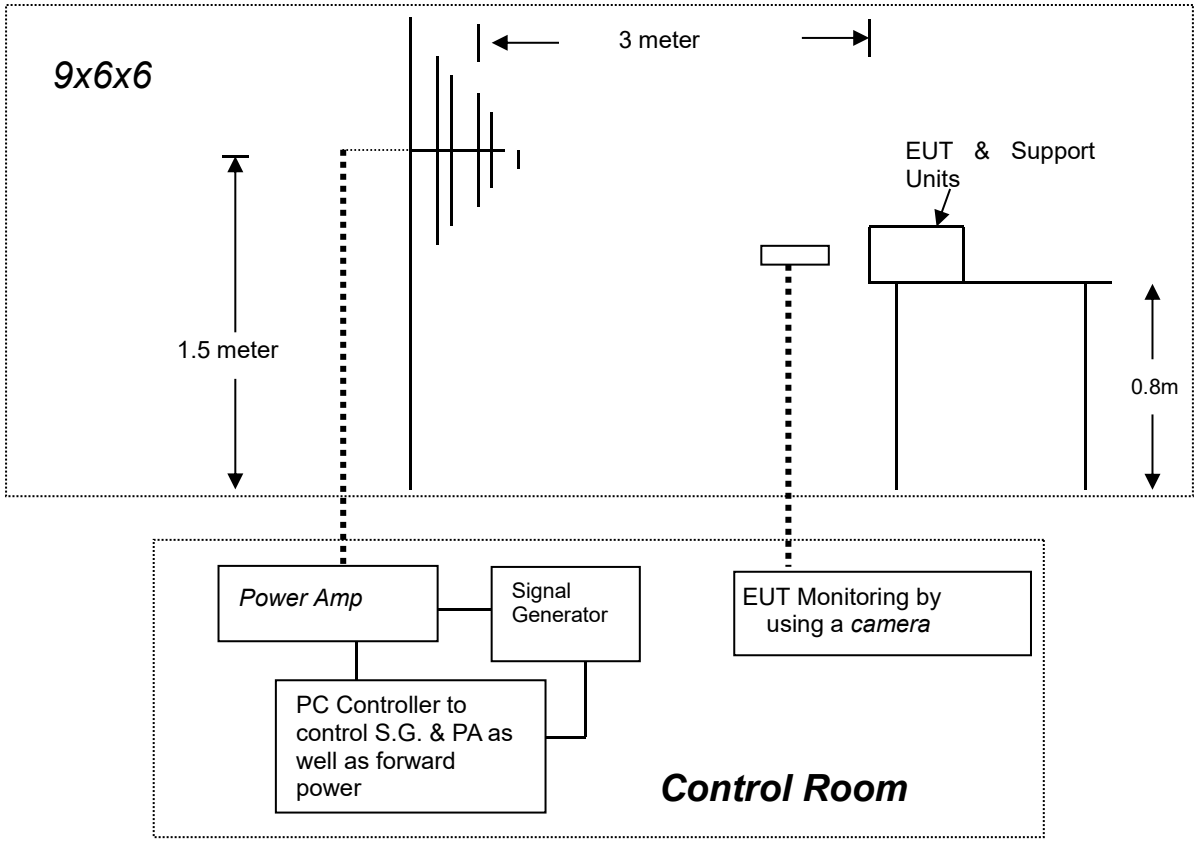
9. RF FIELD STRENGTH SUSCEPTIBILITY TEST

9.1.Block Diagram of Test



9.2.Test Standard

EN 61000-6-2: 2005
((EN 61000-4-3: 2006+A1: 2008 Severity Level: 3, 2, 1; 10V / m, 3V / m, 1V / m)

9.3.Severity Levels and Performance Criterion

9.3.1.Severity Levels

Level	Field Strength V/m
1.	1
2.	3
3.	10
X.	Special

9.3.2.Performance Criterion: **A**

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9.4.EUT Configuration on Test

The configuration of the EUT is same as Section 3.8.

9.5.Operating Condition of EUT

Same as radiated emission measurement, which is listed in Section 5.5, except the test setup replaced as Section 9.1.

9.6.Test Procedure

The EUT are placed on a table, which is 0.8 meter high above the ground. The EUT is set 3 meters away from the transmitting antenna, which is mounted on an antenna tower. Both horizontal and vertical polarization of the antenna is set on test. Each of the four sides of the EUT must be faced this transmitting antenna and measured individually.
In order to judge the EUT performance, a CCD Recording is used to monitor its screen.
All the scanning conditions are as following:

Condition of Test	Remark
1. Fielded Strength	10V/m (Severity Level 2)
2. Radiated Signal	Unmodulated
3. Scanning Frequency	80-1000MHz
4. Sweep time of radiated	0.0015 Decade/s
5. Dwell Time	3 Sec.
6. Fielded Strength	3V/m (Severity Level 2)
7. Radiated Signal	Unmodulated
8. Scanning Frequency	1.4-2.0GHz
9. Sweep time of radiated	0.0015 Decade/s
10. Dwell Time	3 Sec.
11. Fielded Strength	1V/m (Severity Level 1)
12. Radiated Signal	Unmodulated
13. Scanning Frequency	2.0-2.7GHz
14. Sweep time of radiated	0.0015 Decade/s
15. Dwell Time	3 Sec.

9.7.Test Results

PASS.

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RF Field Strength Susceptibility Test Results

Standard	☐ IEC 61000-4-3 ☑ EN 61000-4-3		
Applicant	Sicon Chat Union Electric Co., Ltd.		
EUT	Energy storage Power Conversion System （PCS）	**Temperature**	22.0℃
M/N	EPCS-250	**Humidity**	54.1%
Test Mode	work	**Test Engineer**	Feng Zhang
Frequency Range	80 MHz to 1000 MHz	**Field Strength**	10 V/m
	1400 MHz to 2000 MHz		3 V/m
	2000 MHz to 2700 MHz		1 V/m
Criterion	A		
Modulation	☐None ☐ Pulse ☑AM 1KHz 80%		
Steps	1%		

	Horizontal	**Vertical**
Front	PASS	PASS
Right	PASS	PASS
Rear	PASS	PASS
Left	PASS	PASS

Note:

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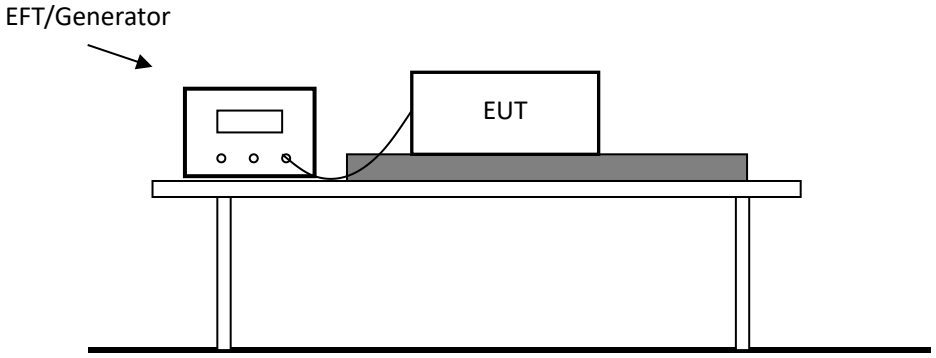
10. ELECTRICAL FAST TRANSIENT/BURST IMMUNITY TEST

10.1.Block Diagram of Test Setup



10.2.Test Standard

EN 61000-6-2: 2005
(EN 61000-4-4: 2012, Severity Level, Level 3: 2KV)

10.3.Severity Levels and Performance Criterion

10.3.1.Severity level

Open Circuit Output Test Voltage ±10%		
Level	On Power Supply Lines	On I/O (Input/Output) Signal data and control lines
1.	0.5 KV	0.25 KV
2.	1 KV	0.5 KV
3.	2 KV	1 KV
4.	4 KV	2 KV
X	Special	Special

10.3.2.Performance Criterion: **B**

10.4.EUT Configuration on Test

The configuration of EUT is listed in Section 3.9.

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10.5.Operating Condition of EUT

10.5.1.Setup the EUT as shown in Section 10.1.

10.5.2.Turn on the power of all equipments.

10.5.3.Let the EUT work in test mode (work) and measure it.

10.6.Test Procedure

The EUT is put on the table, which is 0.8 meter high above the ground. This reference ground plane shall project beyond the EUT by at least 0.1m on all sides and the minimum distance between EUT and all other conductive structure, except the ground plane beneath the EUT, shall be more than 0.5m.

10.6.1.For input and output AC power ports:

The EUT is connected to the power mains by using a coupling device, which couples the EFT interference signal to AC power lines. Both polarities of the test voltage should be applied during compliance test and the duration of the test is 2 mins.

10.6.2.For signal lines and control lines ports: No I/O ports. It’s unnecessary to test.

10.6.3.For DC output line ports: It’s unnecessary to test.

10.7.Test Result

PASS.

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Electrical Fast Transient/Burst Test Results

Standard	☐ IEC 61000-4-4 ☑ EN 61000-4-4		
Applicant	Sicon Chat Union Electric Co., Ltd.		
EUT	Energy storage Power Conversion System （PCS）	**Temperature**	23.2℃
M/N	EPCS-250	**Humidity**	55.8%
Test Mode	work	**Criterion**	B
Test Engineer	Feng Zhang		

Line	Test Voltage	Result (+)	Result (-)
L	2KV	PASS	PASS
N	2KV	PASS	PASS
PE	2KV	PASS	PASS
L-N	2KV	PASS	PASS
L-PE	2KV	PASS	PASS
N-PE	2KV	PASS	PASS
L-N-PE	2KV	PASS	PASS

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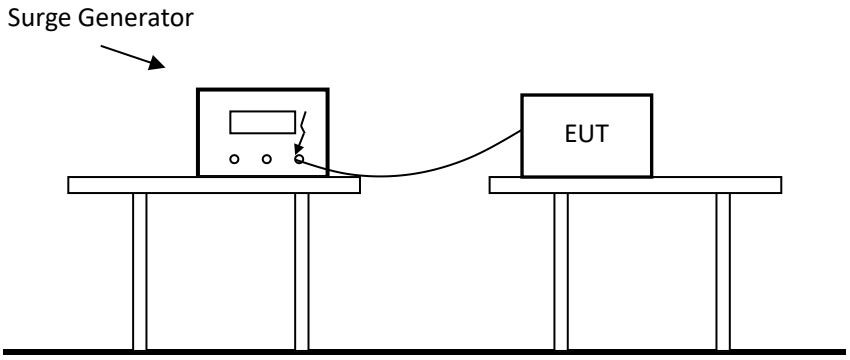
11. SURGE IMMUNITY TEST

11.1.Block Diagram of Test Setup



11.2.Test Standard

EN 61000-6-2: 2005
(EN 61000-4-5: 2014, Severity Level: Line to Line: Level 2, 1.0KV, Line to Earth: Level 3, 2.0KV)

11.3.Severity Levels and Performance Criterion

11.3.1.Severity level

Severity Level	Open-Circuit Test Voltage KV
1	0.5
2	1.0
3	2.0
4	4.0
*	Special

11.3.2.Performance Criterion: **B**

11.4.EUT Configuration on Test

The configuration of EUT is listed in Section 3.10.

11.5.Operating Condition of EUT

11.5.1.Setup the EUT as shown in Section 11.1.

11.5.2.Turn on the power of all equipments.

11.5.3.Let the EUT work in test mode (work) and measure it.

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11.6.Test Procedure

11.6.1.Set up the EUT and test generator as shown on Section 11.1.
11.6.2.For line to line coupling mode, provide a 1.0 KV 1.2/50us voltage surge (at open-circuit condition) and 8/20us current surge to EUT selected points.
11.6.3.At least 5 positive and 5 negative (polarity) tests with a maximum 1/min repetition rate are conducted during test.
11.6.4.Different phase angles are done individually.
11.6.5.Record the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.

11.7.Test Result

PASS.

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Surge Immunity Test Result

Standard	☐ IEC 61000-4-5 ☑ EN 61000-4-5		
Applicant	Sicon Chat Union Electric Co., Ltd.		
EUT	Energy storage Power Conversion System （PCS）	**Temperature**	23.2℃
M/N	EPCS-250	**Humidity**	55.8％
Test Mode	work	**Criterion**	B
Test Engineer	Feng Zhang		

Location	Polarity	Phase Angle	Number of Pulse	Pulse Voltage (KV)	Result
L-N	+	0°	5	1.0	PASS
	+	90°	5	1.0	PASS
	+	180°	5	1.0	PASS
	+	270°	5	1.0	PASS
	-	0°	5	1.0	PASS
	-	90°	5	1.0	PASS
	-	180°	5	1.0	PASS
	-	270°	5	1.0	PASS
L-PE	+	0°	5	2.0	PASS
	+	90°	5	2.0	PASS
	+	180°	5	2.0	PASS
	+	270°	5	2.0	PASS
	-	0°	5	2.0	PASS
	-	90°	5	2.0	PASS
	-	180°	5	2.0	PASS
	-	270°	5	2.0	PASS
N-PE	+	0°	5	2.0	PASS
	+	90°	5	2.0	PASS
	+	180°	5	2.0	PASS
	+	270°	5	2.0	PASS
	-	0°	5	2.0	PASS
	-	90°	5	2.0	PASS
	-	180°	5	2.0	PASS
	-	270°	5	2.0	PASS
Note					

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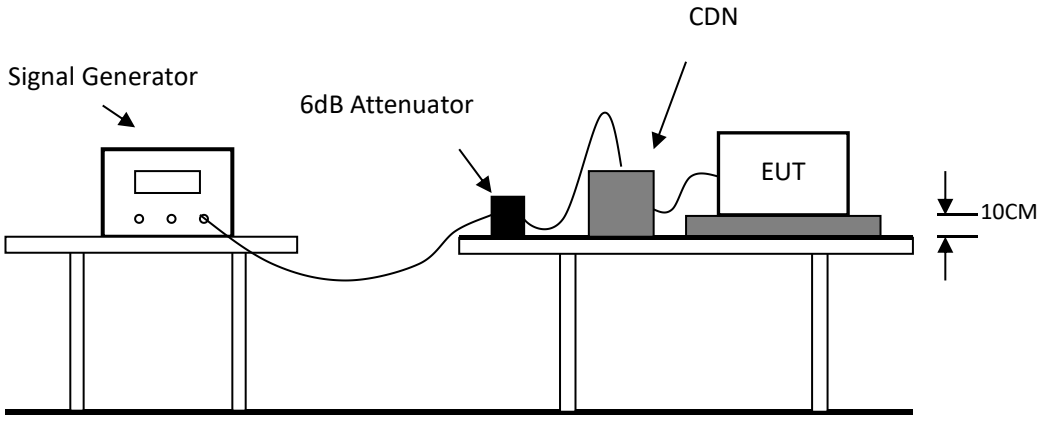
12. INJECTED CURRENTS SUSCEPTIBILITY TEST

12.1.Block Diagram of Test Setup



12.2.Test Standard

EN 61000-6-2: 2005
(EN 61000-4-6: 2014, Severity Level: Level 3, 10V (rms), (0.15MHz ~ 80MHz))

12.3.Severity Levels and Performance Criterion

12.3.1.Severity level

Level	Field Strength V
1	1
2	3
3	10
X	Special

12.3.2.Performance Criterion: **A**

12.4.EUT Configuration on Test

The configuration of EUT is listed in Section 3.11.

12.5.Operating Condition of EUT

12.5.1.Setup the EUT as shown in Section 12.1.

12.5.2.Turn on the power of all equipments.

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12.5.3.Let the EUT work in test mode (work) and measure it.

12.6.Test Procedure

12.6.1.Set up the EUT, CDN and test generators as shown on Section 12.1.
12.6.2.Let the EUT work in test mode and measure it.
12.6.3.The EUT are placed on an insulating support 0.1m high above a ground reference plane. CDN (coupling and decoupling device) is placed on the ground plane about 0.3m from EUT. Cables between CDN and EUT are as short as possible, and their height above the ground reference plane shall be between 30 and 50 mm (where possible).
12.6.4.The disturbance signal described below is injected to EUT through CDN.
12.6.5.The EUT operates within its operational mode(s) under intended climatic conditions after power on.
12.6.6.The frequency range is swept from 150kHz to80MHz using 3V signal level, and with the disturbance signal 80% amplitude modulated with a 1kHz sine wave.
12.6.7.The rate of sweep shall not exceed $1.5*10^{-3}$decades/s. where the frequency is swept incrementally; the step size shall not exceed 1% of the start and thereafter 1% of the preceding frequency value.
12.6.8.Recording the EUT operating situation during compliance testing and decide the EUT immunity criterion.

12.7.Test Results

PASS.

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Injected Currents Susceptibility Test Results

Standard	☐ IEC 61000-4-6 ☑ EN 61000-4-6		
Applicant	Sicon Chat Union Electric Co., Ltd.		
EUT	Energy storage Power Conversion System （PCS）	**Temperature**	24.1℃
M/N	EPCS-250	**Humidity**	52.3％
Test Mode	work	**Criterion**	A
Test Engineer	Feng Zhang		

Frequency Range (MHz)	Injected Position	Strength (Unmodulated)	Criterion	Result
0.15 ~ 80	AC Mains	10V	A	PASS

Remark:
1. Modulation Signal:1kHz 80% AM
2. Measurement Equipment :
Simulator: CIT-10 (FRANKONIA)
CDN : ☐CDN-M2 (FRANKONIA)
☑CDN-M3 (FRANKONIA)

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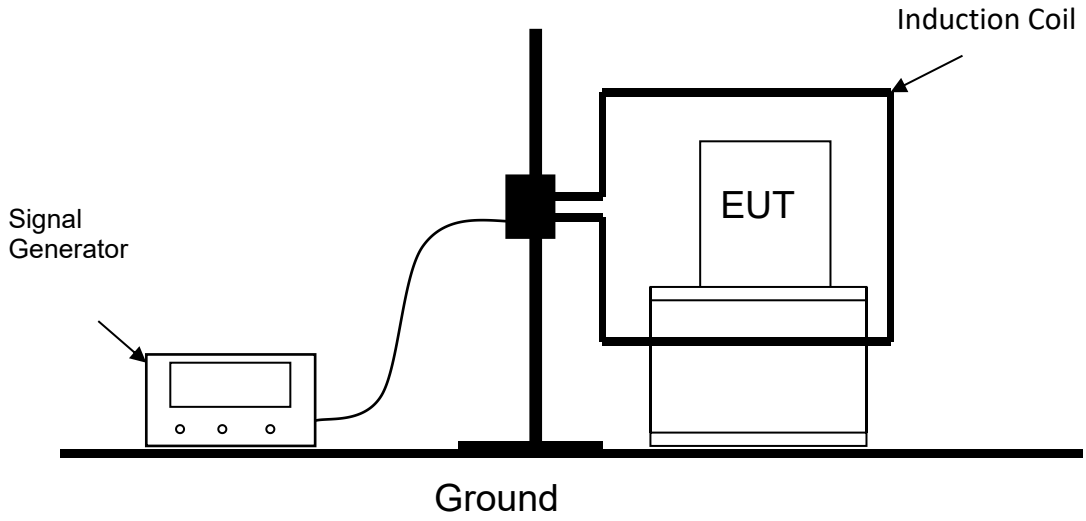
Note:

13. MAGNETIC FIELD SUSCEPTIBILITY TEST

13.1.Block Diagram of Test Setup



13.2.Test Standard

EN 61000-6-2: 2005

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(EN 61000-4-8: 2010, Severity Level: Level 4, 30A / m)

13.3.Severity Levels and Performance Criterion

13.3.1.Severity Levels

Level	Field Strength A/m
1	1
2	3
3	10
4	30
5	100
X	Special

13.3.2.Performance Criterion: **A**

13.4.EUT Configuration on Test

The configuration of the EUT is same as Section 3.12.

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13.5.Test Procedure

The EUT is placed in the middle of a induction coil (1*1m), under which is a 1*1*0.1m (high) table, this small table is also placed on a larger table, 0.8 m above the ground. Both horizontal and vertical polarization of the induction coil is set on test, so that each side of the EUT is affected by the magnetic field. Also can reach the same aim by change the position of the EUT.

13.6.Test Results

PASS.

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Magnetic Field Immunity Test Result

Standard	☐ IEC 61000-4-8 ☑ EN 61000-4-8		
Applicant	Sicon Chat Union Electric Co., Ltd.		
EUT	Energy storage Power Conversion System （PCS）	**Temperature**	23.5℃
M/N	EPCS-250	**Humidity**	49.8%
Test Mode	work	**Criterion**	A
Test Engineer	Feng Zhang		

Test Level (A/M)	Testing Duration	Coil Orientation	Criterion	Result
30	5 mins	X	A	PASS
30	5 mins	Y	A	PASS
30	5 mins	Z	A	PASS

Note:

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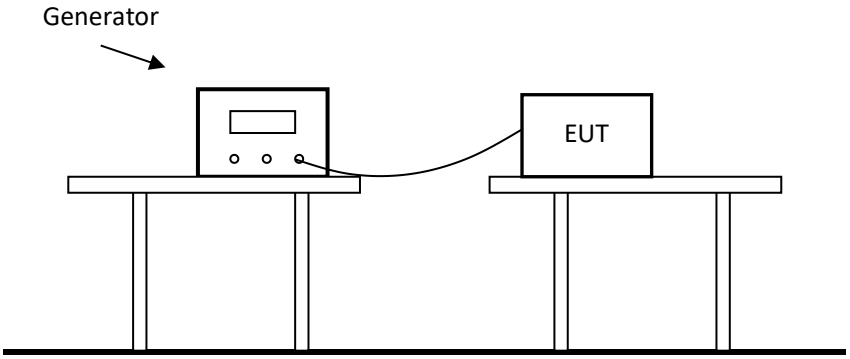
14. VOLTAGE DIPS AND INTERRUPTIONS TEST

14.1.Block Diagram of Test Setup



14.2.Test Standard

EN 61000-6-2: 2005 (EN 61000-4-11: 2004)

14.3.Severity Levels and Performance Criterion

14.3.1.Severity level

Test Level %UT	Voltage dip and short interruptions %UT	Duration (in period)
0	100	0.5
40	60	1.0
70	30	25
0	100	250

14.3.2.Performance Criterion: **B&C**

14.4.EUT Configuration on Test

The configuration of EUT is listed in Section 3.13&3.14.

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14.5.Operating Condition of EUT

14.5.1.Setup the EUT as shown in Section 14.1.

14.5.2.Turn on the power of all equipments.

14.5.3.Let the EUT work in test mode (work) and measure it.

14.6.Test Procedure

14.6.1.Set up the EUT and test generator as shown on Section 14.1.
14.6.2.The interruptions are introduced at selected phase angles with specified duration.
14.6.3.Record any degradation of performance.

14.7.Test Result

PASS.

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Voltage Dips And Interruptions Test Results

Standard	☐ IEC 61000-4-11 ☑ EN 61000-4-11		
Applicant	Sicon Chat Union Electric Co., Ltd.		
EUT	Energy storage Power Conversion System （PCS）	**Temperature**	23.5℃
M/N	EPCS-250	**Humidity**	49.8%
Test Mode	work	**Criterion**	B&C
Test Engineer	Feng Zhang		

Test Level % U_T	Voltage Dips & Short Interruptions % U_T	Duration (in periods)	Criterion	Result
0	100	1.0P	B	PASS
40	60	10P	C	PASS
70	30	25P	C	PASS
0	100	250P	C	PASS

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15. PHOTOS OF EUT

Fig.1

Fig.2

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Fig.3

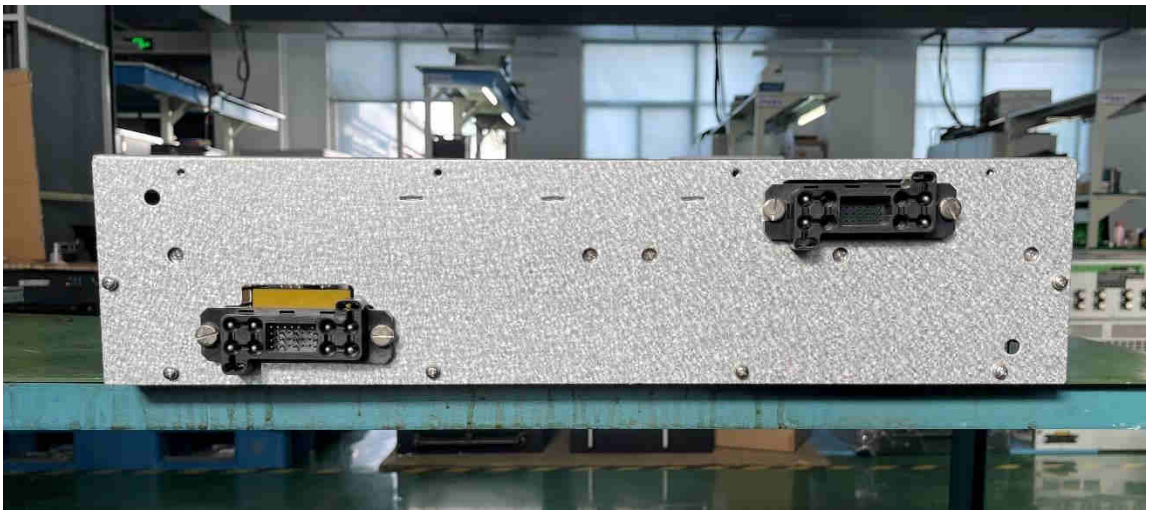

Fig.4

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Fig.5

Fig.6

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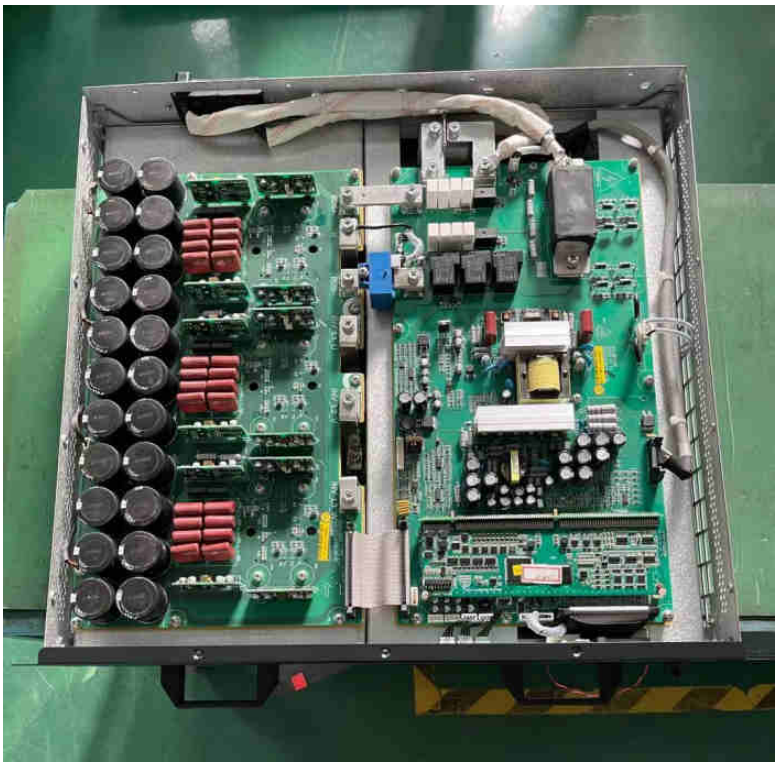

Fig.7

----------THE END OF TEST REPORT----------

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Attestation of Compliance

STE Testing

Reference No.	:	STE20110101E
Applicant	:	Sicon Chat Union Electric Co., Ltd.
Address	:	Bldg.14&15, No. 319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, 050035, China.
Trade Mark	:	N/A
Product	:	Li-ion battery energy storage system
Model(s)	:	ECM-48B100N, EBC48/30-LFP-ABMS, EBC48/50-LFP-ABMS EBC48/100-LFP-ABMS, EBC51.2/100-LFP-ABMS, EBC240/10-LFP-ABMS, EBC480/10-LFP-ABMS,EBC480/20-LFP-ABMS, EBC480/30-LFP-ABMS, EBC480/50-LFP-ABMS, EBC480/100-LFP-ABMS EBC480/150-LFP-ABMS, EBC480/200-LFP-ABMS, EBC480/280-LFP-ABMS, EBC480/40-LFP-ABMS, EBC480/80-LFP-ABMS, EBC480/120-LFP-ABMS, EBC480/160-LFP-ABMS, EBC768/40-LFP-ABMS, EBC768/80-LFP-ABMS, EBC768/120-LFP-ABMS, EBC768/160-LFP-ABMS, EBC768/50-LFP-ABMS, EBC768/100-LFP-ABMS, EBC768/150-LFP-ABMS, EBC768/200-LFP-ABMS, EBC768/280-LFP-ABMS, EBC768/100-LFP-ABMS-M, EBC768/40-LFP-ABMS-F, EBC768/80-LFP-ABMS-F, EBC768/120-LFP-ABMS-F, EBC768/160-LFP-ABMS-F, EBC768/50-LFP-ABMS-F, EBC768/100-LFP-ABMS-F, EBC768/150-LFP-ABMS-F, EBC768/200-LFP-ABMS-F, EBC768/280-LFP-ABMS-F
Tested according to	:	EN IEC 61000-6-4:2019, EN IEC 61000-6-2:2019, EN IEC 61000-3-2: 2019, EN 61000-3-3:2013+A1:2019

The submitted products have been tested by us with the listed standards.

This Attestation of Compliance is issued according to the council Directive 2014/30/EU, Referred to as the Electromagnetic Compatibility. It confirms that the listed product complies with all essential requirements of the EMC directive and applies only to the sample and its technical documentation submitted to Shenzhen STE Testing Laboratory Co., Ltd for testing.

After preparation of the necessary technical documentation as well as the EC conformity declaration the required CE marking can be affixed on the product.Other relevant Directives have to be observed.

CE

STE TESTING LABORATORY APPROVED

Date of issue: June 20, 2019

Manager

Shenzhen STE Testing Laboratory Co., Ltd.
Room 301(left side), Building 9, Dehong Factory Building, No. 63 Yuchang Road, Niuhu Community, Guanlan Street, Longhua District, Shenzhen

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EMC TEST REPORT

For

Sicon Chat Union Electric Co., Ltd.

Li-ion battery energy storage system

Test Model: EBC480/100-LFP-ABMS

Additional Model No.: Please Refer To Page 8

Prepared for	:	Sicon Chat Union Electric Co., Ltd.
Address	:	Bldg.14&15, No. 319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, 050035, China.
Prepared by	:	Shenzhen STE Testing Laboratory Co., Ltd
Address	:	Room 301(left side), Building 9, Dehong Factory Building, No. 63 Yuchang Road, Niuhu Community, Guanlan Street, Longhua District, Shenzhen
Date of receipt of test sample	:	June 10, 2019
Number of tested samples	:	1
Serial number	:	Prototype
Date of Test	:	June 10, 2019 ~ June 20, 2019
Date of Report	:	June 20, 2019

CE

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EMC TEST REPORT

EN IEC 61000-6-4:2019

Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments

EN IEC 61000-6-2:2019

Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity standard for industrial environments

Report Reference No.	:	**STE20110101E**
Date of Issue.....	:	June 20, 2019
Testing Laboratory Name.....	:	**Shenzhen STE Testing Laboratory Co., Ltd**
Address.....	:	Room 301(left side), Building 9, Dehong Factory Building, No. 63 Yuchang Road, Niuhu Community, Guanlan Street, Longhua District, Shenzhen.
Testing Location/ Procedure	:	Full application of Harmonised standards ■ Partial application of Harmonised standards ☐ Other standard testing method ☐
Applicant's Name	:	**Sicon Chat Union Electric Co., Ltd.**
Address.....	:	Bldg.14&15, No. 319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, 050035, China.
Test Specification		
Standard.....	:	EN IEC 61000-6-4:2019 EN IEC 61000-6-2:2019 EN IEC 61000-3-2: 2019 EN 61000-3-3:2013+A1:2019
Test Report Form No.....	:	LCSEMC-1.0
TRF Originator.....	:	Shenzhen STE Testing Laboratory Co., Ltd
Master TRF.....	:	Dated 2016-08

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Test Item Description.....	:	**Li-ion battery energy storage system**
Trade Mark.....	:	N/A
Test Model.....	:	EBC480/100-LFP-ABMS
Ratings	:	Input: DC480V,100A Output: DC480V,200A
Result	:	**PASS**

Compiled by:	**Supervised by:**	**Approved by:**
Hunter Liang	Todd Qian	Fly Li
Hunter Liang/ File administrators	Todd Qian/ Technique principal	Fly Li/Manager

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EMC -- TEST REPORT

Test Report No. : STE20110101E	June 20, 2019 Date of issue

Applicant.....	**: Sicon Chat Union Electric Co., Ltd.**
Address.....	: Bldg.14&15, No. 319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, 050035, China.
Telephone.....	: /
Fax.....	: /
Manufacturer.....	**: Sicon Chat Union Electric Co., Ltd.**
Address.....	: Bldg.14&15, No. 319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, 050035, China.
Telephone.....	: /
Fax.....	: /
Factory.....	**: Sicon Chat Union Electric Co., Ltd.**
Address.....	: Bldg.14&15, No. 319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, 050035, China.
Telephone.....	: /
Fax.....	: /

Test Result	**PASS**

The test report merely corresponds to the test sample.
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Revision History

Revision	Issue Date	Revisions	Revised By
000	May 26, 2020	Initial Issue	Cherry Chen

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1. SUMMARY OF STANDARDS AND RESULTS

1.1. Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below.

Emission (EN IEC 61000-6-4:2019)			
Description of Test Item	**Standard**	**Limits**	**Results**
Conducted disturbance at mains terminals	EN IEC 61000-6-4:2019	---------	PASS
Conducted disturbance at telecommunication port	EN IEC 61000-6-4:2019	---------	N/A
Radiated disturbance	EN IEC 61000-6-4:2019	---------	PASS
Harmonic current emissions	EN IEC 61000-3-2: 2019	Class A	N/A
Voltage fluctuations & flicker	EN 61000-3-3:2013+A1:2019	---------	N/A
Immunity (EN IEC 61000-6-2:2019)			
Description of Test Item	**Basic Standard**	**Performance Criteria**	**Results**
Electrostatic discharge (ESD)	EN 61000-4-2: 2009	B	PASS
Radio-frequency, Continuous radiated disturbance	EN 61000-4-3: 2006+A2: 2010	A	PASS
Electrical fast transient (EFT)	EN 61000-4-4: 2012	B	PASS
Surge (Input d.c. power ports)	EN 61000-4-5: 2014+A1: 2017	B	N/A
Surge (Telecommunication ports)		B	N/A
Radio-frequency, Continuous conducted disturbance	EN 61000-4-6: 2014	A	PASS
Power frequency magnetic field	EN 61000-4-8: 2010	A	PASS
Voltage dips, >95% reduction	EN 61000-4-11: 2004+A1: 2017	B	N/A
Voltage dips, 30% reduction		C	N/A
Voltage interruptions		C	N/A

Note 1: N/A is an abbreviation for not applicable.

Note 2: systems with nominal voltages less than but not equal to 220 V (line-to-neutral), the harmonic and flicker limits have not yet been considered.

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2.1. Description of Performance Criteria

A functional description and a definition of specific performance criteria, during or as a consequence of immunity testing of equipment under test (EUT), shall be provided by the manufacturer and noted in the test report. They shall be consistent with one of the following general criteria for each test as specified in Table 1 to Table 4:

1.2.1. Performance criterion A

The EUT shall continue to operate as intended during and after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the EUT is used as intended. If the performance level is not specified by the manufacturer, this may be derived from the product description and documentation and what the user may reasonably expect from the equipment if used as intended.

1.2.2. Performance criterion B

The EUT shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the EUT is used as intended. The performance level may be replaced by a permissible loss of performance. However, during the test degradation of performance is allowed but no change of actual operating state or stored data is allowed. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, either of these may be derived from the product description and documentation and what the user may reasonably expect from the equipment if used as intended.

1.2.3. Performance criterion C

Temporary loss of function is allowed during the test, provided the function is self-recoverable or can be restored by the operation of the controls.

If, as a result of the application of the tests defined in this standard, the EUT becomes dangerous or unsafe, it shall be deemed to have failed the test.

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2. GENERAL INFORMATION

2.1. Description of Device (EUT)

EUT	:	Li-ion battery energy storage system
Test Model	:	EBC480/100-LFP-ABMS
Additional Model No.	:	ECM-48B100N, EBC48/30-LFP-ABMS, EBC48/50-LFP-ABMS EBC48/100-LFP-ABMS, EBC51.2/100-LFP-ABMS, EBC240/10-LFP-ABMS, EBC480/10-LFP-ABMS, EBC480/20-LFP-ABMS, EBC480/30-LFP-ABMS, EBC480/50-LFP-ABMS, EBC480/150-LFP-ABMS, EBC480/200-LFP-ABMS, EBC480/280-LFP-ABMS, EBC480/40-LFP-ABMS, EBC480/80-LFP-ABMS, EBC480/120-LFP-ABMS, EBC480/160-LFP-ABMS, EBC768/40-LFP-ABMS, EBC768/80-LFP-ABMS, EBC768/120-LFP-ABMS, EBC768/160-LFP-ABMS, EBC768/50-LFP-ABMS, EBC768/100-LFP-ABMS, EBC768/150-LFP-ABMS, EBC768/200-LFP-ABMS, EBC768/280-LFP-ABMS, EBC768/100-LFP-ABMS-M, EBC768/40-LFP-ABMS-F, EBC768/80-LFP-ABMS-F, EBC768/120-LFP-ABMS-F, EBC768/160-LFP-ABMS-F, EBC768/50-LFP-ABMS-F, EBC768/100-LFP-ABMS-F, EBC768/150-LFP-ABMS-F, EBC768/200-LFP-ABMS-F, EBC768/280-LFP-ABMS-F
Power Supply	:	Input: DC480V,100A Output: DC480V,200A
EUT Clock Frequency	:	≤108MHz

2.2 Support equipment List

Description	Manufacturer	Model	Serial Number

2.3. Description of Test Facility

Test Facilities : Shenzhen STE Testing Laboratory Co., Ltd
309, B Tower, Huafeng Headquarters Economic Edifice, No.288 Xixiang Avenue,
Bao'an District, Shenzhen.

Note : Radiated, Radio-Frequency, Electromagnetic Field Immunity Test (Rs) Subcontract To Shenzhen Lcs Compliance Testing Laboratory Ltd for Testing.

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2.4. Statement of The Measurement Uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. To CISPR 16 – 4 “Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements” and is documented in the LCS quality system acc. To DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

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2.5. Measurement Uncertainty

Test	Parameters	Expanded uncertainty (U_{lab})	Expanded uncertainty (U_{cispr})
Conducted Emission	Level accuracy (9kHz to 150kHz) (150kHz to 30MHz)	± 2.63 dB ± 2.35 dB	± 3.8 dB ± 3.4 dB
Power disturbance	Level accuracy (30MHz to 300MHz)	± 2.90dB	± 4.5 dB
Electromagnetic Radiated Emission (3-loop)	Level accuracy (9kHz to 30MHz)	± 3.60 dB	± 3.3 dB
Radiated Emission	Level accuracy (9kHz to 30MHz)	± 3.68 dB	N/A
Radiated Emission	Level accuracy (30MHz to 1000MHz)	± 3.48 dB	± 5.3 dB
Radiated Emission	Level accuracy (above 1000MHz)	± 3.90 dB	± 5.2 dB
Harmonic	Voltage	± 0.510%	N/A
Voltage Fluctuations & Flicker	Voltage	± 0.510%	N/A
1) Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus. 2) The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor of k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.			

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3. MEASURING DEVICES AND TEST EQUIPMENT

Radiated Disturbance

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Due Date.
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal/ Due date
1	3m Semi Anechoic Chamber	Maorui	/	/	2020-02-02
2	EMI Test Receiver	ROHDE & SCHWARZ	ESR 3	102312	2020-06-11
3	Log per Antenna	ROHDE & SCHWARZ	VULP9118	873	2020-06-12
4	EMI Test Software	Farad	EMC	N/A	N/A
5	Positioning Controller	MF	MF-7082	/	N/A

Electrostatic Discharge Immunity Test (ESD)

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Due Date.
1	ESD Simulator	TESEQ	NSG437	1211	2020-06-12

Power Frequency Magnetic Field Immunity Test

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Due Date.
1	Power frequency mag-field generator System	EVERFINE	EMS61000-8K	906003	2020-06-17

Radiated, Radio-Frequency, Electromagnetic Field Immunity Test (RS)-LCS

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Due Date.
1	RS Test Software	Tonscend	/	/	N/A
2	ESG Vector Signal Generator	Agilent	E4438C	MY42081396	2020-11-14
3	3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	2020-06-11
4	RF POWER AMPLIFIER	OPHIR	5225R	1052	2020-11-21
5	RF POWER AMPLIFIER	OPHIR	5273F	1019	2020-11-21
6	Stacked Broadband Log Periodic Antenna	SCHWARZBECK	STLP 9128	9128ES-145	2020-11-21
7	Stacked Mikrowellen Log.-Per Antenna	SCHWARZBECK	STLP 9149	9149-484	2020-11-21
8	RS Test Software	Tonscend	/	/	2020-03-24

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Conducted Disturbance

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Due Date.
1	EMI Test Receiver	ROHDE & SCHWARZ	ESR 3	102312	2020-06-11
2	10dB Attenuator	SCHWARZBECK	MTS-IMP136	261115-001-003 2	2020-03-02
3	Artificial Mains	ROHDE & SCHWARZ	ESH2-Z5	100030	2020-03-02
4	EMI Test Software	Farad	EMC	N/A	N/A
5	ISN	SCHWARZBECK	NTFM 8158	NTFM 8158 0120	2020-03-02

Electrical Fast Transient/Burst Immunity Test (EFT)

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Due Date.
1	Surge test system	EM test	UCS 500 M4	0101-34	2020-03-02

Immunity to Conducted Disturbances, Induced by Radio-Frequency Fields

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Due Date.
1	Simulator	FRANKONIA	CIT-10	A126A1195	2020-06-17
2	CDN	FRANKONIA	CDN-M2	5100100100	2020-06-17
3	CDN	FRANKONIA	CDN-M3	0900-11	2020-06-17
4	Attenuator	FRANKONIA	ATT6	0010222A	2020-06-17
5	Infuse tongs	EMTEST	EM-Clamp	0513A031201	2020-06-17

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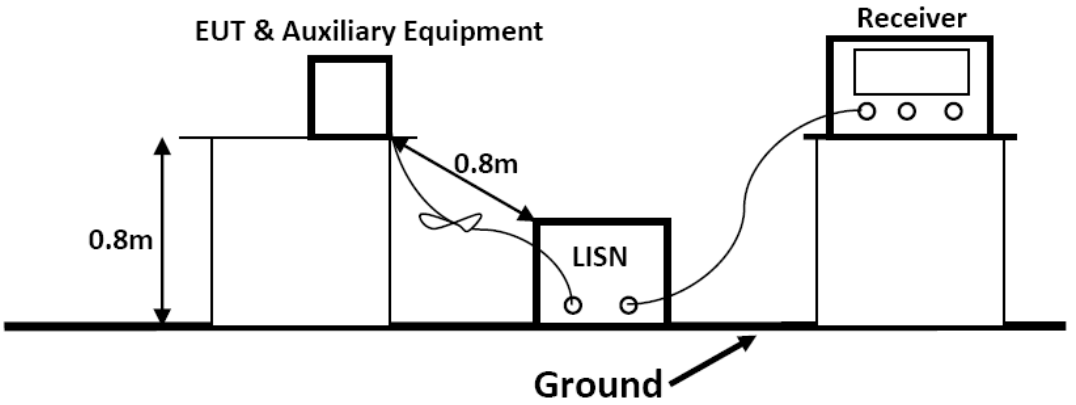
4. Power Line Conducted Emission Measurement

4.1. Block Diagram of Test Setup



4.2. Test Standard

EN IEC 61000-6-4: 2019

Power Line Conducted Emission Limits (Class A)		
Frequency (MHz)	Limit (dBμV)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	79	66
0.50 ~ 30.00	73	60
NOTE1-The lower limit shall apply at the transition frequencies. NOTE2-The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz.		

4.3. EUT Configuration on Test

The following equipments are installed on Power Line Conducted Emission Measurement to meet the EN IEC 61000-6-4 requirement and operating regulations in a manner, which tends to maximize its emission characteristics in a normal application.

4.4. Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and connected to the AC mains through Line Impedance Stability Network (L.I.S.N). This provided 50-ohm coupling impedance for the tested equipments. Both sides of AC line are investigated to find out the maximum conducted emission according to the EN 55032 regulations during conducted emission measurement.

The bandwidth of the field strength meter is set at 9kHz in 150kHz~30MHz.

The frequency range from 150kHz to 30MHz is investigated.

4.5. Test Results

PASS.

The test result please refer to the next page.

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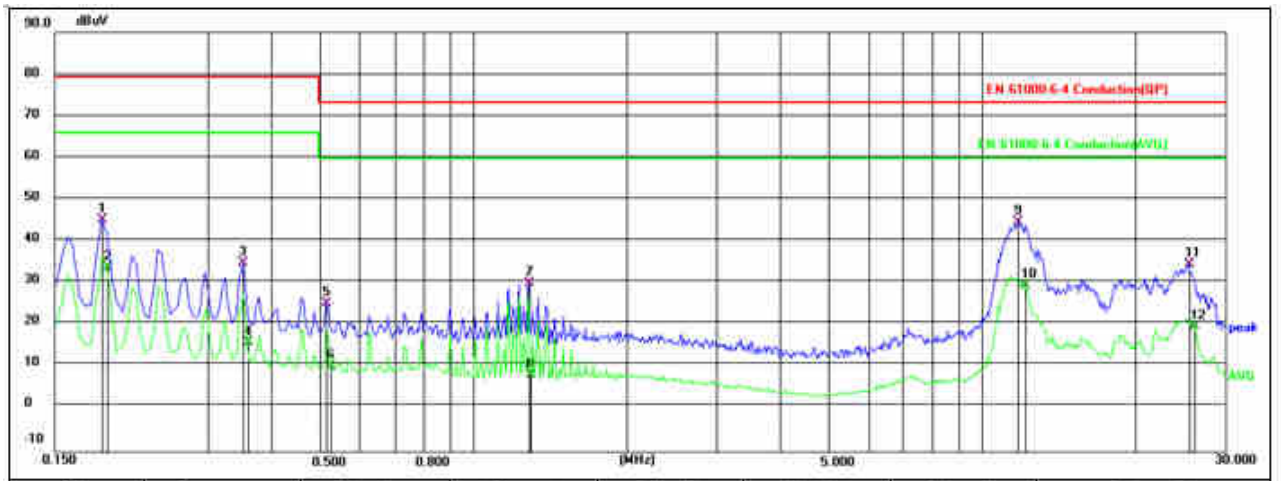
Test Model	EBC480/100-LFP-ABMS	**Test Mode**	Working
Environmental Conditions	23.3℃, 53.7% RH	**Test Engineer**	ZOM ZHANG
Pol.	Line	**Test Voltage**	DC480V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1861	28.05	17.24	45.29	79.00	-33.71	QP
2	0.1906	16.83	17.25	34.08	66.00	-31.92	AVG
3	0.3526	18.94	16.14	35.08	79.00	-43.92	QP
4	0.3596	0.02	16.08	16.10	66.00	-49.90	AVG
5	0.5146	9.87	15.61	25.48	73.00	-47.52	QP
6	0.5237	-5.01	15.59	10.58	60.00	-49.42	AVG
7	1.2841	15.05	15.12	30.17	73.00	-42.83	QP
8	1.2975	-6.75	15.12	8.37	60.00	-51.63	AVG
9	11.7781	30.30	14.39	44.69	73.00	-28.31	QP
10	12.2190	15.42	14.28	29.70	60.00	-30.30	AVG
11	25.5886	27.11	7.56	34.67	73.00	-38.33	QP
12	26.0476	12.52	7.22	19.74	60.00	-40.26	AVG

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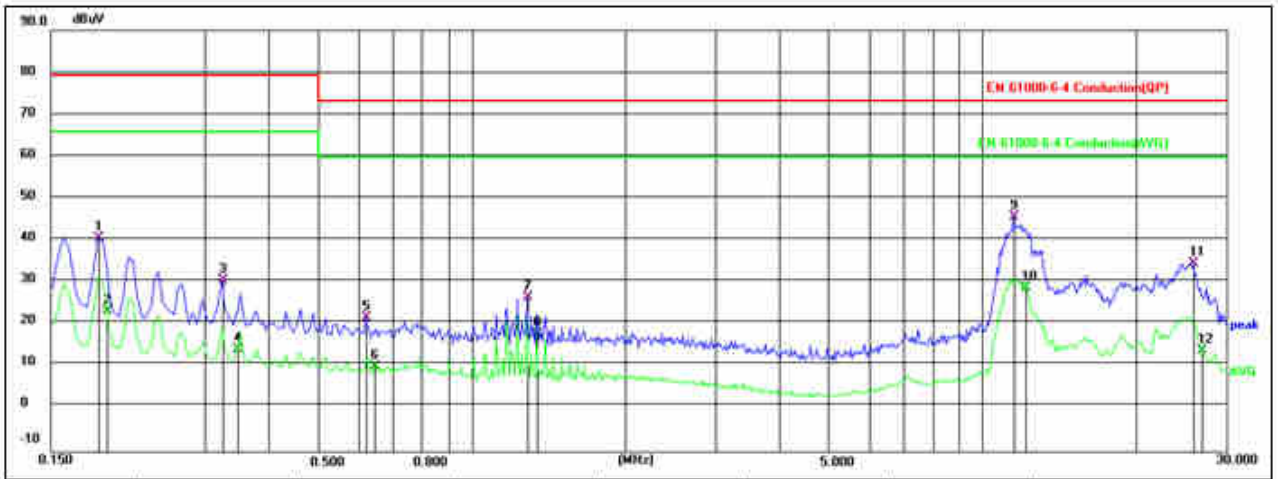
Test Model	EBC480/100-LFP-ABMS	Test Mode	Working
Environmental Conditions	23.3℃, 53.7% RH	Test Engineer	ZOM ZHANG
Pol.	Neutral	Test Voltage	DC480V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1861	23.62	17.24	40.86	79.00	-38.14	QP
2	0.1934	6.05	17.26	23.31	66.00	-42.69	AVG
3	0.3256	14.37	16.34	30.71	79.00	-48.29	QP
4	0.3465	-1.92	16.18	14.26	66.00	-51.74	AVG
5	0.6226	6.12	15.63	21.75	73.00	-51.25	QP
6	0.6474	-5.63	15.79	10.16	60.00	-49.84	AVG
7	1.2886	11.50	15.11	26.61	73.00	-46.39	QP
8	1.3379	2.97	15.11	18.08	60.00	-41.92	AVG
9	11.5126	31.72	14.13	45.85	73.00	-27.15	QP
10	12.1240	14.44	14.42	28.86	60.00	-31.14	AVG
11	25.7551	27.28	7.35	34.63	73.00	-38.37	QP
12	26.8411	6.95	7.22	14.17	60.00	-45.83	AVG

Note: Pre-Scan all mode, Thus record worse case mode result in this report.

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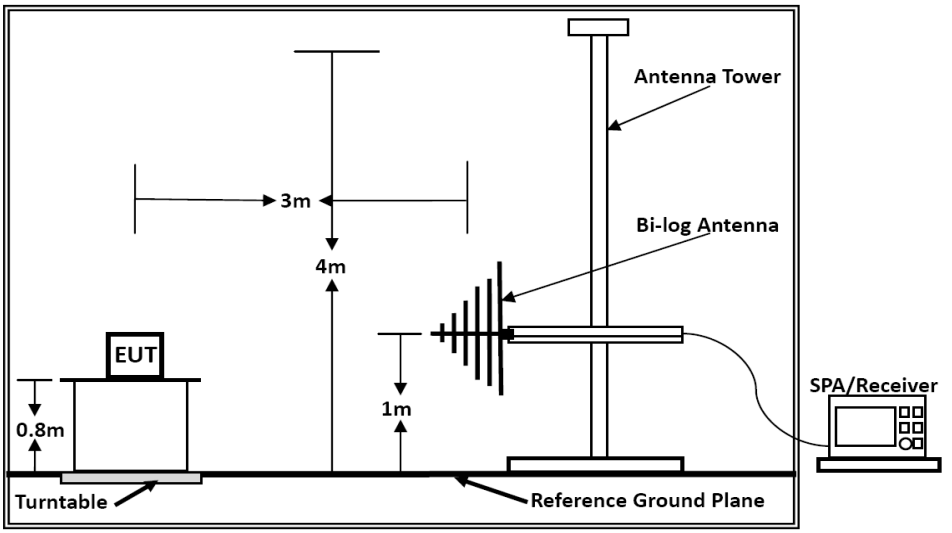
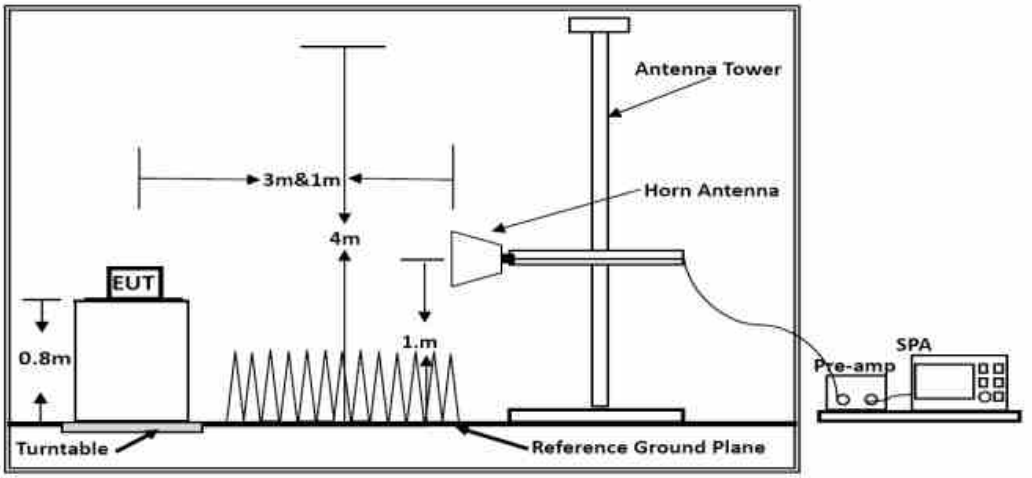
5.RADIATED EMISSION MEASUREMENT

5.1. Block Diagram of Test Setup



Below 1GHz



Above 1GHz

585
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5.2. Test Standard

EN IEC 61000-6-4:2019

Limits for Radiated Emission Below 1GHz		
Frequency (MHz)	Distance (Meters)	Field Strengths Limit (dBμV/m)
30 ~ 230	3	50
230 ~ 1000	3	57
Note: (1) The smaller limit shall apply at the combination point between two frequency bands. (2) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the EUT.		

Limits for Radiated Emission Above 1GHz			
Frequency (MHz)	Distance (Meters)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)
1000 ~ 3000	3	76	56
3000 ~ 6000	3	80	60
***Note: The lower limit applies at the transition frequency.			

5.3. EUT Configuration on Test

The EN 61000-6-4 regulations test method must be used to find the maximum emission during radiated emission measurement.

5.4. Operating Condition of EUT

1) Turn on the power.
2) Let the EUT work and measure it.

5.5. Test Procedure

The EUT is placed on a turntable, which is 0.8 meter high above the ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. By-log antenna is used as a receiving antenna. Both horizontal and vertical polarization of the antenna is set on test.
The bandwidth of the EMI test receiver is set at RBW/VBW=120kHz/1000kHz.
The frequency range from 30MHz to 1000MHz is checked.
The bandwidth of the Spectrum analyzer is set at RBW/VBW=1MHz/3MHz.
The frequency range from 1GHz to the frequency which about 5th carrier harmonic or 6GHz is checked.

5.6. Test Results

PASS.

The test result please refer to the next page.

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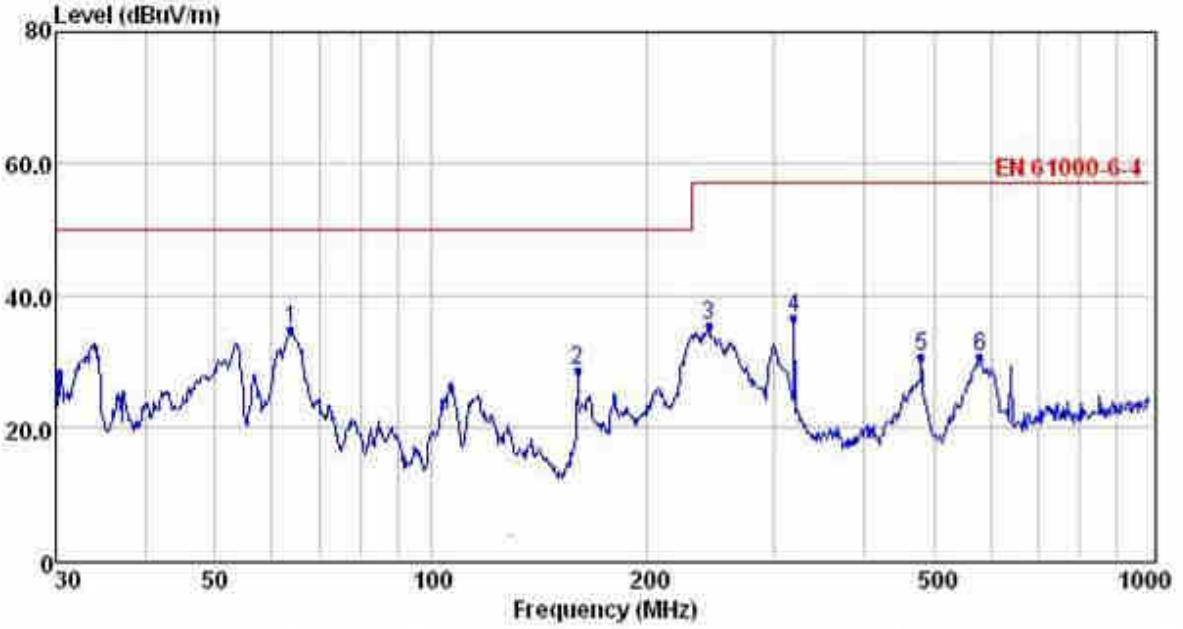
Test Model	EBC480/100-LFP-ABMS	**Test Mode**	Working
Environmental Conditions	23.8℃, 53% RH	**Detector Function**	Quasi-peak
Pol.	Vertical	**Distance**	3m
Test Engineer	ZOM ZHANG	**Test Voltage**	DC480V



	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	63.76	23.12	0.48	11.20	34.80	50.00	-15.20	QP
2	159.78	19.27	0.75	8.66	28.68	50.00	-21.32	QP
3	243.38	22.53	0.90	12.08	35.51	57.00	-21.49	QP
4	319.94	22.22	1.16	13.33	36.71	57.00	-20.29	QP
5	480.53	13.10	1.31	16.08	30.49	57.00	-26.51	QP
6	580.70	11.06	1.44	18.09	30.59	57.00	-26.41	QP

Note: 1. All readings are Quasi-peak values.
2. Measured= Reading + Antenna Factor + Cable Loss
3. The emission that are 20db below the official limit are not reported

Remark: Pre-San all mode, Thus record worse case mode result in this report

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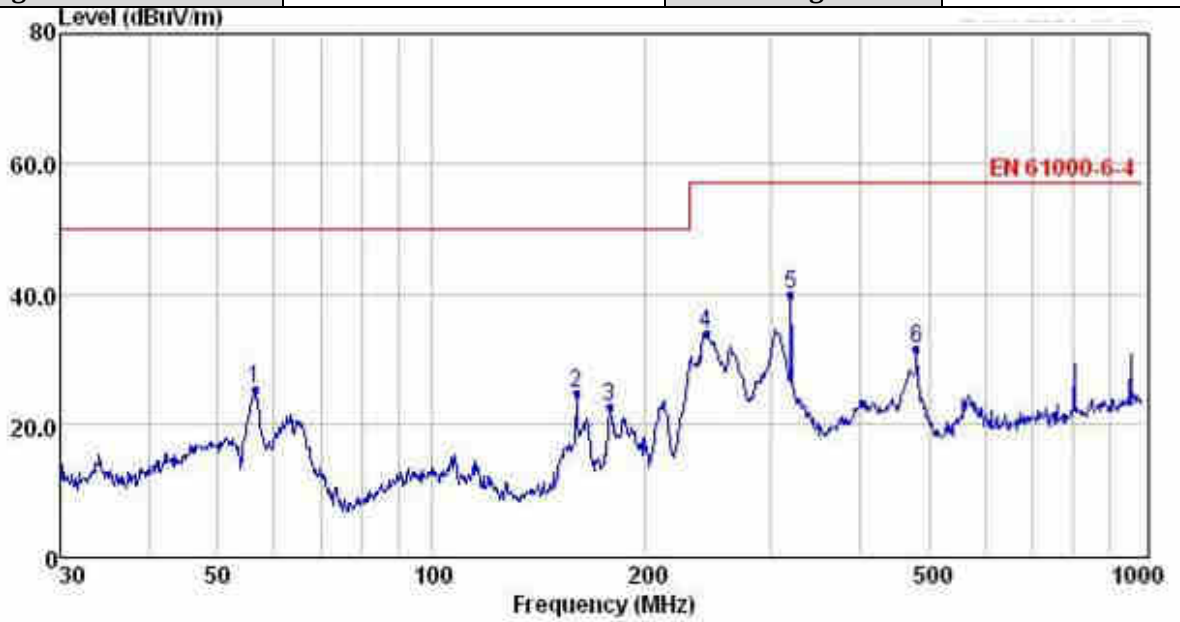
Test Model	EBC480/100-LFP-ABMS	**Test Mode**	Working
Environmental Conditions	23.8℃, 53% RH	**Detector Function**	Quasi-peak
Pol.	Horizontal	**Distance**	3m
Test Engineer	ZOM ZHANG	**Test Voltage**	DC480V



	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	56.39	11.77	0.47	12.93	25.17	50.00	-24.83	QP
2	159.78	15.28	0.75	8.66	24.69	50.00	-25.31	QP
3	178.13	12.08	0.89	9.55	22.52	50.00	-27.48	QP
4	243.38	21.02	0.90	12.08	34.00	57.00	-23.00	QP
5	319.94	25.30	1.16	13.33	39.79	57.00	-17.21	QP
6	480.53	14.07	1.31	16.08	31.46	57.00	-25.54	QP

Note: 1. All readings are Quasi-peak values.
2. Measured= Reading + Antenna Factor + Cable Loss
3. The emission that are 20db below the official limit are not reported

Remark: Pre-San all mode, Thus record worse case mode result in this report

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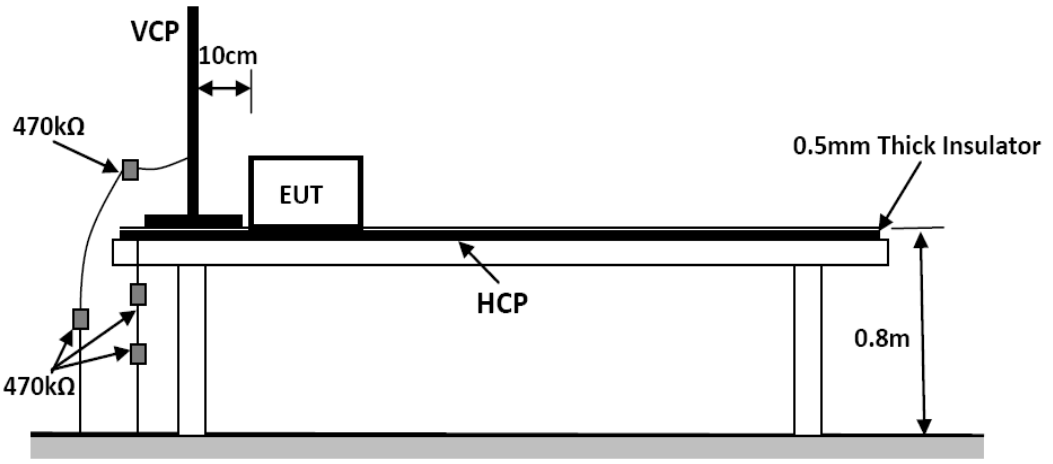
6. ELECTROSTATIC DISCHARGE IMMUNITY TEST

6.1. Block Diagram of Test Setup



6.2. Test Standard

EN IEC 61000-6-2:2019

6.3. Severity Levels and Performance Criterion

6.3.1. Severity level

Level	Test Voltage Contact Discharge (KV)	Test Voltage Air Discharge (KV)
1	±2	±2
2	±4	±4
3	±6	±8
4	±8	±15
X	Special	Special

6.3.2. Performance Criterion：B

6.4. EUT Configuration on Test

The configuration of EUT is listed in Section 6.3.

6.5. Operating Condition of EUT

Same as conducted emission measurement, which is listed in Section 3.4. Except the test set up replaced by Section 8.1.

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6.6. Test Procedure

6.6.1. Air Discharge

This test is done on a non-conductive surface. The round discharge tip of the discharge electrode shall be approached as fast as possible to touch the EUT. After each discharge, the discharge electrode shall be removed from the EUT. The generator is then re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed

6.6.2. Contact Discharge

All the procedure shall be same as Section 9.6.1. Except that the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

6.6.3. Indirect Discharge For Horizontal Coupling Plane

At least 10 single discharges (in the most sensitive polarity) shall be applied at the front edge of each HCP opposite the center point of each unit (if applicable) of the EUT and 0.1m from the front of the EUT. The long axis of the discharge electrode shall be in the plane of the HCP and perpendicular to its front edge during the discharge.

6.6.4. Indirect Discharge For Vertical Coupling Plane

At least 10 single discharge (in the most sensitive polarity) shall be applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m X 0.5m, is placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges shall be applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.

6.7. Test Results

PASS.

The test result please refer to the next page.

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Electrostatic Discharge Test Results

Standard	☐ IEC 61000-4-2 ☑ EN 61000-4-2		
Applicant	Sicon Chat Union Electric Co., Ltd.		
EUT	Li-ion battery energy storage system	**Temperature**	23.6℃
M/N	EBC480/100-LFP-ABMS	**Humidity**	53.2%
Criterion	B	**Pressure**	1021mbar
Test Mode	Working	**Test Engineer**	ZOM ZHANG
Test Voltage	DC480V		

Air Discharge

Test Points	Test Levels			Results		
	± 2kV	± 4kV	± 8kV	Passed	Fail	Performance Criterion
Front	☒	☒	☒	☒	☐	☐A ☒B
Back	☒	☒	☒	☒	☐	☐A ☒B
Left	☒	☒	☒	☒	☐	☐A ☒B
Right	☒	☒	☒	☒	☐	☐A ☒B
Top	☒	☒	☒	☒	☐	☐A ☒B
Bottom	☒	☒	☒	☒	☐	☐A ☒B

Contact Discharge

Test Points	Test Levels		Results		
	± 2 kV	±4 kV	Passed	Fail	Performance Criterion
Front	☒	☒	☒	☐	☐A ☒B
Back	☒	☒	☒	☐	☐A ☒B
Left	☒	☒	☒	☐	☐A ☒B
Right	☒	☒	☒	☐	☐A ☒B
Top	☒	☒	☒	☐	☐A ☒B
Bottom	☒	☒	☒	☐	☐A ☒B

Discharge To Horizontal Coupling Plane

Side of EUT	Test Levels		Results		
	± 2 kV	± 4 kV	Passed	Fail	Performance Criterion
Front	☒	☒	☒	☐	☐A ☒B
Back	☒	☒	☒	☐	☐A ☒B
Left	☒	☒	☒	☐	☐A ☒B
Right	☒	☒	☒	☐	☐A ☒B

Discharge To Vertical Coupling Plane

Side of EUT	Test Levels		Results		
	± 2 kV	± 4 kV	Passed	Fail	Performance Criterion
Front	☒	☒	☒	☐	☐A ☒B
Back	☒	☒	☒	☐	☐A ☒B
Left	☒	☒	☒	☐	☐A ☒B
Right	☒	☒	☒	☐	☐A ☒B

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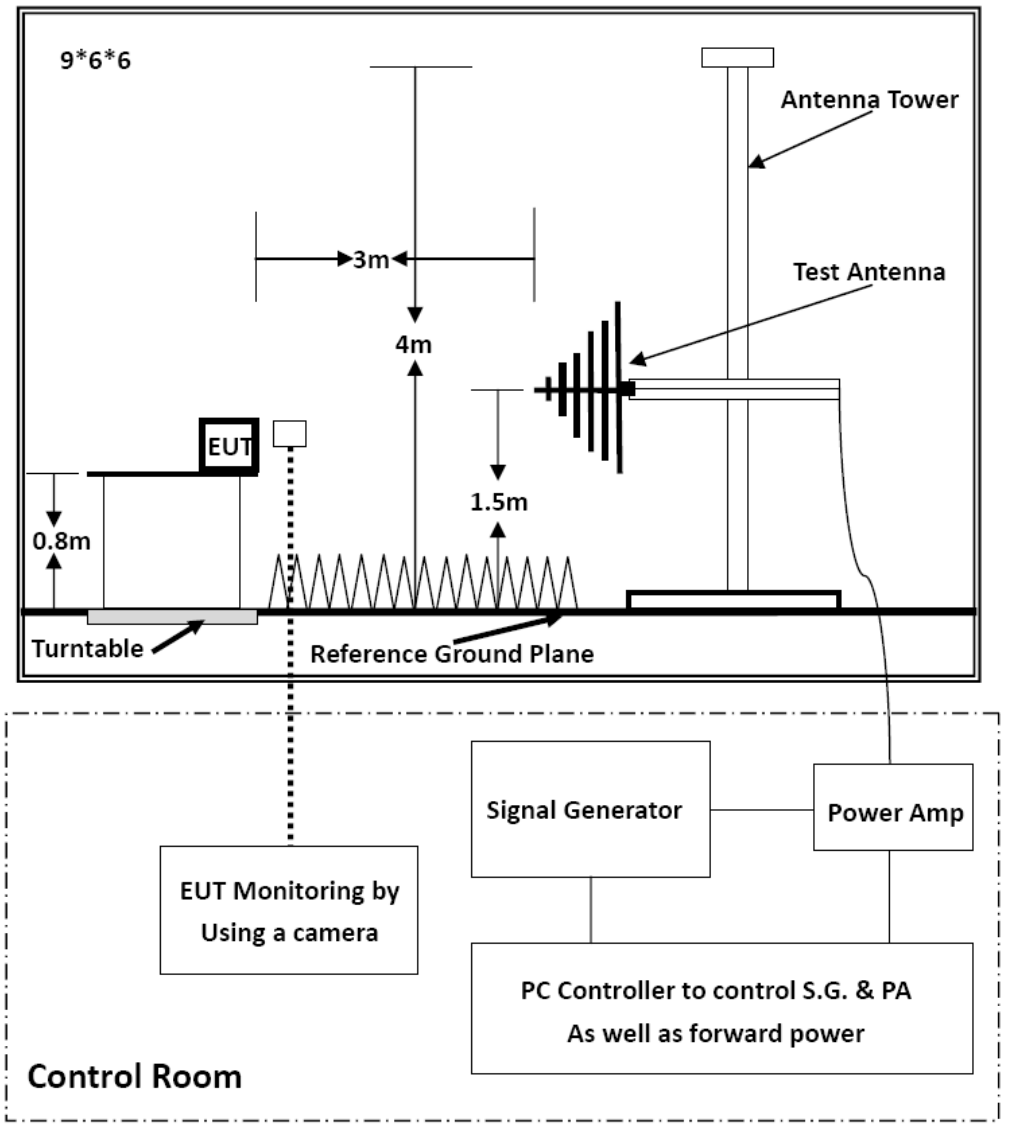
7. RF FIELD STRENGTH SUSCEPTIBILITY TEST

7.1. Block Diagram of Test Setup



7.2. Test Standard

EN IEC 61000-6-2:2019

7.3. Severity Levels and Performance Criterion

7.3.1. Severity level

Level	Field Strength (V/m)
1	1
2	3
3	10
X	1

7.3.2. Performance Criterion: A

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7.4. EUT Configuration on Test

The configuration of EUT is listed in Section 7.3.

7.5. Operating Condition of EUT

Same as radiated emission measurement, which is listed in Section 5.1, except the test setup replaced as Section 9.1.

7.6. Test Procedure

The EUT are placed on a table, which is 0.8 meter high above the ground. The EUT is set 3 meters away from the transmitting antenna, which is mounted on an antenna tower. Both horizontal and vertical polarization of the antenna is set on test. Each of the four sides of the EUT must be faced this transmitting antenna and measured individually.
In order to judge the EUT performance, a CCD Recording is used to monitor its screen.
All the scanning conditions are as following:

Condition of Test	Remark
Fielded Strength	3 V/m (Severity Level 2)
Radiated Signal	Unmodulated
Test Frequency Range (swept test)	80-1000MHz,1400-6000MHz
Dwell time of radiated	0.0015 decade/s
Waiting Time	3 Sec.

7.7. Test Results

PASS.

The test result please refer to the next page.

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RF Field Strength Susceptibility Test Results

Standard	☐ IEC 61000-4-3 ☑ EN 61000-4-3		
Applicant	Sicon Chat Union Electric Co., Ltd.		
EUT	Li-ion battery energy storage system	**Temperature**	24.1℃
M/N	EBC480/100-LFP-ABMS	**Humidity**	52.6%
Field Strength	10V/m 3V/m	**Criterion**	A
Test Mode	Working	**Test Engineer**	Baron.wen
Test Frequency	80MHz to 1000MHz (10V/m) 1400MHz to 6000MHz (3V/m)	**Test Voltage**	DC480V
Modulation	☐None ☐ Pulse ☑AM 1KHz 80%		
Steps	1%		

	Horizontal	**Vertical**
Front	PASS	PASS
Right	PASS	PASS
Rear	PASS	PASS
Left	PASS	PASS

Test Equipment:

1. Signal Generator: 2031 (MARCONI)
2. Power Amplifier: 500A100 & 100W/1000M1 (A&R)
3. Power Antenna: 3108 (EMCO) & AT1080 (A&R)
4. Field Monitor: FM2000 (A&R)

Note:

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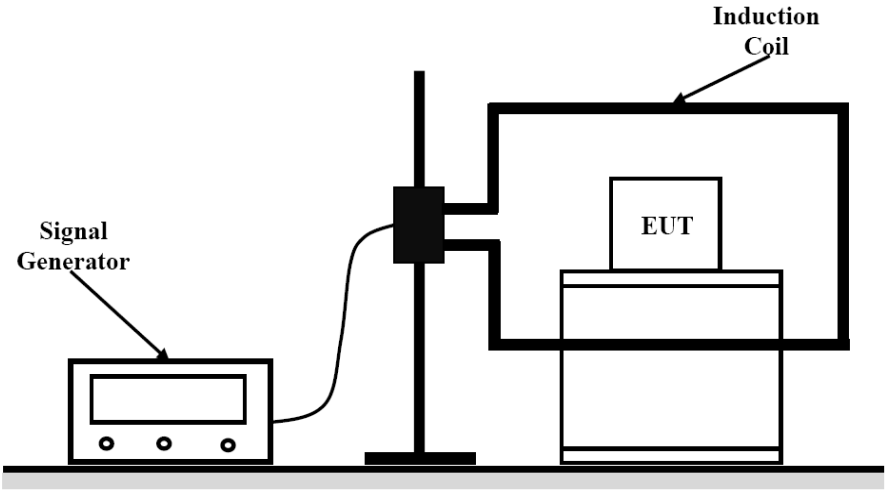
8. MAGNETIC FIELD SUSCEPTIBILITY TEST

8.1. Block Diagram of Test Setup



8.2. Test Standard

EN IEC 61000-6-2:2019

8.3. Severity Levels and Performance Criterion

8.3.1. Severity level

Level	Field Strength (A/m)
1	1
2	3
3	10
4	30
5	100
X	Special

8.3.2. Performance Criterion: A

8.4. EUT Configuration on Test

The configuration of EUT is listed in Section 3.3.

8.5. Test Procedure

The EUT is placed in the middle of a induction coil (1*1m), under which is a 1*1*0.1m (high) table, this small table is also placed on a larger table, 0.8 m above the ground. Both horizontal and vertical polarization of the induction coil is set on test, so that each side of the EUT is affected by the magnetic field. Also can reach the same aim by change the position of the EUT.

8.6. Test Results

PASS.

The test result please refer to the next page.

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Magnetic Field Immunity Test Result

Standard	☐ IEC 61000-4-8	☑ EN 61000-4-8	
Applicant	Sicon Chat Union Electric Co., Ltd.		
EUT	Li-ion battery energy storage system	**Temperature**	22.8℃
M/N	EBC480/100-LFP-ABMS	**Humidity**	53.2％
Test Mode	Working	**Criterion**	A
Test Engineer	ZOM ZHANG	**Test Voltage**	DC480V

Test Level (A/M)	Testing Duration	Coil Orientation	Criterion	Result
30	5 mins	X	A	PASS
30	5 mins	Y	A	PASS
30	5 mins	Z	A	PASS

Note:

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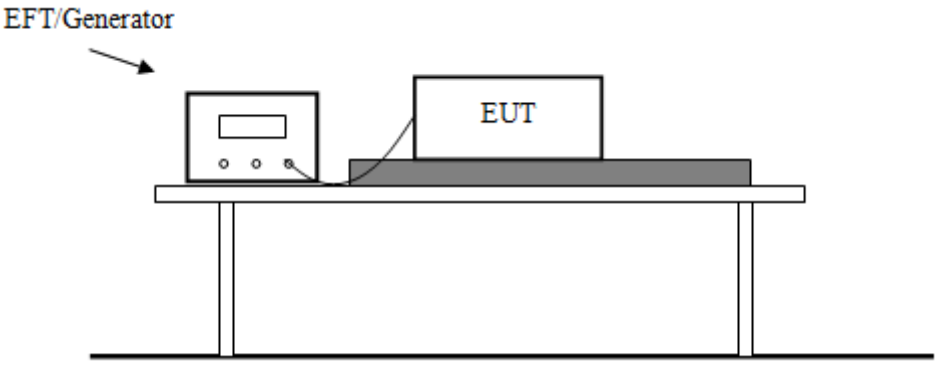
9. Electrical Fast Transient/Burst Immunity Test

9.1. Block Diagram of Test Setup



9.2. Test Standard

EN IEC 61000-6-2: 2019 (EN 61000-4-4: 2012, Level 3: 1KV)

9.3. Severity Levels and Performance Criterion

9.3.1 Severity level

Open Circuit Output Test Voltage ±10%		
Level	On Power Supply Lines	On I/O (Input/Output) Signal data and control lines
1.	0.5 KV	0.25 KV
2.	1 KV	0.5 KV
3.	2 KV	1 KV
4.	4 KV	2 KV
X	Special	Special

9.3.2 Performance Criterion: B

9.4. EUT Configuration on Test

The configuration of EUT is listed in Section 3

9.5. Test Procedure

The EUT is put on the table, which is 0.8 meter high above the ground. This reference ground plane shall project beyond the EUT by at least 0.1m on all sides and the minimum distance between EUT and all other conductive structure, except the ground plane beneath the EUT, shall be more than 0.5m.

9.5.1 For input and output DC power ports:

The EUT is connected to the power mains by using a coupling device, which couples the EFT interference signal to DC power lines. Both polarities of the test voltage should be applied during compliance test and the duration of the test is 2 mins.

9.5.2 For signal lines and control lines ports: No I/O ports. It’s unnecessary to test.

9.6. Test Results

PASS.

Please refer to the following page.

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Electrical Fast Transient/Burst Test Results

Standard	☐ IEC 61000-4-4 ☑ EN 61000-4-4		
Applicant	Sicon Chat Union Electric Co., Ltd.		
EUT	Li-ion battery energy storage system	**Temperature**	24.2℃
M/N	EBC480/100-LFP-ABMS	**Humidity**	53.6%
Test Mode	Working	**Criterion**	B
Test Engineer	ZOM ZHANG	**Test Voltage**	DC480V

Line	Test Voltage	Result (+)	Result (-)
L	1KV	PASS	PASS
N	1KV	PASS	PASS
L-N	1KV	PASS	PASS
L-PE			
N-PE			
L-N-PE			
Signal Line			
I/O Cable			

Note:

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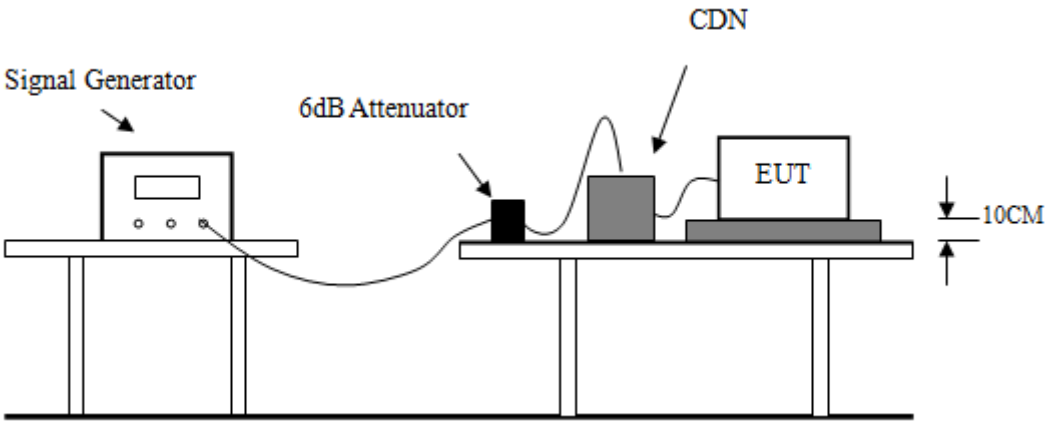
10. Injected Currents Susceptibility Test

10.1 Block Diagram of Test Setup



10.2 Test Standard

EN 61000-6-2: 2007 (EN 61000-4-6: 2014, Severity Level: Level 3, (0.15MHz ~ 80MHz)

10.3 Severity Levels and Performance Criterion

9.3.1 Severity level

Level	Field Strength (V)
1	1
2	3
3	10
X	Special

9.3.2 Performance Criterion: A

10.4 EUT Configuration on Test

The configuration of EUT is listed in Section 3

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10.5 Test Procedure

10.5.1 Set up the EUT, CDN and test generators as shown on Section 9.1

10.5.2 Let the EUT work in test mode and measure it.

10.5.3 The EUT are placed on an insulating support 0.1m high above a ground reference plane. CDN (coupling and decoupling device) is placed on the ground plane about 0.3m from EUT.

Cables between CDN and EUT are as short as possible, and their height above the ground reference plane shall be between 30 and 50 mm (where possible).

10.5.4 The disturbance signal described below is injected to EUT through CDN.

10.5.5 The EUT operates within its operational mode(s) under intended climatic conditions after power on.

10.5.6 The frequency range is swept from 150kHz to80MHz using 3V signal level, and with the disturbance signal 80% amplitude modulated with a 1kHz sine wave.

10.5.7 The rate of sweep shall not exceed 1.5*10-3decades/s. where the frequency is swept incrementally; the step size shall not exceed 1% of the start and thereafter 1% of the preceding frequency value.

10.5.8 Recording the EUT operating situation during compliance testing and decide the EUT immunity criterion.

10.6 Test Results

PASS.

Please refer to the following page.

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Injected Currents Susceptibility Test Results

Standard	☐ IEC 61000-4-6 ☑ EN 61000-4-6		
Applicant	Sicon Chat Union Electric Co., Ltd.		
EUT	Li-ion battery energy storage system	**Temperature ...**	24.4℃
M/N	EBC480/100-LFP-ABMS	**Humidity .....**	52.1% .....
Test Mode	Working	**Criterion .....**	A
Test Engineer	ZOM ZHANG	**Test Voltage**	DC480V

Frequency Range (MHz)	Injected Position	Strength (Unmodulated)	Criterion	Result
0.15 ~ 80	AC Mains	10V	A	PASS

Note:

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11. PHOTOGRAPHS OF THE EUT

Fig. 1

Fig. 2

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Fig. 3

---------- THE END OF TEST REPORT ----------

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TESTING AND MEASURING EQUIPMENT/ALLOWED SUBCONTRACTING
IEC 62619:2017, Edition 1.0
Secondary cells and batteries containing alkaline or other non-acid electrolytes – Safety requirements for secondary lithium cells and batteries, for use in industrial applications

Report Number.....:	STE20110102S
Date of issue.....:	June 20, 2019
Total number of pages.....:	24 pages
Name of Testing Laboratory preparing the Report.....:	Shenzhen STE Testing Laboratory Co., Ltd
Applicant's name.....:	Sicon Chat Union Electric Co., Ltd.
Address.....:	Bldg.14&15, No. 319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, 050035, China.
Test specification:	
Standard.....:	IEC62619:2017, AMD1:2015
Test procedure.....:	CE-LVD
Non-standard test method.....:	N/A
Test Report Form No.....:	IEC62619C
Test Report Form(s) Originator.....:	DEKRA Certification B.V.
Master TRF.....:	Dated 2018-12-21

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General disclaimer:

The test results presented in this report relate only to the object tested.

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Test item description.....:	Li-ion battery energy storage system
Trade Mark.....:	N/A
Manufacturer.....:	Same as the applicant
Model/Type reference.....:	EBC480/100-LFP-ABMS, details see the model list
Ratings.....:	DC 480V, 100A, ta.25°C, IP20

☒	**Testing Laboratory:**	Shenzhen STE Testing Laboratory Co., Ltd	
Testing location/ address.....:		Room 301(left side), Building 9, Dehong Factory Building, No. 63 Yuchang Road, Niuhu Community, Guanlan Street, Longhua District, Shenzhen, China	
Tested by.....:		Hunter Liang / Project Handler	Hunter Liang
Check by.....:		Todd Qian / Reviewer	Todd Qian
Approved by.....:		Fly Li / Technical Director	Fly Li

List of Attachments (including a total number of pages in each attachment):

Attachment No. 1: Photo documentation.

Summary of testing:

All test items are applied to the model EBC480/100-LFP-ABMS, which is considered representative and give the most unfavourable test result, the other models had been tested with construction cheek, temperature rise test and cap interchangeability on the provided samples.

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Tests performed (name of test and test clause):	Testing location:
IEC 62619:2011+A1:2015	Shenzhen STE Testing Laboratory Co., Ltd Room 301(left side), Building 9, Dehong Factory Building, No. 63 Yuchang Road, Niuhu Community, Guanlan Street, Longhua District, Shenzhen, China

Summary of compliance with National Differences:

List of countries addressed

☒ The product fulfils the requirements of Germany and European Group differences

Copy of marking plate:

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

Li-ion battery energy storage system
Model: EBC480/100-LFP-ABMS
DC 480V, 100A

Sicon Chat Union Electric Co., Ltd.
Bldg.14&15, No. 319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, 050035, China.
Importer: xxxx
Address: xxxx
Made In China

Remarks:

1. Representative markings of EBC480/100-LFP-ABMS, markings of all models are identical except for the model name and power.

2. Height of CE mark is 5mm, height of WEEE symbol is 7mm, height of other marks is 5mm, height of letters and numerals is 2mm.

Test item particulars..... :	
Classification of installation and use..... :	☒ Stationary application ☐ Motive application
Supply Connection..... :	☐ S (Very low rate long-time discharge type) ☐ E (Low rate long-time discharge type) ☒ M (Medium rage discharge type) ☐ H (High rate discharge type)
Possible test case verdicts:	
- test case does not apply to the test object..... :	N/A
- test object does meet the requirement..... :	P (Pass)
- test object does not meet the requirement..... :	F (Fail)
Testing..... :	
Date of receipt of test item..... :	June 20, 2019
Date (s) of performance of tests..... :	June 01, 2019 - June 20, 2019

General remarks:

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The test results presented in this report relate only to the item tested.

"(See Enclosure #)" refers to additional information appended to the report.
"(See appended table)" refers to a table appended to the report.

Throughout this report a ☒ comma / ☐ point is used as the decimal separator.

Modified Information

Version	Report No.	Revision Date	Summary
V1.0	STE20110102S	/	Original Version

Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:	
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided..... :	☐ **Yes** ☒ **Not applicable**

When differences exist; they shall be identified in the General product information section.

Name and address of factory (ies)..... :	Same as manufacturer' name and address

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General product information:

1. All models have similar construction and appearance but different power, size and lamp cap.
2. Unless otherwise specified, the models EBC480/100-LFP-ABMS were chosen as representative model to perform all test

The supply connector via with power cord used for all models.

Model list:

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Model	voltage	Input Current(A)	Output Current(A)
ECM-48B100N	48V	100A	100A
EBC48/30-LFP-ABMS	48V	60A	90A
EBC48/50-LFP-ABMS	48V	100A	150A
EBC48/100-LFP-ABMS	48V	100A	100A
EBC51.2/100-LFP-ABMS	51.2V	100A	100A
EBC240/10-LFP-ABMS	240V	20A	40A
EBC480/10-LFP-ABMS	480V	20A	40A
EBC480/20-LFP-ABMS	480V	40A	80A
EBC480/30-LFP-ABMS	480V	60A	120A
EBC480/50-LFP-ABMS	480V	50A	100A
EBC480/100-LFP-ABMS	480V	100A	200A
EBC480/150-LFP-ABMS	480V	150A	300A
EBC480/200-LFP-ABMS	480V	200A	400A
EBC480/280-LFP-ABMS	480V	140A	140A
EBC480/40-LFP-ABMS	480V	80A	200A
EBC480/80-LFP-ABMS	480V	160A	400A
EBC480/120-LFP-ABMS	480V	240A	480A
EBC480/160-LFP-ABMS	480V	320A	480A
EBC768/40-LFP-ABMS	768V	80A	240A
EBC768/80-LFP-ABMS	768V	160A	400A
EBC768/120-LFP-ABMS	768V	240A	480A
EBC768/160-LFP-ABMS	768V	320A	480A
EBC768/50-LFP-ABMS	768V	50A	100A
EBC768/100-LFP-ABMS	768V	100A	200A
EBC768/150-LFP-ABMS	768V	150A	300A
EBC768/200-LFP-ABMS	768V	200A	400A
EBC768/280-LFP-ABMS	768V	140A	140A
EBC768/100-LFP-ABMS-M	768V	100A	200A
EBC768/40-LFP-ABMS-F	768V	80A	240A
EBC768/80-LFP-ABMS-F	768V	160A	400A
EBC768/120-LFP-ABMS-F	768V	240A	480A
EBC768/160-LFP-ABMS-F	768V	320A	480A
EBC768/50-LFP-ABMS-F	768V	50A	100A
EBC768/100-LFP-ABMS-F	768V	100A	200A
EBC768/150-LFP-ABMS-F	768V	150A	300A
EBC768/200-LFP-ABMS-F	768V	200A	400A
EBC768/280-LFP-ABMS-F	768V	140A	140A

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IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict
4	**PARAMETER MEASUREMENT TOLERANCES**		**P**
	Parameter measurement tolerances		P
5	**GENERAL SAFETY CONSIDERATIONS**		**P**
5.1	**General**		**P**
	Cells and batteries are safe under conditions of both intended use and reasonably foreseeable misuse.. :	See also table 5.1 for Critical components information	P
5.2	**Insulation and wiring**		**P**
	Voltage, current, altitude, and humidity requirements		P
	Adequate clearances and creepage distances between connectors		P
	The mechanical integrity of internal connections		P
5.3	**Venting**		**P**
	Pressure relief function		N/A
	Encapsulation used to support cells within an outer casing		P
5.4	**Temperature/voltage/current management**		**P**
	The design prevents abnormal temperature-rise		P
	Voltage, current, and temperature limits of the cells		P
	Specifications and charging instructions for equipment manufacturers		P
5.5	**Terminal contacts of the battery pack and/or battery system**		**P**
	Polarity marking(s)		P
	Capability to carry the maximum anticipated current		P
	External terminal contact surfaces		N/A
	Terminal contacts are arranged to minimize the risk of short circuits		P
5.6	**Assembly of cells, modules, or battery packs into battery systems**		**P**
5.6.1	General		P
	Independent control and protection method(s)		P
	Recommendations of cell operating limits by the cell manufacturer		P
	Batteries designed for the selective discharge of a portion of their series connected cells		P
	Protective circuit component(s) and consideration to the end-device application		P

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Clause	Requirement + Test	Result - Remark	Verdict
5.6.2	Battery system design		N/A
	The voltage control function		N/A
	The voltage control for series-connected batteries		N/A
5.7	**Operating region of lithium cells and battery systems for safe use**		**P**
	The cell operating region.....:		N/A
	Designation of battery system to comply with the cell operating region		P
5.8	**Quality plan**		**N/A**
	Manufacturing quality plan (for example: ISO9001, etc.) prepared and implemented..... :	Reference:	N/A
	The process capabilities and the process controls		N/A
6	**TYPE TEST CONDITIONS**		**P**
6.1	**General**		**P**
6.2	**Test items**		**P**
	Cells or batteries that are not more than six months old (See Table 1 of IEC62619)		P
	Capacity confirmation of the cells or batteries	480V100Ah	P
	Default ambient temperature of test, 25 °C ± 5 °C		P
7	**SPECIFIC REQUIREMENTS AND TESTS**		**P**
7.1	**Charging procedure for test purposes**		**P**
	The battery discharged to a specified final voltage prior to charging		P
	The cells or batteries charged using the method specified by the manufacturer.....:		P
7.2	**Reasonably foreseeable misuse**		**P**
7.2.1	External short-circuit test (cell or cell block)		P
	Short circuit with total resistance of 30 mΩ ± 10 mΩ at 25 °C ± 5 °C		P
	Results: no fire, no explosion		P
7.2.2	Impact test (cell or cell block)		P
	Cylindrical cell, longitudinal axis impact		N/A
	Prismatic cell, longitudinal axis and lateral axis impact		P
	Results: no fire, no explosion.		P

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict
7.2.3	Drop test (cell or cell block, and battery system)		P

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict

7.2.3.1	General		P	
7.2.3.2	Whole drop test (cell or cell block, and battery system)		N/a	
	Description of the Test Unit.....:		—	
	Mass of the test unit (kg)..... :		—	
	Height of drop (m)..... :		—	
	Results: no fire, no explosion		N/A	
7.2.3.3	Edge and corner drop test (cell or cell block, and battery system)		p	
	Description of the Test Unit.....:		—	
	Mass of the test unit (kg)..... :	55KG	—	
	Height of drop (m)..... :		—	
	Results: no fire, no explosion		p	
7.2.4	Thermal abuse test (cell or cell block)		P	
	Results: no fire, no explosion		P	
7.2.5	Overcharge test (cell or cell block)		N/A	
	For those battery systems that are provided with only a single protection for the charging voltage control		—	
	Results: no fire, no explosion.....:	See Table 7.2.5.	P	
7.2.6	Forced discharge test (cell or cell block)		P	
	Upper limit charge voltage of the cell.....:		P	
	Cells connected in series in the battery system..... :		P	
	Redundant or single protection for discharge voltage control provided in battery system..... :		P	
	Target Voltage..... :		P	
	Maximum discharge current of the cell, I_m..... :		P	
	Discharge current for forced discharge, 1.0 It.....:		P	
	Discharging time, t = (1 It / I_m) x 90 (min.)..... :		P	
	Results: no fire, no explosion.....:	See Table 7.2.6.	P	
7.3	**Considerations for internal short-circuit – Design evaluation**		**P**	
7.3.1	General		P	
7.3.2	Internal short-circuit test (cell)		P	

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IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict
	Samples preparation procedure: a), in accordance with 8.3.9 of IEC62133:2012; or b), the nickel particle inserted before charging, or c), the nickel particle was inserted before electrolyte filling.....:		P
	Tested according to Cl. 8.3.9 of IEC 62133:2012 test method, except all tests were carried out in an ambient temperature of 25 °C ± 5 °C.		P
	The appearance of the short-circuit location recorded by photograph or other means..... :	See Attachment # __	—
	The pressing was stopped - When a voltage drop of 50 mV was detected; or		P
	- The pressing force of 800 N (cylindrical cells) or 400 N (prismatic cells) was reached		P
	Results: no fire, no explosion.....:	See Table 7.3.2.	P
7.3.3	**Propagation test (battery system)**		**N/A**
	Method to create a thermal runaway in one cell .... :	See Annex B	**N/A**
	Results: No external fire from the battery system or no battery case rupture.....:	See results in Table 7.3.3	**N/A**
8	**BATTERY SYSTEM SAFETY (CONSIDERING FUNCTIONAL SAFETY)**		**P**
8.1	**General requirements**		**P**
	Functional safety analysis for critical controls		P
	Conduct of a process hazard, risk assessment and mitigation of the battery system		P
8.2	**Battery management system (or battery management unit)**		**P**
8.2.1	Requirements for the BMS		P
	The safety integrity level (SIL) target of the BMS		P
	The charge control evaluated by tests in clauses 8.2.2 to 8.2.4		P
8.2.2	Overcharge control of voltage (battery system)		N/A
	The exceeded charging voltage applied to the whole battery system		N/A
	The exceeded charging voltage applied to only a part of the battery system, such as the cell(s)..... :		N/A
	Results: no fire, no explosion.....:	See Table 8.2.2.	N/A
	The BMS interrupted the overcharging before reaching 110% of the upper limit charging voltage		N/A

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IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict
8.2.3	Overcharge control of current (battery system)		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Results: no fire, no explosion.....:	See Table 8.2.3	P
	The BMS detected the overcharging current and controlled the charging to a level below the maximum charging current		N/A
8.2.4	Overheating control (battery system)		N/A
	The cooling system, if provided, was disconnected		N/A
	Elevated temperature for charging, 5 °C above maximum operating temperature..... :		N/A
	Results: no fire, no explosion.....:	See Table 9.2.5	N/A
	The BMS detected the overheat temperature and terminated charging		N/A
	The battery system operated as designed during test		N/A
9	**INFORMATION FOR SAFETY**		P
	The cell manufacturer provides information about current, voltage and temperature limits of their products		P
	The battery system manufacturer provides information regarding how to mitigate hazards to equipment manufacturers or end-users.		P
10	**MARKING AND DESIGNATION (REFER TO CLAUSE 5 OF IEC 62620)**		P
	The marking items shown in Table 1 in IEC 62620 indicated on the cell, battery system or instruction manual.		P
	Cell or battery system has clear and durable markings		P
	Cell designation		P
	Battery designation		P
	Battery structure formulation		P

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IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict

ANNEX A	OPERATING REGION OF CELLS FOR SAFE USE		P
A.1	General		P
A.2	Charging conditions for safe use		P
A.3	Consideration on charging voltage		P
A.4	Consideration on temperature		P
A.5	High temperature range		P
A.6	Low temperature range		P
A.7	Discharging conditions for safe use		P
A.8	Example of operating region		P

ANNEX B	PROCEDURE OF 7.3.3 PROPAGATION TEST		N/A
B.1	General		N/A
B.2	Test conditions:		N/A
	– The battery fully charged according to the manufacturer recommended conditions.....:		—
	– Target cell forced into thermal runaway.....:		—
	– A specially prepared sample (e.g. a heater or a hole for nail penetration provided) used for ease of testing..... :		—
B.3	Method used for initiating the thermal runaway. 1) Heater (Heater, Burner, Laser, Inductive heating 2) Overcharge 3) Nail penetration of the cell 4) Combination of above methods 5) Other methods..... :		—

ANNEX C	PACKAGING		P
	The materials and pack design chosen in such a way as to prevent the development of unintentional electrical conduction, corrosion of the terminals and ingress of environmental contaminants		P

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict

5.1	TABLE: Critical components information				
Object/part no.	**Manufacturer/ trademark**	**Type/model**	**Technical data**	**Standard**	**Mark(s) of conformity [1)]**
44-pin plug	ANFEITE	DJ-44T	75A -55~125℃		
44-pin socket	ANFEITE	DJ-44Z	75A -55~125℃		
Fuse	Xi'an Sinofuse Electric Co., Ltd	HEV-H-Q 600A/500VDC	500V/600A		
current sensor	NANJING ZHONGXU ELECTRONIC TECHNOLOGY CO., LTD.	HDC600F	400/5		
rectifier diode	Macmic science & Technology Co.,Ltd	MMD200S160 DK	1600V/200A		
DC high voltage EV relay	YM	EVR10-24S-YM-xinnuo	24V control signal, 10A		
Relay	YM	EVR400A-24S	24V control signal, 1000V400A		
Fan	Shengjiu Group Co., Ltd.	121238	24VDC-2A		
Aluminum shell resistance (pre-discharge resistance)	Anhui Kebi Electronic Technology Co., Ltd.	RXFB-2-150W-300R J	300R150W		
LCD terminal	DWIN	DMT80480T070-15WT	7.0inch, 12V		
DC circuit breaker	Shanghai Liangxin Electrical Co., Ltd.	NDM3Z-630-630A	630V/630A		
SMD integrated circuit U4 U5	Toshiba Electronics	ULN2003APW-TI	VIN−0.5~30V, VCE−0.5~50V		
SMD diode D12	Texas Instruments	REF3030-TI	Vinmin=3.001V,Vinmax=5.5V,Vo=3V		
SMD integrated circuit U6	ST	STM32F107VCT6	Operating Frequency：72MHz, Flash Size(Prog)： 256kB, RAM Size： 64kB		
Isolation amplifier U11	Mornsun Guangzhou Science& Technology Co.,Ltd	TD541SCANH	Transmission rate (bps) 1M, input voltage = 5V		

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict

SMD integrated circuit U1	Microchip Technology Inc.	SST25VF020B-80-4I-SAE-Microchip	2 Mbit 2.7 - 3.6V		
Integrated chip U2	ROHM Semiconductor	ML5238GAZ0FL-ROHM	7 - 80V		
SMD crystal oscillator Y2	H.ELE.	HSX321S-25MHz	25MHz		
SMD crystal oscillator Y1	YXC	YSX1610SK	32.768KHZ		
SMD regulator U7	AMS	AMS1117 3.3V	3.3V		
SMD transient suppression diode D27	ST	SM6T6V8CA	6.8V		
MOS tube Q26	ON Semiconductor	FQPF4N90	900V 2.5A		
MOS tube Q3 Q7	Infineon Technologies AG	STW20N95K5-ST	950V 17.5A		
MOS tube Q4 Q18	Infineon Technologies AG	IRF530NPBF-IR	100V 17A		
MOS tube Q1 Q5	JCET Group Co.,Ltd	IRF640	50V 18A		
Transformer T8	Sicon Chat Union Electric Co., Ltd.	LC-BY-0497	---		
Transformer T4	Sicon Chat Union Electric Co., Ltd.	LC-BY-0499	---		
Transformer T2	Sicon Chat Union Electric Co., Ltd.	DLF-BY-0006	---		
Transformer T3-BMU balance board	Sicon Chat Union Electric Co., Ltd.	DLF-BY-0007	---		
Transformer T1	Sicon Chat Union Electric Co., Ltd.	DLF-BY-0003	---		
Transformer T1-BCU control board	Sicon Chat Union Electric Co., Ltd.	DLF-BY-0009	---		
Transformer T1-BCU power board	Sicon Chat Union Electric Co., Ltd.	LC-BY-0503	---		
Transformer T3	Sicon Chat Union Electric Co., Ltd.	LC-BY-0427	---		
485 transceiver module C3-U2 C4-U2	Mornsun Guangzhou Science& Technology Co.,Ltd	TD321S485	---		
Internal wire	Xinya Electronics Co., Ltd.	8AWG - BLACK/RED	---		
Internal wire	Xinya Electronics Co., Ltd.	ZB-RV-10/16/25mm2	---		

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Clause	Requirement + Test	Result - Remark	Verdict

Supplementary information:
[1] Provided evidence ensures the agreed level of compliance. See OD-CB2039.

7.2.1	TABLE: External short-circuit test (cell or cell block)				P
Sample No.	**Ambient (at 25°C ± 5°C)**	**OCV at start of test (V dc)**	**Resistance of Circuit (mΩ)**	**Maximum Case Temperature Rise ΔT (°C)**	**Results**
1	24.6	478.2	25	30.9	A
2	27.3	480.1	30	31.7	A
3	28.9	485.6	35	33.1	A

Supplementary information:
A - No fire or Explosion
B - Fire
C - Explosion
D - The test was completed after 6 h
E - The test was completed after the cell casing cooled to 20% of the maximum temperature rise
F - Other (Please explain):___

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IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict

7.2.5	TABLE: Overcharge test (cell or cell block)					N/A
Sample No.	**OCV at start of test (V dc)**	**OCV at end of test (V dc)**	**Measured Maximum Charging Current (A)**	**Measured Maximum Charging Voltage (V dc)**	**Max. Cell Case Temperature, (°C)**	**Results**

Supplementary information:

Results:
A - No fire or Explosion
B - Fire
C - Explosion
D - Test concluded when temperature reached a steady state condition
E - Test concluded when temperature returned to ambient
F - Other (Please explain): _____

7.2.6	TABLE: Forced discharge test (cell or cell block)				P
Sample No.	**OCV before applying reverse charge, (V dc)**	**Target Voltage (V dc)**	**Measured Reverse Charge Current It, (A)**	**Total Time for Reversed Charge Application (min)**	**Results**
1	547.5	480	1C	90	A
2	547.5	480	1C	90	A

Supplementary information:

Results:
A - No fire or Explosion
B - Fire
C - Explosion
D - Other (Please explain): ___

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Clause	Requirement + Test	Result - Remark	Verdict

7.3.2	TABLE: Internal short-circuit test (cell)			P
Sample No.	**OCV at start of test, (V dc)**	**Particle location [1)]**	**Maximum applied pressure, (N)**	**Results**
1	44.3	1	400	A
2	43.7	1	400	A
3	44.5	1	400	A
4	45.2	2	400	A
5	45.8	1	400	A
6	46.7	2	400	A
7	46.2	2	400	A
8	44.3	1	400	A
9	49.6	1	400	A
10	47.4	2	400	A

Supplementary information:

[1)] Identify one of the following**:**

1: Nickel particle inserted between positive and negative (active material) coated area.

2: Nickel particle inserted between positive aluminium foil and negative active material coated area.

Results:

A - No fire or explosion
B – Fire
C - Explosion
D – Test concluded when 50 mV voltage drop occurred prior to reaching force limit
E – Test concluded when 800/400 N pressure was reached and 50 mV voltage drop was not achieved
F – Test was concluded when fire or explosion occurred
G - Other (Please explain): __

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Clause	Requirement + Test	Result - Remark	Verdict

7.3.3	TABLE: Propagation test (battery system)				N/A
Sample No.	**OCV of Battery System Before Test, (V dc)**	**OCV of Target Cell Before Test, (V dc)**	**Maximum Cell Case Temperature, (°C)**	**Maximum DUT Enclosure Temperature, (°C)**	**Results**

Method of cell failure [1)]	Location of target cell	Area for fire protection (m^2)

Supplementary information:

1) Cell can be failed through applied heat, overcharge, nail penetration or combinations of these failures or other acceptable methods. See supporting documentation for details on cell failure method

2) If the battery system has no outer covering, the manufacturer is required to specify the area for fire protection.

Results:
A – No fire external to DUT enclosure or area for fire protection or no battery case rupture
B – Fire external to DUT enclosure or area for fire protection
C – Explosion
D – Battery case rupture
E - Other (Please explain): __

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IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict

8.2.2	TABLE: Overcharge control of voltage (battery system)				N/A
Sample No.	**OCV at start of test for Cell/Cell Blocks, (V dc)**	**Maximum Charging Current, (A)**	**Max. Charging Voltage, (V dc)**	**Max. Voltage of Cell/Cell Blocks, (V dc)**	**Results**

	Charge Voltage Applied Battery System: 1)	
	Whole	**Part**

Supplementary information:

1. The exceeded voltage can be applied to only a part of the system such as the cell(s) in the battery system per Figure 6 of IEC 62619, if it is difficult to do it in using the whole battery system.

Results:
A - No Fire or Explosion
B – Fire
C - Explosion
D - The voltage of the measured cells or cell blocks did not exceed the upper limit charging voltage
E - The voltage of the measured cells or cell blocks did exceed the upper limit charging voltage
F - All function of battery system did operate as intended during the test.
G - All function of battery system did not operate as intended during the test.
H - Other (Please explain): ___

8.2.3	TABLE: Overcharge control of current (battery system)			P
Sample No.	**OCV at start of test, (V dc)**	**Max. Charging Current, (A)**	**Max. Charging Voltage, (V dc)**	**Results**
1	480	100	547.5	A

Supplementary information:

Results:
A – No fire or Explosion
B – Fire
C – Explosion
D - Overcurrent sensing function of BMU did operate and then charging stopped
E - Overcurrent sensing function of BMU did not operate and then charging stopped
F - All function of battery system did operate as intended during the test.
G - All function of battery system did not operate as intended during the test.
H - Other (Please explain): ____

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Clause	Requirement + Test	Result - Remark	Verdict

8.2.4	TABLE: Overheating control (battery system)		N/A
Model No.	**OCV at start(SOC 50%) of test, V dc**	**Maximum Charging Current, A**	**Maximum Charging Voltage, V dc**
Maximum Specified Temperature of Battery System, °C		**Maximum Measured Cell Case Temperature, °C**	**Results**

Supplementary information:

Results:
A – No fire or Explosion
B – Fire
C – Explosion
D - Temperature sensing function of BMU did operate and then charging stopped
E - Temperature sensing function of BMU did not operate and then charging stopped
F - All function of battery system did operate as intended during the test.
G - All function of battery system did not operate as intended during the test.
H - Other (Please explain): ____

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Attachment No.1 Photo Documentation

Details of: Overview of model EBC480/100-LFP-ABMS

Remark:

-------- End of Test Report --------

Attestation of Compliance

STE Testing

Reference No.	:	**STE20110102S**
Applicant	:	**Sicon Chat Union Electric Co., Ltd.**
Address	:	**Bldg.14&15, No. 319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, 050035, China.**
Product	:	**Li-ion battery energy storage system**
Trade Mark	:	**N/A**
Model(s)	:	**SEE ANNEX I**
Parameters	:	**SEE ANNEX I**
Tested according to	:	**IEC 62619:2011+A1:2015**

The submitted products have been tested by us with the listed standards.

This Attestation of Compliance is issued according to the council Directive 2014/35/EU, Referred to as the Low Voltage Directive. It confirms that the listed product complies with all essential requirements of the LVD Directive and applies only to the sample and its technical documentation submitted to Shenzhen STE Testing Laboratory Co., Ltd. for testing.

After preparation of the necessary technical documentation as well as the EC conformity declaration the required CE marking can be affixed on the product.Other relevant Directives have to be observed.

CE

Date of issue:June 20, 2019

STE TESTING LABORATORY
STE
Manager
APPROVED

Shenzhen STE Testing Laboratory Co., Ltd.
Room 301(left side), Building 9, Dehong Factory Building, No. 63 Yuchang Road, Niuhu Community, Guanlan Street, Longhua District, Shenzhen, Guangdong, China

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ANNEX I:

Reference No. : **STE20110102S**

Model(s) :

Model	voltage	Input Current(A)	Output Current(A)
ECM-48B100N	48V	100A	100A
EBC48/30-LFP-ABMS	48V	60A	90A
EBC48/50-LFP-ABMS	48V	100A	150A
EBC48/100-LFP-ABMS	48V	100A	100A
EBC51.2/100-LFP-ABMS	51.2V	100A	100A
EBC240/10-LFP-ABMS	240V	20A	40A
EBC480/10-LFP-ABMS	480V	20A	40A
EBC480/20-LFP-ABMS	480V	40A	80A
EBC480/30-LFP-ABMS	480V	60A	120A
EBC480/50-LFP-ABMS	480V	50A	100A
EBC480/100-LFP-ABMS	480V	100A	200A
EBC480/150-LFP-ABMS	480V	150A	300A
EBC480/200-LFP-ABMS	480V	200A	400A
EBC480/280-LFP-ABMS	480V	140A	140A
EBC480/40-LFP-ABMS	480V	80A	200A
EBC480/80-LFP-ABMS	480V	160A	400A
EBC480/120-LFP-ABMS	480V	240A	480A
EBC480/160-LFP-ABMS	480V	320A	480A
EBC768/40-LFP-ABMS	768V	80A	240A
EBC768/80-LFP-ABMS	768V	160A	400A
EBC768/120-LFP-ABMS	768V	240A	480A
EBC768/160-LFP-ABMS	768V	320A	480A
EBC768/50-LFP-ABMS	768V	50A	100A
EBC768/100-LFP-ABMS	768V	100A	200A
EBC768/150-LFP-ABMS	768V	150A	300A
EBC768/200-LFP-ABMS	768V	200A	400A
EBC768/280-LFP-ABMS	768V	140A	140A
EBC768/100-LFP-ABMS-M	768V	100A	200A
EBC768/40-LFP-ABMS-F	768V	80A	240A
EBC768/80-LFP-ABMS-F	768V	160A	400A
EBC768/120-LFP-ABMS-F	768V	240A	480A
EBC768/160-LFP-ABMS-F	768V	320A	480A
EBC768/50-LFP-ABMS-F	768V	50A	100A
EBC768/100-LFP-ABMS-F	768V	100A	200A
EBC768/150-LFP-ABMS-F	768V	150A	300A
EBC768/200-LFP-ABMS-F	768V	200A	400A
EBC768/280-LFP-ABMS-F	768V	140A	140A

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THE
QUALITY CHOICE
FOR ALL
YOUR POWER NEEDS

POM
Systems & Services Pvt. Ltd.

To,

POM/MAF/ANERT-2024-122
1.03.2024

The CEO
ANERT
THIRUVANATHAPURAM

Reference:- e-EoI Notification No: **ANERT-TECH/41/2024-PE1** dtd **27.02.2024** for Expression of Interest [EoI] for the Selection of Agency for Pilot Implementation of **Battery Energy Storage System** at **ANERT** HQ, Thiruvananthapuram

We, the undersigned, declare that:

We are authorised distributor for **M/s. Sicon Chat Union Electric Co. Ltd** located at Bldg. 14th & 15th No.319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, China manufacturers of **Energy storage Systems.**

We authorise **M/s. Centertec, Primus Tower, PKA Nagar, Cusat Main Road, Cochin 682 022** to participate and quote in the Tender No. **ANERT-TECH/41/2024-PO1[RTS]**

We, confirm herewith, if **M/s. Centertec** awarded the contract to install and maintain the above tendered item, we will support them, to meet and maintain all the equipment, supplied vide the above Tender number during the warranty and post warranty Annual Maintenance Period.

[Signature]

POM SYSTESMS & SERVICES PVT. LTD. ★ BENGALURU ★

Name I.B.Rao.
Managing Director
POM Systems & Services Pvt. Ltd
No.75, 6th Main, 3rd Phase,
Peenya Indl. Area, Bangalore 560 058

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To,

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The CEO
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Energy Storage Solutions

About US

PAM Systems & Services Pvt. Ltd., a Reputable and Leading company with over 25 years of experience in the field of Power Electronics, we specialize value added products in Energy Storage Solutions Like Grid Renewable Energy Storage Systems, Multifunctional Power Conversion Systems, Battery Energy Storage Systems and Lithium Batteries. We also specialize in Data Center Infrastructures like Micro Data Centers, Modular Data Centers, Modular UPS Systems, Online UPS Systems. And we also specialize Solar Power Products and plants, EV-DC Fast Chargers, and DC Power Supplies.

PAM Systems & Services is committed to providing its customers with the highest quality products and services. The Company's team of experienced engineers and technicians is available to provide support and assistance throughout the entire process, from design and installation to maintenance and support.

PAM Systems & Services is a trusted partner for business and organizations of all sizes. The company's commitment to quality and customer service has made it a leader in the Energy Storage, UPS and Solar Power Industry.

For more information about us please visit company's website www.pompower.in

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Energy storage SOLUTIONS

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Multifunctional Power Conversion System

The multi-functional bi-directional converter can realize the bi-directional conversion from DC to AC and from AC to DC. It can not only convert AC into DC to charge the battery, but also convert DC into AC to supply power to the load or feed back to the grid. The system adopts advanced digital control technology, which optimizes the control performance and improves the reliability of the system. It can realize seamless switching between grid-connected discharge, grid -connected charging and off grid operation modes.

Configuration

AC/DC Module

Bidirectional AC / DC converter can realize the bidirectional conversion from DC to AC and AC to DC. It can not only convert AC to DC to charge battery, but also convert DC to AC to supply power to load or feed back to power grid.

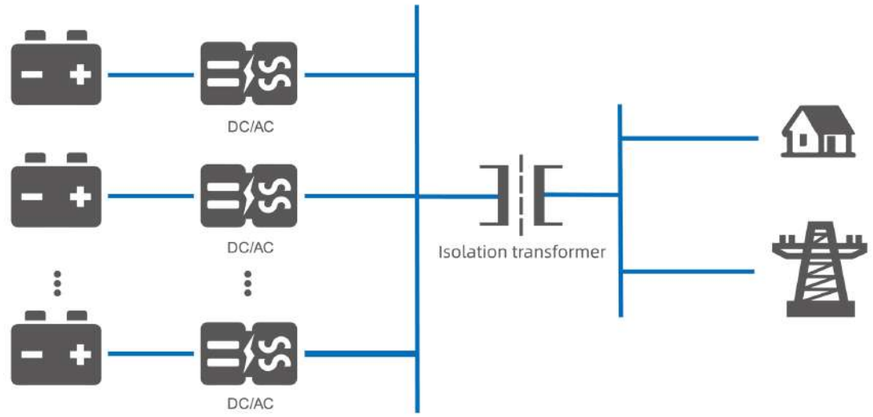
Static Transfer Switch (optional)

Under normal working condition, the static switch is closed. When the power supply is interrupted, the static switch is immediately disconnected. The system turns to off grid power supply, and the battery is discharged for the load.

Power Management System

System operation data monitoring, operation strategy management, historical data record, system status record, etc.

System topology



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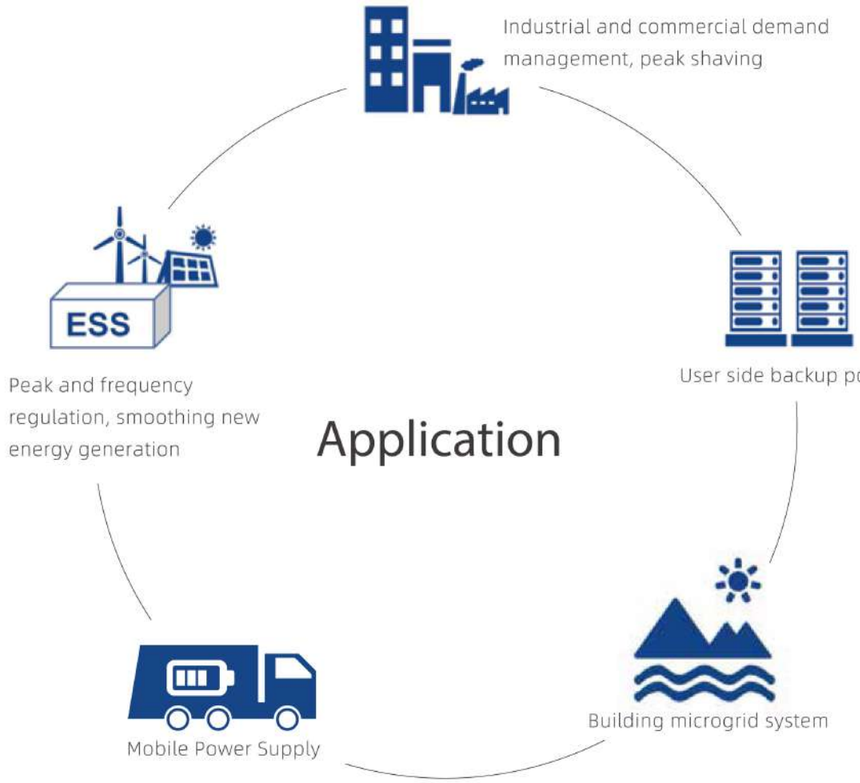
Key product features and benefits

- Multiple working modes.
- Seamless switching between on-grid and off grid modes,<10ms.
- 3P3W and 3P4W optional.
- RS485 , CAN , Ethernet communication modes.
- Functions of low voltage ride through and reactive power compensation.
- 100% unbalanced load capacity in off grid operation.
- Continuous 105% rated output power.
- AC and DC dual input redundant power supply.
- Modular design and flexible product.
- High efficiency, high reliability.
- Battery technology independence.
- PV direct access.



High efficiency integrated PCS systems based on 50kW module

Model:**EPCS50,EPCS100**
Max. Capacity of system: **50kW,100kW**
Power module model: **PCM50**
Power module capacity: **50kW**
Dimension: **600*1000*2000**(W*D*H)mm

Model: **EPCS150,EPCS200,EPCS250**
Max. Capacity of system: **150kW,200kW, 250kW**
Power module model: **PCM50**
Power module capacity: **50kW**
Dimension: **1200*1000*2000**(W*D*H)mm

Model	EPCS50	EPCS100	EPCS150	EPCS200	EPCS250
DC Parameter					
Voltage range	DC580V ~ DC900V				
DC channel Qty	1	2	3	4	5
Max current per channel	85A				
AC parameters (On-grid)					
Output	3W+N+PE/3W+PE				
Rated power	50KW	100KW	150KW	200KW	250KW
Rated voltage	AC 380V/400V				
Rated Current	75A	151A	227A	303A	379A
Voltage range	-15% ~ +10%				
Rated frequency	50Hz/60Hz				
Frequency range	±2Hz				
Power factor	-0.9~+0.9				
Output current harmonics	≤ 3% (Rated power)				
On-off-grid switching time	<20ms				
AC parameters (Off-grid)					
Output	3W+N+PE/3W+PE				
Rated power	50KW	100KW	150KW	200KW	250KW
Rated voltage	AC 380V/400V				
Rated frequency	50Hz/60Hz				
Output voltage harmonics	≤3% (linear full load)				
Unbalanced load capacity	100%				
Overload capacity	105%]: continuous operation; (105% ~ 120%]: 10min;120%); stop operation				
Environment					
Working temperature	-20℃~ 55℃ (>45℃ derating)				
Relative humidity	0% RH ~ 95% RH, No condensation				
Working altitude	< 45℃, 2000m; 2000m ~ 4000m Derating				
Noise	< 75dB				
Others					
Communication	CAN/RS485				
Isolation	Isolation transformer				
Protection	IP20				
Cooling	Air cooling, intelligent fan regulation				
Maximum efficiency	97.50%				
Dimension W*D*H	600*1000*2000mm		1200*1000*2000mm		
Weight	300Kg	330Kg	500Kg	530Kg	560Kg
Certificate	EN50549/G99/IEC62477-1/EN61000/IEC61727/IEC62116/VDE4105				

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High efficiency integrated PCS systems based on 100kW module

Model:**EPCS300,EPCS400,EPCS500,EPCS600**
Max. Capacity of system: **300kW,400kW,500kW,600kW**
Power module model: **PCM100**
Power module capacity: **100kW**
Dimension:**1400*1000*2000** (W*D*H)mm

Model	EPCS300	EPCS400	EPCS500	EPCS600
DC Parameter				
Voltage range	DC680V - DC900V			
DC channel Qty	3	4	5	6
Max current per channel	170A			
AC parameters (On-grid)				
Output	3W+N+PE/3W+PE			
Rated power	300KW	400KW	500KW	600KW
Rated voltage	AC 380V/400V			
Rated Current	454A	606A	758A	909A
Voltage range	-15% ~ +10%			
Rated frequency	50Hz/60Hz			
Frequency range	±2Hz			
Power factor	-0.9~+0.9			
Output current harmonics	≤ 3% (Rated power)			
On-off-grid switching time	<20ms			
AC parameters (Off-grid)				
Output	3W+N+PE/3W+PE			
Rated power	300KW	400KW	500KW	600KW
Rated voltage	AC 380V/400V			
Rated frequency	50Hz/60Hz			
Output voltage harmonics	≤3% (linear full load)			
Unbalanced load capacity	100%			
Overload capacity	105%]: continuous operation; (105%~120%]: 10min;120%); stop operation			
Environment				
Working temperature	-20℃~ 55℃ (>45℃derating)			
Relative humidity	0% RH ~ 95% RH, No condensation			
Working altitude	<45℃, 2000m; 2000m~4000m Derating			
Noise	< 75dB			
Others				
Communication	CAN/RS485			
Isolation	NO			
Protection	IP20			
Cooling	Air cooling, intelligent fan regulation			
Maximum efficiency	98.5% (No Isolatin transformer)			
Dimension W*D*H	1400*1000*2000mm			
Weight	650Kg	675Kg	700Kg	750Kg
Certificate	EN50549/G99/IEC62477-1/EN61000/IEC61727/IEC62116/VDE4105			

Integrated PCS systems with wide voltage range

Model:**EHPCS50,EHPCS100**
Max. Capacity of system: **50kW,100kW**
Power module model: **PCMZ50**
Power module capacity: **50kW**
Dimension:**600*1000*2000** (W*D*H)mm

Model:**EHPCS150,EHPCS200,EHPCS250**
Max. Capacity of system: **150kW,200kW, 250kW**
Power module model: **PCMZ50**
Power module capacity: **50kW**
Dimension:**1200*1000*2000** (W*D*H)mm

Model	EHPCS50	EHPCS100	EHPCS150	EHPCS200	EHPCS250
DC Parameter					
Voltage range	DC200V - DC800V				
DC channel Qty	1	2	3	4	5
Max current per channel	135A				
AC parameters (On-grid)					
Output	3W+N+PE/3W+PE				
Rated power	50KW	100KW	150KW	200KW	250KW
Rated voltage	AC 380V/400V				
Rated Current	75A	151A	227A	303A	379A
Voltage range	-15% ~ +10%				
Rated frequency	50Hz/60Hz				
Frequency range	±2Hz				
Power factor	-0.9~+0.9				
Output current harmonics	≤ 3% (Rated power)				
On-off-grid switching time	<20ms				
AC parameters (Off-grid)					
Output	3W+N+PE/3W+PE				
Rated power	50KW	100KW	150KW	200KW	250KW
Rated voltage	AC 380V/400V				
Rated frequency	50Hz/60Hz				
Output voltage harmonics	≤3% (linear full load)				
Unbalanced load capacity	100%				
Overload capacity	105%]: continuous operation; (105%~110%]: 10min;110%); stop operation				
Environment					
Working temperature	-20℃~55℃ (>45℃derating)				
Relative humidity	0%RH~95%RH, No condensation				
Working altitude	<45℃, 2000m; 2000m~4000m Derating				
Noise	< 75dB				
Others					
Communication	CAN/RS485				
Isolation	Isolation Transformer				
Protection	IP20				
Cooling	Air cooling, intelligent fan regulation				
Maximum efficiency	95.50%				
Dimension W*D*H	600*1000*2000mm		1200*1000*2000mm		
Weight	320Kg	350Kg	530Kg	560Kg	580Kg
Certificate	EN50549/G99/IEC62477-1/EN61000/IEC61727/IEC62116/VDE4105				

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Hybrid PCS system with solar access

Model:**SPCS50**
MPPT: **50kW**
PCS: **50kW**
Dimension:
600*1000*2000(W*D*H)mm

Model:**SPCS100**
MPPT: **100kW**
PCS: **100kW**
Dimension:
1200*1000*2000(W*D*H)mm

Model:**SPCS150**
MPPT: **150kW**
PCS: **150kW**
Dimension:
1200*1000*2000(W*D*H)mm

Model	SPCS50	SPCS100	SPCS150
PV Parameter			
MPPT voltage range	DC200V ~ DC700V		
MPPT full power Volt range	DC370V ~ DC700V		
MPPT channel Qty	1	2	3
Max current per channel	135A		
DC Parameter			
Voltage range	DC580V ~ DC900V		
Max current per channel	85A	170A	255A
AC parameters (On-grid)			
Output	3W+N+PE /3W+PE		
Rated power	50KW	100KW	150KW
Rated voltage	AC 380V/400V		
Rated Current	75A	151A	227A
Voltage range	-15% ~ +10%		
Rated frequency	50Hz/60Hz		
Frequency range	±2Hz		
Power factor	-0.9~+0.9		
Output current harmonics	≤ 3% (Rated Power)		
AC parameters (Off-grid)			
Output	3W+N+PE /3W+PE		
Rated power	50KW	100KW	150KW
Rated voltage	AC 380V/400V		
Rated frequency	50Hz/60Hz		
Output voltage harmonics	≤ 3% (linear full load)		
Unbalanced load capacity	100%		
Overload capacity	105%]: continuous operation; (105%～120%]: 10min;120%); stop operation		
Environment			
Working temperature	-20℃～ 55℃ (>45℃derating)		
Relative humidity	0%RH～95%RH, No condensation		
Working altitude	<45℃, 2000m; 2000m～4000m Derating		
Noise	< 75dB		
Others			
Communication	CAN/RS485		
Isolation	Isolation transformer		
Protection	IP20		
Function	Solar Energy Self-use		
Cooling	Air cooling, intelligent fan regulation		
Dimension W*D*H	600*1000*2000mm	1200*1000*2000mm	1200*1000*2000mm
Weight	550kg	750kg	850kg

Rack-mounted PCS module—easy for integration

Model:**PCM50 II HC**
Capacity:**50kW**
Dimension:
560*530*133(W*D*H)mm

Model:**PCM100 II HC**
Capacity:**100kW**
Dimension:
560*530*177(W*D*H)mm

Model	PCM50 II HC	PCM100 II HC
DC Parameter		
Voltage range	DC680V ~ DC900V	
Rated Power	50KW	100KW
DC channel Qty	1	1
Max current	85A	170A
AC parameters (On-grid)		
Output	3W+N+PE/3W+PE	
Rated power	50KW	100KW
Rated voltage	AC 380V/400V	
Rated Current	75A	151A
Voltage range	-15% ~ +10%	
Rated frequency	50Hz/60Hz	
Frequency range	±2Hz	
Power factor	-0.9~+0.9	
Output current harmonics	≤ 3% (Rated power)	
On-off-grid switching time	<20ms	
AC parameters (Off-grid)		
Output	3W+N+PE/3W+PE	
Rated power	50KW	100KW
Rated voltage	AC 380V/400V	
Rated frequency	50Hz/60Hz	
Voltage accuracy	1%	
Frequency accuracy	±0.2Hz	
Output voltage harmonics	≤3% (linear full load)	
Unbalanced load capacity	100%	
Overload capacity	105%]: continuous operation; (105%～120%]: 10min;120%); stop operation	
Environment		
Working temperature	-20℃～ 55℃ (>45℃ derating)	
Relative humidity	0%RH～95%RH, No condensation	
Working altitude	<45℃, 2000m; 2000m～4000m Derating	
Noise	< 75dB	
Others		
Communication	CAN/RS485	
Isolation	NO	
Protection	IP20	
Cooling	Air cooling, intelligent fan regulation	
Maximum efficiency	98.5%	
Dimension W*D*H	560*530*133mm	560*530*177mm
Weight	30Kg	40Kg

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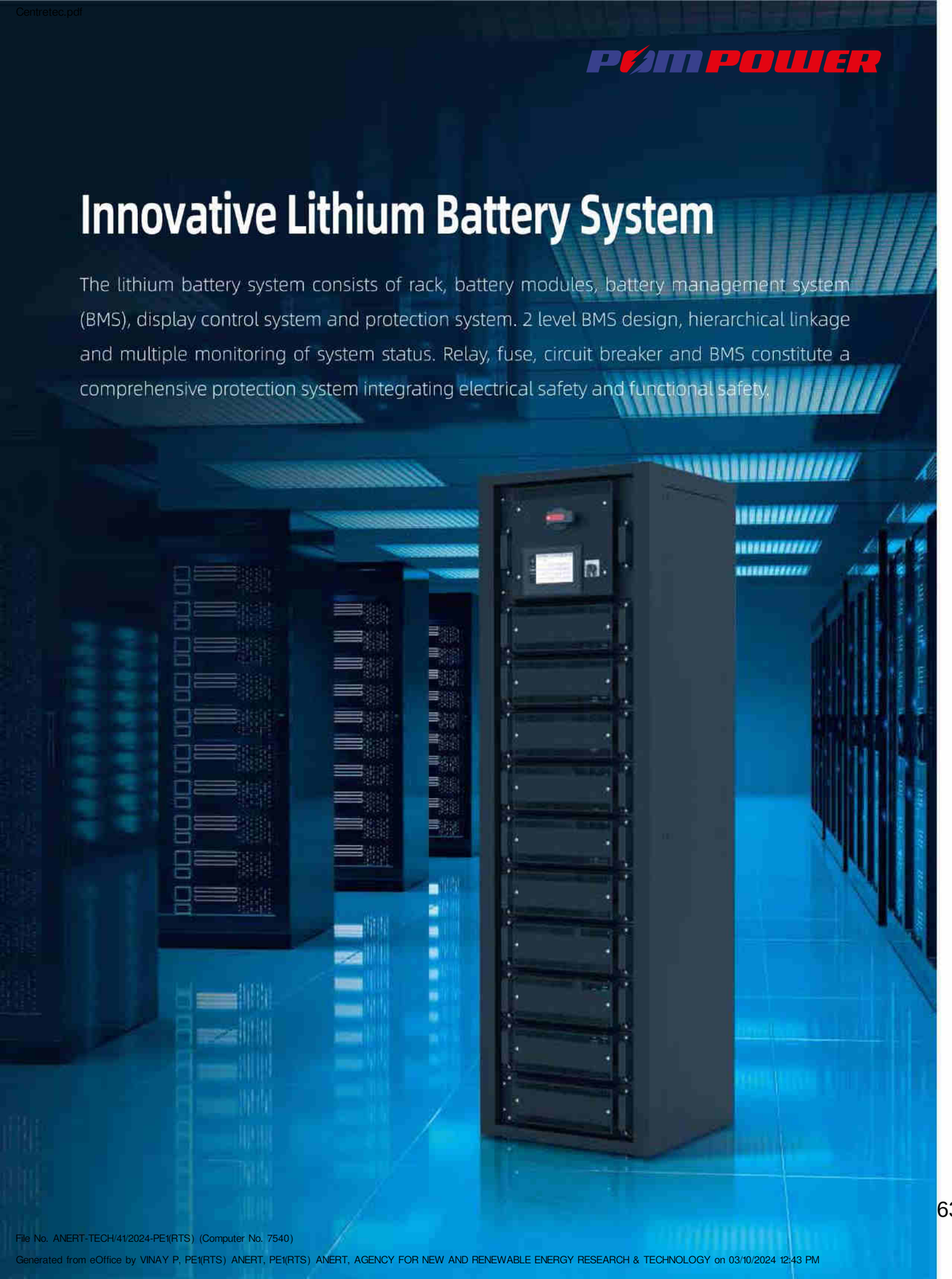
Innovative Lithium Battery System

The lithium battery system consists of rack, battery modules, battery management system (BMS), display control system and protection system. 2 level BMS design, hierarchical linkage and multiple monitoring of system status. Relay, fuse, circuit breaker and BMS constitute a comprehensive protection system integrating electrical safety and functional safety.



Configuration

Battery System

The system mainly consists of safe, efficient and long-life lithium iron phosphate cells, which are connected in series to form battery modules, and multiple modules are connected in series to form battery clusters.

Battery Management System

The core components of the system can effectively protect the battery from overcharge, overdischarge and over-current. At the same time, the balanced management of the cells can ensure the safe, reliable and efficient operation of the whole system.

Power Management System

System operation data monitoring, operation strategy management, historical data record, system status record, etc.

Key product features and benefits

Safe and reliable

- High quality iron phosphate lithium battery.
- Intelligent air cooling design, long service life life, stable operation.
- Three level BMS design of module, cabinet and system, multiple state monitoring, hierarchical linkage, comprehensive guarantee of battery system safety.
- Battery module is designed with PC bracket and reinforce steel structure to guarantee the the highest safety of the system, in transportation, installation and operation.

Efficient and convenient

- Energy system, high energy density, high integration.
- Outstanding high rate performance, maximum 2C charging and 6C discharging.
- Modular design, convenient for maintenance, management and expansion.

Active equalization

- Three level BMS design, energy transferring active equalization, to overcome the impact of single cell capacity on system capacity.
- The equalization accuracy is less than 2%, and the equalization capacity can reaches 10% of the rated output.

Cost optimization

- Small size, light weight, less space and installation cost.
- Long cycle life, low failure rate, reduce operation and maintenance investment.

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High C-rate system

EBC480/40
Battery capacity : **40Ah**
Rated voltage: **480Vdc**
Dimension: **600*550*2000** (W*D*H)mm

EBC480/80
Battery capacity : **80Ah**
Rated voltage: **480Vdc**
Dimension: **600*800*2000**(W*D*H)mm

EBC480/120
Battery capacity : **120Ah**
Rated voltage: **480Vdc**
Dimension: **600*950*2000** (W*D*H)mm

EBC480/160
Battery capacity : **160Ah**
Rated voltage: **480Vdc**
Dimension: **600*1150*2000** (W*D*H)mm

Model	EBC480/40	EBC480/80	EBC480/120	EBC480/160
Battery capacity	40Ah	80Ah	120 Ah	160 Ah
Rated voltage	480V	480V	480V	480V
Rated capacity	19.2kWh	38.4kWh	57.6kWh	76.8kWh
Battery voltage range	420V ~ 547.5V (cell2.8~3.55)			
Max. Continuous charging current	80A (2C)	160A (2C)	240A (2C)	320A (2C)
Max. Continuous discharging current	240A (6C)	400A (5C)	480A (4C)	480A (3C)
Working Temperature	Charging: 0℃~ 50℃ ; Discharging: -20℃~ 55℃			
Best Working Temperature	15℃~ 35℃			
Storage temperature	-40℃~ 60℃ ; (System 20℃~40℃)			
Working environment	Altitude: < 2500m; Relative humidity:< 95% (no condensation)			
Cooling	Intelligent air cooling			
Insulation resistance	> 500MΩ@1500VDC			
Isolation and withstand voltage	2500VDC/1min			
Internal power supply mode	24VDC(Built-in DC/DC)			
Static power consumption	35W			
Data display	7" TN true color LCD screen			
IP rating	IP21			
Dimension				
W(mm)	600	600	600	600
D(mm)	550	800	950	1150
H(mm)	2000	2000	2000	2000
Weight	400kg	600kg	800kg	1000kg
Life cycle	3000 times (1C@25℃ charging&discharging @100%DOD, EOL80%)			
Battery Management System (BMS)				
Cell voltage acquisition range	1-5V			
Cell voltage acquisition accuracy	≤ 10mV			
Total voltage acquisition accuracy	± (0.5%FS+0.1%RD) mv			
Current acquisition range	0~±375ADC	0~±500ADC	0~±600ADC	0~±600ADC
Current acquisition accuracy	≤ ±1%			
Temperature acquisition range	-20 ~ 125℃			
Temperature acquisition accuracy	≤ ±1℃			
Charging over current protection	> 2C , 10s; > 2.2C , 5s; > 2.5C , 1s			
Discharging over current protection	> 6.2C,10s; > 6.5C,1s	> 5.2C,10s; > 5.5C,1s	> 4.2C,10s; > 4.5C,1s	> 3.2C,10s; > 3.5C,1s
Over temperature protection	Discharging > 55℃ (20s) ; Charging > 50℃ (20s)			
Low temperature protection	Discharging < -20℃ (1s) ; Charging < 0℃ (1s)			
Communication mode	Can, RS485, dry contact			
Certification	IEC62619/IEC62620/EN61000/UN38.3			

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High energy system

EBC512/100
Battery capacity： **100Ah**
Rated voltage： **512 Vdc**
Dimension: **1360*650*1400** (W*D*H)mm

EBC480/150
Battery capacity： **150Ah**
Rated voltage： **480 Vdc**
Dimension: **1360*650*1400**(W*D*H)mm

EBC460/200
Battery capacity： **200Ah**
Rated voltage： **460 Vdc**
Dimension: **1360*650*1400** (W*D*H)mm

EBC768/100
Battery capacity： **100Ah**
Rated voltage： **768 Vdc**
Dimension: **1360*650*2000**(W*D*H) mm

EBC768/150
Battery capacity： **150Ah**
Rated voltage： **768 Vdc**
Dimension: **1360*650*2000**(W*D*H)mm

EBC768/200
Battery capacity： **200Ah**
Rated voltage： **768 Vdc**
Dimension: **1360*650*2000**(W*D*H)mm

Model	EBC512/100	EBC480/150	EBC460/200	EBC768/100	EBC768/150	EBC768/200
Battery capacity	100Ah	150Ah	200Ah	100Ah	150Ah	200Ah
Rated voltage	512V	480V	460V	768V		
Rated capacity	51.2kWh	72kWh	92kWh	76.8kWh	115.2kWh	153.6kWh
Battery voltage range	448V ~ 568V	420V ~ 532.5V	403.2V ~ 511.2V	672V ~ 852V		
Max. Continuous charging current	100A（1C）	150A（1C）	200A（1C）	100A（1C）	150A（1C）	200A（1C）
Max. Continuous discharging current	100A（1C）	150A（1C）	200A（1C）	100A（1C）	150A（1C）	200A（1C）
Working Temperature	Charging：0℃~50℃; Discharging：-20℃~55℃					
Best Working Temperature	15℃~35℃					
Storage temperature	-40℃~60℃ (System SOC: 20%~40%)					
Working environment	Altitude：<2500m					
	Relative humidity: <95% (no condensation)					
Cooling	Intelligent air cooling					
Insulation resistance	>500MΩ@1500VDC					
Isolation and withstand voltage	2500VDC/1min					
Internal power supply mode	24VDC（Built-in DC/DC）					
Static power consumption	35W					
Data display	7" TN true color LCD screen					
IP rating	IP21					
Dimension（W*D*H）	1360*650*1400mm			1360*650*2000mm		
Weight	650Kg	850Kg	1050Kg	1000Kg	1350Kg	1650Kg
Life cycle	4000 cycles (1C@25℃charging&discharging@100%DOD，EOL80%)					
Battery Management System (BMS)						
Cell voltage acquisition range	1-5V					
Cell voltage acquisition accuracy	≤10mV					
Total voltage acquisition accuracy	±（0.5%FS+0.1%RD）mv					
Current acquisition range	0~±200ADC	0~±250ADC	0~±375ADC	0~±200ADC	0~±250ADC	0~±375ADC
Current acquisition accuracy	≤±1%					
Temperature acquisition range	-20~125℃					
Temperature acquisition accuracy	≤±1℃					
Charging over current protection	>1C，10s；>1.2C，5s；>1.5C，1s					
Discharging over current protection	>1C，10s；>1.2C，5s；>1.5C，1s					
Over temperature protection	Discharging>55℃（20s）					
	Charging>50℃（20s）					
Low temperature protection	Discharging<-20℃（1s）					
	Charging<0℃（1s）					
Communication mode	CAN, RS485, dry contact					
Certification	IEC62619/IEC62620/EN61000/UN38.3					

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High energy system

EBC768/280

Battery capacity: **280Ah**

Rated voltage: **768Vdc**

Dimension: **1330*667.5*1870**(W*D*H)mm

Model	EBC768/280
Battery capacity	280Ah
Rated voltage	768V
Rated capacity	215.04kWh
Battery voltage range	672V～852V (Cell 2.8~3.55)
Max. Continuous charging current	140A (0.5C)
Max. Continuous discharging current	140A (0.5C)
Working Temperature	Charging: 0℃~ 50℃ ; Discharging -20℃~ 55℃
Best Working Temperature	15℃~ 35℃
Storage temperature	-40℃~ 60℃ ; (System SOC:20℃~40℃)
Working environment	Altitude: < 2500m; Relative humidity:< 95% (no condensation)
Cooling	Intelligent air cooling
Insulation resistance	> 500MΩ@1500VDC
Isolation and withstand voltage	2500VDC/1min
Internal power supply mode	24VDC(Built-in DC/DC)
Static power consumption	35W
Data display	7" TN true color LCD screen
IP rating	IP21
Dimension（W*D*H）	1330*667.5*1870mm
Weight	2000Kg
Life cycle	6000 cycles （0.5C@25℃ charging&discharging @100%DOD，EOL80%）
Battery Management System (BMS)	
Cell voltage acquisition range	1-5V
Cell voltage acquisition accuracy	≤ 10mV
Total voltage acquisition accuracy	±（0.5%FS+0.1%RD）mv
Current acquisition range	0 ~ ±250ADC
Current acquisition accuracy	≤ ±1%
Temperature acquisition range	-20 ~ 125℃
Temperature acquisition accuracy	≤ ±1℃
Charging over current protection	> 0.5C，10s
Discharging over current protection	> 0.5C，10s
Over temperature protection	Discharging > 55℃（20s）
	Charging > 50℃（20s）
Low temperature protection	Discharging < -20℃（1s）
	Charging < 0℃（1s）
Communication mode	Can, RS485, dry contact
Certification	IEC62619/IEC62620/EN61000/UN38.3

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Grid Renewable Energy Storage Power Supply(GRES system)

GRES is an intelligent and modular power supply equipment integrating lithium battery and MPCS. According to different application scenarios, lithium battery, bidirectional DC / AC converter, bidirectional DC / DC converter, Static switch and Power management system can be flexibly combined to realize grid connected power supply, off grid power supply and off grid uninterrupted power supply, static reactive power compensation, harmonic suppression and other function etc.. It can access to new energy, power grid, diesel generator to realize multi-energy reasonable configuration, scientific utilization, to provide users with green, environmental protection, noise free, high reliability and high security power services. With selected LFP batteries for mobile use, it is a robust energy storage solution which could realize ultra mobile, zero-emission, adaptable to different terrains.

Configuration

PCS

Bidirectional AC / DC converter can realize the bidirectional conversion from DC to AC and AC to DC. It can not only convert AC to DC to charge battery, but also convert DC to AC to supply power to load or feed back to power grid.

Battery System

The system mainly consists of safe, efficient and long-life lithium iron phosphate cells, which are connected in series to form battery modules, and multiple modules are connected in series to form battery clusters.

Battery Management System

The core components of the system can effectively protect the battery from overcharge, overdischarge and over-current. At the same time, the balanced management of the cells can ensure the safe, reliable and efficient operation of the whole system.

Power Management System

System operation data monitoring, operation strategy management, historical data record, system status record, etc.

Enclosure

Protection degree IP54.

Air Conditioning

Air Conditioning (HVAC) system is configured to maintained an optimal temperature to maximize energy system operational life and efficiency.

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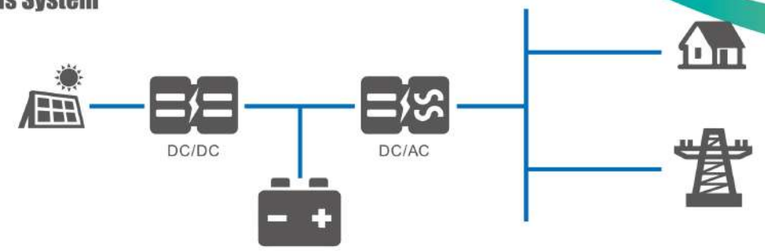
PIMPOWER

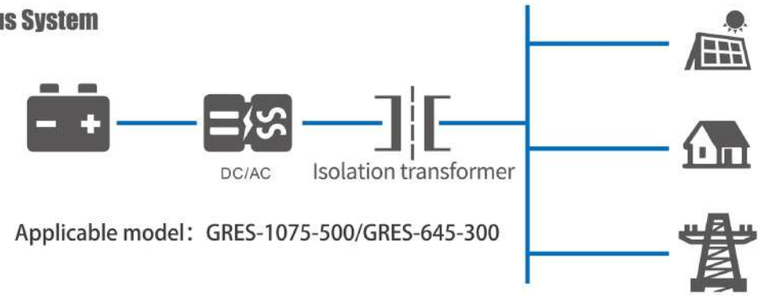
System topology

GRES DC Bus System



Applicable model：GRES-75-50/GRES-150-100/GRES-225-150/GRES-300-200

GRES AC Bus System



Applicable model：GRES-1075-500/GRES-645-300

Key product features and benefits

Safe and reliable

- Damping pad design for Battery installation to Improve the impact resistance of the system.
- IP54， safe and reliable operation in outdoor environment.
- Serially designed PCS and battery pack eliminates circulating current and improve system reliability.
- Integrated BMS,DC, AC multi-layer protection, maximum safety performance design.

Efficient and convenient

- Integrated system, standard modular power module and battery module, easy for installation, maintenance and capacity expansion.
- Easy access to PV and diesel generator, intelligent multi-energy management.
- Fixed on the ground or mounted on vehicle, can be loaded and unloaded by forklift and hoisted by lifting ring.
- One-button starting, more convenient operation.

Cost optimization

- One investment, multiple benefits:Peak shaving, backup power supply, microgrid building,power quality improving and energy storage,etc.
- Small size, light weight, less space and installation cost.
- Long cycle life, low failure rate, reduce operation and maintenance investment.

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GRES DC Bus System

GRES-75-50

Battery capacity: **75kWh**

PCS capacity : **50kW**

Dimension:**1680*1502*1700** (W*D*H)mm

GRES-150-100

Battery capacity: **150kWh**

PCS capacity : **100kW**

Dimension:**1680*2264*1700** (W*D*H)mm

GRES-225-150

Battery capacity: **225kWh**

PCS capacity : **150kW**

Dimension:**1680*3026*1700**(W*D*H)mm

GRES-300-200

Battery capacity: **300kWh**

PCS capacity: **200kW**

Diemnsion:**1680*3788*1700** (W*D*H) mm

Model	GRES-75-50	GRES-150-100	GRES-225-150	GRES-300-200
PV Parameters				
MPPT voltage range	DC200V ~ DC700V			
MPPT full power Volt range	DC370V ~ DC700V			
MPPT channel Qty	0~2 (optional)			
Max current per channel	135A			
AC parameters (On-grid)				
Rated output power	50KW	100KW	150KW	200KW
Rated grid voltage	3W+N+PE, 380V/400V			
Voltage range	-15%~+10%			
Rated frequency	50Hz/60Hz			
Frequency range	±2Hz			
Output current harmonic	≤3%(Rated Power)			
Power factor	-0.9~+0.9			
Overload capacity	105%]: continuous operation; (105% ~ 120%]: 10min; 120%); stop operation			
AC parameters (Off-grid)				
Rated output power	50KW	100KW	150KW	200KW
Rated voltage	3W+N+PE, 380V/400V			
Output voltage harmonics	≤3%(Linear full load)			
Rated frequency	50Hz/60Hz			
Overload capacity	105%]: continuous operation; (105% ~ 120%]: 10min; 120%);stop operation			
Battery				
Battery type	LFP			
Energy of each module	5.12kWh			
Module qty	15	30	45	60
Total power	76.8kWh	153.6kWh	230.4kWh	307.2kWh
Running Time	1.5 (Optional by Changing module qty)			
Life cycle	4000 cycles (0.5C@25℃ charging&discharging @100%DOD, EOL80%)			
Protection				
DC switch	YES			
AC switch	YES			
Grid monitoring	YES			
Surge protection	YES			
Basic Parameters				
Dimension W*D*H	1680*1502*1700mm	1680*2264*1700mm	1680*3026*1700mm	1680*3788*1700mm
Weight	1395Kg	2470Kg	3545Kg	4620Kg
Isolation	No			
On-off-grid switching	STS			
Protection	Outdoor IP54			
Working temperature	-20 ~ 55℃(>45℃derating)			
Relative humidity	0%RH ~ 95%RH, No condensation			
Cooling	Electrical cabin: intelligent air cooling; Battery cabin: air conditioner			
Max working altitude	4000m(>2000m derating)			
Display	Touch screen			
Communication	RS485、CAN、LAN			
Communication Protocol	Modbus-RTU、Modbus-TCP、CAN2.0B			

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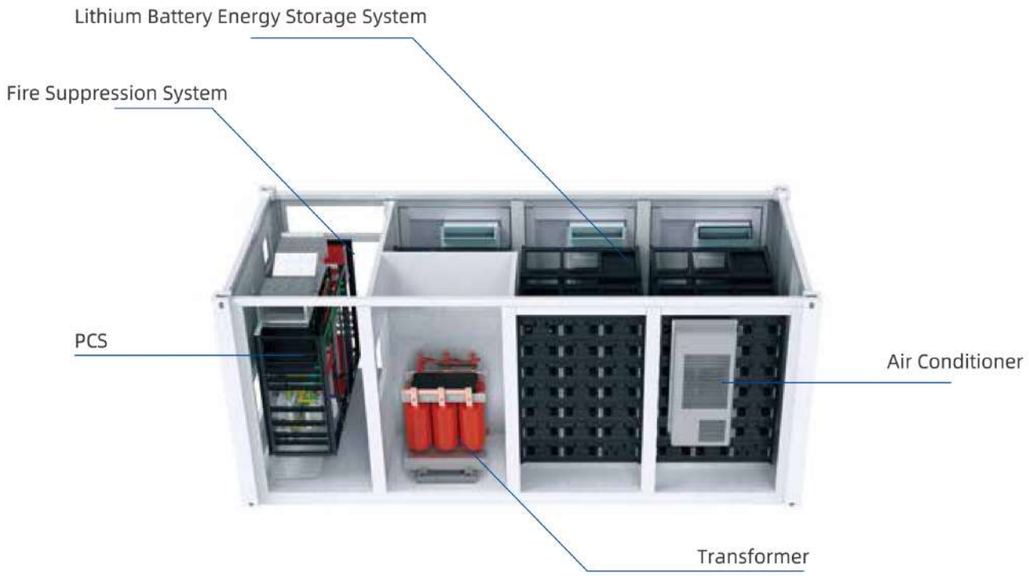
GRES AC Bus System



GRES-645-300

Battery capacity: **645kWh**

PCS capacity: **300kW**

Dimension: **3000*2438*2591**(W*D*H)mm

GRES-1075-500

Battery capacity: **1075kWh**

PCS capacity: **500kW**

Dimension: **6058*2438*2591**(W*D*H)mm

Parameter	GRES-1075-500	GRES-645-300
PV parameters		
Max input power	400KW	200KW
Rated Current	606A	303A
Rated input voltage	3W+N+PE, 380/400V	
Rated frequency	50Hz/60Hz	
AC parameters (On-grid)		
Rated output power	500KW	300KW
Rated grid voltage	3W+N+PE, 380V/400V	
Voltage range	-15%~+10%	
Rated frequency	50Hz/60Hz	
Frequency range	±2Hz	
Output current harmonics	≤3%(Rated Power)	
Power factor	-0.9~+0.9	
Overload capacity	105%]: continuous operation; (105% ~ 120%]: 10min; 120%); stop operation	
AC parameters (Off-grid)		
Rated output power	500KW	300kW
Rated voltage	3W+N+PE, 380V/400V	
Output voltage harmonics	≤3%(Linear full load)	
Rated frequency	50Hz/60Hz	
Overload capacity	105%]: continuous operation; (105% ~ 120%]: 10min; 120%); stop operation	
Battery		
Battery type	LFP	
Energy of each rack	215.04kWh	
Rack qty	5	3
Total power	1075.2kWh	645.12kWh
Running Time	2h (Optional by Changing module qty)	
Life cycle	6000 cycles （0.5C@25℃ charging&discharging @100%DOD，EOL80%）	
Protection		
DC Switch	YES	
AC switch	YES	
Grid monitoring	YES	
Surge protection	YES	
Basic Parameters		
Dimension（W*D*H）	6058*2438*2591mm	3000*2438*2591mm
Weight	16000Kg	10000Kg
Isolation	Isolation transformer(built-in)	
On-off-grid switching	STS	
Protection	Outdoor IP54	
Working temperature	-20～55℃(>45℃derating)	
Relative humidity	0%RH～95%RH，No condensation	
Cooling	Electrical cabin: intelligent air cooling; Battery cabin: air conditioner;	
Max working altitude	4000m(>2000m derating)	
Display	Touch screen	
Communication	RS485、CAN、LAN	
Communication Protocol	Modbus-RTU、Modbus-TCP、CAN2.0B	

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BESS System

we uses standard battery modules, PCS modules, BMS, EMS and other systems to form standard containers to build large-scale grid-side energy storage projects. The standardized and prefabricated design reduces user customization time and construction costs, and reduces safety hazards caused by local installation differences and management risks. It meets the application needs of regional power grid peak shaving, frequency regulation, voltage regulation, emergency response, new energy consumption, etc., and ensures the normal operation of the power system.

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Key product features and benefits

Safe and reliable

- High quality LFP batteries for mobile use.
- From cell to container, hierarchical temperature control strategy with industrial grade temperature control system.
- Full electrical protection: high and low voltage separation, insulation detection, grounding protection, lightning protection design.
- Battery module is designed with PC bracket and reinforce steel structure to guarantee the the highest safety of the system, in transportation, installation and operation.
- A 7mm gap between cells is reserve for thermal isolation and insulation.
- Module built-in fire suppression measures, intelligent container level fire suppression system, hierarchical linkage, multi-layer protection.
- Serially designed PCS and battery pack eliminates circulating current and improve system reliability.

Intelligent and efficient

- Efficient, digital and intelligent energy management system (EMS) architecture design.
- 0.5C charging and discharging rate.
- Fault prediction, identification and rapid location.

Highly integrated

- Convenient transportation, installation, operation and maintenance;
- Modular design, easy for expansion.

Model	ZESS614K-250	ZESS1840K-600
Battery Parameter		
Rated power	614KWh	1.84MWh
Configuration	4 Sets 768V200AH BESS	12 Sets 768V200AH BESS
System voltage	768V	
Working voltage range	DC672V ~ DC852V (2.8V ~ 3.55V)	
Battery type	LFP	
DC parameters		
Voltage range	DC580V ~ DC900V	DC680V ~ DC900V
DC channel Qty	5 (maximum)	6 (maximum)
Max current per channel	85A	170A
AC parameters (On-Grid)		
Output line	3W+N+PE/3W+PE	
Rated power	250KW	600KW
Rated voltage	AC 380V/400V	
Rated Current	379A	909A
Voltage range	-15% ~ +10%	
Rated frequency	50Hz/60Hz	
Frequency range	±2Hz	
Power factor	-0.9~+0.9	
Output current harmonic	≤3% (Rated power)	
AC parameters (Off-Grid)		
Output line	3W+N+PE/3W+PE	
Rated power	250KW	600KW
Rated voltage	AC 380V/400V	
Rated frequency	50Hz/60Hz	
Rated Current	379A	909A
Voltage accuracy	1%	
Frequency accuracy	±0.2Hz	
Output voltage harmonics	3% (linear full load)	
Unbalanced load capacity	100%	
Overload capacity	105%]: continuous operation; (105%~120%]: 10min; 120%): stop operation;	
Environment		
Working temperature	-20℃ ~ 55℃ (>45℃derating)	
Storage temperature	-20℃ ~ 60℃	
Relative humidity	0%RH ~ 95%RH, No condensation	
Working altitude	@45℃, 2000m; 2000m ~ 4000m Derating	
Noise	< 75dB	
Other		
Comminication	CAN/RS485	
Isolation	Isolation Tranformer(built-in)	Isolation Tranformer (external)
Protection	IP54	
Cooling	Air conditioner	
Fire control	Heptafluoropropane	
Demension W*D*H	6096mm*2438mm*2591mm	12196mm*2438mm*2591mm

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Energy Management System (EMS)

EMS provides integrated control and monitoring functions for the whole scheme, collects and analyzes the real-time data of various equipment in the ESS system, and monitors various key data parameters in real time. It is composed of server, user interface, controller, measuring unit, sensor and cloud platform. According to its application type, it can realize the functions of equipment information collection, control, data summary, chart analysis and so on, and form a set of scientific and energy-saving energy management scheme according to the electricity price, time period, battery BMS data, load rate and so on.

Main Function

■ Power station monitoring:
7 * 24-hour second level real-time monitoring and equipment control; Intelligent alarm, multiple notification methods.

■ Energy storage management:
Demand management, power factor regulation, SOC display, charge discharge cycle display, load monitoring, electricity cost optimization.

■ Energy efficiency management:
Year on year and month on month analysis: Energy consumption tracking; Quickly identify major energy consumers and consumption increasing points.

■ Equipment management:
Equipment life cycle management; Electronic archives.

■ Efficient O&M
Unified online and offline operation and maintenance; Automatic tracking record of the whole process of operation and maintenance.

■ Power quality optimization:
Active power automatic control, reactive power control, three-phase imbalance regulation; Visual monitoring of harmonics; Intelligent alarm.

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BESS REFERENCES

Mobile BESS
Country :Dubai
Configuration :
GRES-150-100
GRES-75-50

New Energy Charging Station
Hybrid storage electric vehicle charging
Country : Ethiopia
Configuration :
GRES-150-150
150kW/150kWh +100kW MPPT

PV&BESS
Country : Bulgaria
Configuration :
PCS 600 KW
Battery storage system 1.84MWh

UPS&Battery system
Country :Russia
Configuration :
UPS 2MW
High rate lithium battery system 2.58MWh

New Energy Charging Station
Country :China
Configuration :
PV 26.68KWp
PCS 250KW
Battery storage system 550kWh
EV charger 300KW

PV&BESS
Country :China
Configuration :
PV 2.85MWp
PCS 100KW
Battery storage system 460kWh

BESS
Country :Oman
Configuration :
PCS 100KW
Battery storage system 150 kWh

BESS
Country :Thailand
Configuration :
PCS 300KW
Battery storage system 460kWh

Mobile BESS
Country :Bulgaria
Configuration :
PCS 400KW
Battery storage system 600kWh

PAM POWER

Systems & Services Pvt. Ltd.

Marketing Office:

No-2, D-01, 1st Floor, Solus Jain Heights,
1st Cross JC Road, Opp: to Bangalore Stock Exchange, Bengaluru-560027.
Ph.+91 9663370222 / 9008416333,
E-Mail: info@pompower.in

Registered Office & Factory:

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Bengaluru560058.
Ph.080-28372296 / +91 9844034106, E-mail: pompower@pompower.in

www.pompower.in

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Hykon India Ltd.
Hykon House, Ikkandawarrier Road, Thrissur-1
Ph : 0487-2444163, 2444183
ho@hykonindia.com, www.hykonindia.com
CIN : U52599KL1998PLC012330

FORMAT FOR COVERING LETTER

Sir,

I/We hereby e-tender to render the services under annexed terms and conditions of contract, the whole of the articles referred to and described in the attached specification and quantity decided by the Agency for New & Renewable Energy Research and Technology (ANERT), at the rates quoted against each item.

I am/We are remitting herewith the required amount of Rs. NIL towards the registration Fee by electronic payment vide transaction No ..... dtd.....

Yours faithfully,

Place: 09.03.2024

Date: Thrissur

Signature

Name Harikumar R

Designation Chief Operating Officer

(Office Seal)

www.hykonindia.com

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ho@hykonindia.com, www.hykonindia.com
CIN : U52599KL1998PLC012330

ANNEXURE A – SUMMARY OF BID QUALIFICATION REQUIREMENTS

1.	Name of the applicant and address with email, phone etc.	M/s. Hykon India Ltd., Hykon House, Ikkandawarrier Road, Thrissur – 680 001 e mail : hari@hykonindia.com Mob : 9846035209
2.	Main area of Business	Inverter, UPS, BES, Solar Water Heater, Lithium Battery, Electric Vehicle, Energy Storage System, Solar Pump, ON grid, Off grid System, etc...
3.	Registered Office in Kerala	Brnakulam
4.	Details of Power of Attorney	Harikumar R Chief Operating Officer
5.	Proof for Experience	Purchase Orders attached separately

Documentary evidence for the bid qualification requirements are submitted along with this document and the details furnished above are true and correct.

Signature
of authorised signatory
Name Harikumar R
Designation Chief Operating Officer

Date: 09.03.2024

(Office seal)

www.hykonindia.com

ANNEXURE D – DECLARATION BY THE BIDDER

e-EoI Notification No: ANERT-TECH/41/2024-PE1(RTS)....., dtd .27.02.2024..... for Expression of Interest (EoI) for the Selection of Agency for Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram

To

The CEO

ANERT

We, the undersigned, declare that:

1. We have examined and have no reservations to the Bidding Document, including Addenda No.: ..... (if any)
2. We offer to supply in conformity with the Bidding Document and in accordance with the delivery schedule
3. Our Bid shall be valid for a period of 4 months from the date fixed as deadline for the submission of EoIs in accordance with the Bidding Document, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;
4. If our Bid is accepted, we commit to submit a Security Deposit in the amount of 3 percent of the Contract Price for the due performance of the Contract;
5. We are not participating, as Bidders, in more than one Bid in this bidding process;
6. Our firm, its affiliates or subsidiaries, including any subcontractors or suppliers for any part of the Contract, has not been declared ineligible by the ANERT or Government of Kerala;
7. We understand that this Bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal Contract is prepared and executed.
8. Our firm has obtained the certifications from MNRE or NABL approved Test laboratories that the goods and services are satisfying the technical criteria specified in the bid.

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Signature

Date 09.03.2024

Name Harikumar S
Chief Operating Officer

ANNEXURE E – DECLARATION OF RELATIONSHIP WITH ANERT EMPLOYEE

(to be signed and submitted by the bidder along with the bid)

EoI Notification No.: ANERT-TECH/41/2024-PE1(RTS)

Expression of Interest (EoI) for the Selection of Agency for Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram

To

The CEO

ANERT

Name of the ANERT employee with Designation:

Name of the bidder related to the employee:

This is to put on record that Shri/Smt ……. currently working as ……NIL…….. in ANERT is related to ……., who is the bidder in the bid. We are aware of the Anti-corruption policy of ANERT and will observe the highest standards during the execution of contract and shall retain from corrupt, fraudulent, collusive or coercive practices on competing for the contract.

Signature

Date 09.03.2024

Name Harikumar R
Chief Operating Officer

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AGREEMENT

Subject: Selection of Consultant for Setting up the Project Management Unit (PMU) for Kerala Green Hydrogen Mission

With reference to the RFP Document for the captioned Project, I/we, I **Harikumar R, Chief Operating Officer** authorised signatory of **M/s. Hykon India Ltd. Thrissur** having examined all relevant documents and understood their contents hereby undertake that the Proposal is unconditional and unqualified.

1. I/We confirm that I/we have examined the terms and conditions published in the EOI and accordingly submitting the Application. The proposal is unconditional and unqualified.

2. All information provided in the Proposal is true and correct and all documents accompanying such Proposal are true copies of their respective originals.

Hykon India Ltd
Thrissur

Mrs. JEETHRUDE
LICENSED No. 36 THRISSUR

DIST. TREASURY STAMP DEPOT
THRISSUR

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3. This statement is made for the express purpose of appointment Providing PMU services in terms of providing Consultancy and Technical Services

4. I/We shall make available to ANERT any additional information it may deem necessary or require for supplementing or authenticating the Proposal.

5. I/We acknowledge the right of the ANERT to reject our application without assigning any reason or otherwise and hereby waive our right to challenge the same on any account whatsoever.

6. I/We certify that in the last three years, I/we have neither failed to perform on any contract, as evidenced by imposition of a penalty by an arbitral or judicial Court or a judicial pronouncement or arbitration award against us, nor have been expelled from any project or contract nor have had any contract terminated for breach on our part.

7.I/We declare that:

1. I/We have examined and have no reservations to the EOI Documents, including any Addendum thereto, issued by the ANERT;

2. I/We do not have any conflict of interest in accordance with provisions of the EOI Document;

34255 Rs. 50

Sold to

Hykon India Ltd

Thrissur

DIST. TREASURY STAMP DEPOT 04 Nov 2024 THRISSUR

Mrs. JERTHRUDE
VENDOR No. 36, THRISSUR

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पचास रुपये रु.50

FIFTY RUPEES Rs.50

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CZ 152019

3. I/We have not directly or indirectly or through an agent engaged or indulged in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice, as defined in the EOI document, in respect of any tender or request for proposal issued by or any agreement entered into with the ANERT or any other public sector enterprise or any Government, Central or State; and

4. I/We hereby certify that we have taken steps to ensure that in conformity with the provisions of this EOI, no person acting for us or on our behalf will engage in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice.

8. I / We understand that you may cancel the Selection Process at any time and that ANERT is neither bound to accept any Proposal that you may receive nor to select the Consultant, without incurring any liability to the Applicants in accordance with the EOI document.

9. I / We certify that in regard to matters other than security and integrity of the country, we or any of our Associates have not been convicted by a Court of Law or indicted or adverse orders passed by a regulatory authority which would cast a doubt on our ability to undertake the Consultancy for the Project or which relates to a grave offence that outrages the moral sense of the community.

Hykon India Ltd
Thrissur

DIST. TREASURY STAMP DEPOT
04 MAY 2024
THRISSUR

Mrs. JERTHRUDE
A/ NOOR No. 36, THRISSUR

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10. I / We further certify that in regard to matters relating to security and integrity of the country, we have not been charge-sheeted by any agency of the Government or convicted by a Court of Law for any offence committed by us or by any of our Associates.

11. I / We hereby irrevocably waive any right or remedy which we may have at any stage at law or howsoever otherwise arising to challenge or question any decision taken by the ANERT (and/ or the Government of Kerala / India) in connection with the selection of consultant or in connection with the selection process itself in respect of the above mentioned Project.

12. I / We agree and understand that the proposal is subject to the provisions of the EOI document. In no case, shall I/we have any claim or right of whatsoever nature if the Consultancy for the Project is not awarded to me/us or our proposal is not opened or rejected.

13. I / We agree to keep this offer valid for (120) days from the date of opening of technical bid.

34253 Rs ..... 50 .....

Sold to

Hykon India Ltd

Thrissur

DIST. TREASURY STAMP DEPOT
04 JUN 2024
THRISSUR

Mrs. JERTHRUDE
LICENCE No. 56, THRISSUR

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14. I/We have studied EOI and all other documents carefully. We understand that we shall have no claim, right or title arising out of any documents or information provided to us by the ANERT or in respect of any matter arising out of or concerning or relating to the Selection Process including the award of Consultancy.

15. The Technical Proposals and Financial Proposals are being submitted in separate Covers available in the etenders portal.

16. I/We agree and undertake to abide by all the terms and conditions of the EOI Document. In witness thereof, I/we submit this Proposal under and in accordance with the terms of the EOI Document.

Signed by Sri. Harilakumar K

(Date) 09.03.2024

in the presence of witnesses

1. Decky John

2. Fresey KA

Signed by Sri .....

(Date) .....

in the presence of witnesses

1.

2.

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पचास रुपये रु.50

FIFTY RUPEES Rs.50

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CZ 152031

POWER OF ATTORNEY

Know all men by these presents, we, Hykon India Limited, 41/1948, 7 A Beeran Kunju Road, Ernakulam Kerala, 682018 do hereby constitute, nominate, appoint and authorise Mr Harikumar R son of Raveendran Nair and presently residing at Flat No: CF VI-123, Tilak Nagar, Parottukonam, Thiruvananthapuram, who is presently employed with us and holding the position of Chief Operating Office as our true and lawful attorney.

(Hereinafter referred to as the —Authorized Representative) to do in our name and on our behalf, all such acts, deeds and things as are necessary or required in connection with or incidental to submission of our Proposal for and selection as the Consultant for **ANERT-TECH/41/2024-PE1(RTS)**, including but not limited to signing and submission of all applications, proposals and other documents and writings, participating in pre-bid and other conferences and providing information/ responses to the ANERT, representing us in all matters before the ANERT, signing and execution of all contracts and undertakings consequent to acceptance of our proposal and generally dealing with the Authority in all matters in connection with or relating to or arising out of our Proposal for the said Project and/or upon award thereof to us till the entering into of the Agreement with the ANERT.

NOTARY
RAJITH DAVIS
ATTAKHARA
THRISSUR DISTRICT
Ref. No. 6/2024
Expiry Date: 8-8-2026
GOVT. OF INDIA

09 MAR 2024

24264 value Rs: 50

Sold to

Hykon India Ltd

Thrissur

For Hykon India Ltd.

Chinko George
(Managing Director)

DIST. TREASURY STAMP DEPOT
04 ... 2024
THRISSUR

Mrs. JERTHRUDE
VENDOR No. 36 THRISSUR

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पचास रुपये रु.50

FIFTY RUPEES Rs.50

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CZ 152032

AND, we do hereby agree to ratify and confirm all acts, deeds and things lawfully done or caused to be done by our said Authorised Representative pursuant to and in exercise of the powers conferred by this Power of Attorney and that all acts, deeds and things done by our said Authorised Representative in exercise of the powers hereby conferred shall and shall always be deemed to have been done by us.

IN WITNESS WHEREOF WE, M/S. HYKON INDIA LTD. THE ABOVE - NAMED AUTHORISED REPRESENTATIVE HAVE EXECUTED THIS POWER OF ATTORNEY ON THIS DAY OF 09th MARCH, 2023

For CHRISTO GEORGE
CHAIRMAN MANAGING DIRECTOR
HYKON INDA LTD.
(Signature, name, designation and address)

For Hykon India Ltd.

Christo George
(Managing Director)

Witnesses
1. Decky John
2. Frency KA

Notarized

Accepted (Signature, name, designation and address of the Attorney)

Harikumar R
Chief Operating Officer

Executed and Signed before me on 09 MAR 2024 of 20
Office Thrissur - Kerala.

RAJITH DAVIS ATTATHARA
ADVOCATE & NOTARY, REG. No: 6524
KERALA

NOTARY REG. No: 75/24
BOOK No: XIII
VOL: XIII
PAGE: 10

34265 value Rs : 50

Sold to

Hykon India Ltd
Thrissur

Mrs. JERTHRUDE
VENDOR No. 36, THRISSUR

RAJITH DAVIS ATTATHARA
ADVOCATE & NOTARY
THRISSUR DISTRICT
Reg. No: 6524
Expiry Date: 8-8-2028
GOVT. OF INDIA

09 MAR 2024

DIST. TREASURY STAMP DEPOT
04 MAR 2024
THRISSUR

भारतीय गैर न्यायिक

पचास रुपये रु.50

FIFTY RUPEES Rs.50

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കേരളം केरल KERALA

CZ 152025

UNDERTAKING FOR NO BLACKLISTING & NO BANNING

To
The CEO
ANERT

Sub: Expression of Interest (EoI) for the Selection of Agency for Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram

I / We hereby declare that presently our Company/Limited Liability Partnership/ Partnership Firm/ Sole Proprietorship is having unblemished record and is not declared ineligible for corrupt/fraudulent practices by any State/Central Government/PSU on the date of Bid Submission.

34258 Issue to .....

Issue to

Hykon India Ltd
Thrissur

Mrs. JERTHRUDE
VENDOR No. 36, THRISSUR

DIST. TREASURY STAMP DEPOT
04 2024
THRISSUR

കേരളം केरल KERALA

CZ 152026

I / We further declare that presently our Company/Limited Liability Partnership/ Partnership Firm/ Sole Proprietorship is not blacklisted and not declared ineligible for reasons other than corrupt/fraudulent practices by any State/Central Government/PSU on the date of Bid Submission.

34259 ... 50

Sold to

Hykon India Ltd

Thrissur

DIST. TREASURY STAMP DEPOT
2024
THRISSUR

Mrs. JERTHRUDE
VENDOR No. 56, THRISSUR

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पचास रुपये रु.50

FIFTY RUPEES Rs.50

INDIA

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കേരളം केरल KERALA

CZ 152027

If this declaration is found to be incorrect then without prejudice to any other action that may be taken, our security may be forfeited in full and the EoI if any to the extent accepted may be cancelled.

34260 Value Rs : 22

Send to

Hykon India Ltd
Thrissur

Mrs. JERTHRUDE
VENDOR No. 36, THRISSUR

DIST. TREASURY STAMP DEPOT
04 MAY 2024
THRISSUR

കേരളം केरल KERALA CZ 152028

(Signature & Seal of Authorized Signatory for which POA attached)

Name of Authorized Signatory: Harikumar R

Designation: Chief Operating Officer

Date: 09.03.2024

Place: Thrissur

34261 ... to ... 52 ...

and to

Hykon India Ltd

Thrissur

DIST. TREASURY STAMP DEPOT 04 MAR 2024 THRISSUR

Mrs. JERTHRUDE
VENDOR No. 36, THRISSUR 5-3-24

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Hykon®
Powering the Nation
Hykon India Ltd
Hykon House, Ikkandawarrier Road, Thrissur
Ph : 0487-2444163, 2444183
ho@hykonindia.com, www.hykonindia.com
CIN: U52599KL 1998PLC012330

ANNEXURE G – CERTIFICATE OF FINANCIAL QUALIFICATION

Financial Qualification Certificate

(Rupees in Crores)

S/N	Financial parameters	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23
1.	**Net Worth**					
a)	Paid up Capital	0.0535	0.0535	0.0535	0.0535	0.0535
b)	Free Reserves and Surplus*	7.888236	8.872376	12.859743	14.658579	21.843855
c)	Misc expenses to the extent not written off					
	Net Worth (a+b-c)	7.941736	8.925876	12.913243	14.712079	21.906466
2.	**Annual Turnover ****	72.116706	75.840009	68.909650	82.657203	103.391186

** Free Reserve and Surplus shall be Exclusive of Revaluation Reserve, written back of Depreciation Provision and Amalgamation*

*** Annual total Income/ turnover as incorporated in the Profit and Loss Account excluding non-recurring income, i.e., sale of fixed asset etc.*

It is certified that all the figures are based on audited accounts read with auditors report and Notes to Accounts etc.

(Signature & Seal) of Authorized Signatory

Name of Authorized Signatory: Harikumar R

Designation: Chief Operating Officer

Date: 09.03.2024

Place: Thrissur

Certifying Chartered Accountant:

Name of Firm: M/S. HYKON INDIA LTD.

UDIN No: 24032768BJZWWY7836

Date: 09/03/2024

Place: THRISSUR

CA K.J. TOMY, Bsc, FCA
Chartered Accountant
Membership No: 22768

Note:

1. *In addition to above certificate from Chartered Accountant, Bidder is required to submit Firm's Annual Audit Report, Balance sheet, Profit & Loss and Income Tax Returns / CA certificate for last Five Years i.e., F.Y. 2017-18, 2018-19, 2019-20, 2020-21 & 2021-22.*

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Certificate of Incorporation Consequent upon conversion to Public Limited Company

सत्यमेव जयते

GOVERNMENT OF INDIA

MINISTRY OF CORPORATE AFFAIRS

Registrar of companies, Ernakulam
1st Floor, Company Law Bhawan BMC Road, Ernakulam, Kerala, India, 682021

Corporate Identity Number: U52599KL1998PLC012330

Fresh Certificate of Incorporation Consequent upon Conversion from Private Company to Public Company

IN THE MATTER OF HYKON INDIA PRIVATE LIMITED

I hereby certify that HYKON INDIA PRIVATE LIMITED which was originally incorporated on Seventeenth day of June One thousand nine hundred ninety-eight under the Companies Act, 1956 as HYKON MARKETING SYSTEMS PRIVATE LIMITED. and upon an intimation made for conversion into Public Limited Company under Section 18 of the Companies Act, 2013; and approval of Central Government signified in writing having been accorded thereto by the RoC - Ernakulam vide SRN G44430239 dated 05.06.2017 the name of the said company is this day changed to HYKON INDIA LIMITED.

Given under my hand at Ernakulam this Fifth day of June Two thousand seventeen.

DS MINISTRY OF CORPORATE AFFAIRS 12

A SEHAR PONRAJ
Registrar of Companies
Registrar of Companies
RoC - Ernakulam

Mailing Address as per record available in Registrar of Companies office:

HYKON INDIA LIMITED
41/1948, 1ST FLOOR, CITY MEMORIAL BUILDING, T.A
BEERANKUNJU ROAD, ERNAKULAM, Kerala, India, 682018

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(Amended)

Government of India

Form GST REG-06

[See Rule 10(1)]

Registration Certificate

Registration Number :32AAACH6869H1ZH

1.	Legal Name	HYKON INDIA LIMITED			
2.	Trade Name, if any	HYKON INDIA LIMITED			
3.	Additional trade names, if any				
4.	Constitution of Business	Public Limited Company			
5.	Address of Principal Place of Business	HYKON HOUSE974, IKKANDA WARRIER ROAD, THRISSUR, Thrissur, Kerala, 680001			
6.	Date of Liability	01/07/2017			
7.	Date of Validity	From	01/07/2017	To	Not Applicable
8.	Type of Registration	Regular			
9	Particulars of Approving Authority	Centre Goods and Services Tax Act, 2017			
Signature					

Name	Fleming T D
Designation	Superintendent
Jurisdictional Office	Commercial Tax Office, I Circle
9. Date of issue of Certificate	03/11/2022
Note: The registration certificate is required to be prominently displayed at all places of Business/Office(s) in the State.	

This is a system generated digitally signed Registration Certificate issued based on the approval of application granted on 03/11/2022 by the jurisdictional authority.

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Annexure A

Details of Additional Place of Business(s)

GSTIN	32AAACH6869H1ZH
Legal Name	HYKON INDIA LIMITED
Trade Name, if any	HYKON INDIA LIMITED
Additional trade names, if any	

Total Number of Additional Places of Business(s) in the State 11

Sr. No.	Address
1	X1/855, Industrial Estate, Ollur, THRISSUR, Thrissur, Kerala, 680306
2	A-33, 35, Industrial Estate, Ollur, THRISSUR, Thrissur, Kerala, 680306
3	TC2/1420/3, VYDHUTHI BHAVAN ROAD, PATTOM, THIRUVANANTHAPURAM, Thiruvananthapuram, Kerala, 695004
4	21/311, GROUD FLOOR, VELAMPARAMBIL BUILDING, PARKLINE, KOTTAYAM, Kottayam, Kerala, 686001
5	41/1948, T A BEERAN KUNJU ROAD, ERNAKULAM, Ernakulam, Kerala, 682018
6	27/478, DEEPAM, PARAYANCHERY, KOZHIKODU, Kozhikode, Kerala, 673016
7	SB5-668, GROUND FLOOR, SUPEX CORNER, NEAR TRAINING SCHOOL, KANNUR, Kannur, Kerala, 670002
8	2/489,490,491, NH BY-PASS, THALORE, Thrissur, Kerala, 680306
9	39, 6, Hykon India Limited, Vellikulangara, Kodasserry Panjayath, Thrissur, Thrissur, Kerala, 680721
10	9/52-1, Govt College Road, Kuttanellur, Thrissur, Kerala, 680006
11	XIII/368A,368B, CREZENT TOWER, AMBATTUKAVU,THAIKKATUUKARA P O, ALWAYE, ERNAMKULAM, Ernakulam, Kerala, 683103

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Annexure B

GSTIN	32AAACH6869H1ZH
Legal Name	HYKON INDIA LIMITED
Trade Name, if any	HYKON INDIA LIMITED
Additional trade names, if any	

Details of Managing / Whole-time Directors and Key Managerial Persons

1		Name	CHRISTO GEORGE
		Designation/Status	Managing Director
		Resident of State	Kerala
2		Name	CATHERINE CHRISTO
		Designation/Status	Director
		Resident of State	Kerala
3		Name	GEORGE CHRISTO
		Designation/Status	Director
		Resident of State	Kerala

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आयकर विभाग
INCOME TAX DEPARTMENT
भारत सरकार
GOVT. OF INDIA
स्थायी लेखा संख्या कार्ड
Permanent Account Number Card
AAACH6869H
नाम / Name
HYKON INDIA LIMITED
निगमन/गठन की तारीख
Date of Incorporation / Formation
17/06/1998

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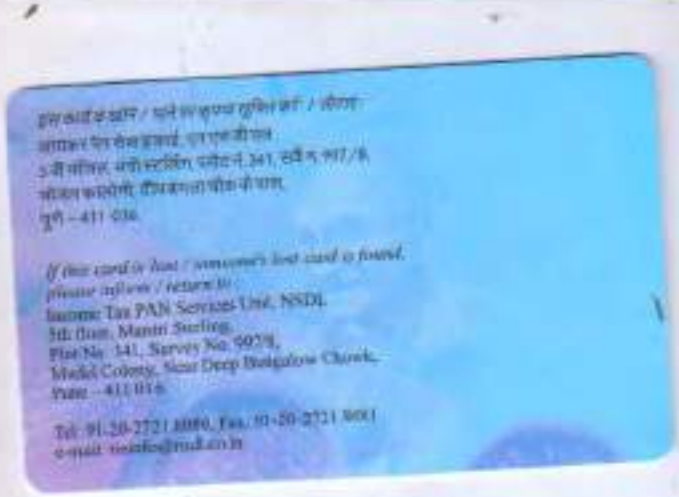

File No. ANERT-TECH/41/2024-PE1(RTS) (Computer No. 7540)

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Contract

Contract No: GEMC-511687706822699
Generated Date: 23-Nov-2021
Bid/RA/PR No: GEM/2021/B/1605157

Organisation Details

Type:	State Government
Ministry:	-
Department:	Animal Husbandry Department Kerala
Organisation Name:	N/A
Office Zone:	Directorate Of Animal Husbandy

Buyer Details

Designation:	Assistant Director FD DAH
Contact No.:	0471-2302381-94
Email ID:	adfd.ahd@kerala.gov.in
GSTIN:	-
Address:	Directorate of Animal Husbandry, 6th Floor, Vikas Bhavan, Palayam, Thiruvananthapuram, THIRUVANANTHAPURAM, KERALA-695033, India

Financial Approval Detail

IFD Concurrence:	No
Designation of Administrative Approval:	Director, Dept of Animal Husbandry, Kerala
Designation of Financial Approval:	Director, Dept of Animal Husbandry, Kerala

Paying Authority Details

Payment Mode:	Offline
Designation:	Administrative Assistant 1
Email ID:	aa1.ahd@kerala.gov.in
GSTIN:	-
Address:	Directorate of Animal Husbandry, 6th Floor, Vikas Bhavan, Palayam, Thiruvananthapuram, THIRUVANANTHAPURAM CITY, KERALA-695033, India

Seller Details

GeM Seller ID:	D3A1180000090647
Company Name:	HYKON INDIA LIMITED
Contact No.:	08086088848
Email ID:	tenders@hykonindia.com
Address:	9/525 21,22,23,HYKON HOUSE,IKKANDA WARRIER ROAD,TRICHUR, Thrissur, KERALA-680001, -
MSME verified:	Yes
MSME Registration number:	KL13B0004274
MSE Social Category:	General
MSE Gender:	Male
GSTIN:	32AAACH6869H1ZH , 29AAACH6869H1Z4 , 33AAACH6869H1ZF , 32AAACH6869H1ZH , 36AAACH6869H1Z9

*GST / Tax invoice to be raised in the name of - Buyer

Product Details

#	Item Description	Category Name & Quadrant	Model	HSN Code	Ordered Quantity	Unit	Lead Time(Days)	Price (Inclusive of all Duties and Taxes in INR)
1	**Product Name :** HYKON 10.0 KVA UPS **Brand :** HYKON **Brand Type :** Registered Brand **Catalogue Status :** OEM verified catalogue **Selling As :** OEM	Online Ups-IS:9000 (Q3)	AEBTS 10000	HSN not specified by seller	1	pieces	-	1,004,500
Total Order Value (in INR)								**1,004,500**

Consignee Detail

S.No	Consignee	Item	Lot No.	Quantity	Delivery Start After	Delivery To Be Completed By
1	Designation: - Email ID: adfd.ahd@kerala.gov.in Contact: 0471-2302381-94 GSTIN: - Address: Directorate of Animal Husbandry, 6th Floor, Vikas Bhavan, Palayam, Thiruvananthapuram, THIRUVANANTHAPURAM, KERALA-695033, India	HYKON 10.0 KVA UPS	-	1	23-Nov-2021	21-Feb-2022

Product Specification for HYKON 10.0 KVA UPS

Specification	Sub-Spec	Value

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Generic	Rating in KVA (KVA)	10.0 KVA
	Technology	IGBT-PWM with inbuilt isolation transformer
	Input Power	Three phase 300 V - 450V sinewave,50Hz
	Output power	Single phase 230V +/-1% sinewave 50 Hz
	Backup time (Minutes)	240
	Minimum VAH (VAH)	48000
	Warranty for UPS (Years)	3
	Movable trolly for Batteries	Without trollery but with rack
	Warranty for battery	2
	Degree of Protection	IP20
	Cabling 5 meters for input and out put	Without
	Paralleling kit for synchronising	Without
	Installation and Commissioning	Yes
Constructional	Minimum thickness of M.S.Sheet Enclosure duly painted (mm)	1.2
	Type of Battery	Lithium ion
Functional	Maximum overshoot and Under shoot of output rated voltage	4
	Voltage Regulation from no load to full load (%)	< / = 3%
	20% Overload limit for minimum 10 minutes	No, only for 5 Minutes
	Overall Efficiency (%)	>/=90%
	Total Harmonic Distortion(THD) (%)	Maximum 3%
	50% Overload limit for minimum 1 minutes	No, only for 3 seconds
Protection	Protection for under voltage at battery terminal at 10.5V per 12 V battery	Yes
	Protection of Over voltage,Short Circuit & over load at UPS output terminal	Yes
Metering And Indications	Digital Metering in UPS for AC Input Voltage,Output AC Voltage,Current,Frequency,Battery Voltage and Current	Yes
	Indicators for mains presence,Battery charging and discharging,Output Over Load, Low Battery Voltage	Yes
Reports And Certification	Damp Heat : in accordance with IS:9000(part 5/sec.2)1981 at Temperature of 40 degree C,two cycles of (12+12) hours each 2007)	Yes
	Dry Heat Test : in accordance with IS:9000 (part 3/sec.5)1977 (reaffirmed 2007) at 55 degree C for 16 hrs	Yes
	Cold Test : in accordance with IS:9000 (Part 2/Sec.4)1977 (Reaffirmed 2007) at -10 degree C for 4 hrs.	Yes
	Availability of the Type Test Report from Central Govt. /NABL/ILAC Accredited lab covering all technical requirements.	Yes
	Type Test Certificate No.	TR/ETL/63748-1
	Type Test Certificate date	27/4/2016
	Name of Lab	ETDC
	Address of Lab	BANGALORE
	As per Meity (Government of India) guidelines UPS shall have valid BIS CRS certifications as applicable	Yes

Buyer Defined Additional Specification for HYKON 10.0 KVA UPS

Specification	Value
Warranty for Battery in years	Minimum 5 years
Installation and commissioning at premises	complete within 15 days after awarding BID

Terms and Conditions

1. Special terms and conditions- Version:1 effective from 04-05-2020

1.1

Calculation of Minimum VAH based on Back up time
Minimum VAH requirements would be calculated on the basis of following:
(VAH Calculation: Battery Voltage x Battery Ah x No. of Batteries = VAH)

UPS Rating	15 Minutes	30 Minutes	60 Minutes	90 Minutes	120 Minutes	180 Minutes	240 Minutes
1 KVA	400 VAH	800 VAH	1600 VAH	2400 VAH	3200 VAH	4800 VAH	6400 VAH
2 KVA	800 VAH	1600 VAH	3200 VAH	4800 VAH	6400 VAH	9600 VAH	12800 VAH
3 KVA	1200 VAH	2400 VAH	4800 VAH	7200VAH	9600 VAH	14400 VAH	19200 VAH
5 KVA	2000 VAH	4000 VAH	8000 VAH	12000 VAH	16000 VAH	24000 VAH	32000 VAH
6 KVA	2400 VAH	4800 VAH	9600 VAH	14400 VAH	19200 VAH	28800 VAH	38400 VAH
7.5 KVA	3000 VAH	6000 VAH	12000 VAH	18000 VAH	24000 VAH	36000 VAH	48000 VAH
10 KVA	4000 VAH	8000 VAH	16000 VAH	24000 VAH	32000 VAH	48000 VAH	64000 VAH
15 KVA	6000 VAH	12000 VAH	24000 VAH	36000 VAH	48000 VAH	72000 VAH	96000 VAH
20 KVA	8000 VAH	16000 VAH	32000 VAH	48000 VAH	64000 VAH	96000 VAH	128000 VAH
30 KVA	12000 VAH	24000 VAH	48000 VAH	72000 VAH	96000 VAH	144000 VAH	192000 VAH
40 KVA	16000 VAH	32000 VAH	64000 VAH	96000 VAH	128000 VAH	192000 VAH	256000 VAH
60 KVA	24000 VAH	48000 VAH	96000 VAH	144000 VAH	192000 VAH	288000 VAH	384000 VAH
80 KVA	32000 VAH	64000 VAH	128000 VAH	192000 VAH	256000 VAH	384000 VAH	512000 VAH
100 KVA	40000 VAH	80000 VAH	160000 VAH	240000 VAH	320000 VAH	480000 VAH	640000 VAH

2. General Terms and Conditions-

2.1 This Contract between the Seller and the Buyer, is for the supply of the Goods and/ or Services, detailed in the schedule above, in accordance with the General Terms and Conditions (GTC) as available on the GeM portal (unless otherwise superseded by Goods / Services specific Special Terms and Conditions (STC) and/ or BID/Reverse Auction Additional Terms and Conditions (ATC), as applicable

2.2 Terms of delivery: Free Delivery at Site including loading/unloading. In respect of items requiring installation and / or commissioning and other services in the scope of supply (as indicated in respective product category specification / STC / ATC), and the cost of the same is also included in the Contract price.

2.2.1 Contracted goods should be delivered at the consignee or designated delivery location as per the working time of the buying organisation. Seller may get the same confirmed from consignee before scheduling delivery.

2.2.2 A copy of the contract should be available with the messenger / dispatching agency that delivers the Goods at consignee / delivery location (preferably pasted / attached outside the consignment / package) for easy reference and ease in delivery acceptance.

2.3 Delivery period: The Delivery Period/Time shall be essence of the Contract and delivery must be completed not later than such date(s). Any modification thereto shall be mutually agreed and incorporated in the Contract as per the provisions of the GTC.

2.4 Performance Security: If the Seller fails or neglects to observe or perform any of his obligations under the contract it shall be lawful for the Buyer to forfeit either in whole or in part, the Performance Security furnished by the Seller.

2.5 Taxes and Duties: Contract Prices are all inclusive i.e. including all taxes, duties, local levies / transportation / loading-unloading charges etc. Break up of GST shall be indicated by the Seller while raising invoice / bill on GeM. While submitting the bill / invoice Seller shall undertake that the Goods and Services Tax (GST) charged on this bill is not more than what is payable under the provision on the relevant Act or the Rules made there under and that the Goods on which GST has been charged have not been exempted under the GST Act or the Rules made there under and the charges on account of GST on these goods are correct under the provision of that Act or the rules made there under.

2.6 Octroi Duty and / or other local taxes:Contract Prices are all inclusive hence no reimbursement over and above the contract price(s) shall be allowed to seller towards payment of local taxes (such as levy of town duty, Octroi Duty, Terminal Tax and other levies of local bodies etc).

2.7 Limitation of Liability: The provisions of limitation of liability between Buyer and Seller as given in the GTC shall be applicable here.

2.8 Resolution of disputes: The provisions of DISPUTE RESOLUTION BETWEEN BUYER AND SELLER as given in the GTC shall be applicable here.

2.9 Liquidated Damages: If the Seller fails to deliver any or all of the Goods/Services within the original/re-fixed delivery period(s) specified in the contract, the Buyer will be entitled to deduct/recover the Liquidated Damages for the delay, unless covered under Force Majeure conditions aforesaid, @ 0.5% per week or part of the week of delayed period as pre-estimated damages not exceeding 10% of the contract value without any controversy/dispute of any sort whatsoever. In case, Service Level Agreement (SLA) is applicable the same shall be applicable for the Contract.

2.10 Financial Certificate:

2.10.1 The expenditure involved for this purpose has received the Sanction of the competent financial authority.

2.10.2 The funds are available under the proper head in the sanction budget allotment for the concern financial year.

2.10.3 I have been fully authorized by the department to sign the supply order or incur the liability of the Goods being ordered.

2.11 The bidder should submit a self declaration to the effect in bidder's official letter head that their agency have not been black listed by any Agency whatsoever till date.

3. Buyer Added Bid Specific Terms and Conditions-

3.1 Availability of Service Centres: Bidder/OEM must have a Functional Service Centre in the State of each Consignee's Location in case of carry-in warranty. (Not applicable in case of goods having on-site warranty). If service center is not already there at the time of bidding, successful bidder / OEM shall have to establish one within 30 days of award of contract. Payment shall be released only after submission of documentary evidence

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of having Functional Service Centre.

3.2 Dedicated /toll Free Telephone No. for Service Support : BIDDER/OEM must have Dedicated/toll Free Telephone No. for Service Support.

3.3 Warranty period of the supplied products shall be as given in specifications from the date of final acceptance of goods or after completion of installation, commissioning & testing of goods (if included in the scope of supply), at consignee location. OEM Warranty certificates must be submitted by Successful Bidder at the time of delivery of Goods. The seller should guarantee the rectification of goods in case of any break down during the guarantee period. Seller should have well established Installation, Commissioning, Training, Troubleshooting and Maintenance Service group in INDIA for attending the after sales service. Details of Service Centres near consignee destinations are to be uploaded along with the bid.

3.4 Over and above the normal Warranty terms as per GeM GTC, the successful bidder / OEM shall have to provide Comprehensive Warranty during the entire Standard warranty period as per contract. : The comprehensive warranty shall be covering the following scope Replacing of all components of UPS including battery at no cost basis (Upload an undertaking with the bid confirming compliance by the bidder if Bidder is taking onus of this compliance. In case OEM is taking onus of this compliance, OEM undertaking is to be uploaded along with Bidder undertaking)

3.5 Successful bidder will have to ensure that adequate number of dedicated technical service personals / engineers are designated / deployed for attending to the Service Request in a time bound manner and for ensuring Timely Servicing / rectification of defects during warranty period, as per Service level agreement indicated in the relevant clause of the bid.

3.6 Scope of supply (Bid price to include all cost components) : Supply Installation Testing Commissioning of Goods and Training of operators and providing Statutory Clearances required (if any)

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Contract

Contract No: GEMC-511687718955640
Generated Date: 15-Jul-2022
Bid/RA No: GEM/2022/B/2175497

Organisation Details

Type:	Central Autonomous
Ministry:	Ministry of Electronics and Information Technology
Department:	NA
Organisation Name:	Centre for Development of Advanced Computing (C-DAC)
Office Zone:	Thiruvananthapuram

Buyer Details

Name:	Bindhu Thomas
Designation:	Senior Assistant
Contact No.:	471-2723333-283
Email ID:	buycon3.cdacc.kl@gembuyer.in
GSTIN:	32AAATC0934H2Z8
Address:	Purchase Department, Centre for Development of Advanced Computing, Vellayambalam, THIRUVANANTHAPURAM, KERALA-695033, India

Financial Approval Detail

IFD Concurrence:	No
Designation of Administrative Approval:	Section Head Purchase
Designation of Financial Approval:	Senior Finance Officer

Paying Authority Details

Payment Mode:	Internet Banking
Designation:	Senior Finance Officer
Email ID:	pao1.meit.kl@gembuyer.in
GSTIN:	N
Address:	Purchase Department, Centre for Development of Advanced Computing, Vellayambalam, THIRUVANANTHAPURAM CITY, KERALA-695033, India

Seller Details

GeM Seller ID:	D3A1180000090647
Company Name:	HYKON INDIA LIMITED
Contact No.:	08086088848
Email ID:	tenders@hykonindia.com
Address:	9/525 21,22,23,HYKON HOUSE,IKKANDA WARRIER ROAD,TRICHUR, Thrissur, KERALA-680001, -
MSME verified:	Yes
MSME Registration number:	KL13B0004274
MSE Social Category:	General
MSE Gender:	Male
GSTIN:	32AAACH6869H1ZH

*GST / Tax invoice to be raised in the name of - Consignee

Product Details

#	Item Description	Ordered Quantity	Unit	Unit Price (INR)	Tax Bifurcation (INR)	Price (Inclusive of all Duties and Taxes in INR)
1	**Product Name :** 500 AH LFP Battery Module **Brand :** HYKON **Brand Type :** Registered Brand **Catalogue Status :** Catalogue not verified by OEM **Selling As :** Reseller not verified by OEM **Category Name & Quadrant :** 500 AH LFP Battery Module (Q3) **Model:** HY-LFP-48500P **HSN Code:** HSN not specified by seller	3	pieces	706,808.2	NA	2,120,424.6
Total Order Value (in INR)						**2,120,424.6**

Consignee Detail

S.No	Consignee	Item	Lot No.	Quantity	Delivery Start After	Delivery To Be Completed By
1	Designation: - Email ID: buycon3.cdacc.kl@gembuyer.in Contact: 471-2723333-283 GSTIN: 32AAATC0934H2Z8 Address: Purchase Department, Centre for Development of Advanced Computing, Vellayambalam, THIRUVANANTHAPURAM, KERALA-695033, India	500 AH LFP Battery Module	-	3	15-Jul-2022	30-Jul-2022

Product Specification for 500 AH LFP Battery Module

Specification	Sub-Spec	Value

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Custom Specification	Custom Specification	Yes

Seller Specification Document:

1. SpecificationDocument1	mkp.gem.gov.in/catalog_data/catalog_support_document/62/03/406/CatalogAttrs/SpecificationDocument/2022/6/2/2022_06_02_18_24_16_spec_2022-06-02-18-24-19_5a5d13dfa21afc7901e56f3b48d6c332.pdf

Buyer Specification Document:

1. SpecificationDocument	mkp.gem.gov.in/catalog_data/catalog_support_document/buyer_documents/48214/54/78/703/CatalogAttrs/SpecificationDocument/2022/5/13/document1_2022-05-13-10-40-42_7a6f4eca47c17298b76d1adc2f0bfe1a.pdf

Terms and Conditions

1. General Terms and Conditions-

1.1 This contract is governed by the General Terms and Conditions, conditions stipulated to this Product/Service as provided in the Marketplace.

1.2 This Contract between the Seller and the Buyer, is for the supply of the Goods and/ or Services, detailed in the schedule above, in accordance with the General Terms and Conditions (GTC) unless otherwise superseded by Goods / Services specific Special Terms and Conditions (STC) and/ or BID/Reverse Auction Additional Terms and Conditions (ATC), as applicable

2. Buyer Added Bid Specific Terms and Conditions-

2.1 *Scope of Supply*:
Scope of supply (Bid price to include all cost components) : Supply Installation Testing and Commissioning of Goods

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Contract|अनुबंध

Contract No|अनुबंध क्रमांक: GEMC-511687773839679

Generated Date|अनुबंध तिथि : 23-Feb-2023

Organisation Details|संगठन विवरण

Type|प्ररूप :	State Autonomous
Ministry|मंत्रालय :	-
Department|विभाग :	Higher Education Department Kerala
Organisation Name|संगठन का नाम :	Mahatma Gandhi University Kottayam
Office Zone|कार्यालय क्षेत्र:	686560

Buyer Details|खरीदार विवरण

Designation|पद :	JOINT REGISTRAR I ADMN
Contact No.|संपर्क नंबर :	-
Email ID|ईमेल आईडी :	jr1admn.mgu@kerala.gov.in
GSTIN|जीएसटीआईएन :	-
Address|पता :	MAHATMA GANDHI UNIVERSITY PRIYADARSHINI HILLS P O ATHIRAMPUZHA KOTTAYAM 686560, KOTTAYAM, KERALA-686560, India

Financial Approval Detail|वित्तीय स्वीकृति विवरण

IFD Concurrence|आईएफडी सहमति:	No
Designation of Administrative Approval| प्रशासनिक अनुमोदन का पदनाम:	VICE CHANCELLOR
Designation of Financial Approval| वित्तीय अनुमोदन का पदनाम :	FINANCE OFFICER

Paying Authority Details|भुगतान प्राधिकरण विवरण

Role:	PAO
Payment Mode|भुगतान का तरीका:	Offline
Designation|पद :	FINANCE OFFICER
Email ID|ईमेल आईडी :	financeof.mgu@kerala.gov.in
GSTIN|जीएसटीआईएन :	-
Address|पता:	MAHATMA GANDHI UNIVERSITY PRIYADARSHINI HILLS P O ATHIRAMPUZHA KOTTAYAM 686560, Kottayam, KERALA-686560, India

Seller Details|विक्रेता विवरण

GeM Seller ID|जेम विक्रेता आईडी :	D3A1180000090647
Company Name|कंपनी का नाम :	HYKON INDIA LIMITED
Contact No.|संपर्क नंबर :	08086088848
Email ID|ईमेल आईडी :	tenders@hykonindia.com
Address|पता :	9/525 21,22,23,HYKON HOUSE,IKKANDA WARRIER ROAD,TRICHUR, Thrissur, KERALA-680001, -
MSME verified|एमएसएमई सत्यापित :	Yes
MSME Registration number|एमएसएमई पंजीकरण संख्या :	KL13B0004274
MSE Social Category|एमएसई सामाजिक श्रेणी :	General
MSE Gender|एमएसई लिंग श्रेणी :	Male
GSTIN|जीएसटीआईएन:	32AAACH6869H1ZH

*GST / Tax invoice to be raised in the name of|जिसके नाम के पक्ष में GST/TAX इनवॉइस पेश किया जाएगा - Buyer

Product Details|उत्पाद विवरण

#	Item Description|आइटम विवरण	Ordered Quantity| आइटम विवरण	Unit | इकाई	Unit Price (INR)| इकाई मूल्य (INR)	Tax Bifurcation (INR)| कर विभाजन (INR)	Price (Inclusive of all Duties and Taxes in INR)| मूल्य (INR में सभी शुल्क और कर सहित)
1	**Product Name|उत्पाद का नाम :** HYKON Online UPS of Rating 20.0 KVA With Battery Of Backup Time 60 Minutes **Brand|ब्रांड :** HYKON **Brand Type|ब्रांड प्रकार :** Registered Brand **Catalogue Status|कैटलॉग की स्थिति:** OEM verified catalogue **Selling As|कैसे बेचा जा रहा है :** OEM **Category Name & Quadrant|श्रेणी का नाम और चतुर्थांश :** Online UPS (Version 2.0) (Q2) **Model|मॉडल:** GEBTS 20000 **HSN Code|एचएसएन कोड:** HSN not specified by seller	1	pieces	462,000	NA	462,000
Total Order Value |कुल ऑर्डर मूल्य (in INR)						**462,000**

Consignee Detail|परेषिती विवरण

S.No| क्र.सं.	Consignee|परेषिती	Item|वस्तु	Lot No.| लॉट नंबर	Quantity| मात्रा	Delivery Start After| दिनांक के बाद डिलीवरी शुरू करना है	Delivery To Be Completed By| वितरण पूरा कब तक करना है
	Designation|पद : Section Officer Stores Email ID|ईमेल आईडी : sostores.mgu@kerala.gov.in Contact|संपर्क : 0481-2733432-	HYKON Online UPS of				

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1	GSTIN|जीएसटीआईएन : - Address|पता : MAHATMA GANDHI UNIVERSITY PRIYADARSHINI HILLS P O ATHIRAMPUZHA KOTTAYAM 686560, KOTTAYAM, KERALA-686560, India	Rating 20.0 KVA With Battery Of Backup Time 60 Minutes	-	1	23-Feb-2023	24-May-2023

Product Specification for HYKON Online UPS of Rating 20.0 KVA With Battery Of Backup Time 60 Minutes

Specification|विनिर्देश	Sub-Spec|उप-विनिर्देश	Value|मूल्य
Generic	Rating in KVA	20.0 KVA
	Switching Technology	IGBT-PWM
	Input Voltage	AC Three phase 300 V - 450V sinewave 50Hz
	Output Voltage	AC Single phase 230V +/-1% 50 Hz
	Warranty for UPS (Years)	3
Battery/Backup Bank	Battery/Backup Bank Provided with Online UPS (Hint: In case the UPS is supplied with battery, seller shall ensure compliance to the GST Rates as per recommendations made in the 45th Meeting of GST council dated 17th Sep 2021)	With Battery
	Type of Battery (hint: NA in case Battery not provided)	Lead Acid type (with tubular positive plates) conforming to IS:1651:1991 latest
	Backup time (Minutes) (hint: NA in case battery not provided)	60 Minutes
	Battery Make	HYKON
	Battery Model Number	240V-48AH
	Battery capacity (Ah)	65
	Weight of the Battery (kg)	50
	Number of Batteries	20
	Minimum Guaranteed VAH	1600 X Per KVA X Per hour of backup time
	Warranty for battery (Years) by Battery Manufucaturer/Brand hint: NA in case battery not provided	3
	Accessories with Battery	NA
Installation and Commissioning or Service	Installation and Commissioning (Covered in the Scope of Supply)	Provided
	After sales service (Turn Around Time)	NA
	Preventive Maintenance (Hint: Mention Timeline if provided, NA if not provided)	NA
	Other Services provided	PAN India service support on 24 x 7 basis,AMC support available warranty,Availability of spares in close proximity (Spares should be easily available close to the site),NA
Performance / Functional	Inbuilt isolation transformer	With
	Overall Efficiency (%)	>/=90% & <94% without Inbuilt isolation transformer
	Power Factor Load Supported	0.8 or better
	Overload limit	50% Overload for minimum 3 seconds
	Total Harmonic Distortion(THD) (%)	3% Maximum @ 100% Linear Load
	Other Functional Features	Crest factor on full non-linear load is not less than 3:1
Accessories	Accessories	Cabling 6 meters (input upto 3m and output upto 3m)
Salient Features	Protection	Over temperature protection
	Metering	Input Voltage
	Alarms and Indications	Indicator for Mains presence,Alarm for Low Battery
	Additional Features	NA
Design / Construction	Type of Design / Construction	Floor Standing
	Form factor of UPS	NA (for Floor Standing)
	Enclosure (mm)	1.2 mm Minimum Thickness of M.S. Sheet duly powder coated
	Degree of Protection	IP21
	DC Bus Voltage (In Volts)	240
	Other Constructional Features	Mains ON/OFF MCB
Operating Conditions	Minimum Operating Temperature	0
	Maximum Operating Temperature	40

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	Relative Humidity Non Condensing at 40 deg C	90
Buyer Specific Requirement	Environmental Test Report Requirements	NA
	Battery Test Report	NA
	Intended Applications	NA
	Other Requirements	ROHS compliance
Reports And Certification	Type of lab which carried out Test of Complete Product to prove the conformity of product as per specification	OEM
	Agree to provide all relevant documents Test Reports/supporting document /reports etc to the buyer at the time of bidding or on demand	Yes
	As per Meity (Government of India) guidelines UPS shall have valid BIS CRS certifications as applicable	Yes (For UPS rating upto 10KVA)

Terms and Conditions | नियम और शर्तें

1. Special terms and conditions- Version:1 effective from 06-07-2022

1.1 In addition to General Terms and Conditions of GeM, the following Special T&C shall be applicable for Online UPS (Version 2.0) with reference to Installation and Commissioning.

Seller's Responsibility: Installation and Commissioning shall involve all the interconnections, any cabling between power source, switch boards within 3 metre range for input power and connecting Output power in the Scope of seller.

Buyer's Responsibility: Buyer will ensure well ventilated/covered site/room having requisite power points/distribution board to provide input power to UPS as well as to take out power from UPS within 3 metre of the location of UPS placement.

The above is not applicable for the stores supplied without installation and commisioning.

Note: The above is indicative and any incidental requirement related to above responsibilities shall also be considered in the responsibilities of Buyer/Seller as applicable.

2. General Terms and Conditions-

2.1 This contract is governed by the General Terms and Conditions, conditions stipulated to this Product/Service as provided in the Marketplace.

2.2 This Contract between the Seller and the Buyer, is for the supply of the Goods and/ or Services, detailed in the schedule above, in accordance with the General Terms and Conditions (GTC) unless otherwise superseded by Goods / Services specific Special Terms and Conditions (STC) and/ or BID/Reverse Auction Additional Terms and Conditions (ATC), as applicable

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नोट: यह सिस्टम जनरेटेड फाइल है। कोई हस्ताक्षर की आवश्यकता नहीं है। इस दस्तावेज़ का प्रिंट आउट भुगतान/लेनदेन उद्देश्य के लिए मान्य नहीं है।

PLUSTECH
SYSTEMS & SOLUTIONS (P) LTD.

207, Lloyds Chambers, Barne Road 409,Mangalwar Peth, Maldhaka Chowk,Pune - 411 011, India
Tel:+91-020- 2605 6366 **E-mail** : info@plustech.co.in **Website** : www.plustech.co.in **CIN NO -** U74210PN2006PTC022119

PURCHASE ORDER

PO No : **POMB23240364A01**

PO Date : **28/07/2023**

Project Name : A 000 - New Office

Supplier Offer Ref.: HIKK-PE/DS/1167R2/2023-24

To,

Hykon India Limited
46, Park Area, 2nd main, 10th cross, Wilson Gardens, Bangalore, Bengaluru Urban, Karnataka, 560027.

GSTIN No : 29AAACH6869H1Z4
Kind Attn : Ranjini
(M. No. : 9343349898)
Phone no :
E-mail : mlr@hykoindia.com

Buyer Name & Address
Plustech Systems and Solutions (P) Ltd.
Address : 207, Lloyds Chambers, Barne Road, 409, Mangalwar Peth, Maldhakka Chowk, Pune - 411011, Maharashtra, India
GSTNo 27AADCP8513B1ZO

Consinee GSTIN No :

We hereby Place Order for Supply of following Materials.

Sr	Description	Quantity		Unit Rate (Rs.)	Total Basic Amt. (Rs.)
1)	Supply of Online UPS with lithium battery as per annexure - I	1.00	SET	4,858,000.00	4,858,000.00

Amount in Words: RUPEES FORTY-EIGHT LAKH FIFTY-EIGHT THOUSAND ONLY.

Total Basic Amount 4,858,000.00

Amendment Remark : Due to change in quantity and Specification (Total PO value remains Same)

Terms & Conditions :

PRICE BASIS	: EX - WORKS	FREIGHT	: INCLUDED
PACKG & FRWG	: INCLUDED	GST TAXES	: IGST Iı / EXTRA AT ACTUAL
DISPATCH DATE	: 17/08/2023	MODE OF DESPATCH	: BY ROAD

PENALTY : IF THERE IS A DELAY, PENALTY @ 0.5% PER WEEK SUBJECTED TO MAX OF 5% OF TOTAL PO VALUE.

GAURANTEE/WARANTY : 60 MONTHS AFTER COMMISSIONING OF PLANT / 60 MONTHS FROM THE DATE OF DISPATCH.

INSTRUCTION MANUALS : SETS OF INSTRUCTION & MAINTENANCE MANUALS, PERFORMANCE TESTS, CALIBRATION REPORTS, GAURANTEE CERTIFICATES & RECOMMENDED SPARE PARTS LIST IN HARD AND **01** SET OF SOFT ON DISPATCH OF MATERIAL AT OUR HEAD OFFICE, ALONG WITH HARDCOPY OF ORIGINAL SALE INVOICE & LR.

Payment Terms	Percentage	Amount
ADVANCE ALONG WITH PO	50.00 %	2429000.00
BALANCE PLUS TAXES & DUTIES AGAINST PROFORMA INVOICE.	40.00 %	1943200.00
AFTER RECEIPT OF MATERIAL AT SITE AFTER 30 DAYS.	10.00 %	485800.00

1. Annex - I : Price Break up, Specification & Excise classification as enclosed.
2. Annex - II : General Terms & Conditions.
3. Annex - III : For Sales Tax & other Terms as enclosed
4. Annex - IV General Terms and Conditions for Manufacturing and Supply

Please send your acceptance to this PO within 7 days from the date of issue in case of no response from your side it will be assumed accepted.

Thanking you,

For PLUSTECH SYSTEMS AND SOLUTIONS P. LTD

Authorized Signatory.

Vendor' Acceptance

Signature

Signatory Name:

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PURCHASE ORDER NO. : POMB23240364A01	**Supplier : Hykon India Limited**
Purchase Order DATE : 28/07/2023	

ANNEXURE - I

PRICE BREAK UP & SPECIFICATION CHART

Sr No	Tag No. / ItemCode	Item Description	Qty	UOM	Unit Rate	Disc Amt	Amount
1)		7.5KVA Online UPS Hykon Make UPS: AEBTS7500/7.5KVA/240VDC True Online, Double Conversion Type, IGBT based (3 phase input and 1 phase output) with Isolation Transformer WARRANTY FOR UPS - 2 YEARS (FROM DATE OF INVOICE)	1.00	Nos	78000.00		78000.00
2)		Lithium Ion Battery: LFP 100AH/ 240V Lithium Ion Battery: LFP 100AH/ 240V (One Pack) for 3 hours backup WARRANTY FOR BATTERY - 5 YEARS (FROM DATE OF INVOICE)	1.00	Nos	519000.00		519000.00
3)		60KVA Online UPS Hykon Make UPS: GEBTT60/60KVA/360VDC True Online, Double Conversion Type, IGBT based (3 phase input and 3 phase output) with Isolation Transformer WARRANTY FOR UPS - 2 YEARS (FROM DATE OF INVOICE)	1.00	Nos	334000.00		334000.00
4)		100KVA Online UPS Hykon Make UPS: 100KVA/360VDC True Online, Double Conversion Type, IGBT based (3 phase input and 3 phase output) with Isolation Transformer WARRANTY FOR UPS - 2 YEARS (FROM DATE OF INVOICE)	1.00	Nos	615000.00		615000.00
5)	**BAT300360**	Lithium Ion Battery: LFP 400AH/ 360V Lithium Ion Battery: LFP 400AH/ 360V (One Pack) for 1 hour backup (FOR BOTH 60KVA & 100KVA UPS) WARRANTY FOR BATTERY - 5 YEARS (FROM DATE OF INVOICE) NOTE - PACKING MATERIAL SHOULD BE USE ABOVE THAN 100 MICRON AS PER GOV. RULE	1.00	Nos	3312000.00		3312000.00
					TOTAL BASIC AMOUNT (RUPEES)		**4858000.00**

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PURCHASE ORDER NO. : POMB23240364A01 **Purchase Order DATE : 28/07/2023**	**Supplier : Hykon India Limited**

For PLUSTECH SYSTEMS AND SOLUTIONS P. LTD

(Authorised Signatory)

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PURCHASE ORDER NO. : POMB23240364A01	**Supplier : Hykon India Limited**
Purchase Order DATE : 28/07/2023	

ANNEXURE - II

GENERAL TERMS AND CONDITIONS FOR MANUFACTURING AND SUPPLY.

1. Sub-contracting and/or sub letting of this purchase order shall not be allowed unless & until agreed in writing by Plustech.
2. Proper engineering practice shall be followed for manufacturing.
3. Welding electrodes shall be of reputed make like ADVANI, ESAB etc.
4. Manufacturer must forward inspection report prior to despatch for our approval and obtain clearance for dispatch.
5. All despatch documents should be as per our detailed purchase order instruction.
6. Packing and forwarding shall be done by the manufacturer so as to avoid damage during transit.

For PLUSTECH SYSTEMS AND SOLUTIONS P. LTD

(Authorised Signatory)

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PURCHASE ORDER NO. : POMB23240364A01	**Supplier : Hykon India Limited**
Purchase Order DATE : 28/07/2023	

ANNEXURE - III

TERMS & CONDITIONS

1. Freight shall be to our account; Transportation shall be arranged by us.
2. Commercial Invoice to be raised on the following address.
   PLUSTECH SYSTEMS AND SOLUTIONS P. LTD
   207, Lloyds Chambers, Barne Road, 409, Mangalwar Peth, Maldhakka Chowk, Pune - 411011
3. HSN heading of the material should be clearly mentioned as per GST.
4. Name & Address of the Consignee should be clearly mentioned.
5. If any cutting or over writing has been done on Invoice that should be signed by the Signatory who has signed the Invoice.
6 Goods to be directly delivered to ()
7. Internal Inspection report should be provided before dispatching the Materials.
8. Delivery
   Delivery schedule should be as per our order otherwise penalty will be applicable as per Annexure - II.
9. Calibration report & Guarantee certificates :
   Performance test calibration reports & guarantee certificates in four copies should be provided **on dispatch of material.**
10. Any service technician required at site for commissioning of equipment or trouble shooting will be deputed with in 24 Hours after intimation.
11. Transit Insurance
    Insurance for the consignment shall be arranged by M/s. PLUSTECH SYSTEMS AND SOLUTIONS P. LTD Details of the consignment along with its value to be intimated by supplier to the following address prior to dispatch.

    M/s. PLUSTECH SYSTEMS AND SOLUTIONS P. LTD
    207, Lloyds Chambers, Barne Road, 409, Mangalwar Peth, Maldhakka Chowk, Pune - 411011

    Attn: **Mr. Kiran Patil / Mr. Jayvant Jamdade / Mr. Devendra Natekar**
    Tel No : 020 - 26056366
    e-mail: kiran.k@plustech.co.in / jaywant@plustech.co.in / natekar@plustech.co.in

For PLUSTECH SYSTEMS AND SOLUTIONS P. LTD

(Authorised Signatory)

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PURCHASE ORDER NO. : POMB23240364A01	**Supplier : Hykon India Limited**
Purchase Order DATE : 28/07/2023	

ANNEXURE -IV

GENERAL INSTRUCTIONS ON MANUFACTURING & SUPPLY OF TANKS/PANELS.

1. All tank modules when aligned should be diagonally true and dimensionally should be with in the allowable tolerance limit.
2. Contractor is supposed to use consumable material approved by us like welding Rod, grinding wheels etc. which have impact on final quality of work. Welding electrodes shall be of make ADVANI, ESAB, D& H etc.
3. Material test reports will be submitted and approved by PLUSTECH prior to fabrication
4. All the welding joints will be DP tested for bigger tanks, which is to be fabricated & supplied in modules.
5. Water fill test for leakage will be carried out at your factory for single piece tanks, & site assembled tanks will be carried at site by contractor. If any leakage is observed at site the contractor shall arrange rectification at his cost
6. Necessary stiffener to be provided in the tank module prior to dispatch to prevent the deformation of tank modules
7. Proper visible match marking to be done at the field joint and sketch guiding for it to be provided along with material dispatch documents.
8. End legs to be provided with stiffener to avoid bend/damage during transport
9. Separate list of items (with quantity) dispatched in parts should be submitted along with challan as packing list.
10. Painting instruction to be followed as per drawing, and wherever "NO" painting instruction, Black oil to be applied on MS surfaces to avoid corrosion.
11. The makes of the various materials shall be as follows:-
    - a) Structural steel - SAIL/TISCO
    - b) SS Sheets/Plates - SALEM/IMPORTED
    - c) GI Sheets - SAIL/JINDAL
    - d) MS pipes - JINDAL/PRAKASH/SURYA
    - e) SS Pipes - CHOKSI/REMI/RAVINDRA
    - f) MS Sheets/plates - SAIL/TISCO
    - f) MS Chequered plates - SAIL/TISCO

For PLUSTECH SYSTEMS AND SOLUTIONS P. LTD

(Authorised Signatory)

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Contract

Contract No: GEMC-511687759746531
Generated Date: 06-Dec-2021

Organisation Details

Type:	State Autonomous
Ministry:	-
Department:	Higher Education Department Kerala
Organisation Name:	Mahatma Gandhi University Kottayam
Office Zone:	686560

Buyer Details

Designation:	JOINT REGISTRAR I ADMN
Contact No.:	-
Email ID:	jr1admn.mgu@kerala.gov.in
GSTIN:	-
Address:	MAHATMA GANDHI UNIVERSITY PRIYADARSHINI HILLS P O ATHIRAMPUZHA KOTTAYAM 686560, KOTTAYAM, KERALA-686560, India

Financial Approval Detail

IFD Concurrence:	No
Designation of Administrative Approval:	VICE CHANCELLOR
Designation of Financial Approval:	FINANCE OFFICER

Paying Authority Details

Payment Mode:	Offline
Designation:	FINANCE OFFICER
Email ID:	financeof.mgu@kerala.gov.in
GSTIN:	-
Address:	MAHATMA GANDHI UNIVERSITY PRIYADARSHINI HILLS P O ATHIRAMPUZHA KOTTAYAM 686560, Kottayam, KERALA-686560, India

Seller Details

GeM Seller ID:	D3A1180000090647
Company Name:	HYKON INDIA LIMITED
Contact No.:	08086088848
Email ID:	tenders@hykonindia.com
Address:	9/525 21,22,23,HYKON HOUSE,IKKANDA WARRIER ROAD,TRICHUR, Thrissur, KERALA-680001, -
MSME verified:	Yes
MSME Registration number:	KL13B0004274
MSE Social Category:	General
MSE Gender:	Male
GSTIN:	32AAACH6869H1ZH , 29AAACH6869H1Z4 , 33AAACH6869H1ZF , 32AAACH6869H1ZH , 36AAACH6869H1Z9

*GST / Tax invoice to be raised in the name of - Buyer

Product Details

#	Item Description	Category Name & Quadrant	Model	HSN Code	Ordered Quantity	Unit	Lead Time(Days)	Price (Inclusive of all Duties and Taxes in INR)
1	**Product Name :** HYKON 20.0 KVA UPS **Brand :** HYKON **Brand Type :** Registered Brand **Catalogue Status :** OEM verified catalogue **Selling As :** OEM	Online Ups-IS:9000 (Q3)	GEBTS 20000	HSN not specified by seller	1	pieces	-	499,400
Total Order Value (in INR)								**499,400**

Consignee Detail

S.No	Consignee	Item	Lot No.	Quantity	Delivery Start After	Delivery To Be Completed By
1	Designation: Section Officer Stores Email ID: sostores.mgu@kerala.gov.in Contact: 0481-2733432- GSTIN: - Address: MAHATMA GANDHI UNIVERSITY PRIYADARSHINI HILLS P O ATHIRAMPUZHA KOTTAYAM 686560, KOTTAYAM, KERALA-686560, India	HYKON 20.0 KVA UPS	-	1	06-Dec-2021	06-Mar-2022

Product Specification for HYKON 20.0 KVA UPS

Specification	Sub-Spec	Value

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Generic	Rating in KVA (KVA)	20.0 KVA
	Technology	IGBT-PWM with inbuilt isolation transformer
	Input Power	Three phase 300 V - 450V sinewave,50Hz
	Output power	Single phase 230V +/-1% sinewave 50 Hz
	Backup time (Minutes)	60
	Minimum VAH (VAH)	21000
	Warranty for UPS (Years)	3
	Movable trolly for Batteries	Without trollery but with rack
	Warranty for battery	2
	Degree of Protection	IP20
	Cabling 5 meters for input and out put	Without
	Paralleling kit for synchronising	Without
	Installation and Commissioning	Yes
Constructional	Minimum thickness of M.S.Sheet Enclosure duly painted (mm)	1.2
	Type of Battery	Lithium ion
Functional	Maximum overshoot and Under shoot of output rated voltage	4
	Voltage Regulation from no load to full load (%)	< / = 3%
	20% Overload limit for minimum 10 minutes	No, only for 5 Minutes
	Overall Efficiency (%)	>/=90%
	Total Harmonic Distortion(THD) (%)	Maximum 3%
	50% Overload limit for minimum 1 minutes	No, only for 3 seconds
Protection	Protection for under voltage at battery terminal at 10.5V per 12 V battery	Yes
	Protection of Over voltage,Short Circuit & over load at UPS output terminal	Yes
Metering And Indications	Digital Metering in UPS for AC Input Voltage,Output AC Voltage,Current,Frequency,Battery Voltage and Current	Yes
	Indicators for mains presence,Battery charging and discharging,Output Over Load, Low Battery Voltage	Yes
Reports And Certification	Damp Heat : in accordance with IS:9000(part 5/sec.2)1981 at Temperature of 40 degree C,two cycles of (12+12) hours each 2007)	Yes
	Dry Heat Test : in accordance with IS:9000 (part 3/sec.5)1977 (reaffirmed 2007) at 55 degree C for 16 hrs	Yes
	Cold Test : in accordance with IS:9000 (Part 2/Sec.4)1977 (Reaffirmed 2007) at -10 degree C for 4 hrs.	Yes
	Availability of the Type Test Report from Central Govt. /NABL/ILAC Accredited lab covering all technical requirements.	Yes
	Type Test Certificate No.	NTS/PPTL/UPS-283/03
	Type Test Certificate date	06-02-2015
	Name of Lab	NTS
	Address of Lab	BANGALORE
	As per Meity (Government of India) guidelines UPS shall have valid BIS CRS certifications as applicable	Yes

Terms and Conditions

1. Special terms and conditions- Version:1 effective from 04-05-2020

1.1

Calculation of Minimum VAH based on Back up time

Minimum VAH requirements would be calculated on the basis of following:

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(VAH Calculation: Battery Voltage x Battery Ah x No. of Batteries = VAH)

UPS Rating	15 Minutes	30 Minutes	60 Minutes	90 Minutes	120 Minutes	180 Minutes	240 Minutes
1 KVA	400 VAH	800 VAH	1600 VAH	2400 VAH	3200 VAH	4800 VAH	6400 VAH
2 KVA	800 VAH	1600 VAH	3200 VAH	4800 VAH	6400 VAH	9600 VAH	12800 VAH
3 KVA	1200 VAH	2400 VAH	4800 VAH	7200VAH	9600 VAH	14400 VAH	19200 VAH
5 KVA	2000 VAH	4000 VAH	8000 VAH	12000 VAH	16000 VAH	24000 VAH	32000 VAH
6 KVA	2400 VAH	4800 VAH	9600 VAH	14400 VAH	19200 VAH	28800 VAH	38400 VAH
7.5 KVA	3000 VAH	6000 VAH	12000 VAH	18000 VAH	24000 VAH	36000 VAH	48000 VAH
10 KVA	4000 VAH	8000 VAH	16000 VAH	24000 VAH	32000 VAH	48000 VAH	64000 VAH
15 KVA	6000 VAH	12000 VAH	24000 VAH	36000 VAH	48000 VAH	72000 VAH	96000 VAH
20 KVA	8000 VAH	16000 VAH	32000 VAH	48000 VAH	64000 VAH	96000 VAH	128000 VAH
30 KVA	12000 VAH	24000 VAH	48000 VAH	72000 VAH	96000 VAH	144000 VAH	192000 VAH
40 KVA	16000 VAH	32000 VAH	64000 VAH	96000 VAH	128000 VAH	192000 VAH	256000 VAH
60 KVA	24000 VAH	48000 VAH	96000 VAH	144000 VAH	192000 VAH	288000 VAH	384000 VAH
80 KVA	32000 VAH	64000 VAH	128000 VAH	192000 VAH	256000 VAH	384000 VAH	512000 VAH
100 KVA	40000 VAH	80000 VAH	160000 VAH	240000 VAH	320000 VAH	480000 VAH	640000 VAH

2. General Terms and Conditions-

2.1 This Contract between the Seller and the Buyer, is for the supply of the Goods and/ or Services, detailed in the schedule above, in accordance with the General Terms and Conditions (GTC) as available on the GeM portal (unless otherwise superseded by Goods / Services specific Special Terms and Conditions (STC) and/ or BID/Reverse Auction Additional Terms and Conditions (ATC), as applicable

2.2 Terms of delivery: Free Delivery at Site including loading/unloading. In respect of items requiring installation and / or commissioning and other services in the scope of supply (as indicated in respective product category specification / STC / ATC), and the cost of the same is also included in the Contract price.

2.2.1 Contracted goods should be delivered at the consignee or designated delivery location as per the working time of the buying organisation. Seller may get the same confirmed from consignee before scheduling delivery.

2.2.2 A copy of the contract should be available with the messenger / dispatching agency that delivers the Goods at consignee / delivery location (preferably pasted / attached outside the consignment / package) for easy reference and ease in delivery acceptance.

2.3 Delivery period: The Delivery Period/Time shall be essence of the Contract and delivery must be completed not later than such date(s). Any modification thereto shall be mutually agreed and incorporated in the Contract as per the provisions of the GTC.

2.4 Performance Security: If the Seller fails or neglects to observe or perform any of his obligations under the contract it shall be lawful for the Buyer to forfeit either in whole or in part, the Performance Security furnished by the Seller.

2.5 Taxes and Duties: Contract Prices are all inclusive i.e. including all taxes, duties, local levies / transportation / loading-unloading charges etc. Break up of GST shall be indicated by the Seller while raising invoice / bill on GeM. While submitting the bill / invoice Seller shall undertake that the Goods and Services Tax (GST) charged on this bill is not more than what is payable under the provision on the relevant Act or the Rules made there under and that the Goods on which GST has been charged have not been exempted under the GST Act or the Rules made there under and the charges on account of GST on these goods are correct under the provision of that Act or the rules made there under.

2.6 Octroi Duty and / or other local taxes:Contract Prices are all inclusive hence no reimbursement over and above the contract price(s) shall be allowed to seller towards payment of local taxes (such as levy of town duty, Octroi Duty, Terminal Tax and other levies of local bodies etc).

2.7 Limitation of Liability: The provisions of limitation of liability between Buyer and Seller as given in the GTC shall be applicable here.

2.8 Resolution of disputes: The provisions of DISPUTE RESOLUTION BETWEEN BUYER AND SELLER as given in the GTC shall be applicable here.

2.9 Liquidated Damages: If the Seller fails to deliver any or all of the Goods/Services within the original/re-fixed delivery period(s) specified in the contract, the Buyer will be entitled to deduct/recover the Liquidated Damages for the delay, unless covered under Force Majeure conditions aforesaid, @ 0.5% per week or part of the week of delayed period as pre-estimated damages not exceeding 10% of the contract value without any controversy/dispute of any sort whatsoever. In case, Service Level Agreement (SLA) is applicable the same shall be applicable for the Contract.

2.10 Financial Certificate:

2.10.1 The expenditure involved for this purpose has received the Sanction of the competent financial authority.

2.10.2 The funds are available under the proper head in the sanction budget allotment for the concern financial year.

2.10.3 I have been fully authorized by the department to sign the supply order or incur the liability of the Goods being ordered.

2.11 The bidder should submit a self declaration to the effect in bidder's official letter head that their agency have not been black listed by any Agency whatsoever till date.

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Contract

Contract No: GEMC-511687715461829
Generated Date: 22-Apr-2022

Organisation Details

Type:	State Autonomous
Ministry:	-
Department:	Higher Education Department Kerala
Organisation Name:	Mahatma Gandhi University Kottayam
Office Zone:	686560

Buyer Details

Designation:	JOINT REGISTRAR I ADMN
Contact No.:	-
Email ID:	jr1admn.mgu@kerala.gov.in
GSTIN:	-
Address:	MAHATMA GANDHI UNIVERSITY PRIYADARSHINI HILLS P O ATHIRAMPUZHA KOTTAYAM 686560, KOTTAYAM, KERALA-686560, India

Financial Approval Detail

IFD Concurrence:	No
Designation of Administrative Approval:	VICE CHANCELLOR
Designation of Financial Approval:	FINANCE OFFICER

Paying Authority Details

Payment Mode:	Offline
Designation:	FINANCE OFFICER
Email ID:	financeof.mgu@kerala.gov.in
GSTIN:	-
Address:	MAHATMA GANDHI UNIVERSITY PRIYADARSHINI HILLS P O ATHIRAMPUZHA KOTTAYAM 686560, Kottayam, KERALA-686560, India

Seller Details

GeM Seller ID:	D3A1180000090647
Company Name:	HYKON INDIA LIMITED
Contact No.:	08086088848
Email ID:	tenders@hykonindia.com
Address:	9/525 21,22,23,HYKON HOUSE,IKKANDA WARRIER ROAD,TRICHUR, Thrissur, KERALA-680001, -
MSME verified:	Yes
MSME Registration number:	KL13B0004274
MSE Social Category:	General
MSE Gender:	Male
GSTIN:	32AAACH6869H1ZH , 29AAACH6869H1Z4 , 33AAACH6869H1ZF , 32AAACH6869H1ZH , 36AAACH6869H1Z9

*GST / Tax invoice to be raised in the name of - Buyer

Product Details

#	Item Description	Ordered Quantity	Unit	Unit Price (INR)	Tax Bifurcation (INR)	Price (Inclusive of all Duties and Taxes in INR)
1	**Product Name :** HYKON 20.0 KVA UPS **Brand :** HYKON **Brand Type :** Registered Brand **Catalogue Status :** OEM verified catalogue **Selling As :** OEM Category Name & Quadrant : Online Ups-IS:9000 (Q3) GEBTS 20000 HSN not specified by seller	1	pieces	420,000	NA	420,000
Total Order Value (in INR)						**420,000**

Consignee Detail

S.No	Consignee	Item	Lot No.	Quantity	Delivery Start After	Delivery To Be Completed By
1	Designation: Section Officer Stores Email ID: sostores.mgu@kerala.gov.in Contact: 0481-2733432- GSTIN: - Address: MAHATMA GANDHI UNIVERSITY PRIYADARSHINI HILLS P O ATHIRAMPUZHA KOTTAYAM 686560, KOTTAYAM, KERALA-686560, India	HYKON 20.0 KVA UPS	-	1	22-Apr-2022	21-Jul-2022

Product Specification for HYKON 20.0 KVA UPS

691

Specification	Sub-Spec	Value
Generic	Rating in KVA (KVA)	20.0 KVA
	Technology	IGBT-PWM with inbuilt isolation transformer
	Input Power	Three phase 300 V - 450V sinewave,50Hz
	Output power	Single phase 230V +/-1% sinewave 50 Hz
	Backup time (Minutes)	15
	Minimum VAH (VAH)	11520
	Warranty for UPS (Years)	3
	Movable trolly for Batteries	Without
	Warranty for battery	2
	Degree of Protection	IP20
	Cabling 5 meters for input and out put	Without
	Paralleling kit for synchronising	Without
	Installation and Commissioning	Yes
Constructional	Minimum thickness of M.S.Sheet Enclosure duly painted (mm)	1.2
	Type of Battery	Lithium ion
Functional	Maximum overshoot and Under shoot of output rated voltage	4
	Voltage Regulation from no load to full load (%)	< / = 3%
	20% Overload limit for minimum 10 minutes	No, only for 5 Minutes
	Overall Efficiency (%)	>/=90%
	Total Harmonic Distortion(THD) (%)	Maximum 3%
	50% Overload limit for minimum 1 minutes	No, only for 3 seconds
Protection	Protection for under voltage at battery terminal at 10.5V per 12 V battery	Yes
	Protection of Over voltage,Short Circuit & over load at UPS output terminal	Yes
Metering And Indications	Digital Metering in UPS for AC Input Voltage,Output AC Voltage,Current,Frequency,Battery Voltage and Current	Yes
	Indicators for mains presence,Battery charging and discharging,Output Over Load, Low Battery Voltage	Yes
Reports And Certification	Damp Heat : in accordance with IS:9000(part 5/sec.2)1981 at Temperature of 40 degree C,two cycles of (12+12) hours each 2007)	Yes
	Dry Heat Test : in accordance with IS:9000 (part 3/sec.5)1977 (reaffirmed 2007) at 55 degree C for 16 hrs	Yes
	Cold Test : in accordance with IS:9000 (Part 2/Sec.4)1977 (Reaffirmed 2007) at -10 degree C for 4 hrs.	Yes
	Availability of the Type Test Report from Central Govt. /NABL/ILAC Accredited lab covering all technical requirements.	Yes
	Type Test Certificate No.	NTS/PPTL/UPS-346/02
	Type Test Certificate date	08-07-2017
	Name of Lab	NTS
	Address of Lab	BANGALORE
	As per Meity (Government of India) guidelines UPS shall have valid BIS CRS certifications as applicable	Yes

Terms and Conditions

1. Special terms and conditions- Version:1 effective from 04-05-2020

1.1

Calculation of Minimum VAH based on Back up time
Minimum VAH requirements would be calculated on the basis of following:
(VAH Calculation: Battery Voltage x Battery Ah x No. of Batteries = VAH)

UPS Rating	15 Minutes	30 Minutes	60 Minutes	90 Minutes	120 Minutes	180 Minutes	240 Minutes
1 KVA	400 VAH	800 VAH	1600 VAH	2400 VAH	3200 VAH	4800 VAH	6400 VAH
2 KVA	800 VAH	1600 VAH	3200 VAH	4800 VAH	6400 VAH	9600 VAH	12800 VAH
3 KVA	1200 VAH	2400 VAH	4800 VAH	7200VAH	9600 VAH	14400 VAH	19200 VAH
5 KVA	2000 VAH	4000 VAH	8000 VAH	12000 VAH	16000 VAH	24000 VAH	32000 VAH
6 KVA	2400 VAH	4800 VAH	9600 VAH	14400 VAH	19200 VAH	28800 VAH	38400 VAH
7.5 KVA	3000 VAH	6000 VAH	12000 VAH	18000 VAH	24000 VAH	36000 VAH	48000 VAH
10 KVA	4000 VAH	8000 VAH	16000 VAH	24000 VAH	32000 VAH	48000 VAH	64000 VAH
15 KVA	6000 VAH	12000 VAH	24000 VAH	36000 VAH	48000 VAH	72000 VAH	96000 VAH
20 KVA	8000 VAH	16000 VAH	32000 VAH	48000 VAH	64000 VAH	96000 VAH	128000 VAH
30 KVA	12000 VAH	24000 VAH	48000 VAH	72000 VAH	96000 VAH	144000 VAH	192000 VAH
40 KVA	16000 VAH	32000 VAH	64000 VAH	96000 VAH	128000 VAH	192000 VAH	256000 VAH
60 KVA	24000 VAH	48000 VAH	96000 VAH	144000 VAH	192000 VAH	288000 VAH	384000 VAH
80 KVA	32000 VAH	64000 VAH	128000 VAH	192000 VAH	256000 VAH	384000 VAH	512000 VAH
100 KVA	40000 VAH	80000 VAH	160000 VAH	240000 VAH	320000 VAH	480000 VAH	640000 VAH

2. General Terms and Conditions-

2.1 This Contract between the Seller and the Buyer, is for the supply of the Goods and/ or Services, detailed in the schedule above, in accordance with the General Terms and Conditions (GTC) as available on the GeM portal (unless otherwise superseded by Goods / Services specific Special Terms and Conditions (STC) and/ or BID/Reverse Auction Additional Terms and Conditions (ATC), as applicable

2.2 Terms of delivery: Free Delivery at Site including loading/unloading. In respect of items requiring installation and / or commissioning and other services in the scope of supply (as indicated in respective product category specification / STC / ATC), and the cost of the same is also included in the Contract price.

2.2.1 Contracted goods should be delivered at the consignee or designated delivery location as per the working time of the buying organisation. Seller may get the same confirmed from consignee before scheduling delivery.

2.2.2 A copy of the contract should be available with the messenger / dispatching agency that delivers the Goods at consignee / delivery location (preferably pasted / attached outside the consignment / package) for easy reference and ease in delivery acceptance.

2.3 Delivery period: The Delivery Period/Time shall be essence of the Contract and delivery must be completed not later than such date(s). Any modification thereto shall be mutually agreed and incorporated in the Contract as per the provisions of the GTC.

2.4 Performance Security: If the Seller fails or neglects to observe or perform any of his obligations under the contract it shall be lawful for the Buyer to forfeit either in whole or in part, the Performance Security furnished by the Seller.

2.5 Taxes and Duties: Contract Prices are all inclusive i.e. including all taxes, duties, local levies / transportation / loading-unloading charges etc. Break up of GST shall be indicated by the Seller while raising invoice / bill on GeM. While submitting the bill / invoice Seller shall undertake that the Goods and Services Tax (GST) charged on this bill is not more than what is payable under the provision on the relevant Act or the Rules made there under and that the Goods on which GST has been charged have not been exempted under the GST Act or the Rules made there under and the charges on account of GST on these goods are correct under the provision of that Act or the rules made there under.

2.6 Octroi Duty and / or other local taxes:Contract Prices are all inclusive hence no reimbursement over and above the contract price(s) shall be allowed to seller towards payment of local taxes (such as levy of town duty, Octroi Duty, Terminal Tax and other levies of local bodies etc).

2.7 Limitation of Liability: The provisions of limitation of liability between Buyer and Seller as given in the GTC shall be applicable here.

2.8 Resolution of disputes: The provisions of DISPUTE RESOLUTION BETWEEN BUYER AND SELLER as given in the GTC shall be applicable here.

2.9 Liquidated Damages: If the Seller fails to deliver any or all of the Goods/Services within the original/re-fixed delivery period(s) specified in the contract, the Buyer will be entitled to deduct/recover the Liquidated Damages for the delay, unless covered under Force Majeure conditions aforesaid, @ 0.5% per week or part of the week of delayed period as pre-estimated damages not exceeding 10% of the contract value without any controversy/dispute of any sort whatsoever. In case, Service Level Agreement (SLA) is applicable the same shall be applicable for the Contract.

2.10 Financial Certificate:

2.10.1 The expenditure involved for this purpose has received the Sanction of the competent financial authority.

2.10.2 The funds are available under the proper head in the sanction budget allotment for the concern financial year.

2.10.3 I have been fully authorized by the department to sign the supply order or incur the liability of the Goods being ordered.

2.11 The bidder should submit a self declaration to the effect in bidder's official letter head that their agency have not been black listed by any Agency whatsoever till date.

Note: This is system generated file. No signature is required. Print out of this document is not valid for payment/ transaction purpose.

THIRUVANANTHAPURAM MUNICIPAL CORPORATION

E13/S-170/2023 24/02/2023

M/s Hykon India Ltd.
TC-2/1420/2,3,
Vydhyuthi Bhavan Road
Pattom

Letter of Acceptance

Ref: - 1. Tender Reference E13/S-182/21-22(s-1102/22) Vide Tender ID **2022_UAD_472039_4** dated 28/JAN/2023
2. Negobation Letter No HI/TV/352/22-23 DATED 23.02.23

We are happy to inform you that, you are the Qualified for the tender for Supplying and installing UPS and shifting old UPS with electrical work with LFP battery. In view of that you are requested to make arrangements and supply the UPS and other works mentioned in the tender documents as per schedule
You are also requested to execute an agreement on non-judicial Kerala stamp paper worth ₹~~200/-~~ ₹ 751/- within one week from the date of this LoA

Accepted Rates

S#	Item	Rate	Tax	Amount (in ₹)
1.	10KVA UPS with LFP Battery			2656050.00
2.	Wiring Charges	64000.00	11520.00	75520.00
3.	Shifting and reinstallation Charges	25200.00	4536.00	29736.00
	Total			**2761306.00**

Wiring Charges will be paid on actuals as per the inspection of electrical Committee subject to Maximum quoted amount

Amount quoted are inclusive of all taxes and freight charges. No additional amount will be bared by TMC

Thiruvananthapuram
24/02/23

Yours truly

Assistant Executive Engineer and
Implementing Officer,TMC

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europass

BIJU RAMU A R

Nationality: Indian **Date of birth:** 22/02/1989

Phone number: (+91) 8943677466 **Email address:** bijuramuar@gmail.com

Whatsapp Messenger: +918943677466

LinkedIn: https://www.linkedin.com/in/biju-ramu-a-r-aba60249/

Home: ARATTUPUZHA HOUSE ANTHIKAD P O, 680641 THRISSUR (India)

ABOUT ME

As an electrical engineer with expertise in power electronics, I would be responsible for designing, developing, and testing electronic devices and systems that control and convert electrical power. You would work on a wide range of projects, from small-scale consumer electronics to large-scale industrial systems.
Some of the tasks you might perform as an electrical engineer in power electronics include:

1. Designing power electronic circuits and systems using tools like simulation software, CAD, Psim, proteus and prototype testing.
2. Selecting and integrating components such as power semiconductor devices, capacitors, and inductors to achieve specific performance requirements.
3. Designing and testing power electronics converters, such as DC-DC converters, AC-DC converters, and DC-AC inverters.
4. Troubleshooting and debugging power electronic circuits and systems to ensure reliable and efficient operation.
5. Keeping up-to-date with new developments in power electronics technology and incorporating these advances into your designs.

WORK EXPERIENCE

Research engineerElectrical engineer

[06/01/2023 – Current]

City: THRISSUR

Country: India

1. Designing electrical systems: Electrical R&D engineers are responsible for designing electrical systems, including circuits, equipment, and other related components. They need to have a deep understanding of electrical theory, as well as the ability to use CAD software to create 2D and 3D designs.
2. Developing prototypes: Electrical R&D engineers work closely with other engineers and technicians to develop prototypes of new electrical equipment and systems. They use their designs to create functional prototypes that can be tested and refined.
3. Conducting testing: Once prototypes have been developed, electrical R&D engineers are responsible for conducting testing to ensure that the equipment or system meets all requirements and specifications. They may use a variety of testing methods, including simulations and experiments.
4. Analyzing data: Electrical R&D engineers need to be able to analyze data and draw conclusions from it. They may use statistical software or other tools to analyze test results and make recommendations for improvements.
5. Writing reports: Electrical R&D engineers must be able to communicate their findings and recommendations clearly and effectively. They may write reports detailing the results of their testing, including any issues or problems that were identified, as well as proposed solutions.
6. Collaborating with other engineers and stakeholders: Electrical R&D engineers work closely with other engineers, technicians, and stakeholders to ensure that the equipment or system meets all requirements and specifications. They must be able to collaborate effectively and communicate complex technical information to non-technical stakeholders.

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7. Staying up-to-date with industry trends: Electrical R&D engineers must stay up-to-date with the latest industry trends and advancements in electrical engineering. This may involve attending conferences, reading industry publications, and collaborating with other engineers in their field.

Electronics engineering technician

Centre for Development of Advanced Computing Trivandrum [21/12/2018 – 05/01/2023]

City: Trivandrum

Country: India

I worked as a part of a research team which worked in the field of solar inverter. Main activities are as follows

1. Testing and verification of PCBs and wirings of the unit.
2. Trail run of solar inverter lab level and onsite.
3. inspection of solar installations
4. involve in the teamwork of design of various electrical circuits in
5. the solar inverter

Engineering assistant

Sree chithra Tirunal institute of Medical Science [30/08/2016 – 30/11/2017]

City: Trivandrum

Country: India

I worked as a part of research team , worked in the field of biomedical implants

1. Involved in testing of various electronic circuits
2. Testing of various circuits
3. create reports

Electrical drafter

Al kaleej Modern Lights [01/04/2009 – 14/05/2010]

City: Doha

Country: Qatar

1. Responsible to attend meeting with the main Contractor and
2. Consultants.
3. Preparation of electrical drawing, cross checking various
4. revision of electrical drawings including industrial & domestic
5. using AutoCAD
6. Site inspection.

Electrical supervisor

Prime electrical contractors and engineering [01/04/2009 – 14/05/2010]

City: THRISSUR

Country: India

1. Supervising the electrical installation in the site.
2. Prepare the electrical drawings using Autocad.
3. Dealing with clients and attending technical discussion

EDUCATION AND TRAINING

Bachelor of Technology in Electrical and Electronics Engineering

Cochin University of Science And Technology [01/04/2013 – 01/04/2017]

Address: Pulinccunnu Alappuzha District, 688504 Alappuzha (India)

Website: cusat.ac.in

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Three-year Diploma in Electrical and Electronics Engineering

Sree Rama Govt. Polytechnic College, [01/04/2006 – 01/04/2009]

Address: Sree Rama Govt. Polytechnic College Thriprayar, 680567 THRISSUR (India)
Website: http://sreeramapoly.ac.in

LANGUAGE SKILLS

Mother tongue(s): **malayalam**

Other language(s):

English

LISTENING B2 **READING** B2 **WRITING** B1

SPOKEN PRODUCTION B2 **SPOKEN INTERACTION** B1

DIGITAL SKILLS

Microsoft Office / Autocad / Psim / Proteus / Matlab / Microsoft Word / Microsoft Excel

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Adarsh Chandra Mohan
adarshchandra98@gmail.com

Graduate Apprentice at Keltron Equipment Complex (12/09/2022 to 11 /09/2023)

- ✓ 1 year experience in Security Systems.
- ✓ Experience in Installation of Biometric Punching machines and its relevant firmwares.
- ✓ Experience in conducting site studies and marking the relevant device location points in accordance with the Clients requirements and providing estimate of the metric measurement of electrical and LAN cable requirement.
- ✓ Experience in activating smart cards to facilitate Biometric punching.
- ✓ Good experience in troubleshooting of Biometric punching machines, UPS (600 VA) and Ethernet cable.
- ✓ Well versed in crimping of Ethernet cable with RJ45 connector.
- ✓ Good knowledge in setting up electrical power box.
- ✓ Self-motivated with proven analytical, technical and communication skills.
- ✓ Strong team player, collaborates well with others to solve problems and actively incorporates input from various sources.
- ✓ Excellent attention to detail and strong communication skills.

Engineer Trainee at Red Labs (1/11/2023 to present)

- ✓ Responsible for servicing of Red Button Voice module which is a real time alert system.
- ✓ Designed a wiring system to effectively carry power from source to the Red Button system.
- ✓ Conducted calculation of Connected Loads to decide the type of power supply required .
- ✓ Testing of 4K Dahua IP camera's , Power Over Ethernet Switch (POE), Network Video Recorder (NVR), Ethernet Cables.
- ✓ Assigning of ip's to Individual cameras .

EDUCATION

Title of the Degree with Branch	College/University	Year of Passing
B Tech (Electrical and Electronics Engineering)	Mar Baselios College of Engineering & Technology, Thiruvananthapuram	2020
XII	Indian Community School (Senior), Kuwait	2016
X	Indian Community School (Senior), Kuwait	2014

TECHNICAL SKILLS

- Crimping LAN cable.
- Basic electrical works.

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- Basic knowledge in C, C++.
- Basic networking knowledge.
- Circuit Assembly on Breadboard .
- Electrical Wire Looping .
- CCTV hardware installation .

SAMPLE ASSIGNMENTS

Project Title: Aadhaar Enabled Biometric Attendance System (AEBAS) Installation and Software configuration

Client: Department of Electrical Inspectorate
Company: Keltron Equipment Complex
Description: This project involved installation of AEBAS and it's related firmwares

- ✓ Conducted site study and located device points where the devices are to be mounted .
- ✓ Upgraded firmwares - AEBAS firmware and Vendor firmware to install AEBAS application and fingerprint sensor respectively to facilitate smooth operation of punching machines .
- ✓ On boarded the Employees on to the attendance site , and generated Attendance id to facilitate punching.
- ✓ Generated Activation code to activate the device and to add the device into the attendance site .
- ✓ Provided training to the concerned authorities on the usage of attendance site to add designations , leave records , On Duty records and generation of attendance records .

Project Title: Aadhaar Enabled Biometric Attendance System (AEBAS) Type 0 Installation and Software configuration.

Client : State Water Transport Department
Company: Keltron Equipment Complex .
Description: This project involved installation of AEBAS and it's related firmwares.

- ✓ Requested the Client to provide Windows 10 PC or higher to install the firmwares into the system .
- ✓ Type 0 AEBAS being a USB type machine is inserted into the CPU .
- ✓ Firmwares are installed into the system .
- ✓ Biometric Attendance System (BAS) application is installed into the system .
- ✓ Activation code is generated from the attendance site and the code is entered on to the BAS application to activate the device and register it into the attendance site .
- ✓ On boarded the Employees on to the attendance site , and generated Attendance id to facilitate punching.
- ✓ Provided training to the concerned authorities on the usage of attendance site to add designations , leave records , On Duty records and generation of attendance records .

Project Title: Aadhaar Enabled Biometric Attendance System (AEBAS) Servicing .

Client: Kerala Toddy Workers Welfare Fund Board

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Company: Keltron Equipment Complex

Description: The Client had reported a complaint on the device being not powered .

- ✓ Reported to the site and noted that the adapter extension cable has been damaged and the damaged cable has been replaced with a new DC cable . Power has been then restored .

PERSONAL INFORMATION

Permanent Address : House no: 47 , Vrindavan Gardens , Pattom , Trivandrum , 695004

Email : adarshchandra98@gmail.com

Phone : 7034685247

1. Details of Modular BESS Installation done by the bidder/OEM within the Country. Photos and video to be included along with copy of certification as mentioned in the tender.

Name of the customer:	Plus Tech
Place:	Pune
Size and brief description of project:	a) Inverter - 100 kW - 1 No Battery – 360V, 400Ah
	b) Inverter - 60 kW -1 No Battery – 360V, 400Ah
	c) Inverter – 7.5 kW -1No Battery – 240V, 100Ah

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Name of the customer:	CDAC
Place :	Thiruvananthapuram
Size and brief description of project:	48V 500Ah battery pack for ESS – 3 nos

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Name of the customer:	Health Department of Kerala
Place:	Thiruvananthapuram
Size and brief description of project:	UPS - 100 kVA -1 No Battery – 240V, 200Ah

2. Details of Service Engineers who have undertaken training from the OEM

Resume & Training Certificate attached herewith.

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3. Description of proposed system showcasing the BESS use cases as per tender.

Battery energy storage system (BESS)

Energy can be stored in batteries for when it is needed. The battery energy storage system (BESS) is an advanced technological solution that allows energy storage in multiple ways for later use. Given the possibility that an energy supply can experience fluctuations due to weather, blackouts, or for geopolitical reasons, battery systems are vital for utilities, businesses and homes to achieve a continual power flow. A battery energy storage system is no longer an afterthought or an add-on, but rather an important pillar of any energy strategy, especially any energy strategy that makes use of renewable solar power. The sun is a wonderful energy engine, but it has one, significant limit: no sunshine, no power production. By combining battery energy storage with PV solutions, the batteries can mitigate the intermittent nature of renewable power by storing solar power produced during the day for night-time use, thus guaranteeing a steady supply of power at all times.

BESS: main applications

Battery storage can be used in many ways that go beyond the simple emergency backup in the event of an energy shortage or blackout. Applications differ depending on whether the storage is being used for a business or a home.

- Peak shaving, or the ability to manage energy demand to avoid a sudden short term spike in consumption
- Load shifting, which allows businesses to shift their energy consumption from one time period to another, by tapping the battery when energy costs more
- Flexibility, whereby customers can reduce their site's grid demand at critical times – without changing their electricity consumption. Energy storage therefore makes it a lot easier to participate in a Demand Response program and save on energy costs
- Micro grids rely on batteries as a key component, because these grids need energy storage to enable them to disconnect from the main electricity grid when needed
- Integration with renewable energy sources, since batteries guarantee a smooth and continuous electricity flow in the absence of the availability of power from renewable.

Advantages of battery energy storage system

- Environmental gains: installing a battery storage system in a home or businesses powered by renewable energy reduces pollution, thereby contributing to the energy transition and combating the effects of global warming.
- Lower energy costs: storing low-cost energy and consuming it during peak periods when electricity rates are higher allows a user to shift consumption and avoid higher charges, saving money. The savings are magnified when combined with solar power, which is free.
- Less dependent on the grid: battery storage systems guarantee a continuous energy supply, even at times when the energy grid is unstable due to peaks in demand or extreme weather.

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- “Always on” supply: the sun is not always “on.” A battery storage system works round the clock, and therefore compensates for any fluctuations in solar energy supply by storing any excess power in the system.
- Resilience: a battery storage system provides emergency backup in the event of a power outage, guaranteeing business continuity.

Technical Specification of proposed system

SYSTEM PARAMETER	
Nominal Voltage (V)	460
Nominal Capacity (Ah)	100
Nominal Energy (kWh)	150
Charge/Discharge rate	0.5/0.5
composition	1P240
SOCKET specification	1P489
FIRE FIGHTING system	Aerosol + perflux
Dimension (W*D*H)	1414*1450
Weight (kg)	2700
Allowable Operating Temperature Range	-20 to 50
Operating humidity range	0 to 95
IP rating	IP54
Cooling Code	liquid
Communication	RS485/ETH
Communication Protocol	IEC61850/Modbus RTU/Modbus TCP
Maximum allowable parallel communication	8 sets
PCS PLACEMENT	Built in within the cabinet

AC PARAMETERS	
Nominal Power (kW)	100
Max Output Power (Kw) [Grid Connected}	110
Rated Grid Voltage (v)	400
Allowable Grid Voltage (%)	15 to 1
Max Output Power (Kw) [OFF Grid]	100

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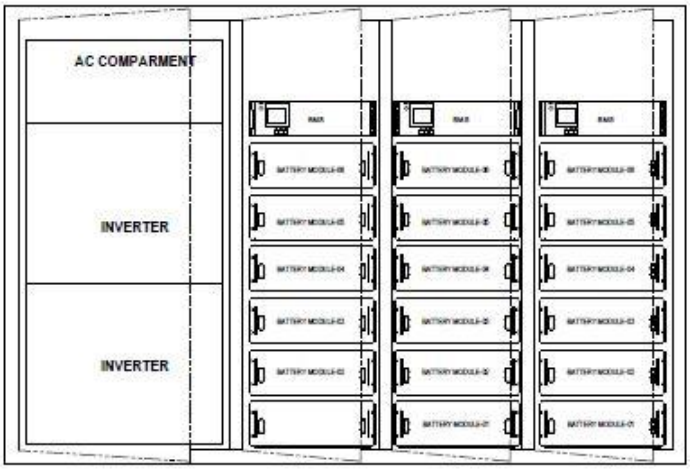
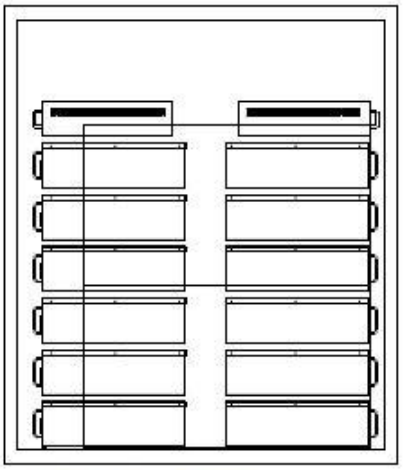
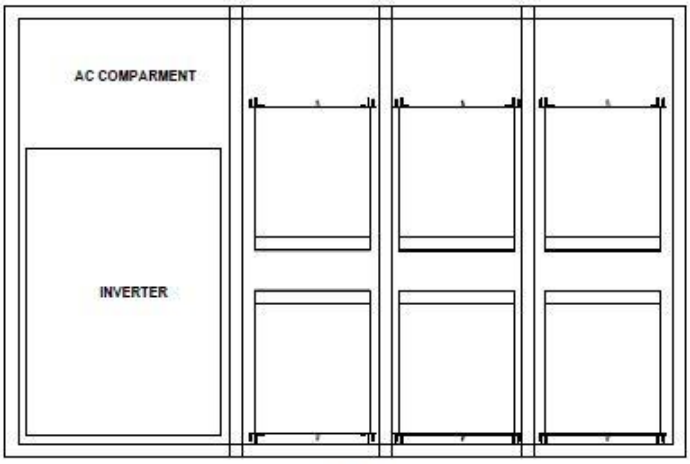
4. The detailed drawing of the Modular system along with ventilation system





FRONT VIEW SIDE VIEW



TOP VIEW

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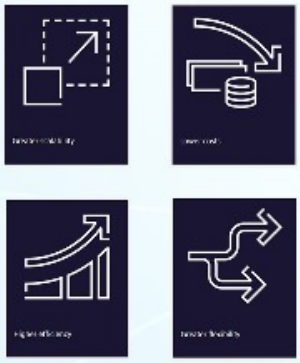
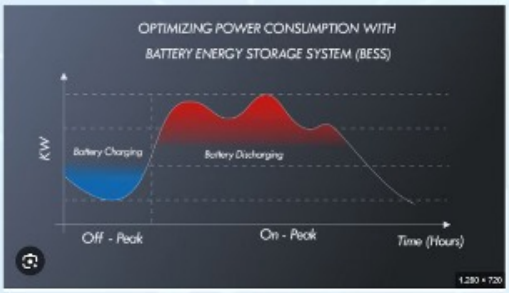
Hykon®
Powering the Nation

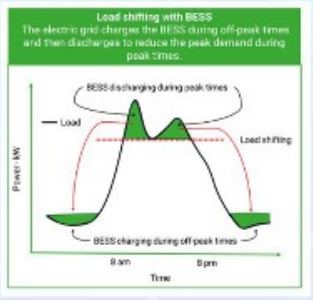
Main Applications & Advantages of battery energy storage system

- Peak shaving
  a cost-saving technique used by businesses to reduce electricity expenses by minimizing peak electricity demand, thereby lowering demand charges.
- Load shifting
  Which allows businesses to shift their energy consumption from one time period to another.
- Flexibility, whereby customers can reduce their site's grid demand at critical times – without changing their electricity consumption.
- Micro grids rely on batteries as a key component, because these grids need energy storage to enable them to disconnect from the main electricity grid when needed.
- Integration with renewable energy sources, since batteries guarantee a smooth and continuous electricity flow in the absence of the availability of power from renewable.
- Environmental gains: installing a battery storage system in a home or businesses powered by renewable energy reduces pollution.
- Lower energy costs: storing low-cost energy and consuming it during peak periods when electricity rates are higher allows a user to shift consumption and avoid higher charges.
- Less dependent on the grid: battery storage systems guarantee a continuous energy supply, even at times when the energy grid is unstable due to peaks in demand or extreme weather.
- Resilience: a battery storage system provides emergency backup in the event of a power outage, guaranteeing business continuity.

ENVIRONMENTAL BENEFITS







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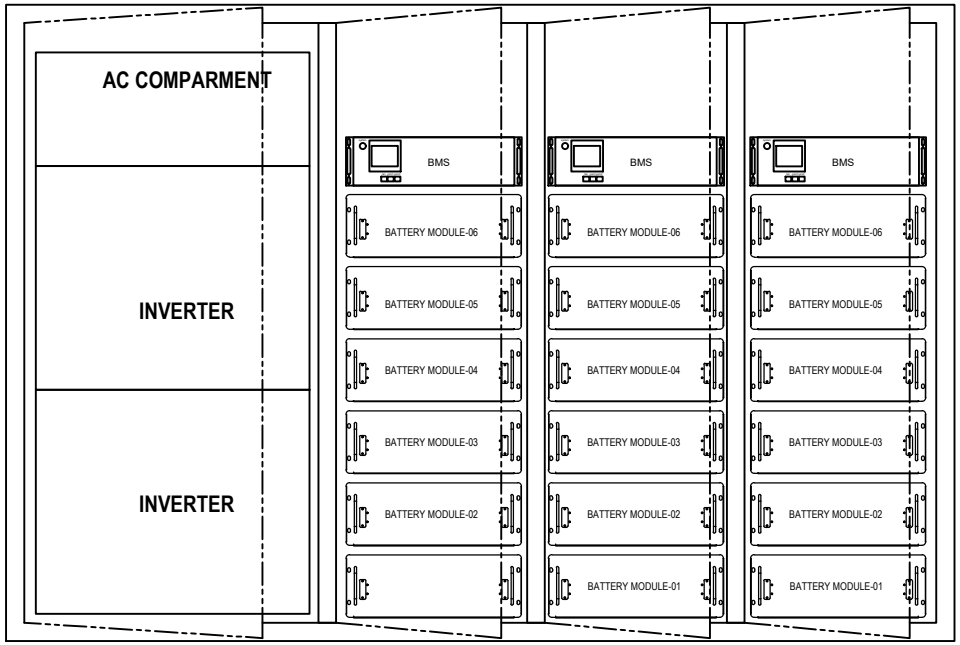
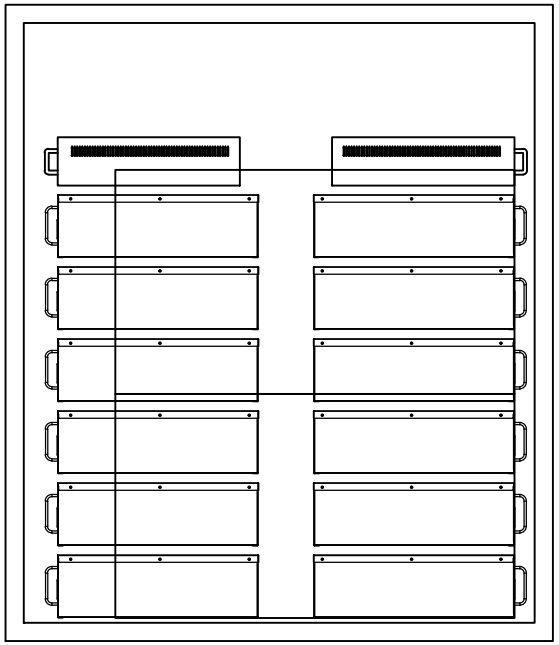
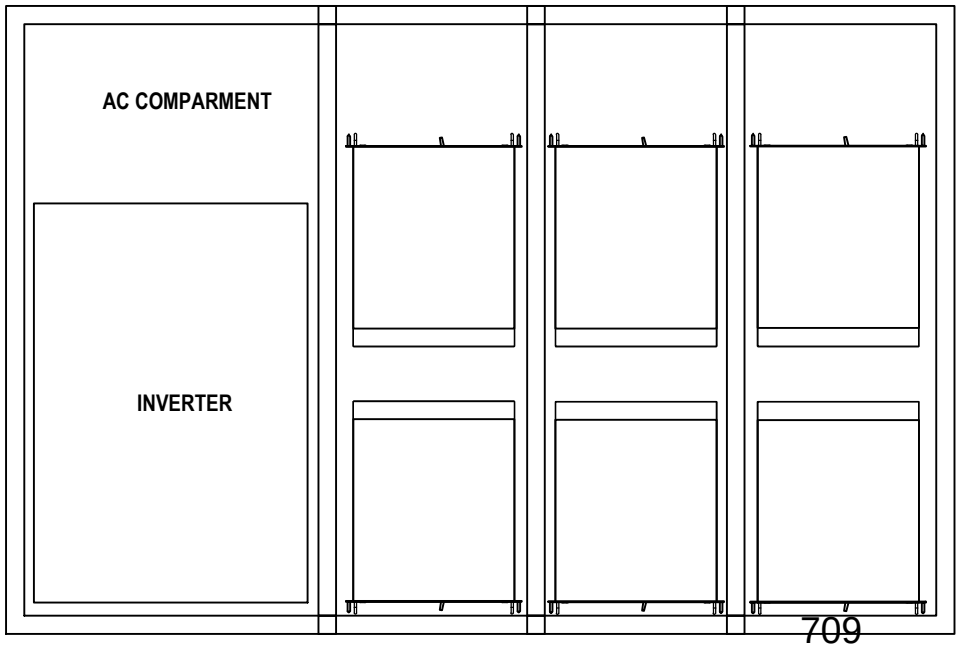




FRONT VIEW **SIDE VIEW**



TOP VIEW

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Powering the Nation

HIRD/ 022 /23-24

10/03/23

CERTIFICATE

This certificate is awarded to Mr. **ADARSH CHANDRA MOHAN** on successful completion of Internal Training of Topic "**Battery Energy Storage System upto 1MWH**" on 10/03/23. The training was conducted by **Mr. AJISH T G**

Congratulations on your dedication to your role. Your hard work and dedication are instrumental in shaping a successful career. "Keep up the excellent work!!"

For Hykon India Limited

DGM R&D

AJISH T G

HYKON INDIA LTD.
HYKON HOUSE
THRISSUR - 1
PH: 0487-2444183
IKKANDA WARRIER ROAD

www.hykonindia.com

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Powering the Nation

HIRD/ 021 /23-24

10/03/23

CERTIFICATE

This certificate is awarded to Mr. **BIJU RAMU R** on successful completion of Internal Training of Topic "**Battery Energy Storage System upto 1MWH**" on 10/03/23. The training was conducted by **Mr. AJISH T G**

Congratulations on your dedication to your role. Your hard work and dedication are instrumental in shaping a successful career. "Keep up the excellent work!!"

For Hykon India Limited

DGM R&D

AJISH T G

HYKON INDIA LTD. HYKON HOUSE THRISSUR - 1 PH: 0487-2444183 IKKANDA WARRIER ROAD

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Adarsh Chandra Mohan
adarshchandra98@gmail.com

Graduate Apprentice at Keltron Equipment Complex (12/09/2022 to 11 /09/2023)

- ✓ 1 year experience in Security Systems.
- ✓ Experience in Installation of Biometric Punching machines and its relevant firmwares.
- ✓ Experience in conducting site studies and marking the relevant device location points in accordance with the Clients requirements and providing estimate of the metric measurement of electrical and LAN cable requirement.
- ✓ Experience in activating smart cards to facilitate Biometric punching.
- ✓ Good experience in troubleshooting of Biometric punching machines, UPS (600 VA) and Ethernet cable.
- ✓ Well versed in crimping of Ethernet cable with RJ45 connector.
- ✓ Good knowledge in setting up electrical power box.
- ✓ Self-motivated with proven analytical, technical and communication skills.
- ✓ Strong team player, collaborates well with others to solve problems and actively incorporates input from various sources.
- ✓ Excellent attention to detail and strong communication skills.

Engineer Trainee at Red Labs (1/11/2023 to present)

- ✓ Responsible for servicing of Red Button Voice module which is a real time alert system.
- ✓ Designed a wiring system to effectively carry power from source to the Red Button system.
- ✓ Conducted calculation of Connected Loads to decide the type of power supply required .
- ✓ Testing of 4K Dahua IP camera's , Power Over Ethernet Switch (POE), Network Video Recorder (NVR), Ethernet Cables.
- ✓ Assigning of ip's to Individual cameras .

EDUCATION

Title of the Degree with Branch	College/University	Year of Passing
B Tech (Electrical and Electronics Engineering)	Mar Baselios College of Engineering & Technology, Thiruvananthapuram	2020
XII	Indian Community School (Senior), Kuwait	2016
X	Indian Community School (Senior), Kuwait	2014

TECHNICAL SKILLS

- Crimping LAN cable.
- Basic electrical works.

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- Basic knowledge in C, C++.
- Basic networking knowledge.
- Circuit Assembly on Breadboard .
- Electrical Wire Looping .
- CCTV hardware installation .

SAMPLE ASSIGNMENTS

Project Title: Aadhaar Enabled Biometric Attendance System (AEBAS) Installation and Software configuration

Client: Department of Electrical Inspectorate
Company: Keltron Equipment Complex
Description: This project involved installation of AEBAS and it's related firmwares

- ✓ Conducted site study and located device points where the devices are to be mounted .
- ✓ Upgraded firmwares - AEBAS firmware and Vendor firmware to install AEBAS application and fingerprint sensor respectively to facilitate smooth operation of punching machines .
- ✓ On boarded the Employees on to the attendance site , and generated Attendance id to facilitate punching.
- ✓ Generated Activation code to activate the device and to add the device into the attendance site .
- ✓ Provided training to the concerned authorities on the usage of attendance site to add designations , leave records , On Duty records and generation of attendance records .

Project Title: Aadhaar Enabled Biometric Attendance System (AEBAS) Type 0 Installation and Software configuration.

Client : State Water Transport Department
Company: Keltron Equipment Complex .
Description: This project involved installation of AEBAS and it's related firmwares.

- ✓ Requested the Client to provide Windows 10 PC or higher to install the firmwares into the system .
- ✓ Type 0 AEBAS being a USB type machine is inserted into the CPU .
- ✓ Firmwares are installed into the system .
- ✓ Biometric Attendance System (BAS) application is installed into the system .
- ✓ Activation code is generated from the attendance site and the code is entered on to the BAS application to activate the device and register it into the attendance site .
- ✓ On boarded the Employees on to the attendance site , and generated Attendance id to facilitate punching.
- ✓ Provided training to the concerned authorities on the usage of attendance site to add designations , leave records , On Duty records and generation of attendance records .

Project Title: Aadhaar Enabled Biometric Attendance System (AEBAS) Servicing .

Client: Kerala Toddy Workers Welfare Fund Board

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Company: Keltron Equipment Complex

Description: The Client had reported a complaint on the device being not powered .

- ✓ Reported to the site and noted that the adapter extension cable has been damaged and the damaged cable has been replaced with a new DC cable . Power has been then restored .

PERSONAL INFORMATION

Permanent Address : House no: 47 , Vrindavan Gardens , Pattom , Trivandrum , 695004

Email : adarshchandra98@gmail.com

Phone : 7034685247

europass

BIJU RAMU A R

Nationality: Indian **Date of birth:** 22/02/1989

Phone number: (+91) 8943677466 **Email address:** bijuramuar@gmail.com

Whatsapp Messenger: +918943677466

LinkedIn: https://www.linkedin.com/in/biju-ramu-a-r-aba60249/

Home: ARATTUPUZHA HOUSE ANTHIKAD P O, 680641 THRISSUR (India)

ABOUT ME

As an electrical engineer with expertise in power electronics, I would be responsible for designing, developing, and testing electronic devices and systems that control and convert electrical power. You would work on a wide range of projects, from small-scale consumer electronics to large-scale industrial systems.
Some of the tasks you might perform as an electrical engineer in power electronics include:

1. Designing power electronic circuits and systems using tools like simulation software, CAD, Psim, proteus and prototype testing.
2. Selecting and integrating components such as power semiconductor devices, capacitors, and inductors to achieve specific performance requirements.
3. Designing and testing power electronics converters, such as DC-DC converters, AC-DC converters, and DC-AC inverters.
4. Troubleshooting and debugging power electronic circuits and systems to ensure reliable and efficient operation.
5. Keeping up-to-date with new developments in power electronics technology and incorporating these advances into your designs.

WORK EXPERIENCE

Research engineerElectrical engineer

[06/01/2023 – Current]

City: THRISSUR

Country: India

1. Designing electrical systems: Electrical R&D engineers are responsible for designing electrical systems, including circuits, equipment, and other related components. They need to have a deep understanding of electrical theory, as well as the ability to use CAD software to create 2D and 3D designs.
2. Developing prototypes: Electrical R&D engineers work closely with other engineers and technicians to develop prototypes of new electrical equipment and systems. They use their designs to create functional prototypes that can be tested and refined.
3. Conducting testing: Once prototypes have been developed, electrical R&D engineers are responsible for conducting testing to ensure that the equipment or system meets all requirements and specifications. They may use a variety of testing methods, including simulations and experiments.
4. Analyzing data: Electrical R&D engineers need to be able to analyze data and draw conclusions from it. They may use statistical software or other tools to analyze test results and make recommendations for improvements.
5. Writing reports: Electrical R&D engineers must be able to communicate their findings and recommendations clearly and effectively. They may write reports detailing the results of their testing, including any issues or problems that were identified, as well as proposed solutions.
6. Collaborating with other engineers and stakeholders: Electrical R&D engineers work closely with other engineers, technicians, and stakeholders to ensure that the equipment or system meets all requirements and specifications. They must be able to collaborate effectively and communicate complex technical information to non-technical stakeholders.

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7. Staying up-to-date with industry trends: Electrical R&D engineers must stay up-to-date with the latest industry trends and advancements in electrical engineering. This may involve attending conferences, reading industry publications, and collaborating with other engineers in their field.

Electronics engineering technician

Centre for Development of Advanced Computing Trivandrum [21/12/2018 – 05/01/2023]

City: Trivandrum

Country: India

I worked as a part of a research team which worked in the field of solar inverter. Main activities are as follows

1. Testing and verification of PCBs and wirings of the unit.
2. Trail run of solar inverter lab level and onsite.
3. inspection of solar installations
4. involve in the teamwork of design of various electrical circuits in
5. the solar inverter

Engineering assistant

Sree chithra Tirunal institute of Medical Science [30/08/2016 – 30/11/2017]

City: Trivandrum

Country: India

I worked as a part of research team , worked in the field of biomedical implants

1. Involved in testing of various electronic circuits
2. Testing of various circuits
3. create reports

Electrical drafter

Al kaleej Modern Lights [01/04/2009 – 14/05/2010]

City: Doha

Country: Qatar

1. Responsible to attend meeting with the main Contractor and
2. Consultants.
3. Preparation of electrical drawing, cross checking various
4. revision of electrical drawings including industrial & domestic
5. using AutoCAD
6. Site inspection.

Electrical supervisor

Prime electrical contractors and engineering [01/04/2009 – 14/05/2010]

City: THRISSUR

Country: India

1. Supervising the electrical installation in the site.
2. Prepare the electrical drawings using Autocad.
3. Dealing with clients and attending technical discussion

EDUCATION AND TRAINING

Bachelor of Technology in Electrical and Electronics Engineering

Cochin University of Science And Technology [01/04/2013 – 01/04/2017]

Address: Pulinccunnu Alappuzha District, 688504 Alappuzha (India)

Website: cusat.ac.in

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Three-year Diploma in Electrical and Electronics Engineering

Sree Rama Govt. Polytechnic College, [01/04/2006 – 01/04/2009]

Address: Sree Rama Govt. Polytechnic College Thriprayar, 680567 THRISSUR (India)
Website: http://sreeramapoly.ac.in

LANGUAGE SKILLS

Mother tongue(s): **malayalam**

Other language(s):

English

LISTENING B2 **READING** B2 **WRITING** B1

SPOKEN PRODUCTION B2 **SPOKEN INTERACTION** B1

DIGITAL SKILLS

Microsoft Office / Autocad / Psim / Proteus / Matlab / Microsoft Word / Microsoft Excel

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THE
QUALITY CHOICE
FOR ALL
YOUR POWER NEEDS

Systems & Services Pvt. Ltd.

COVERING LETTER

Sir,

I/We hereby e-tender to render the services under annexed terms and conditions of contract, the whole of the articles referred to and described in the attached specification and quantity decided by the Agency for New & Renewable Energy Research and Technology (ANERT), at the rates quoted against each item.

I am/We are remitting herewith the required amount of Rs. NIL towards the registration Fee by electronic payment vide transaction No None.

Thanks, and Regards
For, POM Systems & Services Pvt. Ltd.,
Balasankar Menon KG (General Manager)
Email: gm@pompower.in

POM SYSTESMS & SERVICES PVT. LTD. BENGALURU

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THE
QUALITY CHOICE
FOR ALL
YOUR POWER NEEDS

Systems & Services Pvt. Ltd.

Tender ID: 2024_ANERT_664557_1

ANNEXURE A – SUMMARY OF BID QUALIFICATION REQUIREMENTS

1.	Name of the applicant and address with email, phone etc.	**POM Systems and Services Private Limited** **Brand Name: POM POWER** No 75, 6th Main, 3rd Phase, Peenya Industrial Area, Bangalore : 560058 Email : gm@pompower.in Phone : 7907241109
2.	Main area of Business	Online UPS, Inverters, Solar Energy systems, BESS, GRES, etc.,
3.	Registered Office in Kerala	TC 20/1361(1), G Floor, Amal Plaza, Pathirappally Ward, Opposite Civil Station Compound, Kudapanakunnu PO, Thiruvananthapuram : 695043
4.	Details of Power of Attorney	Please find Enclosed
5.	Proof for Experience	Please find Enclosed

Documentary evidence for the bid qualification requirements is submitted along with this document and the details furnished above are true and correct.

Date: 05.03.2024

Thanks, and Regards
For, POM Systems & Services Pvt. Ltd.,
Balasankar Menon KG (General Manager)
Email: gm@pompower.in

POM SYSTEMS & SERVICES PVT. LTD. BENGALURU

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കേരളം केरल KERALA

DA 595812

ANNEXURE B – AGREEMENT

Subject: "Expression of Interest (EoI) for the Selection of Agency for Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram",

With reference to the RFP Document for the captioned Project, I/we, I **Balasankar Menon KG, General Manager** authorised signatory of M/s **POM Systems & Services Pvt. Ltd.,** (Brand Name: **POM POWER**) Having registered office at No-75, 6th Main 3rd Phase, Peenya Industrial Area, Karnataka, Bengaluru-560058. having examined all relevant documents and understood their contents hereby undertake that the Proposal is unconditional and unqualified.

1. I/We confirm that I/we have examined the terms and conditions published in theEOI and accordingly submitting the Application. The proposal is unconditional and unqualified.
2. All information provided in the Proposal is true and correct and all documents accompanying such Proposal are true copies of their respective originals.

No. 60612
1/3/24

KILIYALLOOR MANI
THEAVAM VENDOR
Institute of Commerce Bldg.,

PRINCIPAL SUB TREASURY

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3. This statement is made for the express purpose of appointment Providing PMU services in terms of providing Consultancy and Technical Services
4. I/We shall make available to ANERT any additional information it may deem necessary or require for supplementing or authenticating the Proposal.
5. I/We acknowledge the right of the ANERT to reject our application without assigning any reason or otherwise and hereby waive our right to challenge the same on any account whatsoever.
6. I/We certify that in the last three years, I/we have neither failed to perform on any contract, as evidenced by imposition of a penalty by an arbitral or judicial Court or a judicial pronouncement or arbitration award against us, nor have beenexpelled from any project or contract nor have had any contract terminated for breach on our part.

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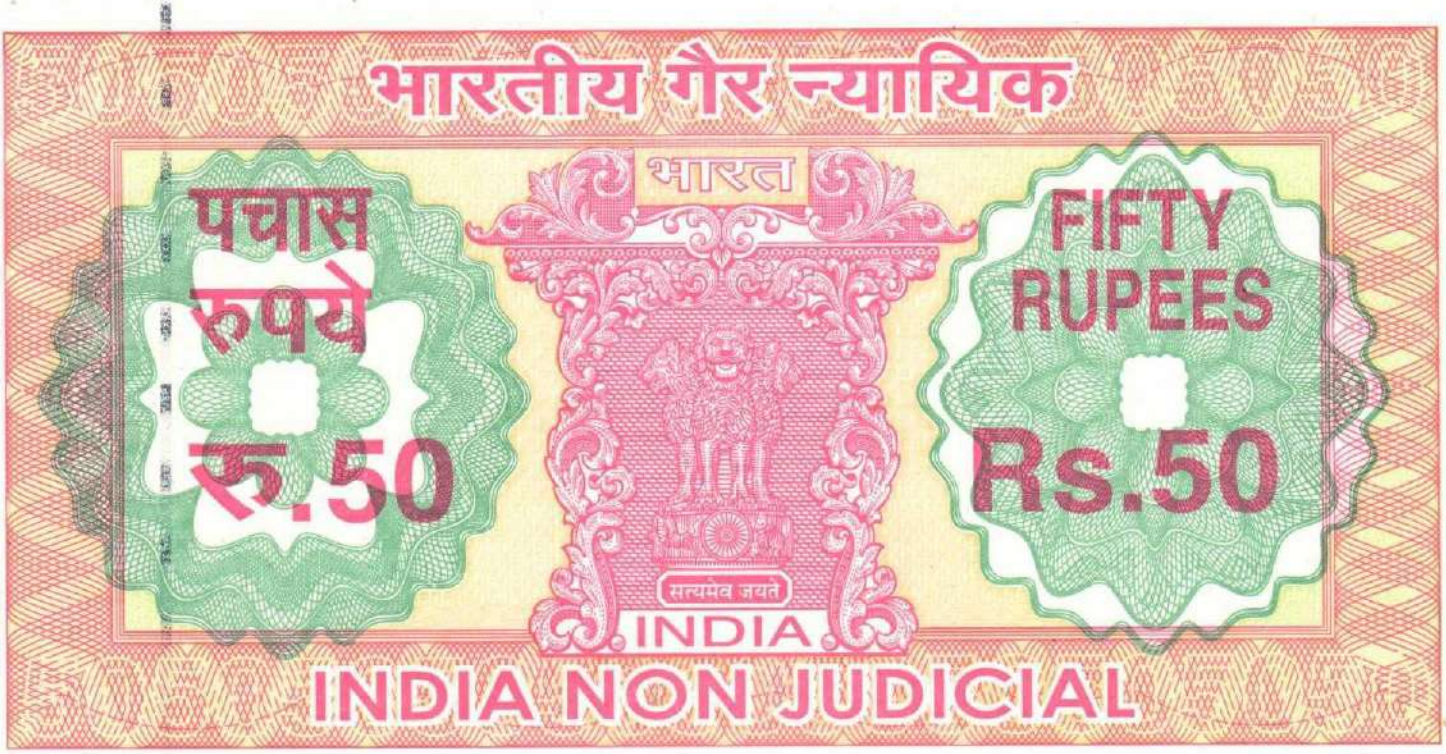

കേരളം केरल KERALA

DA 595813

1. I/We declare that I/We have examined and have no reservations to the EOI Documents, including any Addendum thereto, issued by the ANERT;
2. I/We do not have any conflict of interest in accordance with provisions of theEOI Document;
3. I/We have not directly or indirectly or through an agent engaged or indulgedin any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice, as defined in the EOI document, in respect ofany tender or request for proposal issued by or any agreement entered into with the ANERT or any other public sector enterprise or any Government, Central or State; and

No. 60613
1/3/24

KILIYALLOOR MANI
PALAYAM VENDOR

PRINCIPAL SUB TREASURY

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4. I/We hereby certify that we have taken steps to ensure that in conformity with the provisions of this EOI, no person acting for us or on our behalf will engage in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice.

8. I / We understand that you may cancel the Selection Process at any time and thatANERT is neither bound to accept any Proposal that you may receive nor to select the Consultant, without incurring any liability to the Applicants in accordance with the EOI document.

9. I / We certify that in regard to matters other than security and integrity of the country, we or any of our Associates have not been convicted by a Court of Law orindicted or adverse orders passed by a regulatory authority which would cast a doubt on our ability to undertake the Consultancy for the Project or which relatesto a grave offence that outrages the moral sense of the community.

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भारतीय गैर न्यायिक

भारत

पचास रुपये रु.50

FIFTY RUPEES Rs.50

सत्यमेव जयते

INDIA

INDIA NON JUDICIAL

കേരളം केरल KERALA

DA 595814

10. I / We further certify that in regard to matters relating to security and integrity ofthe country, we have not been charge-sheeted by any agency of the Government or convicted by a Court of Law for any offence committed by us or by any of our Associates.

11. I / We hereby irrevocably waive any right or remedy which we may have at any stage at law or howsoever otherwise arising to challenge or question any decision taken by the ANERT (and/ or the Government of Kerala / India) in connection with the selection of Consultant or in connection with the Selection Process itself in respect of the above mentioned Project.

No. 60614

1/8/24

KILIYALLOOR MANI
PALAYAM VENDOR

PRINCIPAL SUB TREASURY

POM SYSTEMS AND SERVICES

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12. I / We agree and understand that the proposal is subject to the provisions of the EOI document. In no case, shall I/we have any claim or right of whatsoever natureif the Consultancy for the Project is not awarded to me/us or our proposal is notopened or rejected.
13. I / We agree to keep this offer valid for (120) days from the date of opening of technical bid.
14. I/We have studied EOI and all other documents carefully. We understand that weshall have no claim, right or title arising out of any documents or information provided to us by the ANERT or in respect of any matter arising out of orconcerning or relating to the Selection Process including the award of Consultancy.
15. The Technical Proposals and Financial Proposals are being submitted in separateCovers available in the etenders portal.

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കേരളം केरल KERALA

DA 595815

16. I/We agree and undertake to abide by all the terms and conditions of the EOI Document. In witness thereof, I/we submit this Proposal under and in accordancewith the terms of the EOI Document.

Signed by Sri .....

(Date) .....

in the presence of witnesses

1.

2.

Signed by Sri .....

(Date) .....

in the presence of witnesses

1.

2.

No: 60615

KILIYALLOOR MANI
PALAYAM VENDOR

PRINCIPAL SUB TREASURY
Date

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INDIA NON JUDICIAL

Government of Karnataka

e-Stamp

Certificate No.	:	**IN-KA47754448271552W**
Certificate Issued Date	:	04-Mar-2024 01:22 PM
Account Reference	:	NONACC (FI)/ kacrsfl08/ GANDHINAGAR/ KA-GN
Unique Doc. Reference	:	SUBIN-KAKACRSFL0857447953383209W
Purchased by	:	POM SYSTEMS AND SERVICES PVT LTD
Description of Document	:	Article 41(h) Power of Attorney - in any other case
Property Description	:	POWER OF ATTORNEY
Consideration Price (Rs.)	:	0 (Zero)
First Party	:	POM SYSTEMS AND SERVICES PVT LTD
Second Party	:	ANERT
Stamp Duty Paid By	:	POM SYSTEMS AND SERVICES PVT LTD
Stamp Duty Amount(Rs.)	:	500 (Five Hundred only)

Authorised Signatory
Karnataka State Registration & Stamp Department
Officials Multipurpose Co-Operative Society Ltd
Gandhinagar Branch

NOTARY M. RAJENDRA B.A.,LL.B., Reg. No. 10154 BANGALORE-GOVT. OF INDIA

Please write or type below this line

ANNEXURE C – POWER OF ATTORNEY

Know all men by these presents, we, M/s **POM Systems & Services Pvt. Ltd.**, having registered office at **No. 75, 6th Main, 3rd Phase, Peenya Industrial Area, Bengaluru-560058**. do hereby constitute, nominate, appoint and authorise Mr. KG Balan sankar Menon (Employee) and presently residing at 4D, Souparnika Regal, Kallayam, Tiruvananthapuram 695043. who is presently employed with us and holding the position of General Manager as our true and lawful

POM SYSTEMS & SERVICES PVT. LTD. BENGALURU

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Statutory Alert:

attorney (Hereinafter referred to as the —Authorized Representative) to do in our name and on our behalf, all such acts, deeds and things as are necessary or required in connection with or incidental to submission of our Proposal for and selection as the Consultant for

_____

including but not limited to signing and submission of all applications, proposals and other documents and writings, participating in pre-bid and other conferences and providing information/ responses to the ANERT, representing us in all matters before the ANERT, signing and execution of all contracts and undertakings consequent to acceptance of our proposal and generally dealing with the Authority in all matters in connection with or relating to or arising out of our Proposal for the said Project and/or upon award thereof to us till the entering into of the Agreement with the ANERT.

AND, we do hereby agree to ratify and confirm all acts, deeds and things lawfully done or caused to be done by our said Authorized Representative pursuant to and in exercise of the powers conferred by this Power of Attorney and that all acts, deeds and things done by our said Authorized Representative in exercise of the powers hereby conferred shall and shall always be deemed to have been done by us.

IN WITNESS WHEREOF WE, POM Systems & Services Pvt. Ltd., THE ABOVE – NAMED Mr. KG Balashankar Menon AUTHORISED REPRESENTATIVE HAVE EXECUTED THIS POWER OF ATTORNEY ON THIS D A Y 0 4 M A R C H OF 2024

POM SYSTEMS & SERVICES PVT. LTD. BENGALURU

NOTARY M. RAJENDRA M.A.,LL.B., Reg. No. 10154 BANGALORE-GOVT. OF INDIA

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For
POM Systems & Services Pvt. Ltd.,
Name: I Bhima Rao
Designation: Managing Director

POM SYSTESMS & SERVICES PVT. LTD. * BENGALURU *

Witnesses:

1. (Vinod Kumar. N - Employee. POM System & Services Pvt. Ltd.,)

2. (M.v. RAMU - Employee POM Systems & Services Pvt Ltd.)

Name: K G Balasankar Menon
Designation: General Manager

NOTARY
M. RAJENDRA
M.A.,LL.B.,
Reg. No. 10154
BANGALORE-GOVT. OF INDIA

ATTESTED BY ME
M. RAJENDRA, M.A.,LL.B
ADVOCATE & NOTARY PUBLIC
GOVT. OF INDIA
#728, 3rd Block, 14th Cross, HMT Layout
Nagasandra (P) Bangalore - 560 073

04 MAR 2024

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प्रारूप० आई० आर०

Form I. R.

निगमन का प्रमाण-पत्र

CERTIFICATE OF INCORPORATION

ता०.....का से०.....

No. 08/..27199.....of 2000.....

मैं एतद्द्वारा प्रमाणित करता हूँ कि आज.....

.....

.....

कम्पनी अधिनियम (1956 का 1) के अधीन निगमित की गई है और यह कम्पनी परिसीमित है ।

I hereby certify that POM SYSTEMS & SERVICES PRIVATE LIMITED XXX XXX XXX XXX XXX

is this day incorporated under the Companies Act, 1956 (No. 1 of 1956) and that the Company is Limited.

मेरे हस्ताक्षर से आज ता०.....को दिया गया ।

Given under my hand at BANGALORE this FIFTH day of JUNE Two Thousand

Dt. 5.6.2000

5.6.2000

(B.M. ANAND)
कम्पनियों का रजिस्ट्रार
कर्नाटक, बेंगलूर
Registrar of Companies
KARNATAKA, BANGALORE

5-6-00

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(Amended)

सत्यमेव जयते

Government of India

Form GST REG-06

[See Rule 10(1)]

Registration Certificate

Registration Number :29AACCP0728K1Z9

1.	Legal Name	POM SYSTEMS & SERVICES PRIVATE LIMITED			
2.	Trade Name, if any	POM SYSTEMS AND SERVICES PVT LTD			
3.	Constitution of Business	Private Limited Company			
4.	Address of Principal Place of Business	No.75, POM SYSTEMS AND SERVICES PVT LTD, 6th Main 3rd Phase, Peenya Industrial Area, Bengaluru (Bangalore) Urban, Karnataka,			
5.	Date of Liability	01/07/2017			
6.	Date of Validity	From	20/09/2017	To	NA
7.	Type of Registration	Regular			
8.	Particulars of Approving Authority				

Signature

Name	
Designation	
Office	
Date of issue of Certificate	14/06/2018

Note: The registration certificate is required to be prominently displayed at all places of Business/Office(s) in the State.

This is a system generated digitally signed Registration Certificate issued based on the deemed approval of application on

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आयकर विभाग
INCOME TAX DEPARTMENT

भारत सरकार
GOVT. OF INDIA

स्थायी लेखा संख्या कार्ड
Permanent Account Number Card

AACCP0728K

नाम / Name
POM SYSTEMS & SERVICES PRIVATE LIMITED

निगमन/गठन की तारीख
Date of Incorporation / Formation
05/06/2000

31122017

732

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THE
QUALITY CHOICE
FOR ALL
YOUR POWER NEEDS

Systems & Services Pvt. Ltd.

ANNEXURE D – DECLARATION BY THE BIDDER

e-EoI Notification No: **ANERT-TECH/41/2024-PE1(RTS)** dtd 27.2.2024 for Expression of Interest (EoI) for the Selection of Agency for Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram

To
The CEO
ANERT

We, the undersigned, declare that:

1. We have examined and have no reservations to the Bidding Document, including Addenda No. (if any)
2. We offer to supply in conformity with the Bidding Document and in accordance with the delivery schedule
3. Our Bid shall be valid for a period of 4 months from the date fixed as deadline for the submission of EoIs in accordance with the Bidding Document, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;
4. If our Bid is accepted, we commit to submit a Security Deposit in the amount of 3 percent of the Contract Price for the due performance of the Contract;
5. We are not participating, as Bidders, in more than one Bid in this bidding process;
6. Our firm, its affiliates or subsidiaries, including any subcontractors or suppliers forany part of the Contract, has not been declared ineligible by the ANERT or Government of Kerala;
7. We understand that this Bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract betweenus, until a formal Contract is prepared and executed.
8. Our firm has obtained the certifications from MNRE or NABL approved Test laboratories that the goods and services are satisfying the technical criteria specified in the bid.

Thanks, and Regards
For, POM Systems & Services Pvt. Ltd.,
Balasankar Menon KG (General Manager)
Email: gm@pompower.in

POM SYSTEMS & SERVICES PVT. LTD. BENGALURU

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FOR ALL
YOUR POWER NEEDS

POM Systems & Services Pvt. Ltd.

ANNEXURE E – DECLARATION OF RELATIONSHIP WITH ANERT EMPLOYEE

EoI Notification No.: **ANERT-TECH/41/2024-PE1(RTS)**

Expression of Interest (EoI) for the Selection of Agency for Pilot Implementation ofBattery Energy Storage System at ANERT HQ, Thiruvananthapuram

To
The CEO
ANERT

Name of the ANERT employee with Designation: **NIL**

Name of the bidder related to the employee: **NA**

This is to put on record that Shri/Smt **NONE** currently working as **NONE** in ANERT is related to, who is the bidder in the bid. We are aware of the Anti-corruption policy of ANERT and will observe the highest standards during the execution of contract and shall retain from corrupt, fraudulent, collusive or coercive practices on competing for the contract.

Date: 05.03.2024

Thanks, and Regards
For, POM Systems & Services Pvt. Ltd.,
Balasankar Menon KG (General Manager)
Email: gm@pompower.in

POM SYSTEMS & SERVICES PVT. LTD. BENGALURU

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ANNEXURE F – UNDERTAKING FOR NO BLACKLISTING & NO BANNING

Undertaking for No Blacklisting & No Banning

To

The CEO
ANERT

Sub: Expression of Interest (EoI) for the Selection of Agency for Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram

I / We hereby declare that presently our Company/Limited Liability Partnership/Partnership Firm/ Sole Proprietorship is having unblemished record and is not declared ineligible for corrupt/fraudulent practices by any State/Central Government/PSU on thedate of Bid Submission.

I / We further declare that presently our Company/Limited Liability Partnership/ Partnership Firm/ Sole Proprietorship is not blacklisted and not declared ineligible for reasons other than corrupt/fraudulent practices by any State/Central Government/PSU on the date of Bid Submission.

No. 23138 Dom Systems

SINDHU L S

PRINCIPAL ST EAST FORT
22 FEB 2024

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भारतीय गैर न्यायिक

भारत

पचास रुपये रु.50

FIFTY RUPEES Rs.50

सत्यमेव जयते

INDIA

INDIA NON JUDICIAL

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CZ 150825

If this declaration is found to be incorrect then without prejudice to any other action that may be taken, our security may be forfeited in full and the EoI if any to the extent accepted may be cancelled.

Date: 05.03.2024

Thanks, and Regards

For, POM Systems & Services Pvt. Ltd.,

Balasankar Menon KG (General Manager)

Email: gm@pompower.in

No. 23139 Pom Systems

SINDHU LLS

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CA V.K. Sudhakar Shetty
B.Sc., F. C. A

V. K. S. SHETTY & CO.,
CHARTERED ACCOUNTANTS

Form D

FINANCIAL INFORMATION

1. Financial Analysis – Financial Details are to be furnished for the Last Five Years duly certified by the Chartered Accountant as submitted by the Applicant to the Income Tax Department. The Bidder should give Information strictly as the Format given below:

(Rs. in Lakhs)

Sl. No.	Particulars	Financial Year				
		2018-19	2019-20	2020-21	2021-22	2022-23
1	Gross Annual Turn Over	428.49	375.03	515.56	659.74	655.74
2	Turn-Over on Works	428.49	375.03	515.56	659.74	655.74
3	Profits/Loss after Taxes (Consolidated)	9.11	8.94	7.79	62.86	11.60
4	Profits/Loss after Taxes (Standalone)	9.11	8.94	7.79	62.86	11.60
5	The bidder should give information strictly in above format					

2. Financial Arrangements for carrying out the Proposed Work:

Date : 30/10/2023
Place : Bangalore

Certified By
For V. K. S. Shetty and Co.,
Chartered Accountants

Sudhakar Shetty V. K.
Proprietor
Firm Regn. No: 005302S
Membership No: 029676
UDIN: 23029676BGWMUP1105

V.K.S. SHETTY & CO. ★ Chartered Accountants ★ Bangalore-86 Ph: 23193645

Signature(s) of Bidders(s)

Note: The Contractor should upload Copy of Abridged Balance Sheet along with Profit and Loss Account Statement of the Firm for the Last Three Financial Years.

CA V.K. Sudhakar Shetty
B.Sc., F. C. A

V. K. S. SHETTY & CO.,
CHARTERED ACCOUNTANTS

Certificate by Chartered Accountant on letterhead

This is to certify that **M/s POM Systems and Services Private Limited** (hereinafter referred to as 'enterprise') having PAN Number **AACCP0728K** and UDYAM Registration Number **UDYAM-KR-03-0076695** registered office **at No 75, 6th A Main, 3rd Phase, Peenya Industrial Area, Bangalore: 560058** is falling under the category **Small** under MSMED A c t 2006. (Copy of UDYAM Registration Certificate to be enclosed).

The said classification of **Small** is arrived at based on the Notifications / guidelines / clarifications issued under Micro, Small and Medium Enterprises Development Act, 2006 including the notification S.O.2119 (E) dated 26th June 2020.

The Investment of the enterprise in Plant and Machinery or Equipment as at 31st March 2023 as per Clause 4 of the Notification is 37.49 (Rupees in Lakhs).

The turnover of the Enterprise for the period ending 31st March 2023 as per Clause 5 of the Notification is 655.74 (Rupees in Lakhs).

Date : 04/01/2024

Certified By
For V. K. S. Shetty and Co.,
Chartered Accountants

Sudhakar Shetty V. K.
Proprietor
Firm Regn. No: 005302S
Membership No: 029676
UDIN: 24029676BKAHTW2990

V.K.S. SHETTY & CO. Chartered Accountants Bangalore-86 Ph: 23193645

No.55, 1st Floor, 10th Cross, Mahalakshmipuram, 2nd Stage, West of Chord Road, (Near Rajajinagar Metro Station) Bangalore-560086
Tel: +91-80-23193645 / 46, +91-96631 99003 (Off) 98455 97123, 76761 55586 (Per)
Email : ca.vksshetty@gmail.com, vksshettyandco@gmail.com / Website : www.vksshettyandco.in
GSTIN : 29AEOPS9245M1ZD

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CERTIFICATE

This is to Certify that the Management System of

POM Systems & Services Pvt. Ltd.

No-75, 6th Main, 3rd Phase, Peenya Industrial Area,
Bengaluru-560058, India

has been audited and found to comply with the requirements of:

ISO 9001:2015
(Quality Management System)

For the Scope of activities described below:

Manufacturing, Supply and Post Sales Service of Energy Storage Systems, Data Center Infrastructure Products, UPS Systems, Solar Inverters, Solar Street Lights, Fast Chargers-EV, DC Power Supplies, Frequency Converters, Multifunctional Power Conversion Systems, Rack Mounted Power Conversion Systems, Innovative Lithium Battery Systems, Servo Controlled Voltage Stabilizers & Ultra Isolation Transformers, Engineering, Procurement & commissioning of Solar Power plants, Procurement and Supply of Solar Modules

Certificate No.: IN231005027

Date of initial registration	*Date of this Certificate*	*Recertification Due*
05 October 2023	*05 October 2023*	*04 October 2026*

Validity of this certificate is subject to successful completion of surveillance audit on or before due date, in case surveillance audit not conducted this certificate shall be suspended/cancelled.

Director

For verification and updated information concerning the present certificate visit to www.lmscert.uk/www.lmscert.com
This certificate is property of LMS Assessments Limited and remains valid subject to satisfactory surveillance audits and shall be returned immediately when demanded.

Accreditation

LMS Assessments Limited
Bartle House, Oxford Court, Manchester,
M2 3WQ(United Kingdom)
Phone : +44-7904664589
Visit :- www.lmscert.uk/www.lmscert.com
E-mail :- info@lmscert.uk
(Company Regd. No. 11029176 Registered in England and Wales)

LMS/EGAC/F109Q/19/REV00

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भारत सरकार
Government of India
सूक्ष्म, लघु एवं मध्यम उद्यम मंत्रालय
Ministry of Micro, Small and Medium Enterprises

सूक्ष्म, लघु एवं मध्यम उद्यम
MICRO, SMALL & MEDIUM ENTERPRISES

UDYAM REGISTRATION CERTIFICATE

UDYAM REGISTRATION NUMBER — **UDYAM-KR-03-0076695**

NAME OF ENTERPRISE — **M/S POM SYSTEMS AND SERVICES PRIVATE LIMITED**

TYPE OF ENTERPRISE *

SNo.	Classification Year	Enterprise Type	Classification Date
1	2023-24	Small	09/05/2023
2	2022-23	Micro	26/06/2022
3	2021-22	Micro	17/06/2021

MAJOR ACTIVITY — **MANUFACTURING**

SOCIAL CATEGORY OF ENTREPRENEUR — **GENERAL**

NAME OF UNIT(S)

S.No.	Udyog Aadhaar Memorandum	Unit(s) Name
1	KR03D0022344	POM SYSTEMS AND SERVICES PVT LTD

OFFICAL ADDRESS OF ENTERPRISE

Flat/Door/Block No.	NO.75	Name of Premises/ Building	.
Village/Town	PEENYA INDUSTRIAL AREA	Block	3RD PHASE
Road/Street/Lane	6TH MAIN ROAD	City	BANGALORE
State	KARNATAKA	District	BENGALURU (URBAN) , Pin 560058
Mobile	9844034106	Email:	info@pompower.in

DATE OF INCORPORATION / REGISTRATION OF ENTERPRISE — **05/06/2000**

DATE OF COMMENCEMENT OF PRODUCTION/BUSINESS — **21/04/2022**

NATIONAL INDUSTRY CLASSIFICATION CODE(S)

SNo.	NIC 2 Digit	NIC 4 Digit	NIC 5 Digit	Activity
1	27 - Manufacture of electrical equipment	2790 - Manufacture of other electrical equipment	27900 - Manufacture of other electrical equipment	Manufacturing
2	33 - Repair and installation of machinery and equipment	3313 - Repair of electronic and optical equipment	33131 - Repair and maintenance of measuring, testing, navigating and	Manufacturing

740

			control equipment of group 265	
3	35 - Electricity, gas, steam and air conditioning supply	3510 - Electric power generation, transmission and distribution	35105 - Electric power generation using solar energy	Manufacturing
4	26 - Manufacture of computer, electronic and optical products	2620 - Manufacture of computers and peripheral equipment	26209 - Manufacture of computers and peripheral equipment n.e.c.	Manufacturing
5	26 - Manufacture of computer, electronic and optical products	2640 - Manufacture of consumer electronics	26409 - Manufacture of other electronic consumer goods n.e.c. (this includes non- television video camera)	Manufacturing
6	46 - Wholesale trade, except of motor vehicles and motorcycles	4652 - Wholesale of electronic and telecommunications equipment and parts	46529 - Wholesale of other electronic equipments and parts thereof	Trading

DATE OF UDYAM REGISTRATION **17/06/2021**

* **In case of graduation (upward/reverse) of status of an enterprise, the benefit of the Government Schemes will be availed as per the provisions of Notification No. S.O. 2119(E) dated 26.06.2020 issued by the M/o MSME.**

Disclaimer: This is computer generated statement, no signature required. Printed from https://udyamregistration.gov.in & Date of printing:- 05/12/2023

For any assistance, you may contact:

1. District Industries Centre: **BANGALORE (URBAN) (KARNATAKA)**

2. MSME-DFO: **BANGALORE (KARNATAKA)**

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Sicon Chat Union Electric Co., Ltd.
Bldg.14&15, No. 319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, China
Tel: 86-311-85903762

Distribution Certificate

SICON CHAT UNION ELECTRIC CO., LTD,

Located in: Bldg.14&15, No. 319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, China

Herewith confirms that the company:

POM SYSTEMS AND SERVICES PRIVATE LTD.

Located in: NO. 75. 6th main, 3 ed Phase, PEENYA Industrial Area, BANGALORE - 560058, INDIA.

IEC: 0708017401

GST: 29AACCP0728K1Z9

Is our authorized distributor in the territory of India for marketing, sales, after sales services and repairing for all current and upcoming UPS, EV Chargers and Energy Storage Systems products of us.

Sincerely,

Vivian Zhang

(Global Sales Director)

Vivian Zhang

Sicon Chat Union Electric Co., Ltd

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Sicon Chat Union Electric Co., Ltd.
Add: Bldg.14 & 15, No.319 Xiangjiang Street, High-Tech Zone, Shijiazhuang, China
Email: enquiry@scupower.com
Tel:86-311-85903762 Fax:86-311-85903718 Post: 050035

To whom-so-ever it may concern

We M/s. Sicon Chat Union Electric Co. ltd, Bldg: 14 & 15, No.319, Xiangjiang Street, Hi-tech Zone, Shijiazhuang, 050035, China, Manufacturer of EV Chargers, Modular UPS, PCS, Modular Energy Storage System with Lithium Batteries in Containers have global supplied Energy Storage Containers. Our Partners M/s.POM Systems and Services Pvt. Ltd is the Important Distributor and Service Provider of SCU in India.

The following Individuals are trained at our Factory during the month of December 2023, from M/s. POM Systems and Services Pvt. Ltd, 75, 6th Main, 3rd Phase, Peenya Industrial Area, Bangalore 560058 India. They are the only Authorized Engineers who has been trained and permitted to install our list of Products, at present, in India.

1. Mr. Sudhindra
2. Mr. Ramesh
3. Mr. Vasanthan
4. Mr. Sreejith

We are committed to support them for the entire Design, Supply, Installation and Commission of the entire products manufactured by us, supplied in India during the warranty and AMC period.

Best Regards,

Sherry Tsui
Sales Manager

(Authorised Signatory)

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Sicon Chat Union Electric Co., Ltd.
Add: Bldg.14 & 15, No.319 Xiangjiang Street, High-Tech Zone, Shijiazhuang, China
Email: enquiry@scupower.com
Tel:86-311-85903762 Fax:86-311-85903718 Post: 050035

29th February 2024

To,
The CEO,
ANERT,
Trivandrum

Ref. No. ANERT-TECH/41/2024-PE-1 (RTS)

We refer your tender and confirm here with, that we have installed Battery Energy Storage System, as per your specifications in a factory environment at Bangalore, and it's running successfully for the last two months.

You may requested to visit the premises and inspect all parameters with immediate effect.

Best regards,

Sherry Tsui
Sales Manager

Authorised Signatory
Sicon Chat Union Electric Co. Ltd

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Attestation of Compliance

STE Testing

Reference No.	:	STE20110101E
Applicant	:	Sicon Chat Union Electric Co., Ltd.
Address	:	Bldg.14&15, No. 319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, 050035, China.
Trade Mark	:	N/A
Product	:	Li-ion battery energy storage system
Model(s)	:	ECM-48B100N, EBC48/30-LFP-ABMS, EBC48/50-LFP-ABMS EBC48/100-LFP-ABMS, EBC51.2/100-LFP-ABMS, EBC240/10-LFP-ABMS, EBC480/10-LFP-ABMS,EBC480/20-LFP-ABMS, EBC480/30-LFP-ABMS, EBC480/50-LFP-ABMS, EBC480/100-LFP-ABMS EBC480/150-LFP-ABMS, EBC480/200-LFP-ABMS, EBC480/280-LFP-ABMS, EBC480/40-LFP-ABMS, EBC480/80-LFP-ABMS, EBC480/120-LFP-ABMS, EBC480/160-LFP-ABMS, EBC768/40-LFP-ABMS, EBC768/80-LFP-ABMS, EBC768/120-LFP-ABMS, EBC768/160-LFP-ABMS, EBC768/50-LFP-ABMS, EBC768/100-LFP-ABMS, EBC768/150-LFP-ABMS, EBC768/200-LFP-ABMS, EBC768/280-LFP-ABMS, EBC768/100-LFP-ABMS-M, EBC768/40-LFP-ABMS-F, EBC768/80-LFP-ABMS-F, EBC768/120-LFP-ABMS-F, EBC768/160-LFP-ABMS-F, EBC768/50-LFP-ABMS-F, EBC768/100-LFP-ABMS-F, EBC768/150-LFP-ABMS-F, EBC768/200-LFP-ABMS-F, EBC768/280-LFP-ABMS-F
Tested according to	:	EN IEC 61000-6-4:2019, EN IEC 61000-6-2:2019, EN IEC 61000-3-2: 2019, EN 61000-3-3:2013+A1:2019

The submitted products have been tested by us with the listed standards.

This Attestation of Compliance is issued according to the council Directive 2014/30/EU, Referred to as the Electromagnetic Compatibility. It confirms that the listed product complies with all essential requirements of the EMC directive and applies only to the sample and its technical documentation submitted to Shenzhen STE Testing Laboratory Co., Ltd for testing.

After preparation of the necessary technical documentation as well as the EC conformity declaration the required CE marking can be affixed on the product.Other relevant Directives have to be observed.

CE

STE TESTING LABORATORY
APPROVED

Date of issue: June 20, 2019

Manager

Shenzhen STE Testing Laboratory Co., Ltd.
Room 301(left side), Building 9, Dehong Factory Building, No. 63 Yuchang Road, Niuhu Community, Guanlan Street, Longhua District, Shenzhen

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EMC TEST REPORT

For

Sicon Chat Union Electric Co., Ltd.

Li-ion battery energy storage system

Test Model: EBC480/100-LFP-ABMS

Additional Model No.: Please Refer To Page 8

Prepared for	:	Sicon Chat Union Electric Co., Ltd.
Address	:	Bldg.14&15, No. 319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, 050035, China.
Prepared by	:	Shenzhen STE Testing Laboratory Co., Ltd
Address	:	Room 301(left side), Building 9, Dehong Factory Building, No. 63 Yuchang Road, Niuhu Community, Guanlan Street, Longhua District, Shenzhen
Date of receipt of test sample	:	June 10, 2019
Number of tested samples	:	1
Serial number	:	Prototype
Date of Test	:	June 10, 2019 ~ June 20, 2019
Date of Report	:	June 20, 2019

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EMC TEST REPORT

EN IEC 61000-6-4:2019

Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments

EN IEC 61000-6-2:2019

Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity standard for industrial environments

Report Reference No.	:	**STE20110101E**
Date of Issue.....	:	June 20, 2019
Testing Laboratory Name.....	:	**Shenzhen STE Testing Laboratory Co., Ltd**
Address.....	:	Room 301(left side), Building 9, Dehong Factory Building, No. 63 Yuchang Road, Niuhu Community, Guanlan Street, Longhua District, Shenzhen.
Testing Location/ Procedure	:	Full application of Harmonised standards ■ Partial application of Harmonised standards ☐ Other standard testing method ☐
Applicant's Name	:	**Sicon Chat Union Electric Co., Ltd.**
Address.....	:	Bldg.14&15, No. 319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, 050035, China.
Test Specification		
Standard.....	:	EN IEC 61000-6-4:2019 EN IEC 61000-6-2:2019 EN IEC 61000-3-2: 2019 EN 61000-3-3:2013+A1:2019
Test Report Form No.....	:	LCSEMC-1.0
TRF Originator.....	:	Shenzhen STE Testing Laboratory Co., Ltd
Master TRF.....	:	Dated 2016-08

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Test Item Description.....	:	**Li-ion battery energy storage system**
Trade Mark.....	:	N/A
Test Model.....	:	EBC480/100-LFP-ABMS
Ratings	:	Input: DC480V,100A Output: DC480V,200A
Result	:	**PASS**

Compiled by:	Supervised by:	Approved by:
Hunter Liang	Todd Qian	Fly Li
Hunter Liang/ File administrators	Todd Qian/ Technique principal	Fly Li/Manager

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EMC -- TEST REPORT

Test Report No. : STE20110101E	June 20, 2019 Date of issue

Applicant.....	**: Sicon Chat Union Electric Co., Ltd.**
Address.....	: Bldg.14&15, No. 319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, 050035, China.
Telephone.....	: /
Fax.....	: /
Manufacturer.....	**: Sicon Chat Union Electric Co., Ltd.**
Address.....	: Bldg.14&15, No. 319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, 050035, China.
Telephone.....	: /
Fax.....	: /
Factory.....	**: Sicon Chat Union Electric Co., Ltd.**
Address.....	: Bldg.14&15, No. 319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, 050035, China.
Telephone.....	: /
Fax.....	: /

Test Result	**PASS**

The test report merely corresponds to the test sample.
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Revision History

Revision	Issue Date	Revisions	Revised By
000	May 26, 2020	Initial Issue	Cherry Chen

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1. SUMMARY OF STANDARDS AND RESULTS

1.1. Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below.

Emission (EN IEC 61000-6-4:2019)			
Description of Test Item	**Standard**	**Limits**	**Results**
Conducted disturbance at mains terminals	EN IEC 61000-6-4:2019	---------	PASS
Conducted disturbance at telecommunication port	EN IEC 61000-6-4:2019	---------	N/A
Radiated disturbance	EN IEC 61000-6-4:2019	---------	PASS
Harmonic current emissions	EN IEC 61000-3-2: 2019	Class A	N/A
Voltage fluctuations & flicker	EN 61000-3-3:2013+A1:2019	---------	N/A
Immunity (EN IEC 61000-6-2:2019)			
Description of Test Item	**Basic Standard**	**Performance Criteria**	**Results**
Electrostatic discharge (ESD)	EN 61000-4-2: 2009	B	PASS
Radio-frequency, Continuous radiated disturbance	EN 61000-4-3: 2006+A2: 2010	A	PASS
Electrical fast transient (EFT)	EN 61000-4-4: 2012	B	PASS
Surge (Input d.c. power ports)	EN 61000-4-5: 2014+A1: 2017	B	N/A
Surge (Telecommunication ports)		B	N/A
Radio-frequency, Continuous conducted disturbance	EN 61000-4-6: 2014	A	PASS
Power frequency magnetic field	EN 61000-4-8: 2010	A	PASS
Voltage dips, >95% reduction	EN 61000-4-11: 2004+A1: 2017	B	N/A
Voltage dips, 30% reduction		C	N/A
Voltage interruptions		C	N/A
Note 1: N/A is an abbreviation for not applicable. Note 2: systems with nominal voltages less than but not equal to 220 V (line-to-neutral), the harmonic and flicker limits have not yet been considered.			

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2.1. Description of Performance Criteria

A functional description and a definition of specific performance criteria, during or as a consequence of immunity testing of equipment under test (EUT), shall be provided by the manufacturer and noted in the test report. They shall be consistent with one of the following general criteria for each test as specified in Table 1 to Table 4:

1.2.1. Performance criterion A

The EUT shall continue to operate as intended during and after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the EUT is used as intended. If the performance level is not specified by the manufacturer, this may be derived from the product description and documentation and what the user may reasonably expect from the equipment if used as intended.

1.2.2. Performance criterion B

The EUT shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the EUT is used as intended. The performance level may be replaced by a permissible loss of performance. However, during the test degradation of performance is allowed but no change of actual operating state or stored data is allowed. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, either of these may be derived from the product description and documentation and what the user may reasonably expect from the equipment if used as intended.

1.2.3. Performance criterion C

Temporary loss of function is allowed during the test, provided the function is self-recoverable or can be restored by the operation of the controls.

If, as a result of the application of the tests defined in this standard, the EUT becomes dangerous or unsafe, it shall be deemed to have failed the test.

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2. GENERAL INFORMATION

2.1. Description of Device (EUT)

EUT	:	Li-ion battery energy storage system
Test Model	:	EBC480/100-LFP-ABMS
Additional Model No.	:	ECM-48B100N, EBC48/30-LFP-ABMS, EBC48/50-LFP-ABMS EBC48/100-LFP-ABMS, EBC51.2/100-LFP-ABMS, EBC240/10-LFP-ABMS, EBC480/10-LFP-ABMS, EBC480/20-LFP-ABMS, EBC480/30-LFP-ABMS, EBC480/50-LFP-ABMS, EBC480/150-LFP-ABMS, EBC480/200-LFP-ABMS, EBC480/280-LFP-ABMS, EBC480/40-LFP-ABMS, EBC480/80-LFP-ABMS, EBC480/120-LFP-ABMS, EBC480/160-LFP-ABMS, EBC768/40-LFP-ABMS, EBC768/80-LFP-ABMS, EBC768/120-LFP-ABMS, EBC768/160-LFP-ABMS, EBC768/50-LFP-ABMS, EBC768/100-LFP-ABMS, EBC768/150-LFP-ABMS, EBC768/200-LFP-ABMS, EBC768/280-LFP-ABMS, EBC768/100-LFP-ABMS-M, EBC768/40-LFP-ABMS-F, EBC768/80-LFP-ABMS-F, EBC768/120-LFP-ABMS-F, EBC768/160-LFP-ABMS-F, EBC768/50-LFP-ABMS-F, EBC768/100-LFP-ABMS-F, EBC768/150-LFP-ABMS-F, EBC768/200-LFP-ABMS-F, EBC768/280-LFP-ABMS-F
Power Supply	:	Input: DC480V,100A Output: DC480V,200A
EUT Clock Frequency	:	≤108MHz

2.2 Support equipment List

Description	Manufacturer	Model	Serial Number

2.3. Description of Test Facility

Test Facilities : Shenzhen STE Testing Laboratory Co., Ltd
309, B Tower, Huafeng Headquarters Economic Edifice, No.288 Xixiang Avenue,
Bao'an District, Shenzhen.

Note : Radiated, Radio-Frequency, Electromagnetic Field Immunity Test (Rs) Subcontract To Shenzhen Lcs Compliance Testing Laboratory Ltd for Testing.

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2.4. Statement of The Measurement Uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. To CISPR 16 – 4 "Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements" and is documented in the LCS quality system acc. To DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

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2.5. Measurement Uncertainty

Test	Parameters	Expanded uncertainty (U_{lab})	Expanded uncertainty (U_{cispr})
Conducted Emission	Level accuracy (9kHz to 150kHz) (150kHz to 30MHz)	± 2.63 dB ± 2.35 dB	± 3.8 dB ± 3.4 dB
Power disturbance	Level accuracy (30MHz to 300MHz)	± 2.90dB	± 4.5 dB
Electromagnetic Radiated Emission (3-loop)	Level accuracy (9kHz to 30MHz)	± 3.60 dB	± 3.3 dB
Radiated Emission	Level accuracy (9kHz to 30MHz)	± 3.68 dB	N/A
Radiated Emission	Level accuracy (30MHz to 1000MHz)	± 3.48 dB	± 5.3 dB
Radiated Emission	Level accuracy (above 1000MHz)	± 3.90 dB	± 5.2 dB
Harmonic	Voltage	± 0.510%	N/A
Voltage Fluctuations & Flicker	Voltage	± 0.510%	N/A
1) Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus. 2) The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor of k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.			

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3. MEASURING DEVICES AND TEST EQUIPMENT

Radiated Disturbance

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Due Date.
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal/ Due date
1	3m Semi Anechoic Chamber	Maorui	/	/	2020-02-02
2	EMI Test Receiver	ROHDE & SCHWARZ	ESR 3	102312	2020-06-11
3	Log per Antenna	ROHDE & SCHWARZ	VULP9118	873	2020-06-12
4	EMI Test Software	Farad	EMC	N/A	N/A
5	Positioning Controller	MF	MF-7082	/	N/A

Electrostatic Discharge Immunity Test (ESD)

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Due Date.
1	ESD Simulator	TESEQ	NSG437	1211	2020-06-12

Power Frequency Magnetic Field Immunity Test

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Due Date.
1	Power frequency mag-field generator System	EVERFINE	EMS61000-8K	906003	2020-06-17

Radiated, Radio-Frequency, Electromagnetic Field Immunity Test (RS)-LCS

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Due Date.
1	RS Test Software	Tonscend	/	/	N/A
2	ESG Vector Signal Generator	Agilent	E4438C	MY42081396	2020-11-14
3	3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	2020-06-11
4	RF POWER AMPLIFIER	OPHIR	5225R	1052	2020-11-21
5	RF POWER AMPLIFIER	OPHIR	5273F	1019	2020-11-21
6	Stacked Broadband Log Periodic Antenna	SCHWARZBECK	STLP 9128	9128ES-145	2020-11-21
7	Stacked Mikrowellen Log.-Per Antenna	SCHWARZBECK	STLP 9149	9149-484	2020-11-21
8	RS Test Software	Tonscend	/	/	2020-03-24

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Conducted Disturbance

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Due Date.
1	EMI Test Receiver	ROHDE & SCHWARZ	ESR 3	102312	2020-06-11
2	10dB Attenuator	SCHWARZBECK	MTS-IMP136	261115-001-0032	2020-03-02
3	Artificial Mains	ROHDE & SCHWARZ	ESH2-Z5	100030	2020-03-02
4	EMI Test Software	Farad	EMC	N/A	N/A
5	ISN	SCHWARZBECK	NTFM 8158	NTFM 8158 0120	2020-03-02

Electrical Fast Transient/Burst Immunity Test (EFT)

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Due Date.
1	Surge test system	EM test	UCS 500 M4	0101-34	2020-03-02

Immunity to Conducted Disturbances, Induced by Radio-Frequency Fields

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Due Date.
1	Simulator	FRANKONIA	CIT-10	A126A1195	2020-06-17
2	CDN	FRANKONIA	CDN-M2	5100100100	2020-06-17
3	CDN	FRANKONIA	CDN-M3	0900-11	2020-06-17
4	Attenuator	FRANKONIA	ATT6	0010222A	2020-06-17
5	Infuse tongs	EMTEST	EM-Clamp	0513A031201	2020-06-17

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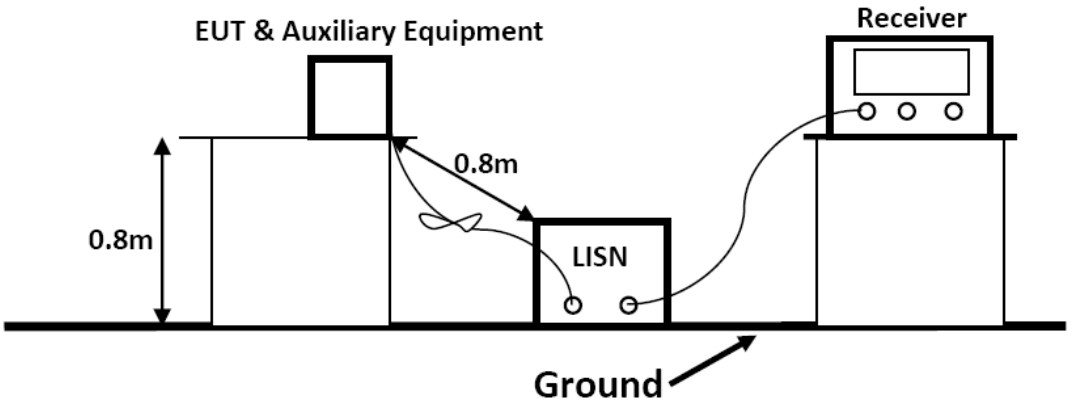
4. Power Line Conducted Emission Measurement

4.1. Block Diagram of Test Setup



4.2. Test Standard

EN IEC 61000-6-4: 2019

Power Line Conducted Emission Limits (Class A)		
Frequency (MHz)	Limit (dBμV)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	79	66
0.50 ~ 30.00	73	60
NOTE1-The lower limit shall apply at the transition frequencies. NOTE2-The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz.		

4.3. EUT Configuration on Test

The following equipments are installed on Power Line Conducted Emission Measurement to meet the EN IEC 61000-6-4 requirement and operating regulations in a manner, which tends to maximize its emission characteristics in a normal application.

4.4. Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and connected to the AC mains through Line Impedance Stability Network (L.I.S.N). This provided 50-ohm coupling impedance for the tested equipments. Both sides of AC line are investigated to find out the maximum conducted emission according to the EN 55032 regulations during conducted emission measurement.

The bandwidth of the field strength meter is set at 9kHz in 150kHz~30MHz.

The frequency range from 150kHz to 30MHz is investigated.

4.5. Test Results

PASS.

The test result please refer to the next page.

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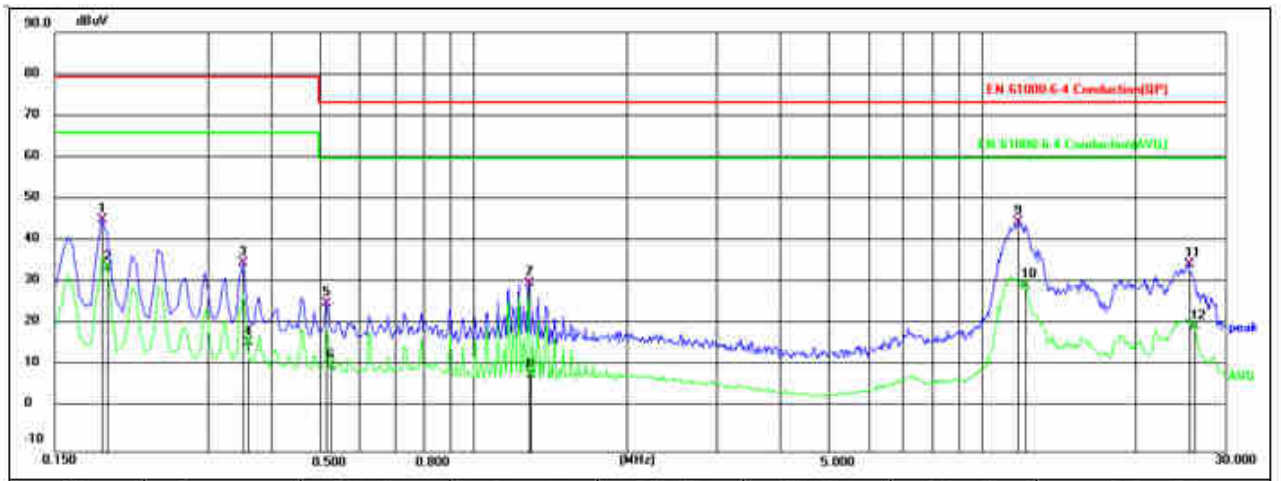
Test Model	EBC480/100-LFP-ABMS	**Test Mode**	Working
Environmental Conditions	23.3℃, 53.7% RH	**Test Engineer**	ZOM ZHANG
Pol.	Line	**Test Voltage**	DC480V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1861	28.05	17.24	45.29	79.00	-33.71	QP
2	0.1906	16.83	17.25	34.08	66.00	-31.92	AVG
3	0.3526	18.94	16.14	35.08	79.00	-43.92	QP
4	0.3596	0.02	16.08	16.10	66.00	-49.90	AVG
5	0.5146	9.87	15.61	25.48	73.00	-47.52	QP
6	0.5237	-5.01	15.59	10.58	60.00	-49.42	AVG
7	1.2841	15.05	15.12	30.17	73.00	-42.83	QP
8	1.2975	-6.75	15.12	8.37	60.00	-51.63	AVG
9	11.7781	30.30	14.39	44.69	73.00	-28.31	QP
10	12.2190	15.42	14.28	29.70	60.00	-30.30	AVG
11	25.5886	27.11	7.56	34.67	73.00	-38.33	QP
12	26.0476	12.52	7.22	19.74	60.00	-40.26	AVG

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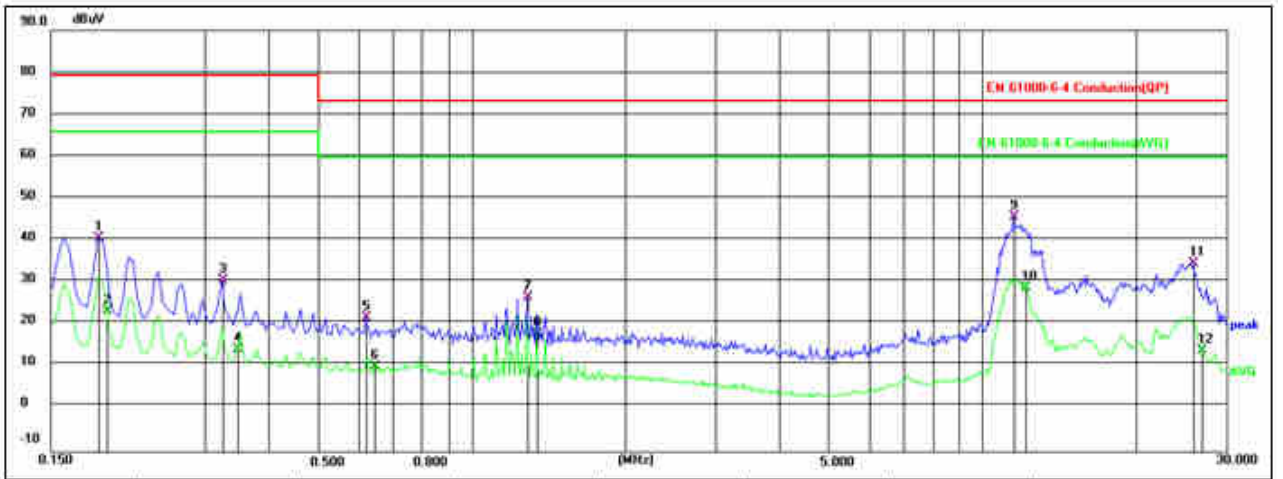
Test Model	EBC480/100-LFP-ABMS	**Test Mode**	Working
Environmental Conditions	23.3℃, 53.7% RH	**Test Engineer**	ZOM ZHANG
Pol.	Neutral	**Test Voltage**	DC480V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1861	23.62	17.24	40.86	79.00	-38.14	QP
2	0.1934	6.05	17.26	23.31	66.00	-42.69	AVG
3	0.3256	14.37	16.34	30.71	79.00	-48.29	QP
4	0.3465	-1.92	16.18	14.26	66.00	-51.74	AVG
5	0.6226	6.12	15.63	21.75	73.00	-51.25	QP
6	0.6474	-5.63	15.79	10.16	60.00	-49.84	AVG
7	1.2886	11.50	15.11	26.61	73.00	-46.39	QP
8	1.3379	2.97	15.11	18.08	60.00	-41.92	AVG
9	11.5126	31.72	14.13	45.85	73.00	-27.15	QP
10	12.1240	14.44	14.42	28.86	60.00	-31.14	AVG
11	25.7551	27.28	7.35	34.63	73.00	-38.37	QP
12	26.8411	6.95	7.22	14.17	60.00	-45.83	AVG

Note: Pre-Scan all mode, Thus record worse case mode result in this report.

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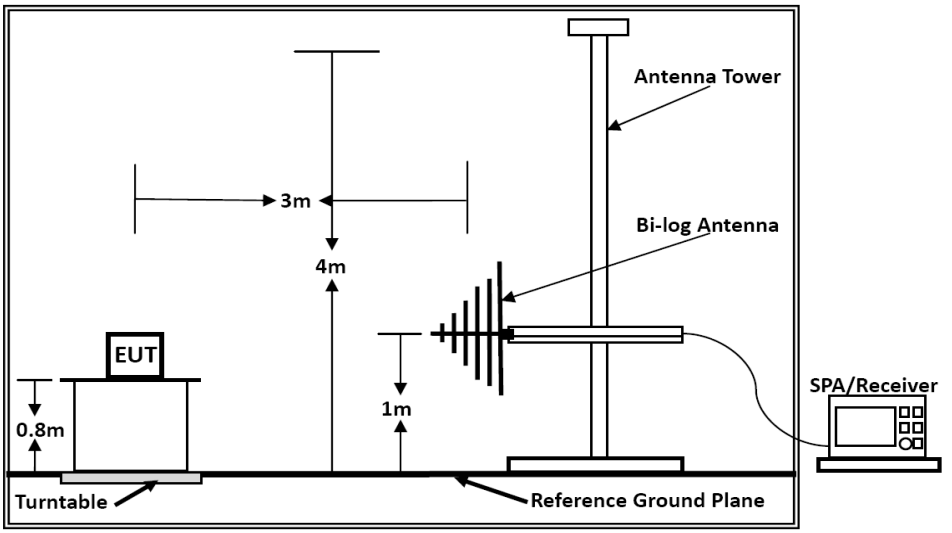
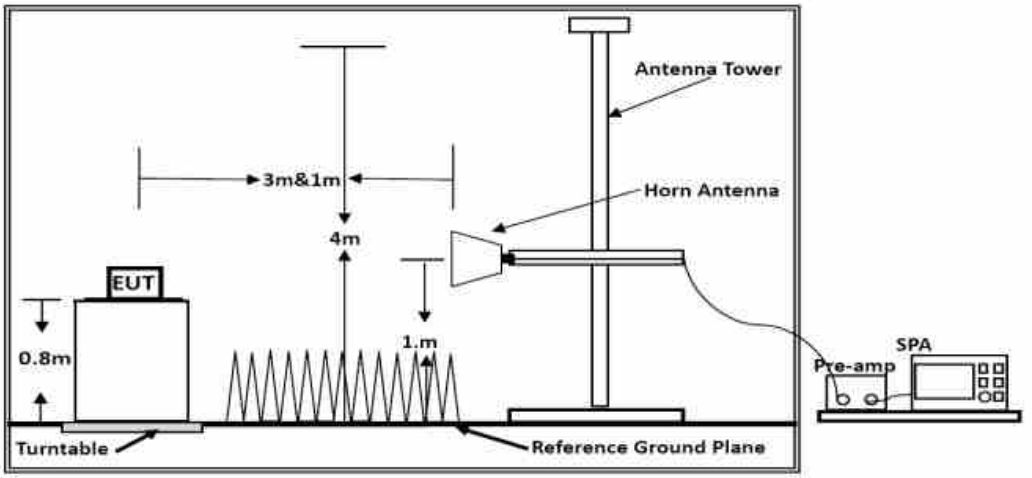
5.RADIATED EMISSION MEASUREMENT

5.1. Block Diagram of Test Setup



Below 1GHz



Above 1GHz

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5.2. Test Standard

EN IEC 61000-6-4:2019

Limits for Radiated Emission Below 1GHz		
Frequency (MHz)	Distance (Meters)	Field Strengths Limit (dBμV/m)
30 ~ 230	3	50
230 ~ 1000	3	57
Note: (1) The smaller limit shall apply at the combination point between two frequency bands. (2) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the EUT.		

Limits for Radiated Emission Above 1GHz			
Frequency (MHz)	Distance (Meters)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)
1000 ~ 3000	3	76	56
3000 ~ 6000	3	80	60
***Note: The lower limit applies at the transition frequency.			

5.3. EUT Configuration on Test

The EN 61000-6-4 regulations test method must be used to find the maximum emission during radiated emission measurement.

5.4. Operating Condition of EUT

1) Turn on the power.
2) Let the EUT work and measure it.

5.5. Test Procedure

The EUT is placed on a turntable, which is 0.8 meter high above the ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. By-log antenna is used as a receiving antenna. Both horizontal and vertical polarization of the antenna is set on test.
The bandwidth of the EMI test receiver is set at RBW/VBW=120kHz/1000kHz.
The frequency range from 30MHz to 1000MHz is checked.
The bandwidth of the Spectrum analyzer is set at RBW/VBW=1MHz/3MHz.
The frequency range from 1GHz to the frequency which about 5th carrier harmonic or 6GHz is checked.

5.6. Test Results

PASS.

The test result please refer to the next page.

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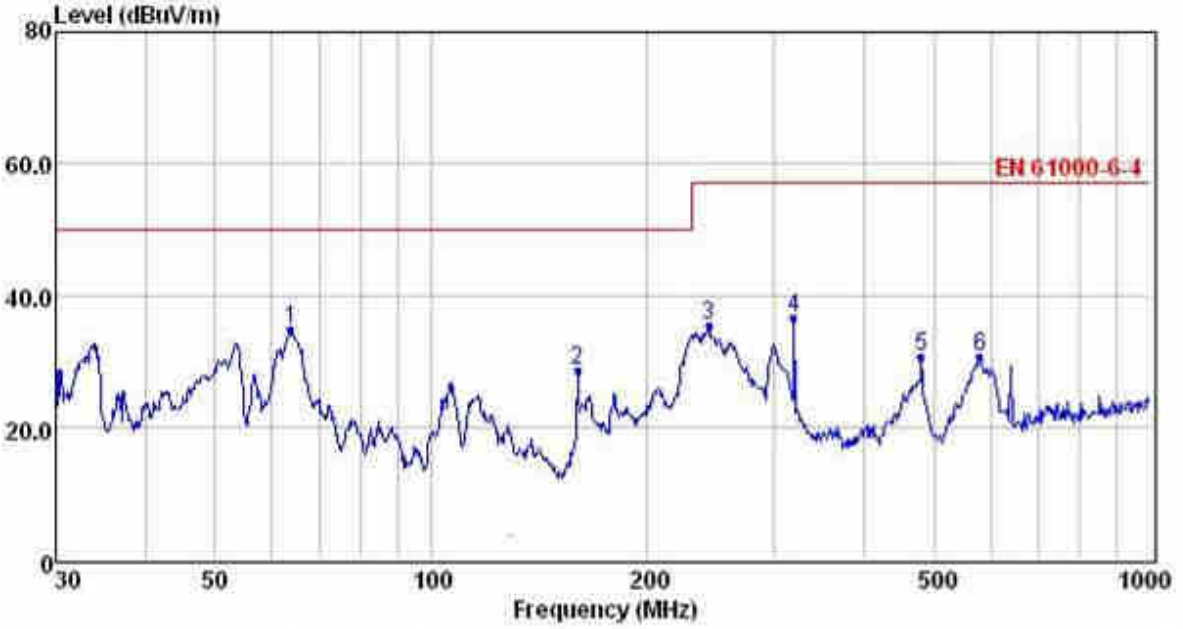
Test Model	EBC480/100-LFP-ABMS	**Test Mode**	Working
Environmental Conditions	23.8℃, 53% RH	**Detector Function**	Quasi-peak
Pol.	Vertical	**Distance**	3m
Test Engineer	ZOM ZHANG	**Test Voltage**	DC480V



	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	63.76	23.12	0.48	11.20	34.80	50.00	-15.20	QP
2	159.78	19.27	0.75	8.66	28.68	50.00	-21.32	QP
3	243.38	22.53	0.90	12.08	35.51	57.00	-21.49	QP
4	319.94	22.22	1.16	13.33	36.71	57.00	-20.29	QP
5	480.53	13.10	1.31	16.08	30.49	57.00	-26.51	QP
6	580.70	11.06	1.44	18.09	30.59	57.00	-26.41	QP

Note: 1. All readings are Quasi-peak values.
2. Measured= Reading + Antenna Factor + Cable Loss
3. The emission that are 20db below the official limit are not reported

Remark: Pre-San all mode, Thus record worse case mode result in this report

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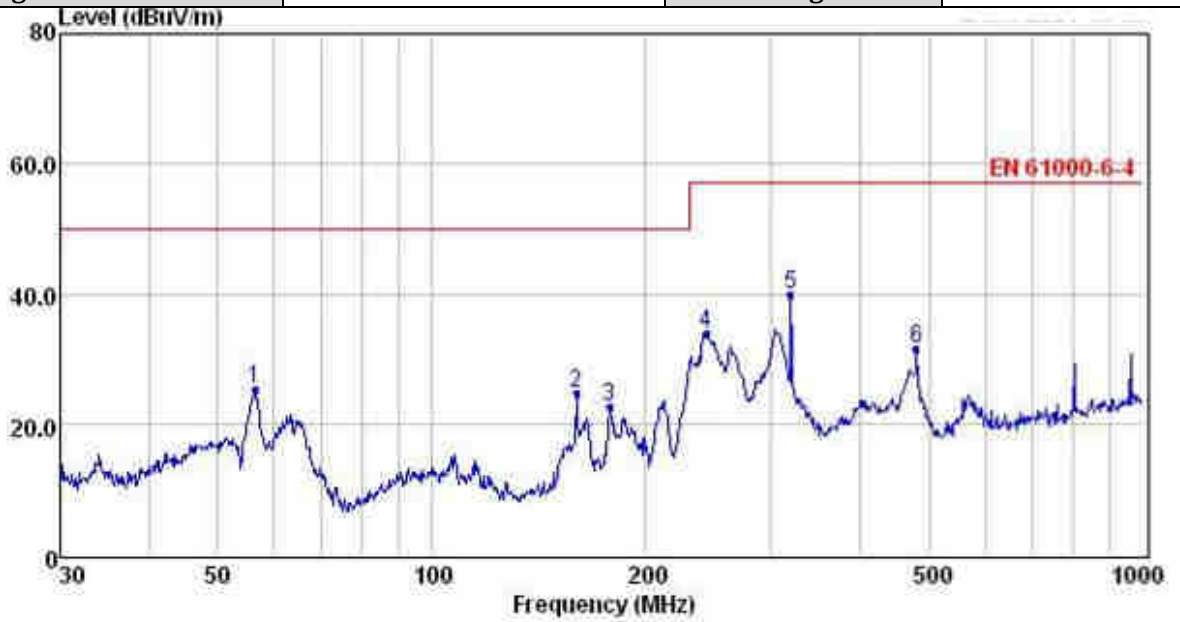
Test Model	EBC480/100-LFP-ABMS	**Test Mode**	Working
Environmental Conditions	23.8℃, 53% RH	**Detector Function**	Quasi-peak
Pol.	Horizontal	**Distance**	3m
Test Engineer	ZOM ZHANG	**Test Voltage**	DC480V



	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	56.39	11.77	0.47	12.93	25.17	50.00	-24.83	QP
2	159.78	15.28	0.75	8.66	24.69	50.00	-25.31	QP
3	178.13	12.08	0.89	9.55	22.52	50.00	-27.48	QP
4	243.38	21.02	0.90	12.08	34.00	57.00	-23.00	QP
5	319.94	25.30	1.16	13.33	39.79	57.00	-17.21	QP
6	480.53	14.07	1.31	16.08	31.46	57.00	-25.54	QP

Note: 1. All readings are Quasi-peak values.
2. Measured= Reading + Antenna Factor + Cable Loss
3. The emission that are 20db below the official limit are not reported

Remark: Pre-San all mode, Thus record worse case mode result in this report

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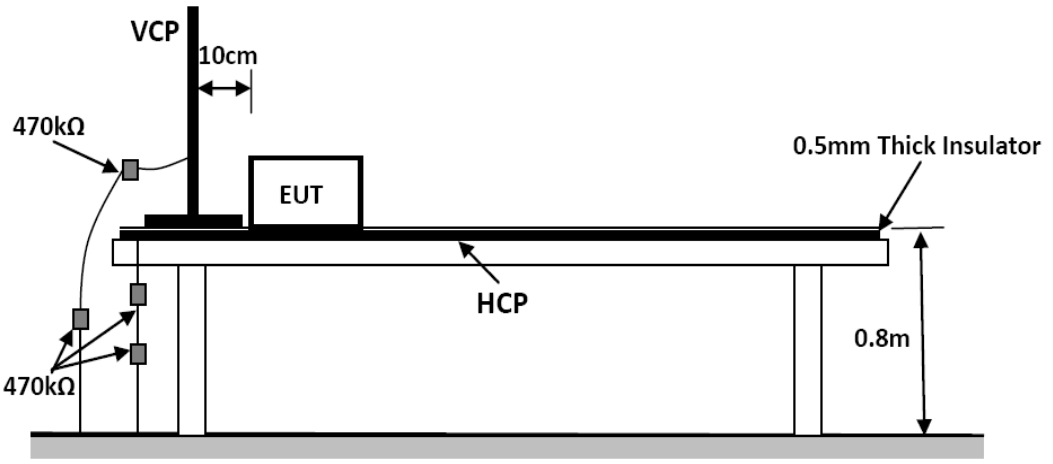
6. ELECTROSTATIC DISCHARGE IMMUNITY TEST

6.1. Block Diagram of Test Setup



6.2. Test Standard

EN IEC 61000-6-2:2019

6.3. Severity Levels and Performance Criterion

6.3.1. Severity level

Level	Test Voltage Contact Discharge (KV)	Test Voltage Air Discharge (KV)
1	±2	±2
2	±4	±4
3	±6	±8
4	±8	±15
X	Special	Special

6.3.2. Performance Criterion：B

6.4. EUT Configuration on Test

The configuration of EUT is listed in Section 6.3.

6.5. Operating Condition of EUT

Same as conducted emission measurement, which is listed in Section 3.4. Except the test set up replaced by Section 8.1.

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6.6. Test Procedure

6.6.1. Air Discharge

This test is done on a non-conductive surface. The round discharge tip of the discharge electrode shall be approached as fast as possible to touch the EUT. After each discharge, the discharge electrode shall be removed from the EUT. The generator is then re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed

6.6.2. Contact Discharge

All the procedure shall be same as Section 9.6.1. Except that the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

6.6.3. Indirect Discharge For Horizontal Coupling Plane

At least 10 single discharges (in the most sensitive polarity) shall be applied at the front edge of each HCP opposite the center point of each unit (if applicable) of the EUT and 0.1m from the front of the EUT. The long axis of the discharge electrode shall be in the plane of the HCP and perpendicular to its front edge during the discharge.

6.6.4. Indirect Discharge For Vertical Coupling Plane

At least 10 single discharge (in the most sensitive polarity) shall be applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m X 0.5m, is placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges shall be applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.

6.7. Test Results

PASS.

The test result please refer to the next page.

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Electrostatic Discharge Test Results

Standard	☐ IEC 61000-4-2 ☑ EN 61000-4-2		
Applicant	Sicon Chat Union Electric Co., Ltd.		
EUT	Li-ion battery energy storage system	**Temperature**	23.6℃
M/N	EBC480/100-LFP-ABMS	**Humidity**	53.2%
Criterion	B	**Pressure**	1021mbar
Test Mode	Working	**Test Engineer**	ZOM ZHANG
Test Voltage	DC480V		

Air Discharge

Test Points	Test Levels			Results		
	± 2kV	± 4kV	± 8kV	Passed	Fail	Performance Criterion
Front	☒	☒	☒	☒	☐	☐A ☒B
Back	☒	☒	☒	☒	☐	☐A ☒B
Left	☒	☒	☒	☒	☐	☐A ☒B
Right	☒	☒	☒	☒	☐	☐A ☒B
Top	☒	☒	☒	☒	☐	☐A ☒B
Bottom	☒	☒	☒	☒	☐	☐A ☒B

Contact Discharge

Test Points	Test Levels		Results		
	± 2 kV	±4 kV	Passed	Fail	Performance Criterion
Front	☒	☒	☒	☐	☐A ☒B
Back	☒	☒	☒	☐	☐A ☒B
Left	☒	☒	☒	☐	☐A ☒B
Right	☒	☒	☒	☐	☐A ☒B
Top	☒	☒	☒	☐	☐A ☒B
Bottom	☒	☒	☒	☐	☐A ☒B

Discharge To Horizontal Coupling Plane

Side of EUT	Test Levels		Results		
	± 2 kV	± 4 kV	Passed	Fail	Performance Criterion
Front	☒	☒	☒	☐	☐A ☒B
Back	☒	☒	☒	☐	☐A ☒B
Left	☒	☒	☒	☐	☐A ☒B
Right	☒	☒	☒	☐	☐A ☒B

Discharge To Vertical Coupling Plane

Side of EUT	Test Levels		Results		
	± 2 kV	± 4 kV	Passed	Fail	Performance Criterion
Front	☒	☒	☒	☐	☐A ☒B
Back	☒	☒	☒	☐	☐A ☒B
Left	☒	☒	☒	☐	☐A ☒B
Right	☒	☒	☒	☐	☐A ☒B

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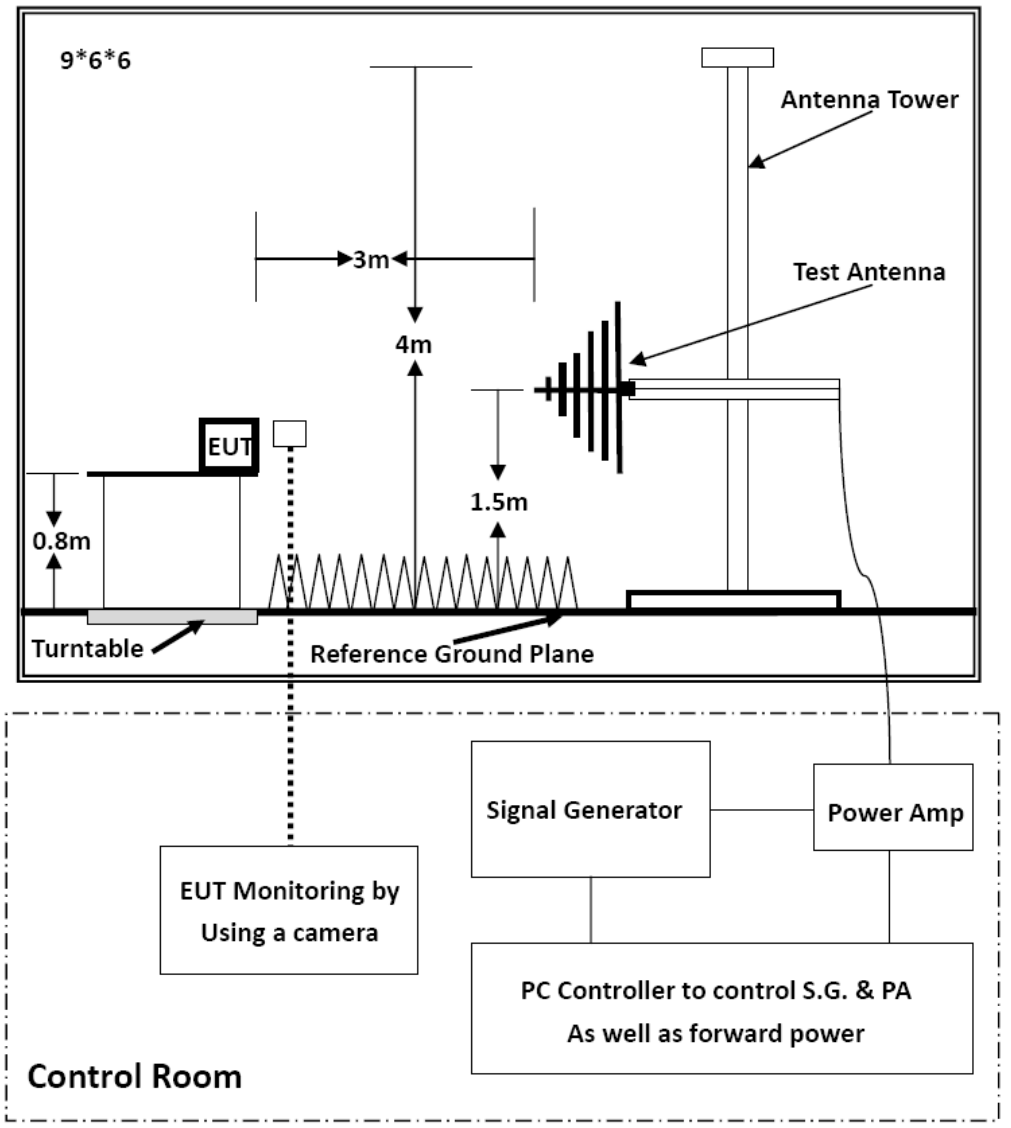
7. RF FIELD STRENGTH SUSCEPTIBILITY TEST

7.1. Block Diagram of Test Setup



7.2. Test Standard

EN IEC 61000-6-2:2019

7.3. Severity Levels and Performance Criterion

7.3.1. Severity level

Level	Field Strength (V/m)
1	1
2	3
3	10
X	1

7.3.2. Performance Criterion: A

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7.4. EUT Configuration on Test

The configuration of EUT is listed in Section 7.3.

7.5. Operating Condition of EUT

Same as radiated emission measurement, which is listed in Section 5.1, except the test setup replaced as Section 9.1.

7.6. Test Procedure

The EUT are placed on a table, which is 0.8 meter high above the ground. The EUT is set 3 meters away from the transmitting antenna, which is mounted on an antenna tower. Both horizontal and vertical polarization of the antenna is set on test. Each of the four sides of the EUT must be faced this transmitting antenna and measured individually.
In order to judge the EUT performance, a CCD Recording is used to monitor its screen.
All the scanning conditions are as following:

Condition of Test	Remark
Fielded Strength	3 V/m (Severity Level 2)
Radiated Signal	Unmodulated
Test Frequency Range (swept test)	80-1000MHz,1400-6000MHz
Dwell time of radiated	0.0015 decade/s
Waiting Time	3 Sec.

7.7. Test Results

PASS.

The test result please refer to the next page.

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RF Field Strength Susceptibility Test Results

Standard	☐ IEC 61000-4-3 ☑ EN 61000-4-3		
Applicant	Sicon Chat Union Electric Co., Ltd.		
EUT	Li-ion battery energy storage system	**Temperature**	24.1℃
M/N	EBC480/100-LFP-ABMS	**Humidity**	52.6%
Field Strength	10V/m 3V/m	**Criterion**	A
Test Mode	Working	**Test Engineer**	Baron.wen
Test Frequency	80MHz to 1000MHz (10V/m) 1400MHz to 6000MHz (3V/m)	**Test Voltage**	DC480V
Modulation	☐None ☐ Pulse ☑AM 1KHz 80%		
Steps	1%		

	Horizontal	**Vertical**
Front	PASS	PASS
Right	PASS	PASS
Rear	PASS	PASS
Left	PASS	PASS

Test Equipment:

1. Signal Generator: 2031 (MARCONI)
2. Power Amplifier: 500A100 & 100W/1000M1 (A&R)
3. Power Antenna: 3108 (EMCO) & AT1080 (A&R)
4. Field Monitor: FM2000 (A&R)

Note:

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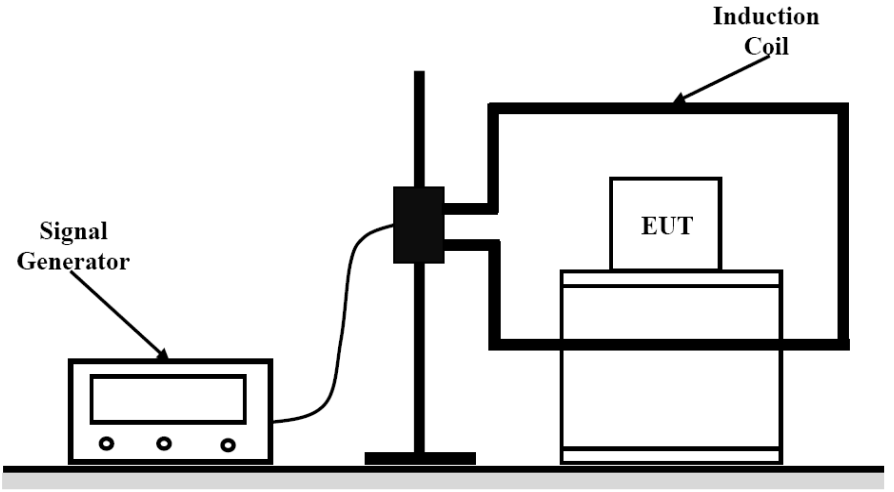
8. MAGNETIC FIELD SUSCEPTIBILITY TEST

8.1. Block Diagram of Test Setup



8.2. Test Standard

EN IEC 61000-6-2:2019

8.3. Severity Levels and Performance Criterion

8.3.1. Severity level

Level	Field Strength (A/m)
1	1
2	3
3	10
4	30
5	100
X	Special

8.3.2. Performance Criterion: A

8.4. EUT Configuration on Test

The configuration of EUT is listed in Section 3.3.

8.5. Test Procedure

The EUT is placed in the middle of a induction coil (1*1m), under which is a 1*1*0.1m (high) table, this small table is also placed on a larger table, 0.8 m above the ground. Both horizontal and vertical polarization of the induction coil is set on test, so that each side of the EUT is affected by the magnetic field. Also can reach the same aim by change the position of the EUT.

8.6. Test Results

PASS.

The test result please refer to the next page.

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Magnetic Field Immunity Test Result

Standard	☐ IEC 61000-4-8 ☑ EN 61000-4-8		
Applicant	Sicon Chat Union Electric Co., Ltd.		
EUT	Li-ion battery energy storage system	**Temperature**	22.8℃
M/N	EBC480/100-LFP-ABMS	**Humidity**	53.2%
Test Mode	Working	**Criterion**	A
Test Engineer	ZOM ZHANG	**Test Voltage**	DC480V

Test Level (A/M)	Testing Duration	Coil Orientation	Criterion	Result
30	5 mins	X	A	PASS
30	5 mins	Y	A	PASS
30	5 mins	Z	A	PASS

Note:

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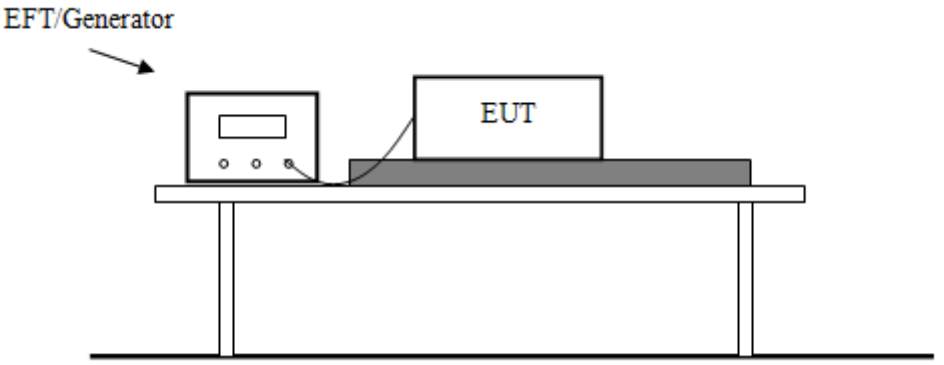
9. Electrical Fast Transient/Burst Immunity Test

9.1. Block Diagram of Test Setup



9.2. Test Standard

EN IEC 61000-6-2: 2019 (EN 61000-4-4: 2012, Level 3: 1KV)

9.3. Severity Levels and Performance Criterion

9.3.1 Severity level

Open Circuit Output Test Voltage ±10%		
Level	On Power Supply Lines	On I/O (Input/Output) Signal data and control lines
1.	0.5 KV	0.25 KV
2.	1 KV	0.5 KV
3.	2 KV	1 KV
4.	4 KV	2 KV
X	Special	Special

9.3.2 Performance Criterion: B

9.4. EUT Configuration on Test

The configuration of EUT is listed in Section 3

9.5. Test Procedure

The EUT is put on the table, which is 0.8 meter high above the ground. This reference ground plane shall project beyond the EUT by at least 0.1m on all sides and the minimum distance between EUT and all other conductive structure, except the ground plane beneath the EUT, shall be more than 0.5m.

9.5.1 For input and output DC power ports:

The EUT is connected to the power mains by using a coupling device, which couples the EFT interference signal to DC power lines. Both polarities of the test voltage should be applied during compliance test and the duration of the test is 2 mins.

9.5.2 For signal lines and control lines ports: No I/O ports. It’s unnecessary to test.

9.6. Test Results

PASS.

Please refer to the following page.

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Electrical Fast Transient/Burst Test Results

Standard	☐ IEC 61000-4-4 ☑ EN 61000-4-4		
Applicant	Sicon Chat Union Electric Co., Ltd.		
EUT	Li-ion battery energy storage system	**Temperature**	24.2℃
M/N	EBC480/100-LFP-ABMS	**Humidity**	53.6%
Test Mode	Working	**Criterion**	B
Test Engineer	ZOM ZHANG	**Test Voltage**	DC480V

Line	Test Voltage	Result (+)	Result (-)
L	1KV	PASS	PASS
N	1KV	PASS	PASS
L-N	1KV	PASS	PASS
L-PE			
N-PE			
L-N-PE			
Signal Line			
I/O Cable			

Note:

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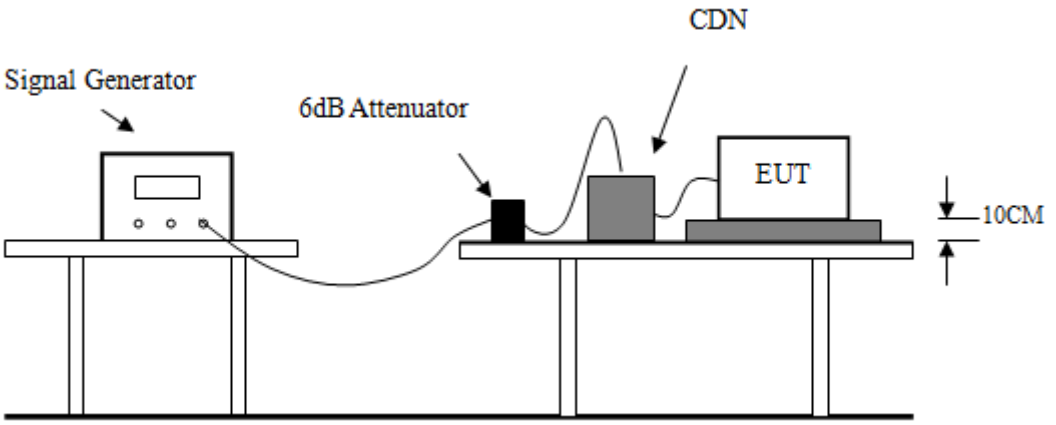
10. Injected Currents Susceptibility Test

10.1 Block Diagram of Test Setup



10.2 Test Standard

EN 61000-6-2: 2007 (EN 61000-4-6: 2014, Severity Level: Level 3, (0.15MHz ~ 80MHz)

10.3 Severity Levels and Performance Criterion

9.3.1 Severity level

Level	Field Strength (V)
1	1
2	3
3	10
X	Special

9.3.2 Performance Criterion: A

10.4 EUT Configuration on Test

The configuration of EUT is listed in Section 3

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10.5 Test Procedure

10.5.1 Set up the EUT, CDN and test generators as shown on Section 9.1

10.5.2 Let the EUT work in test mode and measure it.

10.5.3 The EUT are placed on an insulating support 0.1m high above a ground reference plane. CDN (coupling and decoupling device) is placed on the ground plane about 0.3m from EUT.

Cables between CDN and EUT are as short as possible, and their height above the ground reference plane shall be between 30 and 50 mm (where possible).

10.5.4 The disturbance signal described below is injected to EUT through CDN.

10.5.5 The EUT operates within its operational mode(s) under intended climatic conditions after power on.

10.5.6 The frequency range is swept from 150kHz to80MHz using 3V signal level, and with the disturbance signal 80% amplitude modulated with a 1kHz sine wave.

10.5.7 The rate of sweep shall not exceed 1.5*10-3decades/s. where the frequency is swept incrementally; the step size shall not exceed 1% of the start and thereafter 1% of the preceding frequency value.

10.5.8 Recording the EUT operating situation during compliance testing and decide the EUT immunity criterion.

10.6 Test Results

PASS.

Please refer to the following page.

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Injected Currents Susceptibility Test Results

Standard	☐ IEC 61000-4-6 ☑ EN 61000-4-6		
Applicant	Sicon Chat Union Electric Co., Ltd.		
EUT	Li-ion battery energy storage system	**Temperature ...**	24.4℃
M/N	EBC480/100-LFP-ABMS	**Humidity .....**	52.1% .....
Test Mode	Working	**Criterion .....**	A
Test Engineer	ZOM ZHANG	**Test Voltage**	DC480V

Frequency Range (MHz)	Injected Position	Strength (Unmodulated)	Criterion	Result
0.15 ~ 80	AC Mains	10V	A	PASS

Note:

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11. PHOTOGRAPHS OF THE EUT

Fig. 1

Fig. 2

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Fig. 3

---------- THE END OF TEST REPORT ----------

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Attestation of Compliance

STE Testing

Reference No.	:	**STE20110102S**
Applicant	:	**Sicon Chat Union Electric Co., Ltd.**
Address	:	**Bldg.14&15, No. 319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, 050035, China.**
Product	:	**Li-ion battery energy storage system**
Trade Mark	:	**N/A**
Model(s)	:	**SEE ANNEX I**
Parameters	:	**SEE ANNEX I**
Tested according to	:	**IEC 62619:2011+A1:2015**

The submitted products have been tested by us with the listed standards.

This Attestation of Compliance is issued according to the council Directive 2014/35/EU, Referred to as the Low Voltage Directive. It confirms that the listed product complies with all essential requirements of the LVD Directive and applies only to the sample and its technical documentation submitted to Shenzhen STE Testing Laboratory Co., Ltd. for testing.

After preparation of the necessary technical documentation as well as the EC conformity declaration the required CE marking can be affixed on the product.Other relevant Directives have to be observed.

CE

Date of issue:June 20, 2019

STE TESTING LABORATORY
STE
Manager
APPROVED

Shenzhen STE Testing Laboratory Co., Ltd.
Room 301(left side), Building 9, Dehong Factory Building, No. 63 Yuchang Road, Niuhu Community, Guanlan Street, Longhua District, Shenzhen, Guangdong, China

ANNEX I:

Reference No. : STE20110102S

Model(s) :

Model	voltage	Input Current(A)	Output Current(A)
ECM-48B100N	48V	100A	100A
EBC48/30-LFP-ABMS	48V	60A	90A
EBC48/50-LFP-ABMS	48V	100A	150A
EBC48/100-LFP-ABMS	48V	100A	100A
EBC51.2/100-LFP-ABMS	51.2V	100A	100A
EBC240/10-LFP-ABMS	240V	20A	40A
EBC480/10-LFP-ABMS	480V	20A	40A
EBC480/20-LFP-ABMS	480V	40A	80A
EBC480/30-LFP-ABMS	480V	60A	120A
EBC480/50-LFP-ABMS	480V	50A	100A
EBC480/100-LFP-ABMS	480V	100A	200A
EBC480/150-LFP-ABMS	480V	150A	300A
EBC480/200-LFP-ABMS	480V	200A	400A
EBC480/280-LFP-ABMS	480V	140A	140A
EBC480/40-LFP-ABMS	480V	80A	200A
EBC480/80-LFP-ABMS	480V	160A	400A
EBC480/120-LFP-ABMS	480V	240A	480A
EBC480/160-LFP-ABMS	480V	320A	480A
EBC768/40-LFP-ABMS	768V	80A	240A
EBC768/80-LFP-ABMS	768V	160A	400A
EBC768/120-LFP-ABMS	768V	240A	480A
EBC768/160-LFP-ABMS	768V	320A	480A
EBC768/50-LFP-ABMS	768V	50A	100A
EBC768/100-LFP-ABMS	768V	100A	200A
EBC768/150-LFP-ABMS	768V	150A	300A
EBC768/200-LFP-ABMS	768V	200A	400A
EBC768/280-LFP-ABMS	768V	140A	140A
EBC768/100-LFP-ABMS-M	768V	100A	200A
EBC768/40-LFP-ABMS-F	768V	80A	240A
EBC768/80-LFP-ABMS-F	768V	160A	400A
EBC768/120-LFP-ABMS-F	768V	240A	480A
EBC768/160-LFP-ABMS-F	768V	320A	480A
EBC768/50-LFP-ABMS-F	768V	50A	100A
EBC768/100-LFP-ABMS-F	768V	100A	200A
EBC768/150-LFP-ABMS-F	768V	150A	300A
EBC768/200-LFP-ABMS-F	768V	200A	400A
EBC768/280-LFP-ABMS-F	768V	140A	140A

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TESTING AND MEASURING EQUIPMENT/ALLOWED SUBCONTRACTING
IEC 62619:2017, Edition 1.0
Secondary cells and batteries containing alkaline or other non-acid electrolytes – Safety requirements for secondary lithium cells and batteries, for use in industrial applications

Report Number.....:	STE20110102S
Date of issue.....:	June 20, 2019
Total number of pages.....:	24 pages
Name of Testing Laboratory preparing the Report.....:	Shenzhen STE Testing Laboratory Co., Ltd
Applicant's name.....:	Sicon Chat Union Electric Co., Ltd.
Address.....:	Bldg.14&15, No. 319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, 050035, China.
Test specification:	
Standard.....:	IEC62619:2017, AMD1:2015
Test procedure.....:	CE-LVD
Non-standard test method.....:	N/A
Test Report Form No.....:	IEC62619C
Test Report Form(s) Originator.....:	DEKRA Certification B.V.
Master TRF.....:	Dated 2018-12-21

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General disclaimer:

The test results presented in this report relate only to the object tested.

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Test item description.....:	Li-ion battery energy storage system
Trade Mark.....:	N/A
Manufacturer.....:	Same as the applicant
Model/Type reference.....:	EBC480/100-LFP-ABMS, details see the model list
Ratings.....:	DC 480V, 100A, ta.25°C, IP20

☒	**Testing Laboratory:**	Shenzhen STE Testing Laboratory Co., Ltd	
Testing location/ address.....:		Room 301(left side), Building 9, Dehong Factory Building, No. 63 Yuchang Road, Niuhu Community, Guanlan Street, Longhua District, Shenzhen, China	
Tested by.....:		Hunter Liang / Project Handler	Hunter Liang
Check by.....:		Todd Qian / Reviewer	Todd Qian
Approved by.....:		Fly Li / Technical Director	Fly Li

List of Attachments (including a total number of pages in each attachment):

Attachment No. 1: Photo documentation.

Summary of testing:

All test items are applied to the model EBC480/100-LFP-ABMS, which is considered representative and give the most unfavourable test result, the other models had been tested with construction cheek, temperature rise test and cap interchangeability on the provided samples.

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Tests performed (name of test and test clause):	Testing location:
IEC 62619:2011+A1:2015	Shenzhen STE Testing Laboratory Co., Ltd Room 301(left side), Building 9, Dehong Factory Building, No. 63 Yuchang Road, Niuhu Community, Guanlan Street, Longhua District, Shenzhen, China

Summary of compliance with National Differences:

List of countries addressed

☒ The product fulfils the requirements of Germany and European Group differences

Copy of marking plate:

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

Li-ion battery energy storage system
Model: EBC480/100-LFP-ABMS
DC 480V, 100A

Sicon Chat Union Electric Co., Ltd.
Bldg.14&15, No. 319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, 050035, China.
Importer: xxxx
Address: xxxx
Made In China

Remarks:

1. Representative markings of EBC480/100-LFP-ABMS, markings of all models are identical except for the model name and power.

2. Height of CE mark is 5mm, height of WEEE symbol is 7mm, height of other marks is 5mm, height of letters and numerals is 2mm.

TÜV NORD

Certificate

of Conformity

Registered No.:

COCPVP08104/21E-02

File reference	Test report No.	Date of issue
PVP08104/21E-02	TRPVP08104/21E/02	2021-12-21

On the basis of the tests undertaken, the samples of the below product(s) have been found to comply with the essential requirements of the referenced specifications at the time the tests were carried out:

Applicant:	**Sicon Chat Union Electric Co., Ltd.** Bldg.14&15, No. 319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, Hebei, China (050035)
Manufacturer:	**Sicon Chat Union Electric Co., Ltd.** Bldg.14&15, No. 319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, Hebei, China (050035)
Factory:	**Sicon Chat Union Electric Co., Ltd.** Bldg.14&15, No. 319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, Hebei, China (050035)
Product:	EPCS-Series modular power conversion system
Type designation:	EPCS 50, EPCS 100, EPCS 150, EPCS 200, EPCS 250, EPCS 300, EPCS 400, EPCS 500, EPCS 600
Certification program:	BOS-P-01 Rev. 00
Certification fundamental(s):	EN 50549-1:2019+AC:2019-04 with national network and system protection for Norway into consideration See test report for detailed information.

This document is based on the evaluation of the samples of the above mentioned product(s). It does not imply an assessment of the mass-production of the product(s), and it does not permit the use of a TÜV NORD mark. The holder of this document may use it in connection with the related test report(s).

Renewable Energy

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P.R. China

TÜV NORD

Certificate

of Conformity

Registered No.:

COCPVP08104/21E-01

File reference	Test report No.	Date of issue
PVP08104/21E-01	TRPVP08104/21E/01	2021-12-21

On the basis of the tests undertaken, the samples of the below product(s) have been found to comply with the essential requirements of the referenced specifications at the time the tests were carried out:

Applicant:	**Sicon Chat Union Electric Co., Ltd.** Bldg.14&15, No. 319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, Hebei, China (050035)
Manufacturer:	**Sicon Chat Union Electric Co., Ltd.** Bldg.14&15, No. 319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, Hebei, China (050035)
Factory:	**Sicon Chat Union Electric Co., Ltd.** Bldg.14&15, No. 319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, Hebei, China (050035)
Product:	EPCS- Series modular power conversion system
Type designation:	EPCS 50, EPCS 100, EPCS 150, EPCS 200, EPCS 250, EPCS 300, EPCS 400, EPCS 500, EPCS 600
Certification program:	BOS-P-01 Rev. 00
Certification fundamental(s):	Engineering Recommendation G99 Issue 1 – Amendment 6 See test report for detailed information.

This document is based on the evaluation of the samples of the above mentioned product(s). It does not imply an assessment of the mass-production of the product(s), and it does not permit the use of a TÜV NORD mark. The holder of this document may use it in connection with the related test report(s).

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Attestation of Compliance

STE Testing

Reference No.	:	**STE21092602E**
Applicant	:	**Sicon Chat Union Electric Co., Ltd.**
Address	:	**Bldg.14&15, No. 319, Xiangjiang Street, High-Tech Zone, Shijiazhuang, 050035, China**
Trade Mark	:	**N/A**
Product	:	**Energy storage Power Conversion System（PCS）**
Model(s)	:	**EPCS-250, EPCS50, EPCS100, EPCS150, EPCS200, EPCS250, EPCS300, EPCS400, EPCS500, EPCS600, EHPCS-250/50, EHPCS-200/50, EHPCS-150/50, EHPCS-100/50, EHPCS-50/50**
Tested according to	:	**EN 61000-6-4: 2007+A1: 2011** **EN 61000-3-2: 2014** **EN 61000-3-3: 2013** **EN 61000-6-2: 2005**

The submitted products have been tested by us with the listed standards.

This Attestation of Compliance is issued according to the council Directive 2014/30/EU, Referred to as the Electromagnetic Compatibility. It confirms that the listed product complies with all essential requirements of the EMC directive and applies only to the sample and its technical documentation submitted to Shenzhen STE Testing Laboratory Co., Ltd for testing.

After preparation of the necessary technical documentation as well as the EC conformity declaration the required CE marking can be affixed on the product.Other relevant Directives have to be observed.

CE

Date of issue: September 28, 2021

STE TESTING LABORATORY
STE
APPROVED

Manager

Shenzhen STE Testing Laboratory Co., Ltd.
Room 301(left side), Building 9, Dehong Factory Building, No. 63 Yuchang Road, Niuhu Community, Guanlan Street, Longhua District, Shenzhen

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Attestation of Compliance

STE Testing

Reference No.	:	**STE21092601S**
Applicant	:	**Sicon Chat Union Electric Co., Ltd.**
Address	:	**Bldg.14&15, No. 319, Xiangjiang Street, High-Tech Zone, Shijiazhuang, 050035, China**
Product	:	**Energy storage Power Conversion System (PCS)**
Trade Mark	:	**N/A**
Model(s)	:	**EPCS50, EPCS100, EPCS150, EPCS200, EPCS250, EPCS300, EPCS400, EPCS500, EPCS600, EHPCS-250/50, EHPCS-200/50, EHPCS-150/50, EHPCS-100/50, EHPCS-50/50**
Parameters	:	**DC: 550V-850V⎓, MAX 454A AC: 380V~, 50/60Hz, MAX 362A**
Tested according to	:	**EN 62477-1: 2012+A11: 2014+A1: 2017**

The submitted products have been tested by us with the listed standards.

This Attestation of Compliance is issued according to the council Directive 2014/35/EU, Referred to as the Low Voltage Directive. It confirms that the listed product complies with all essential requirements of the LVD Directive and applies only to the sample and its technical documentation submitted to Shenzhen STE Testing Laboratory Co., Ltd. for testing.

After preparation of the necessary technical documentation as well as the EC conformity declaration the required CE marking can be affixed on the product.Other relevant Directives have to be observed.

CE

Date of issue:September 29, 2021

STE TESTING LABORATORY
STE
APPROVED
Manager

Shenzhen STE Testing Laboratory Co., Ltd.
Room 301(left side), Building 9, Dehong Factory Building, No. 63 Yuchang Road, Niuhu Community, Guanlan Street, Longhua District, Shenzhen, Guangdong, China

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TEST REPORT
IEC 62477-1
Safety requirements for power electronic converter systems and equipment
Part 1: General

Report Reference No.....:	STE21092601S
Date of issue.....:	2021-09-29
Total number of pages .....:	75 pages
Name of Testing Laboratory preparing the Report.....:	Shenzhen STE Testing Laboratory Co., Ltd Room 301(left side), Building 9, Dehong Factory Building, No. 63 Yuchang Road, Niuhu Community, Guanlan Street, Longhua District, Shenzhen, China
Applicant's name.....:	Sicon Chat Union Electric Co., Ltd.
Address.....:	Bldg.14&15, No. 319, Xiangjiang Street, High-Tech Zone, Shijiazhuang, 050035, China
Test specification:	
Standard.....:	IEC 62477-1:2012+AMD1: 2016
Test procedure.....:	CE-LVD
Non-standard test method.....:	N/A
Test Report Form No.....:	IEC62477_1C
Test Report Form(s) Originator.....:	VDE Testing and Certification Institute
Master TRF.....:	Dated 2018-08-14

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General disclaimer:

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POM POwer.pdf

Test item description.....:	Energy storage Power Conversion System (PCS)
Trade Mark.....:	N/A
Manufacturer.....:	Sicon Chat Union Electric Co., Ltd. Bldg.14&15, No. 319, Xiangjiang Street, High-Tech Zone, Shijiazhuang, 050035, China
Model/Type reference.....:	EPCS50, EPCS100, EPCS150, EPCS200, EPCS250, EPCS300, EPCS400, EPCS500, EPCS600, EHPCS-250/50, EHPCS-200/50, EHPCS-150/50, EHPCS-100/50, EHPCS-50/50
Ratings.....:	DC: 550V-850V⎓, MAX 454A AC: 380V~, 50/60Hz, MAX 362A

Testing procedure and testing location:

Testing Laboratory:	Shenzhen STE Testing Laboratory Co., Ltd
Testing location/ address.....:	Room 301(left side), Building 9, Dehong Factory Building, No. 63 Yuchang Road, Niuhu Community, Guanlan Street, Longhua District, Shenzhen, China
Tested by.....:	Hunter Liang / Project Handler
Review by.....:	Todd Qian / Reviewer
Approved by.....:	Fly Li / Technical Director

List of Attachments (including a total number of pages in each attachment):

Attachment No.1:

Photo documentation (4 pages).

Summary of testing:

Tests performed (name of test and test clause):	**Testing location:**
The submitted samples were found to comply with the requirements of: ➢ Electrical safety IEC 62477-1:2012+AMD1: 2016; EN 62477-1: 2012+A11: 2014+A1: 2017.	Shenzhen STE Testing Laboratory Co., Ltd Room 301(left side), Building 9, Dehong Factory Building, No. 63 Yuchang Road, Niuhu Community, Guanlan Street, Longhua District, Shenzhen, China

Summary of compliance with National Differences (List of countries addressed):

List of countries addressed: EU Group Differences

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Copy of marking plate

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

Energy storage Power Conversion System (PCS)

Model: EPCS250

Rating:

DC: 550V-850V⎓, MAX 454A

AC: 380V~, 50/60Hz, MAX 362A

Sicon Chat Union Electric Co., Ltd.

Made in China

Remark:

1. Representative markings of model: EPCS250, markings of all models are identical except for model name.

2. The height dimension of CE mark should not less than 5mm, the height dimension of WEEE symbol should not less than 7mm, height of other marks at least 5mm, height of letters and numerals at least 2mm.

Test item particulars..... :	
Classification of installation and use.....:	For building-in
Supply Connection.....:	Permanent connection
.....:	
Possible test case verdicts:	
- test case does not apply to the test object.....:	N/A
- test object does meet the requirement.....:	P (Pass)
- test object does not meet the requirement.....:	F (Fail)
Testing..... :	
Date of receipt of test item.....:	2021-09-26
Date (s) of performance of tests.....:	From 2021-09-26 to 2021-09-29

General remarks:

"(See Enclosure #)" refers to additional information appended to the report.
"(See appended table)" refers to a table appended to the report.

Throughout this report a ☐ comma / ☒ point is used as the decimal separator.

Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:

The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided.....:	☐ **Yes** ☒ **Not applicable**

When differences exist; they shall be identified in the General product information section.

Name and address of factory (ies)..... : Same as manufacturer

General product information and other remarks:

1. The text of standard IEC 62477-1:2012+AMD1:2016 was approved as European Standard EN 62477-1: 2012+A11: 2014+A1: 2017 without any modification. The product complies with EN 62477-1: 2012+A11: 2014+A1: 2017.
2. The appliance used indoor only.
3. The maximum ambient temperature specified by manufacturer is 40°C.
4. All models are identical except for the model name and appearance, all tests were conducted on the model EPCS250.

Additional test item particulars :	
Equipment mobility:	☐ movable ☐ hand-held ☒ stationary ☐ fixed ☐ transportable ☐ for building-in
Connection to the mains :	☐ pluggable equipment ☐ direct plug-in ☒ permanent connection ☐ for building-in
Environmental category :	☐ outdoor ☒ indoor ☐ indoor unconditional conditional
Over voltage category Mains :	☐ OVC I ☐ OVC II ☒ OVC III ☐ OVC IV
Over voltage category PV :	☐ OVC I ☐ OVC II ☐ OVC III ☐ OVC IV
Mains supply tolerance (%) :	-85 / +115 %
Tested for power systems :	Non-mains supply system voltage
IT testing, phase-phase voltage (V) :	--
Class of equipment :	☒ Class I ☐ Class II ☐ Class III ☐ Not classified
Mass of equipment (kg) :	1350kg
Pollution degree :	II
IP protection class :	IP20
For more information: see table 4 :	--

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EMC TEST REPORT

For

Sicon Chat Union Electric Co., Ltd.

Energy storage Power Conversion System（PCS）

Model No.: EPCS-250

Additional Model No.: EPCS50, EPCS100, EPCS150, EPCS200, EPCS250, EPCS300, EPCS400, EPCS500, EPCS600, EHPCS-250/50, EHPCS-200/50, EHPCS-150/50, EHPCS-100/50, EHPCS-50/50

Prepared for	:	Sicon Chat Union Electric Co., Ltd.
Address	:	Bldg.14&15, No. 319, Xiangjiang Street, High-Tech Zone, Shijiazhuang, 050035, China
Prepared by	:	Shenzhen STE Testing Laboratory Co., Ltd
Address	:	Room 301(left side), Building 9, Dehong Factory Building, No. 63 Yuchang Road, Niuhu Community, Guanlan Street, Longhua District, Shenzhen
Date of receipt of test sample	:	September 26, 2021
Number of tested samples	:	1
Serial number	:	Prototype
Date of Test	:	September 26, 2021 ~ September 28, 2021
Date of Report	:	September 28, 2021

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EMC TEST REPORT
EN 61000-6-4: 2007+A1: 2011
Electromagnetic compatibility (EMC) -- Part 6-4: Generic standards - Emission standard for industrial environments
EN 61000-6-2: 2005
Electromagnetic compatibility (EMC)-- Part 6-2: Generic standards - Immunity for industrial environments

Report Reference No. .....:	**STE21092602E**
Date Of Issue.....:	September 28, 2021
Testing Laboratory Name.....:	**Shenzhen STE Testing Laboratory Co., Ltd**
Address.....:	Room 301(left side), Building 9, Dehong Factory Building, No. 63 Yuchang Road, Niuhu Community, Guanlan Street, Longhua District, Shenzhen
Testing Location/ Procedure.....:	Full application of Harmonised standards ■ Partial application of Harmonised standards ☐ Other standard testing method ☐
Applicant's Name.....:	**Sicon Chat Union Electric Co., Ltd.**
Address.....:	Bldg.14&15, No. 319, Xiangjiang Street, High-Tech Zone, Shijiazhuang, 050035, China
Test specification:	
Standard.....:	EN 61000-6-4: 2007+A1: 2011, EN 61000-3-2: 2014 EN 61000-3-3: 2013, EN 61000-6-2: 2005
Test Report Form No.....:	EMC-1.0
TRF Originator.....:	Shenzhen STE Testing Laboratory Co., Ltd
Master TRF.....:	Dated 2017-08

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Test Item Description.....:	**Energy storage Power Conversion System（PCS）**
Trade Mark.....:	N/A
Model/ Type Reference.....:	EPCS-250
Ratings.....:	Input: AC 380V, 50/60Hz, MAX:362A Output: DC 550/850V, MAX:454A
Result .....:	**Positive**

Compiled by:	Supervised by:	Approved by:
Hunter Liang	Todd Qian	Fly Li
Hunter Liang/ File administrators	Todd Qian/ Technique principal	Fly Li/Manager

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EMC -- TEST REPORT

Test Report No. : STE21092602E	September 28, 2021 Date of issue

Type / Model.....	: EPCS-250
EUT.....	: Energy storage Power Conversion System（PCS）
Applicant.....	: **Sicon Chat Union Electric Co., Ltd.**
Address.....	: Bldg.14&15, No. 319, Xiangjiang Street, High-Tech Zone, Shijiazhuang, 050035, China
Telephone.....	: /
Fax.....	: /
Manufacturer.....	: **Sicon Chat Union Electric Co., Ltd.**
Address.....	: Bldg.14&15, No. 319, Xiangjiang Street, High-Tech Zone, Shijiazhuang, 050035, China
Telephone.....	: /
Fax.....	: /
Factory.....	: **Sicon Chat Union Electric Co., Ltd.**
Address.....	: Bldg.14&15, No. 319, Xiangjiang Street, High-Tech Zone, Shijiazhuang, 050035, China
Telephone.....	: /
Fax.....	: /

Test Result according to the standards on page 8: **Positive**

The test report merely corresponds to the test sample.
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Revision History

Revision	Issue Date	Revisions	Revised By
000	September 28, 2021	Initial Issue	Fly Li

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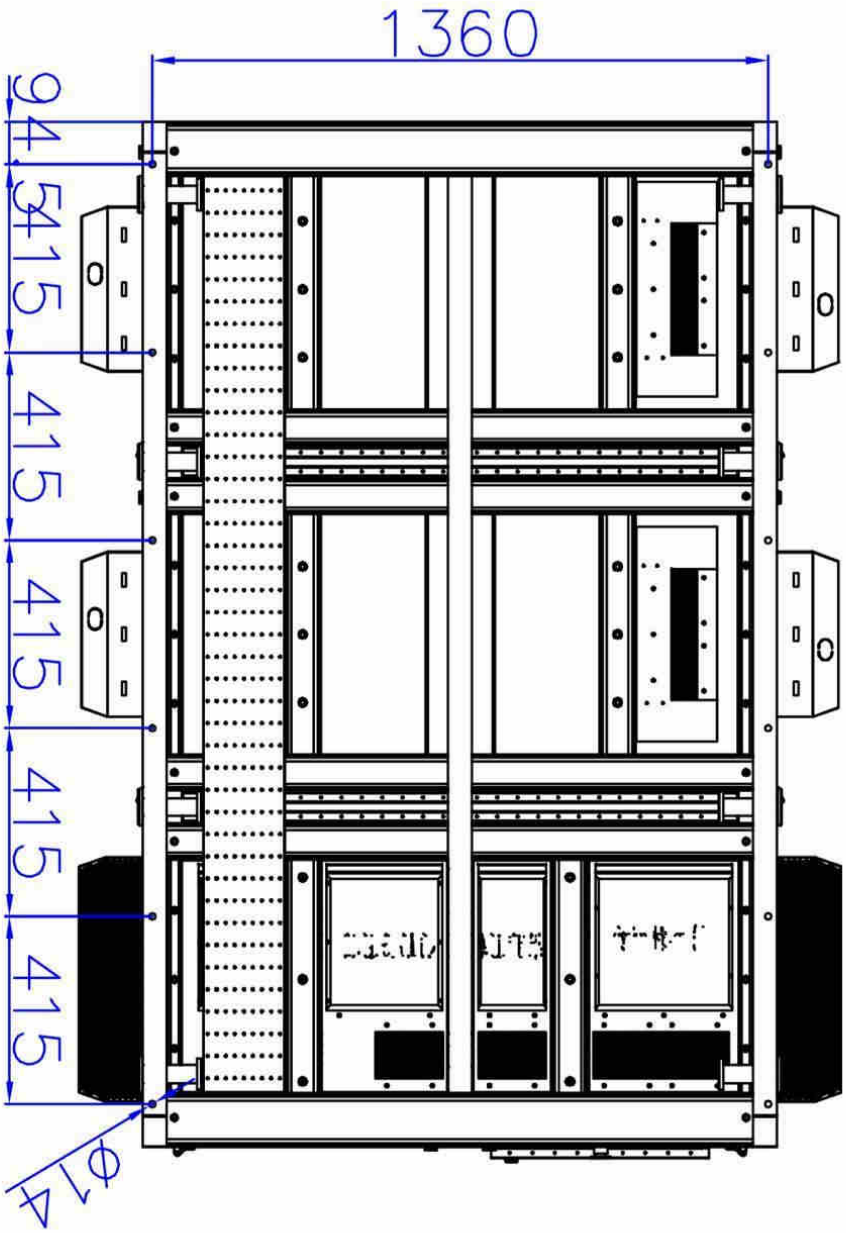

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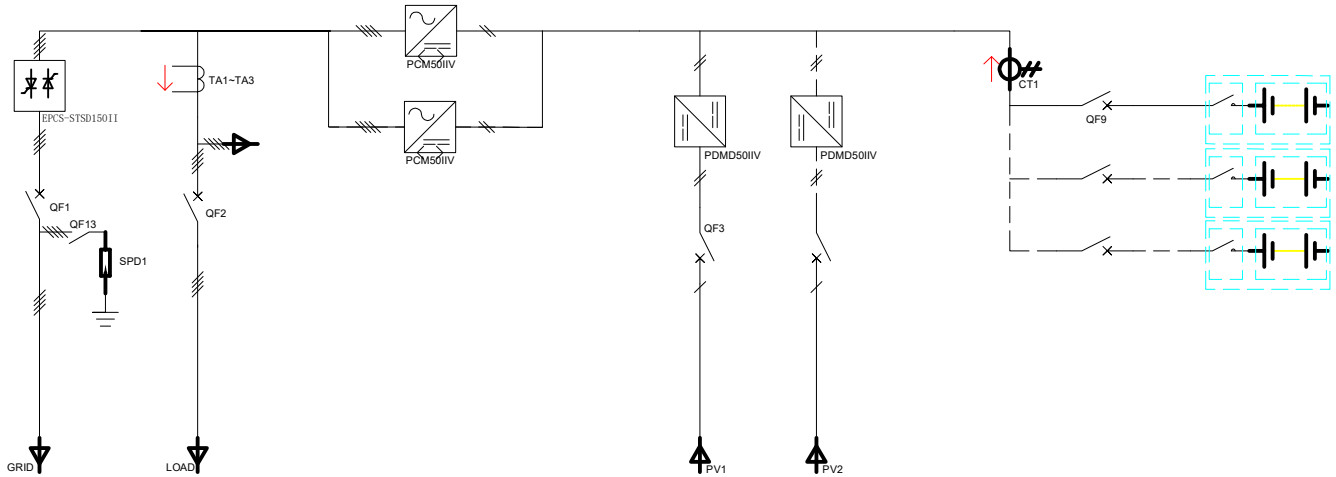

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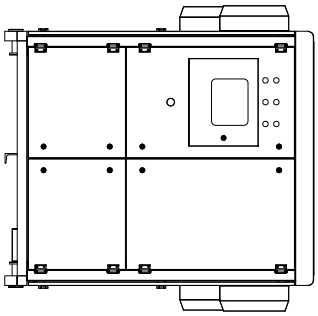

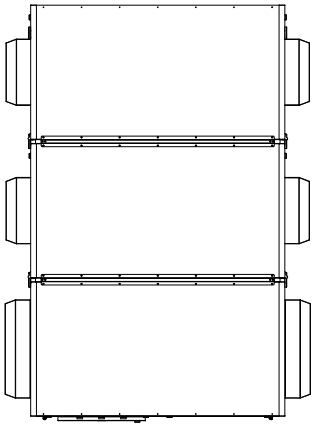

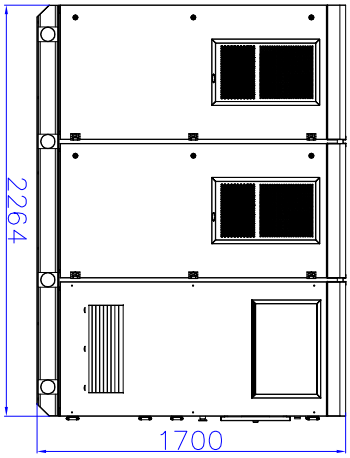

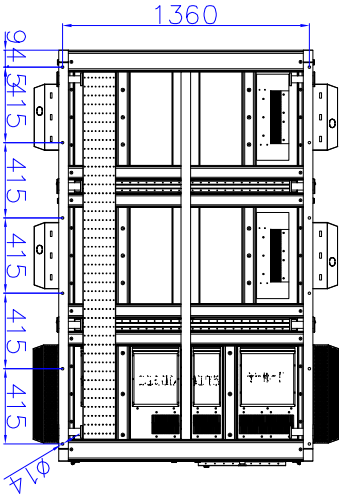

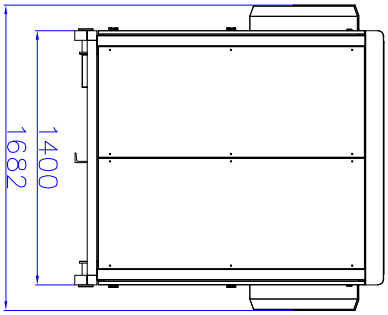

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GRES User Manual

GRES-75-50
GRES-150-100
GRES-225-150
GRES-300-200

Version: 1.01

3/2023

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Foreword

Dear customer, thank you very much for using the GRES system product developed and produced by our company.

This GRES is a comprehensive energy storage product that integrates the advantages of our company in digital technology and new semiconductor technology, and integrates lithium battery products, PCS converters and supporting systems innovatively. The system adopts 50KW energy storage converter module and high-performance lithium battery system, which has the characteristics of extremely high power density, energy density, reliability and efficiency, intelligence and flexibility.

At present, the energy storage technology has developed into an important part of the power grid operation process. After the power grid system introduces the energy storage link, it can eliminate the difference between day and night peaks and valleys according to the customer's electricity demand, smooth the load, effectively use the power equipment, and reduce the cost of power supply. Promote the application of renewable energy. The energy storage converter provides an interface between the power grid and the energy storage battery to realize the charging and discharging of the energy storage battery. Through application in different occasions (grid-connected system, island system, hybrid system and micro-grid system), it can effectively control power resources, and ensure the safety of power grid and load power supply through functions such as voltage regulation and frequency regulation, peak shaving and valley power supply, and micro-grid power supply.

This manual introduces the functional characteristics and usage of this product, including safety instructions, product overview, mechanical and electrical installation, system operation steps, system parameter settings, fault diagnosis, and routine maintenance.

Please keep this manual in a safe place for future use.

Before use, please read this manual carefully and carefully, and use this product after understanding the product precautions.

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Precautions
◆ When the product is used, the peripheral cables must be installed and completed according to the regulations, and the operation must be performed in accordance with the contents of the manual. ◆ The illustrations in this manual are for illustration only, and may be different from the products you ordered. Please refer to the actual products purchased.. ◆ The company is committed to the continuous improvement of products, product functions will continue to upgrade, the information provided is subject to change without prior notice. ◆ The company provides customers with a full range of technical support. If you have any questions or suggestions in use, please contact the company's account manager in time. ◆ The copyright of the contents of the manual is owned by SICON. This document cannot be copied or rewritten without authorization.

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Special Statement

Personal safety

1. The installation of this product must be carried out under the guidance of the professional engineer of the manufacturer or the manufacturer's authorized agent, and the debugging must be carried out by the engineer designated by the manufacturer, otherwise it may cause product failure or endanger personal safety.

2. Before installing and debugging this product, be sure to read this product manual and safety precautions in detail, otherwise it may cause product failure or endanger personal safety.

3. This product is not intended to be used as a power source for any life support equipment.

4. It is strictly forbidden to put the battery or other devices in this product into fire to avoid explosion and endanger personal safety.

Device Security

1. If it is stored or left unused for a long time, the product must be placed in a dry, clean and specified temperature range, and the system must be charged and discharged every 3 to 6 months. This will prolong the life of the battery inside the device.

2. This product should be used in an appropriate working environment (see the Environmental Requirements section of this product manual for details).

3. The use of this product in the following work environments is prohibited:

- Places with high temperature, low temperature or humidity beyond the specifications of this product
- Places with conductive dust, corrosive gas, salt mist or flammable gas
- Places with vibration and shock
- Places close to heat sources or places with strong electromagnetic field interference

Disclaimer

The manufacturer is not responsible for defects or malfunctions caused by:

- Exceed the scope of use and working environment specified by the product
- Unauthorized modification or repair, wrong installation, improper operation
- Force majeure factors are encountered
- Other matters that violate the provisions of this product manual

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Safety Precautions

Safety Statement

Please read and follow these safety precautions before installing, operating and maintaining the equipment.

To ensure the safety of people and equipment, when installing, operating and maintaining the equipment, please follow the signs on the equipment and all safety precautions in the manual.

The "Danger", "Warning" and "Caution" items in the manual do not represent all the safety precautions that should be observed, but only serve as a supplement to all the safety precautions.

This equipment should be used in an environment that meets the design specifications, otherwise it may cause equipment failure, abnormal function caused by non-compliance with relevant regulations, or damage to parts, etc., which are not within the scope of equipment quality assurance.

Our company will not bear any legal responsibility for personal safety accidents and property losses caused by illegal operation of equipment.

Definition of security level

This manual uses the following safety signs, please be sure to follow them!

Grade	Definition
Danger	Improper use can lead to a dangerous situation, possibly resulting in personal injury or death!
Warning	Improper use can create a hazardous situation that could result in personal injury or equipment damage!
Notice	Although it will not cause equipment damage or personal injury, users must read and abide by the!

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Safety Precautions

Warning

1. Before connecting to the system (including AC mains and loads, etc.), be sure to ground it reliably, and the grounding of the equipment must comply with local electrical regulations.

2. The selection of pre-equipment power distribution protection equipment must comply with local electrical regulations.

3. Like other types of high-power equipment, GRES system s have high voltage inside. However, since the components with high voltage can only be accessed by opening the front door (with a lock), the possibility of contact with high voltage has been minimized. This device is IP54 compliant and has additional safety shielding inside.

4. All equipment internal maintenance and maintenance work requires the use of tools and should be performed by professionals who have received relevant training.

5. The GRES system contains multiple power sources, and all AC and DC power sources must be disconnected before maintenance.

6. The GRES system contains multiple AC and DC high voltage circuits. Use AC and DC voltage meters to verify voltage before operating GRES system s.

7. All physical care and maintenance of batteries requires the use of tools or keys and should be performed by personnel who have received relevant training.

8. The use of batteries requires special care. After the battery is connected, the terminal voltage of the battery will exceed 600Vdc, and personal contact will be fatal.

9. This manual provides precautions to be observed when using or near lithium batteries, which should be observed at all times. Particular attention should be paid to advice on local environmental conditions and the provision of protective work clothing, first aid equipment and fire fighting equipment.

If the internal fuse of the GRES system is damaged, the fuse with the same electrical parameters must be used and operated by professionals.

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Warning

1. The power cables must be routed in metal wiring troughs or metal ground troughs to prevent cable damage and reduce electromagnetic radiation.

2. Please note that the GRES system equipment is loaded with high-voltage lithium batteries, and the batteries are at risk of electric shock, including high short-circuit currents. Follow all safety precautions when handling batteries.

- Use tools with insulated handles to avoid accidental short circuits.
- Remove watches, rings and other metal objects.
- Put on rubber gloves and safety boots, and wear protective clothing.
- Do not put tools or any metal parts on top of the battery.
- Before connecting or disconnecting the terminals, please disconnect the charging power source and the load.
- When moving the battery module, please use appropriate lifting gear and wear all appropriate safety clothing and carry safety equipment.
- The battery must be disposed, transported, recycled or discarded in accordance with relevant national laws and regulations. Do not throw the battery into a fire to avoid exposing the battery to the sun.
- Do not open or damage the battery.
- Only authorized, properly trained and qualified technicians should perform maintenance on this equipment.
- Only qualified personnel familiar with batteries and familiar with safety precautions should install or maintain this system.

Do not allow unauthorized personnel to access the battery.

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Notice

- Please read the user manual and installation manual carefully before installation and use of the equipment.
- If you have any questions, please contact our after-sales service in time, please do not blindly operate the equipment and cause damage to the equipment.

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1. Product Description

This chapter introduces the functions, features, technical indicators and external dimensions of GRES system .

1.1 Product Overview

Grid Renewable Energy Storage Power Supply（GRES for short）， it refers to a set of integrated power system that combines energy storage converter (PCS for short), photovoltaic controller (MPPT for short), and energy storage battery. The seamless switching function between on-grid and off-grid is realized by configuring on-grid static transfer switch (STS for short). The system can use lithium battery energy storage to combine mains and load intelligence, realize peak shaving, microgrid application, multi-energy complementation, strategic intelligent power consumption, and provide users with high economy, high reliability and high safety. High-quality electric energy service.

GRES system s are designed for mobile or stationary use. Divided into battery room and PCS room. The battery compartment can be configured into 1~3 groups of batteries according to the requirements, and each group is composed of 15 battery modules connected in series. The PCS room mainly installs PCS modules, on-grid and off-grid switch STS, MPPT modules and other electrical power distribution equipment. All external output ports, terminals and human-computer interaction screens are all designed in the PCS room. The system has an AC input and output interface, the input end is connected to the power grid, and the output end is connected to the load, so that the system can be used off-grid.

The PCS part adopts advanced digital control technology, which optimizes the control performance, improves the reliability of the system, and realizes uninterrupted switching between modes such as grid-connected discharge, grid-connected charging, and system off-grid operation. The PCS system has a wide DC input range, which can better suit the charging and discharging requirements of different battery combinations. At the same time, the PCS system adopts a modular design in terms of structure and power. Under the same power output, the diversity of battery pack connections is increased and the number of parallel battery packs is reduced. It can better manage the battery, improve the life of the battery and the economic benefits of the energy storage system. The main performance characteristics of the PCS system are as follows:

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｜Safe and reliable｜

High quality li-ion cell for mobile use

Laser welding connection with high strength and low impedance

Cells is designed with PC holders and reinforce steel structure to guarantee the highest safety of the system in transportation, installation and operation

Damping pad design to improve the impact resistance of the system

IP54，safe and reliable operation in outdoor environment

Serially designed PCS and battery pack eliminates circulating current and improve system reliability.

Integrated BMS,DC, AC multi-layer protection, maximum safety performance design

｜Efficient and Convenient｜

Integrated system, standard modular power module and battery module, easy for installation, maintenance and capacity expansion

Easy access to PV and diesel generator, intelligent muli-energy management.

Fixed on the ground or mounted on vehicle, can be loaded and unloaded by forklift and hoisted by lifting ring

Multi systems could be connected in parallel

｜Cost optimization｜

One investment, multiple benefits:Peak shaving, backup power supply, micro grid building,power quality improving and energy storage,etc.

Small size, light weight, less space and installation cost

Long cycle life, low failure rate, reduce operation and maintenance investment

Maximize green energy utilization.

The battery part selects the top performance cells in the international market. The battery system mainly installs battery modules, two-way active balance BMS battery management system, aerosol fire protection and battery protection components. The cabinet has scientific structure, high mechanical strength, convenient module installation, and the overall structure maximizes the

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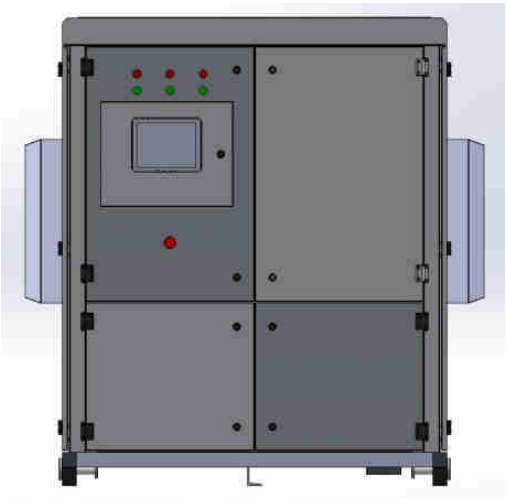
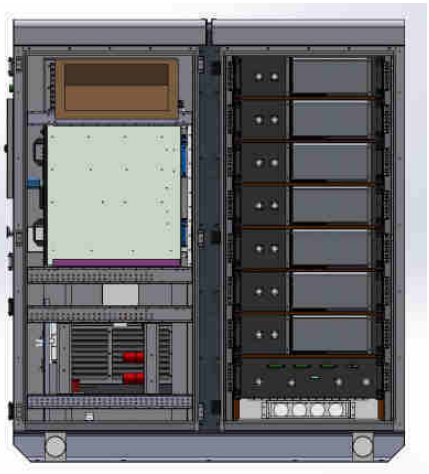
reliability and safety of the system. The main features of the battery system are as follows:

- Compared with lead-acid batteries, it is small in size, light in weight, long in life and high in discharge rate.
- Equipped with active balanced BMS, supports CAN, RS485 communication.
- Modular design is convenient for maintenance, management and expansion.
- Supports parallel use of multiple battery systems.
- Real-time monitoring of cell status, SOC accuracy is better than 5% in the full range.
- Intelligent air cooling design, long system life.
- Three-level design of modules, cabinets and systems, multiple status monitoring, and hierarchical linkage to fully ensure the safety of the battery system.
- Power and communication loop design, strong fault tolerance.

1.1.1 Equipment diagram





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Battery room

GRES-75-50 has one battery room.

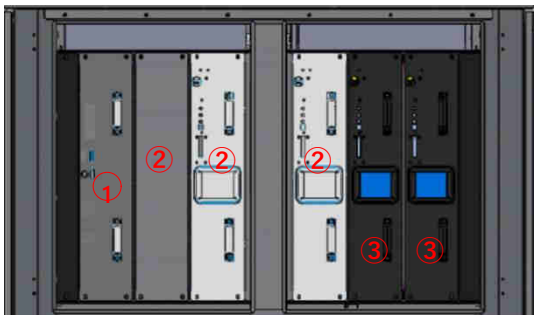
GRES-150-100 has two battery rooms.

GRES-225-150 has three battery rooms.

GRES-300-200 has four battery rooms.

1.1.2 Component introduction

Table 1.1-1

	1、STS module 2、PCS module（50KW） 3、MPPT module(50KW)-Optional Note: GRES-75-50 has one PCS module. GRES-150-100 has two PCS module. GRES-225-150 has three PCS module. GRES-300-200 has four PCS module.
	1、AC output circuit breaker 2、AC input circuit breaker 3、Lightning arrester 4、PV input circuit breaker 5、Battery output circuit breakers (one switch per cluster)

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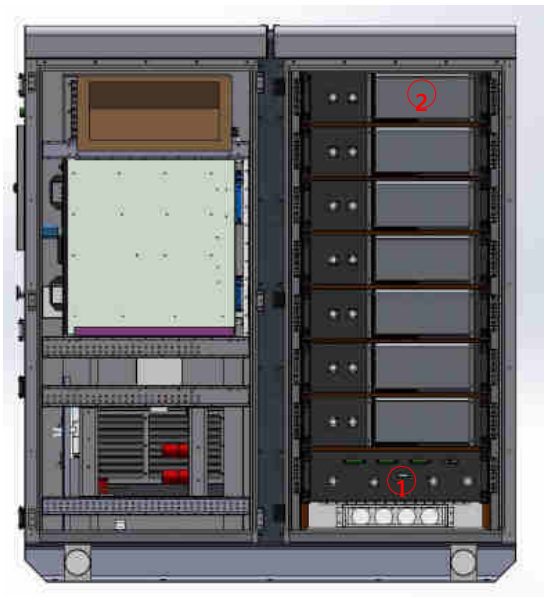	1、Battery module 2、Control Box、 (each battery cabinet contains 15 battery modules and 1 control boxes)

1.1.3 System Specifications

Table 1.1-2

Model	GRES-75-50	GRES-150-100	GRES-225-150	GRES-300-200
Photovoltaic parameters (grid connection)				
MPPT voltage range	DC200V ~ DC700V			
Full Power MPPT Voltage Range	DC370V ~ DC700V			
MPPT channel Qty	0 ~ 2（Optional）			
Single-circuit MPPT maximum current	135A			
AC parameters (grid-connection)				
Rated output power (kW)	50	100	150	200
Max output power (kW)	52.5	105	157.5	210
Rated grid voltage (V)	AC 380/400V			
Grid voltage range	-15% ~ +10%			
Rated grid frequency (Hz)	50/60			
Grid frequency range (Hz)	±2			
Output current harmonics	≤3%（rated power）			
Power factor	-0.9~+0.9			
AC parameters(off grid)				

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Rated output power (kW)	50	100	150	200
Max output power (kW)	52.5	105	157.5	210
Rated output voltage(V)	3W+N+PE, 380/400			
Output voltage harmonics	3%（linear full load）			
Rated frequency (Hz)	50/60			
Overload capacity	105%]: continuous operation; (105% ~ 120%]: 10min;120%):1min			
Battery parameters				
Cell type	lithium iron phosphate			
Energy of each module(kWh)	5.12			
Battery Module qty	15	30	45	60
System rated power (kWh)	76.8	153.6	230.4	307.2
Running Time (h)	1.5(Optional by Changing module qty)			
Battery life	25℃0.5C/0.5C100%DODEOL80%≥4000s			
protection				
DC switch	reserve			
AC switch	reserve			
Power grid monitoring	reserve			
Insulation monitoring	reserve			
DC back connection protection	reserve			
Earth-fault protection	reserve			
Surge protection	DC II/AC II			
System efficiency				
Max efficiency	95%			
Protection				
DC Switch	YES			
AC switch	YES			
Grid monitoring	YES			
Insulation monitoring	YES			
DC reverse polarity protection	YES			

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Ground fault protection	YES			
Surge protection	DC /AC 2nd level			
Basic Parameters				
Dimensions (W*D*H)(mm)	1680*1500*1700	1680*2270*1700	1680*3050*1700	1680*3800*1700
Weight (kg)	1395	2470	3545	6520
Isolated transformer	Non-isolated			
Levels of protection	Outdoor IP54			
Working temperature range	-20～55℃(>45℃， derating)			
Relative humidity (no condensation)	0～95%			
Temperature control mode	Battery:HVAC PCS: Air-cooling			
Maximum work altitude (m)	4000 (>2000 derating)			
Display	Touch screen			
Communication interface	RS485, CAN			
Protocol	Modbus-RTU, CAN2.0B			

1.2 PCS module

This section introduces the function, features, technical specifications, appearance and operation instructions of the PCS module in the GRES system .

1.2.1 PCS module function

PCS module can realize the charging and discharging process of the battery according to the instructions of the PCS controller, carry out the conversion of AC and DC, and can realize the adjustment of the active power and reactive power of the grid. In the case of no grid, it can directly supply power to the AC load.

1.2.2 PCS module Features

PCS module adopts advanced digital control technology and has a wide DC input range, which can better meet the charging and discharging requirements of different battery combinations. It can be used in parallel with multiple units. Diversity of connections to PCS systems.

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1.2.3 PCS the appearance and characteristics of the module

Figure 1.2-1 PCS Module Appearance

The PCS bidirectional converter module adopts the air duct isolation design, which can greatly improve the heat dissipation efficiency of the power device. It adopts the SVPWM modulation method to improve the busbar utilization rate and reduce the switching loss of the power device. The power density of the bidirectional converter module is improved by means of fine structural design and reduction of the size of the power module. At the same time, the bidirectional converter module has full-power stage active and reactive power output capabilities, which can effectively improve the quality of the power grid and protect the safe operation of electrical equipment.

1.2.5 PCS Installation steps of the converter module

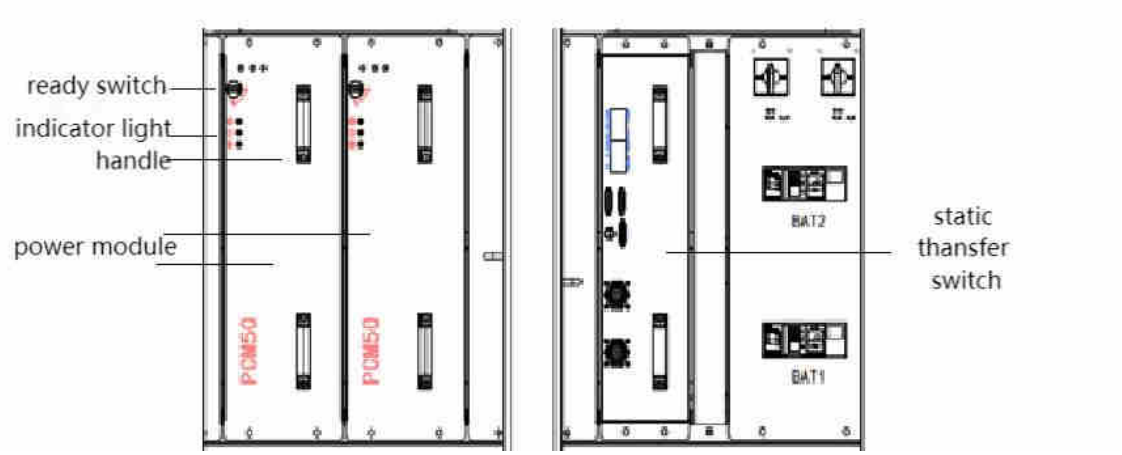

Figure1.2-2 PCS System main power module installation diagram

PCS Module installation steps are as follows:

1. Turn the ready switch on the front panel of the module to the not-ready state (the switch is OFF at this time), as shown in the figure on the right:

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2. Insert the module into the installation location and push it into the cabinet;

3. Fix the module on the main power cabinet through the fixing holes on both sides of the front panel of the module;

4. Rotate the ready switch to the ready state as shown on the right:

Notice

- After the main power module is installed, when the PCS system is turned on for the first time, please turn the ready switch of the power module to the not-ready state. The purpose is to verify whether the main power modules work normally one by one. When starting at the same time, the fault location is not easy to find.
- Before installing or removing the power module, make sure that the ready switch is turned to the not-ready state.

1.3 STS Static switch module

1.3.1 STS module function

The static transfer switch is a non-contact switch, which is an AC switch composed of two thyristors (SCR) in reverse parallel connection, and its closing and opening are controlled by a logic controller. There are two types: conversion type and parallel type. The transfer switch is mainly used in a system powered by two power sources, and its function is to realize automatic switching from one channel to the other; the parallel switch is mainly used for the parallel connection between the inverter and the mains or multiple inverters.

When the frequency and amplitude of the two AC power sources are the same, they can work in parallel. Therefore, when a certain AC power supply fails, a balanced current will be generated between the two power supplies, so that the output voltage of the two parallel power supplies will change and affect the reliability of the power supply. The role of the STS is to cut off the faulty power output and isolate the inverter output from the grid. The principle of STS is shown in the following figure:

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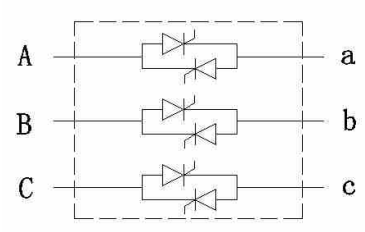

Figure 1.3-1 Schematic diagram of static transfer switch module

The following figure is a schematic diagram of the STS module:

Figure 1.3-2 Schematic diagram of static transfer switch module

Through the intelligent control of the STS module, the work mode switching function of the PCS system can be realized. Under normal circumstances, the PCS system is in the grid-connected discharge state.

At this time, the energy generated by the PCS system is supplied to the load and the grid. If the load power is greater than the set output power of the PCS system, the excess power is provided by the grid.

When the power grid suddenly loses power, the static transfer switch is disconnected, the PCS system switches to the off-grid working mode, and the load is supplied with energy by the PCS system; after the power grid returns to normal, the PCS system switches back to the original working state.

When the PCS system is in the grid-connected charging state, the load is powered by the grid, and the PCS system uses the excess power except the load to charge the battery. When the power grid suddenly loses power, the static transfer switch is disconnected, the PCS system switches to the off-grid working mode, and the load is supplied with energy by the PCS system; after the power grid returns to normal, the PCS system switches back to the original working state.

1.3.2 Static Transfer Switch Specifications

Table 1.3-1 Technical Specifications of Static Transfer Switch

Model grade	EPCS-STSD150
Switching time from grid connection	≤20ms（Cooperate with PCs）
Rated AC power	150KW

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Grid type	Three phase three wire
Rated grid voltage	380V
Input voltage range	-20%~+15%
Overload capacity	105%]: continuous operation; (105% ~ 120%]: 10min; 120%):1min
AC rated frequency	50Hz/60Hz
Cooling mode	Forced air cooling
Installation mode	Rack
Noise	<75 dB
Temperature range	-25℃~55℃(Derating above 45 ℃)
Degree of protection	IP20
Working altitude	45℃时，2000m（No derating required）， 2000m ~ 4000m Derating use
Condensation	5％RH ~ 95％RH，non-condensing
Installation mode	Integrated in GRES system cabinet
Module size(W*H*D，mm)	132*550*500
weight	20kg

1.3.3 Static transfer switch communication interface definition description

The system control unit module provides the following interfaces，As shown in Figure 1.3-3:

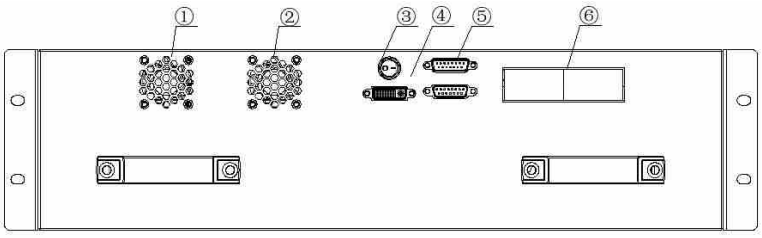

Figure 1.3-3 Schematic diagram of the position of the static transfer switch panel interface

Table 1.3-2

NO.	Description
1，2	Auxiliary Power Fan
3	static switch ready switch

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4	Monitoring screen communication interface
5	System parallel interface
6	system communication interface

The schematic diagram of the static transfer switch communication interface is shown in Figure 1.3-4. The interface description is shown in Table 1.3-2

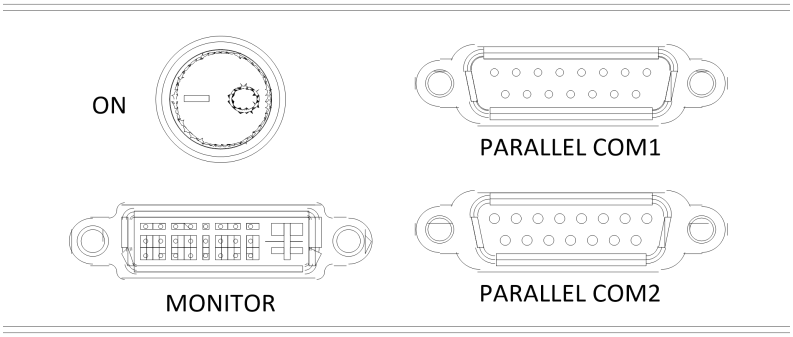

Figure 1.3-4 Schematic diagram of communication interface

Table 1.3-3 Communication interface description

Interface	Meaning
ON	Static Transfer Switch Ready Switch
MONITOR	System monitoring unit LCD communication interface
PARALLEL COM 1	System parallel communication interface 1 (male)
PARALLEL COM 2	System parallel communication interface 2 (female)

Notice

- Shielded cables are required for system parallel communication, and both ends of the shielding layer must be reliably connected to the chassis.

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1.3.4 Dry Contact Interface Definition

The schematic diagram of dry contact interface is shown in figure 1.3-4, and the interface description is shown in the table. The maximum voltage borne by dry contact interface MFP and BFP is 24VDC or 250VAC, and the maximum current flowing is 5A. The maximum voltage borne by other dry node interfaces is 24VDC, and the maximum current flowing is 20mA.

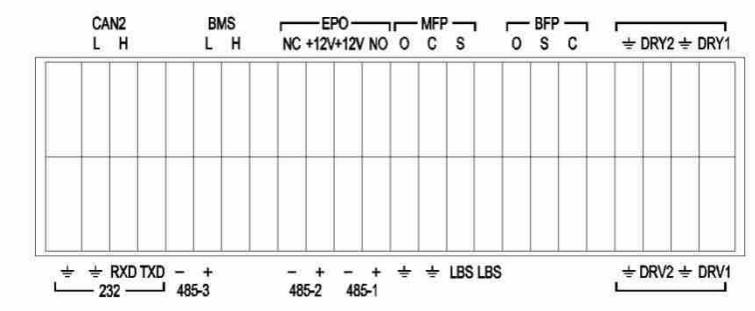

Figure 1.3-5 Schematic diagram of dry contact interface

Table 1.3-4 Dry contact interface description

Functional interface	Interface silk printing	meaning
	DRY1	reserve
	⏚	
	DRY2	reserve
	⏚	
	DRY1	reserve
	⏚	
	DRY2	reserve
	⏚	
B FP	O	reserve
	S	
	C	
	/	/
MFP	O	reserve
	C	
	S	
	/	/
485-1	+	System communication with the upper position computer
	-	

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Functional interface	Interface silk printing	meaning
485-2	+	reserve
	-	reserve
485-3	+	reserve
	-	reserve
RS232	RXD	reserve
	⏚	
	TXD	reserve
	⏚	
EPO	NC	Remote emergency shutdown interface (connected with normally closed contact points)
	+12V	
	+12V	Remote emergency shutdown interface (connected with the normally open contact point)
	NO	
BMS	L	BMS communication with the battery
	H	
CAN2	L	reserve
	H	
LBS	LBS	reserve
	⏚	

1.3.5 Definition of the interface on the back of the static transfer switch

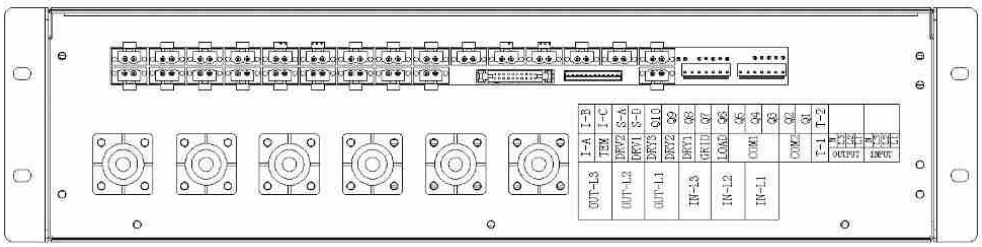

Figure 1.3-6 Schematic diagram of the interface on the back of the static transfer switch

Table 1.3-5 Description of the interface on the back of the static transfer switch

Signal		Definition	Remarks
IN	L1	AC input A	
	L2	AC input B	
	L3	AC input C	

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OUT	L1	AC input A	
	L2	AC input B	
	L3	AC input C	
INPUT	L1	Input voltage sampling A	
	L2	Input voltage sampling B	
	L3	Input voltage sampling C	
	N	Input voltage sampling N	
OUTPUT	L1	Output voltage sampling A	
	L2	Output voltage sampling B	
	L3	Output voltage sampling C	
	N	Output voltage sampling N	
T-1		Transformer over temperature alarm	
T-2		Transformer over temperature protection	
COM1		communication interface	
COM2			
LOAD		Load circuit breaker state sampling	
GRID		State sampling of the grid-connected circuit breaker	
DRY1		Enter the dry contact 1	reserve
DRY2		Enter the dry contact 2	reserve
DRY3		Enter the dry contact 3	reserve
DRV1		Output dry contact 1	reserve
DRV2		Output dry contact 2	reserve
TEM		Environmental temperature sampling	
I-A		Phase A current sampling	

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I-B	Phase B current sampling	
I-C	Phase C current sampling	
S-A	AC lightning protection status	
S-D	DC lightning protection device status	
Q1		
Q2		reserve
Q3		reserve
Q4		reserve
Q5		reserve
Q6		reserve
Q7		reserve
Q8		reserve
Q9		reserve
Q10		reserve

Danger

The emergency shutdown action of the PCS system will turn off the PCS power module and static transfer switch, but will not disconnect the DC input and grid input of the PCS system from the inside. To completely power off the PCS system, after triggering the EPO, it is also necessary to disconnect all circuit breakers on the main power circuit inside the PCS system.

Warning

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- The static transfer switch module does not support hot plug.

Notice

- When the PCS system works in off-grid discharge mode, the power at the load end should not be greater than the rated power of the PCS system, otherwise the PCS system will overload and shut off when the P C S system is off.
- When the PCS system is working in grid charging mode, the power at the load end should not be greater than the rated power of the PCS system, to prevent the static conversion switch from being overload for a long time, and the PCS system has no excess power to charge the battery.
- STS module integrated with system cabinet inside, non-critical factor, prohibited disassembly.

1.4 MPPT Module

1.4.1 MPPT module function

MPPT module has its own monitoring system, which can cooperate with PCS module to easily build a small energy storage system. The touch screen can also be placed externally, which is convenient to realize the parallel connection of multiple modules to form a medium-sized DC system. The power modules are flexibly arranged, easy to install and maintain. The MPPT module adopts rack mounted mode, with small volume and light weight, and supports online hot plug of the module. The module has a wide range of DC voltage and has a wider range of application scenarios

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Figure 1.4-1 MPPT Module appearance

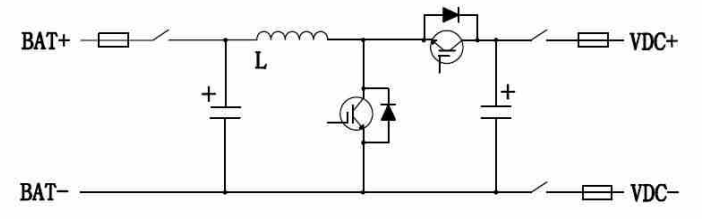

Figure 1.4-2 M P P T Schematic diagram

1.4.2 MPPT Features

- The module is 3U with high power density;
- The module has its own monitoring system, can be external touch screen, flexible to build a small energy storage system;
- The module has MPPT function, more efficient use of natural energy;
- The 110% rated output power can be run for a long time;
- Wide DC voltage range: 200V~900V;, 300 V to 900 V
- Multiple modules can be used in parallel to increase the installed capacity of the system;
- Perfect match for the cascade utilization of energy storage batteries.

1.4.3 MPPT Appearance

The PDMD50 module front panel contains a module ready switch, signal indicator, and mounting handle. The energy storage system supports module hot plug during operation. The ready switch is used to judge whether the module is in good contact with the system and to confirm the switch on and off. The signal indicator is mainly used to indicate the current working state of the module. The schematic diagram of the front panel of the module is as follows:

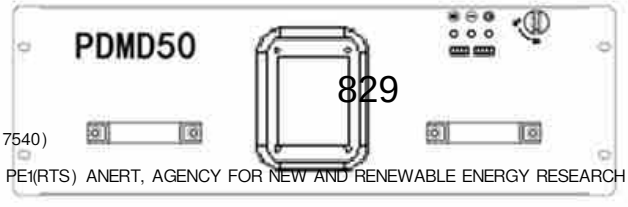

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Figure 1.4-3 MPPT Schematic diagram of the module front panel

Module panel screen screen description:

Table 1.4-1

Order	significance
	Main power module operating status indicator lamp (green light)
	Main power module alarm status indicator lamp (yellow light)
	Main power module fault state indicator lamp (red light)
	Main power module is ready
	The main power module is not ready

The rear panel of the PDMD50 module mainly includes input and output interfaces. The rear panel diagram is shown as follows:

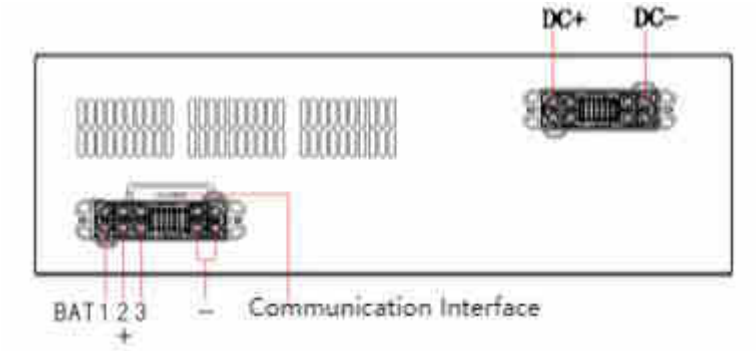

Figure 1.4-4

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PDMD50 module installation dimension diagram:

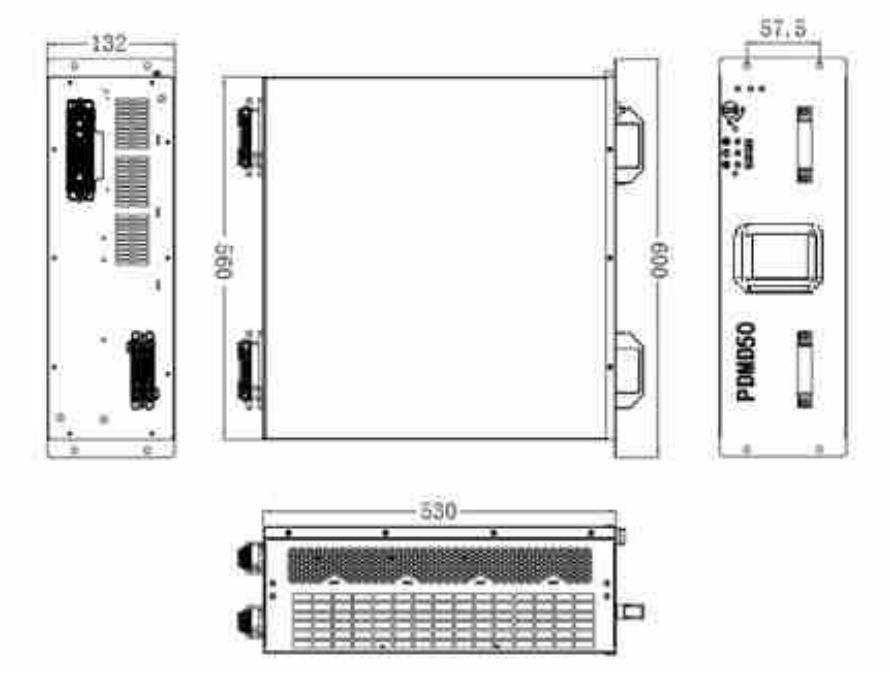

Figure 1.4-5

1.4.4 MPPT operation

The PDMD50 module has its own monitoring system. The module uses a 3.5-inch touch screen to facilitate users to view the data and operation control of the equipment.By operating the touch screen, the PDMD50 module can operate control and query all parameters, operation information and battery status and alarm information of the PDMD50 module.

The following figure is a main interface display diagram of the PCM50, through which the operation information of the module can be read:

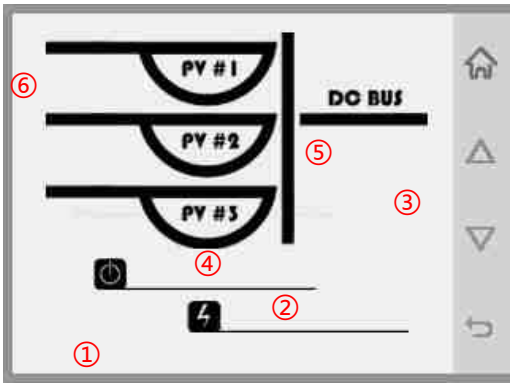

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Figure 1.4-6

Table 1.4-2

No.	Description
1	Time display
2	Operation bar
3	Module alarm status
4	Module Working Mode (BUCK / BOOST)
5	DC output voltage and current display
6	Photovoltaic input voltage and current display

Touch any blank position of the main interface, and you can enter the operation interface of the module, which includes: data, setting, control, alarm and about information.The user operates on the module by clicking on the corresponding icon:

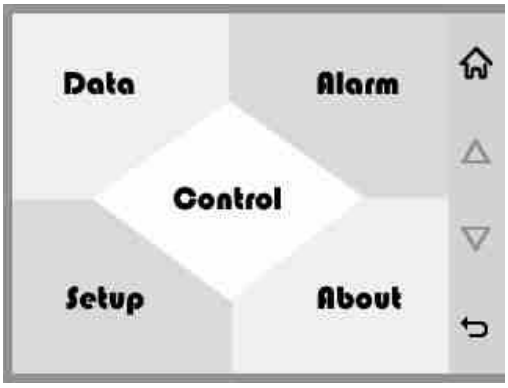

Figure 1.4-7

The data interface contains the operation data of the module, including high voltage side voltage current and PV side voltage current:

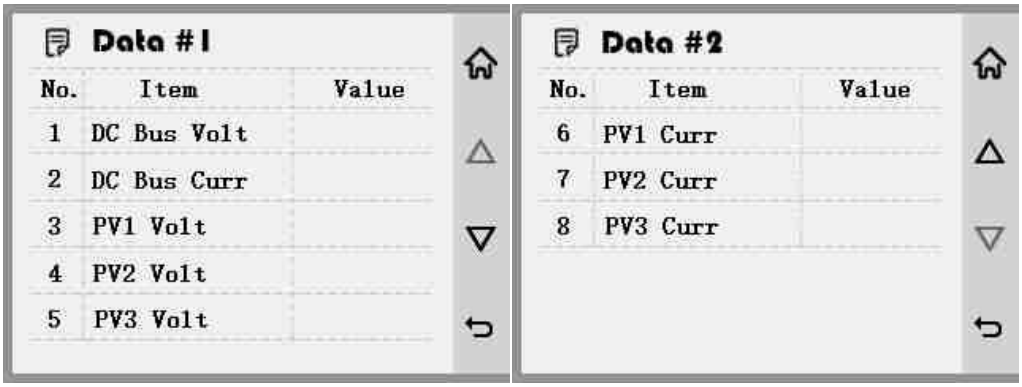

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Figure 1.4-8

The alarm interface mainly displays the fault query when the module runs abnormally. When the alarm is generated, it is represented by √, and when it is not generated, it is represented by ×.

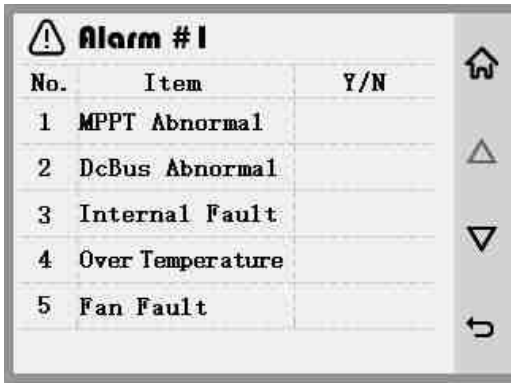

Figure 1.4-9

The setting interface includes basic parameter setting and running parameter setting. Basic information such as module language, time and date can be set through the basic parameter setting.

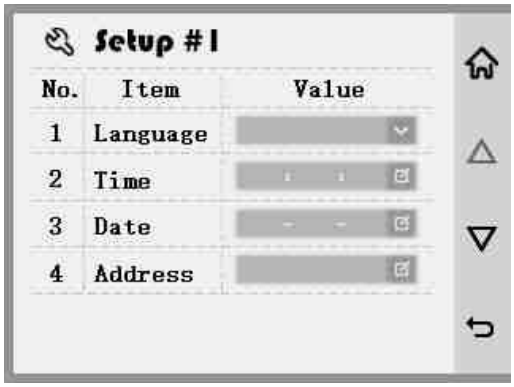

Figure 1.4-10

Table 1.4-3

No.	Description
1	Language
2	Time
3	Date
4	Set up by the panel dial code

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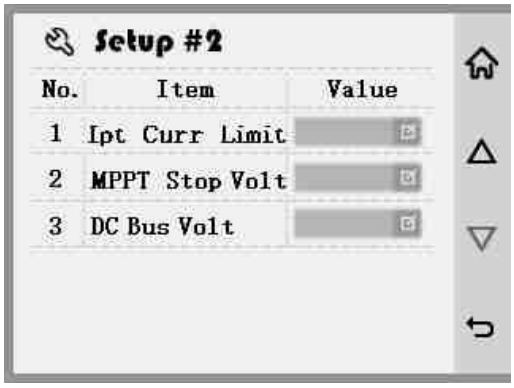

Figure 1.4-11

Table 1.4-4

No	Description
1	Enter the limit current
2	MPPTEnter the stop voltage
3	High-voltage side DC bus output voltage

The control interface is mainly fault clearing control. When the module has an irreversible fault, manual fault removal needs to be performed.

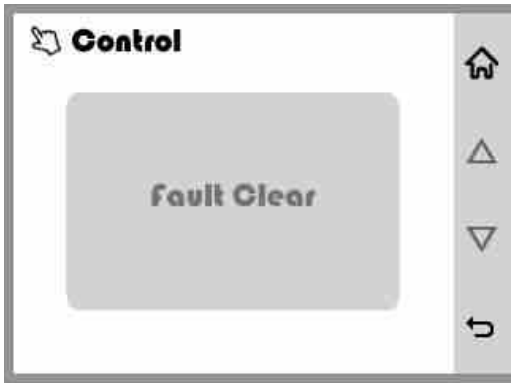

Figure 1.4-12

About the version number that the interface is mainly used for query module operation:

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Figure 1.4-13

Table 1.4-5

No.	Description
1	DSP program version
2	FPGA version
3	Display version
4	Current sampling plate version

1.5 Lithium-ion battery system

1.5.1 System function

The battery system in the GRES consists of 1 to 3 independent battery clusters, with each battery room corresponding to one group of battery cluster.Each set of battery clusters is divided into 15 battery modules and one high-voltage control box.The battery system structure is shown in the figure below:

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Figure 1.5-1 Battery room diagram

1.5.2 Technical indicators

Technical parameters of the single battery cluster are shown in in Table 1.5-1:

Table 1.5-1 Single Battery Cluster Technical Parameters

No.	Item	Parameter
1	Comprise	15*Battery modules+1*high voltage compartment
2	Rated charging current@25℃	1C
3	Rated discharge current@25℃	1C
4	Rated capacity	100AH
5	Rated energy	76.8KWH
6	Rated voltage	768V
7	BMS	Two-way active equilibrium
8	Cell	50Ah/3.2V

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9	Battery module	100Ah/51.2V
10	Battery system	100Ah/768V

1.5.3 Interface definition

The external communication interface of the battery system is located in the front panel at the bottom of each battery cluster.See Fig. 1.5-2 for control box panel and Table 1.5-2 for interface description.

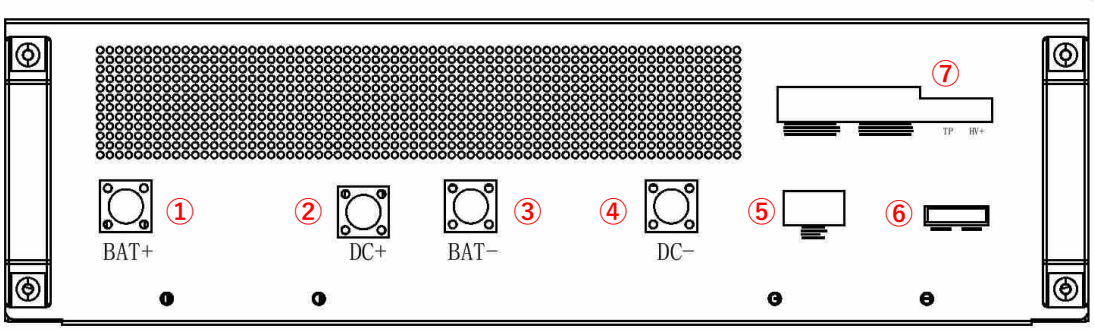

Figure 1.5-2 Diagram of the control box panel

Table 1.5-2 Control Box Panel

1	Battery module total positive terminal
2	Total battery output
3	Total negative terminal of the battery module
4	Total negative battery output
5	Communication port 1
6	The power supply interface of the system fan
7	Communication port 2

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■Communication port 1

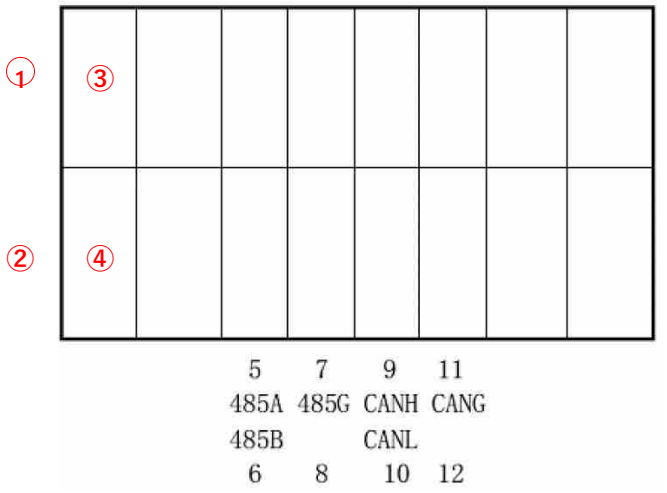

Figure 1.5-3

Table 1.5-3

No.	Description	Remark
1，2	Panel status indicator interface	
3，4	Reserved	
5，6	RS485 mouthpiece	Remote monitoring and updating
9，10	CAN communication interface	The Battery communicates with the PCS

■Communication port 2

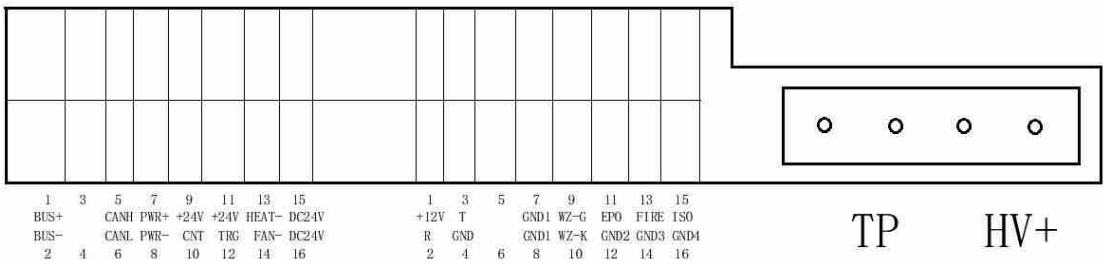

Figure 1.5-4

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Table 1.5-4

No.	Description	Remark
1，2	BUS	Balancing bus48V
3，4	reserved	
5，6	CAN	Communication with modules
7，8	PWR	Module working power supply
9，10	CNT	Battery circuit breaker contact point
11，12	TRG	Battery breaker buckle
13，15	HEAT	System heater power supply
14，16	FAN	reserved

No.	Description	Remark
1，2，3，4	Display	Battery external display interface
5，6	reserved	reserved
7，9	WA-G	reserved
8，10	WA-K	Battery shutdown signal
11，12	EPO	Battery EPO signal
13，14	FIRE	reserved
15，16	ISO	reserved

No.	Description	Remark
TP、HV+	Battery start	Battery start signal, connect to the knob switch

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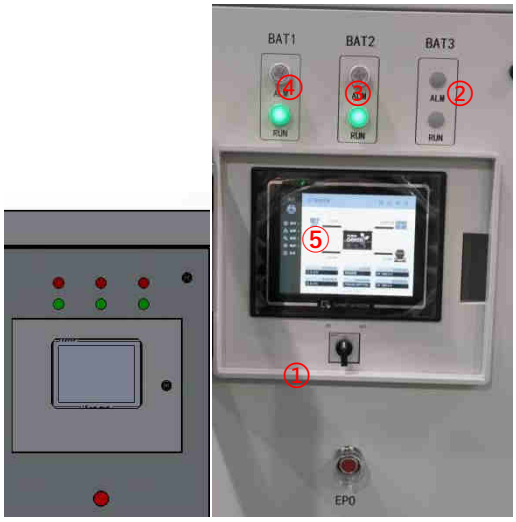
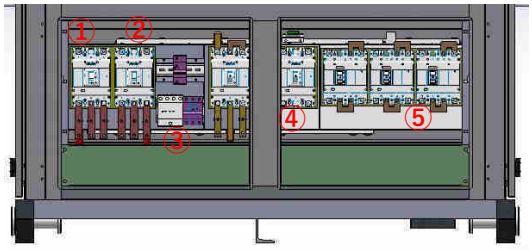
1.6 Operation panel and display section

This chapter details the functions and methods of the operation control display panel of the GRES system system, and provides a description of LCD display information, including LCD display type, detailed menu information, prompt window information, and alarm list.

1.6.1 Operate the panel section

Table 1.6-1

	1、The battery system switches on and off 2、Battery cluster 3status indicator lamp 3、Battery cluster 2 status indicator lamp 4、Battery cluster 1 status indicator lamp 5、The system displays the screen
	1、The AC output circuit breaker 2、The AC input circuit breaker 3、Lightning protection device 4、PV input circuit breaker 5、Battery output circuit breaker (one switch per battery cluster)

1.6.2 Display interface

■ Main page

The monitoring unit of the system is located on the front of the cabinet. The monitoring display screen is a 10.1-inch color touch screen, which is convenient for users to view various data and operation control of the equipment. Through the operation control display panel, the GRES system can be operated and controlled, and all parameters of the system and PCS power module, PCS system

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and battery status and alarm information can be queried.

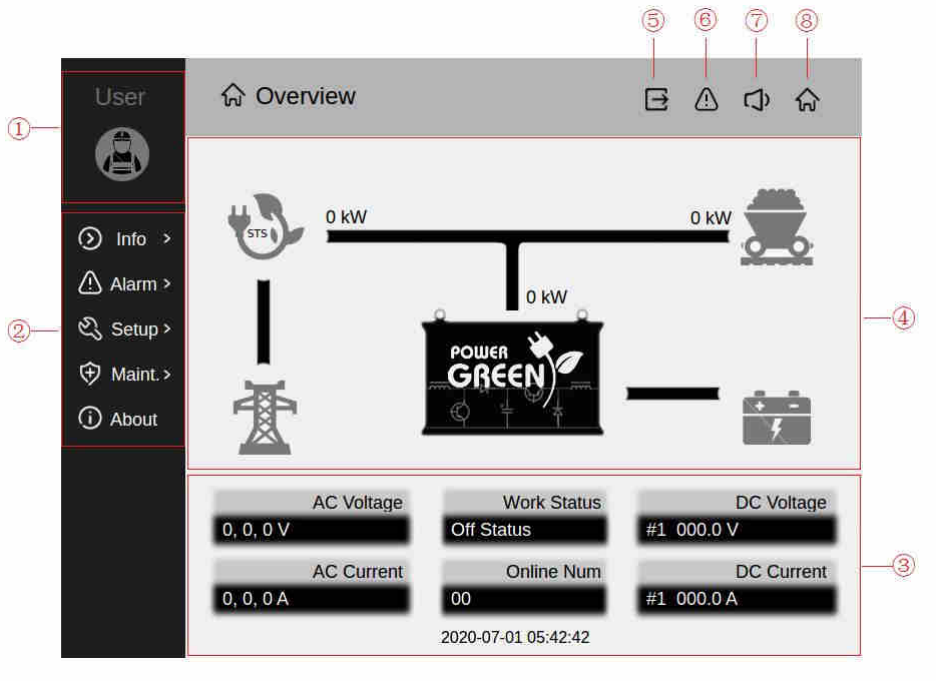

Figure 1.6-1 PCS Control Display Panel Schematic

Table 1.6-2 PCS operation control display panel project and definition

No.	Item	Meaning
①	Login / logout	For the login and logout of users with different permissions, the default password of administrator login is "123456", and the login password of engineer is: month * day, month * hour and day * hour. The last two digits are combined into 6-digit password data
②	Menu area	You can enter different interfaces to view equipment data, parameters and set corresponding parameters
③	Parameter display	Display AC side voltage / current, system working status, online module, DC voltage / current, electric energy and other information
④	main interface	Display system power supply status
⑤	Grid information display	Directly enter the power grid information display interface in operation. See 3.2.1 for details of the operation interface
⑥	Current Alarm	Directly enter the current alarm display interface
⑦	Eliminate alarm tone	When the display emits an alarm sound, click to eliminate the alarm sound to turn off the sound
⑧	Return to main page	No matter in which display interface, click this icon to return to the main page

Notice

- Each interface can be browsed by sliding up and down.

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Two different audible alarms will be issued during operation, as shown in the table below.

Table 1.6-3

Alarm sound	Meaning
Beep once every 1 second (1Hz)	When general alarms occur in PCS system (for example: main power module is not ready, main circuit voltage undervoltage, bypass over protection, DC unconnected alarm, etc.), this alarm sound is sent
Sound 4 times every 1 second (4Hz)	This alarm sound will be sent out in case of general faults of PCS system (such as PCs startup failure, battery EOD shutdown alarm, etc.)
Continuous chirping	In case of serious fault of PCs (such as reverse battery connection, EPO shutdown, reverse power grid phase sequence, etc.), this alarm sound will be sent out

■ Operation interface

In the process of system operation, for the data monitoring and historical curve of power grid information, DC information, PCS module information, load information, MPPT module information and environmental data, it can not only read the real-time data, but also read the value of historical data within a certain range and show a curve state, which can more intuitively observe the change of each data over time, More effective analysis of data anomalies and fluctuations.

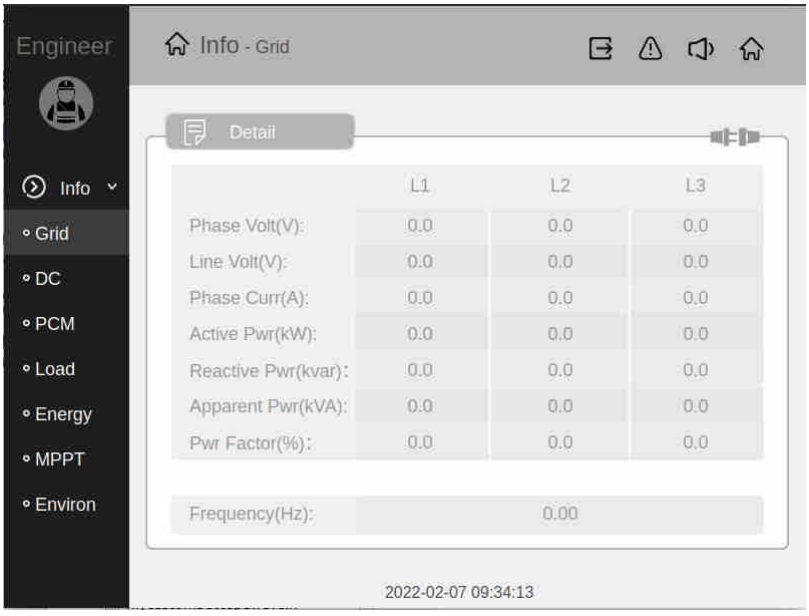

Figure 1.6-2

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Table 1.6-4

NO.	Item	Meaning
1	Phase Volt	Grid connected phase voltage
2	Line Volt	Grid access line voltage
3	Phase Curr	Charging and discharging phase current at grid side
4	Active Pwr	Active power of each phase at grid side
5	Reactive Pwr	Reactive power of each phase at grid side
6	Apparent Pwr	Apparent power of each phase at grid side
7	Pwr Factor	Power factor of each phase at grid side
8	Frequency	Grid voltage frequency

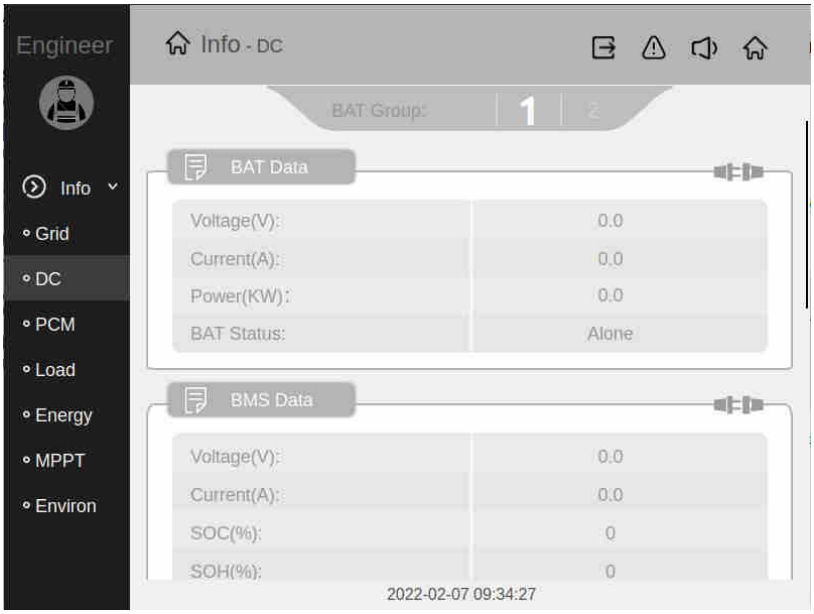

Figure 1.6-3

Table 1.6-5

NO.	Item		Meaning
1	Battery data	Voltage	Battery voltage detected by PCS system
2		Current	Battery charge and discharge current detected by PCS system
3		Power	Battery charge and discharge power detected by PCS system
4		BAT	Battery working state detected by PCS

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		Status	(charging, discharging and standing)
5	BMS data	Voltage	Battery information uploaded by BMS
6		Current	
7		SOC	
8		SOH	

Notice

- According to the PCS system configuration, the battery pack can support PCS module and battery cluster one-to-one, one to many and many to one use. Therefore, the battery data may be divided into multiple groups. When multiple groups of batteries are applied, you can select to view the corresponding battery pack data by sliding the "battery pack" title bar.

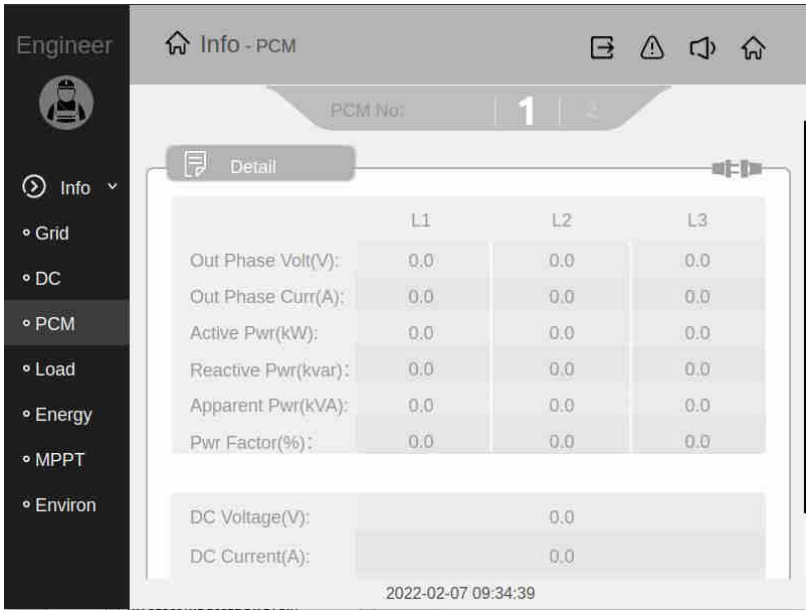

Figure 1.6-4

Table 1.6-6

NO.	Item	Meaning
1	Out Phase Volt	Voltage value of each phase at the AC side of the module

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2	Out Phase Curr	Current value of each phase at the AC side of the module
3	Active Pwr	Active power of each phase at the AC side of the module
4	Reactive Pwr	Reactive power of each phase at the AC side of the module
5	Apparent Pwr	Apparent power of each phase at the AC side of the module
6	Pwr Factor	Power factor of each phase at the AC side of the module
7	DC Voltage	DC side voltage value of the module
8	DC Current	DC side current value of the module

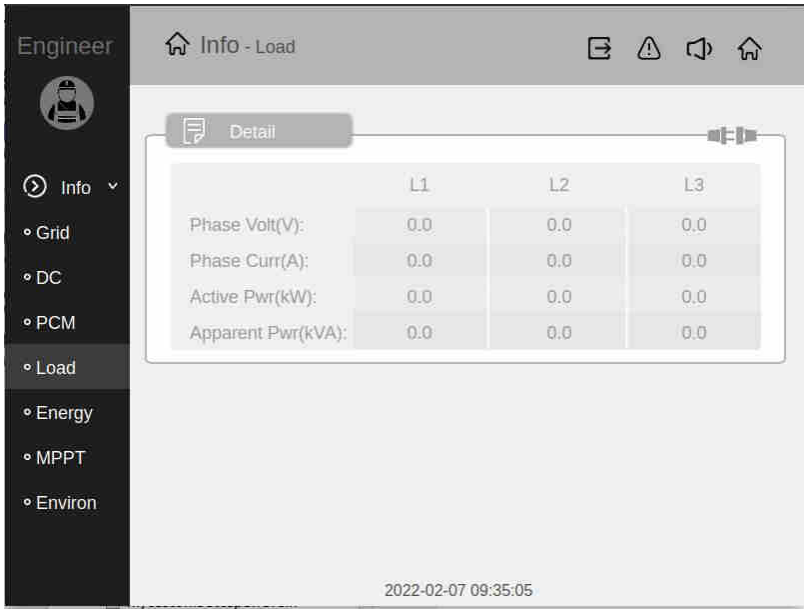

Figure 1.6-5

Table 1.6-7

	Item	Meaning
1	Phase Volt	PCS load side AC voltage
2	Phase Curr	PCS load side AC current
3	Active Pwr	PCS load side AC active power

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4	Apparent Pwr	PCS load side AC apparent power

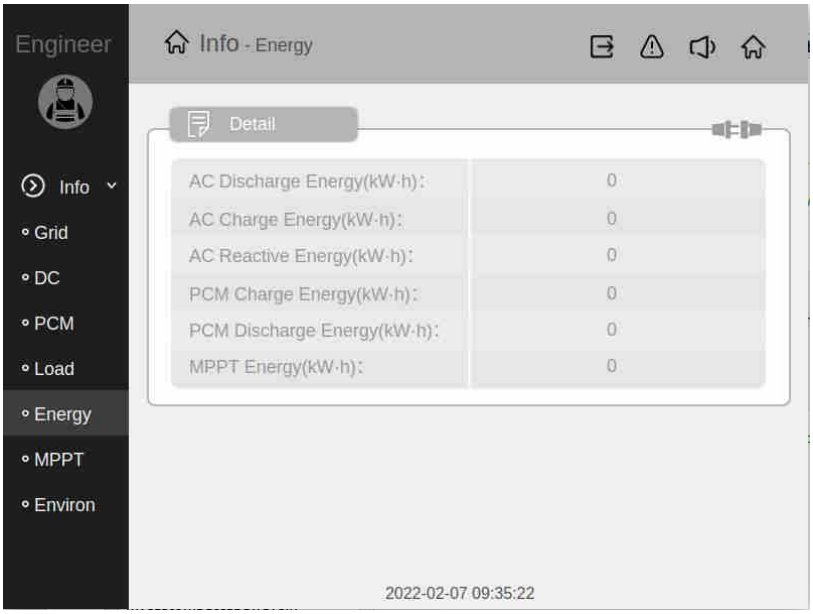

Figure 1.6-6

Table 1.6-8

	Item	Meaning
1	AC Discharge Energy	Grid connected input power
2	AC Charge Energy	Grid connected output
3	AC Reactive Energy	Reactive power
4	PCM Charge Energy	Battery charge
5	PCM Discharge Energy	Battery discharge capacity
6	MPPT Energy	Cumulative photovoltaic power generation

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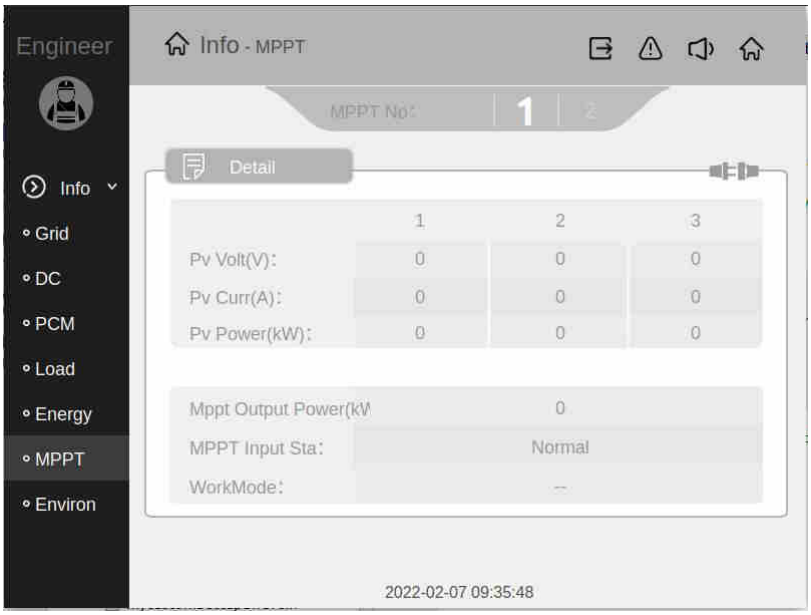

Figure 1.6-7

Table 1.6-9

	Item	Meaning
1	PV Volt	Photovoltaic input voltage
2	PV Curr	Photovoltaic input current
3	PV Power	Photovoltaic input power
4	MPPT Output Power	MPPT module output power
5	MPPT Input Sta	MPPT module input status
6	WorkMode	Working mode of MPPT module

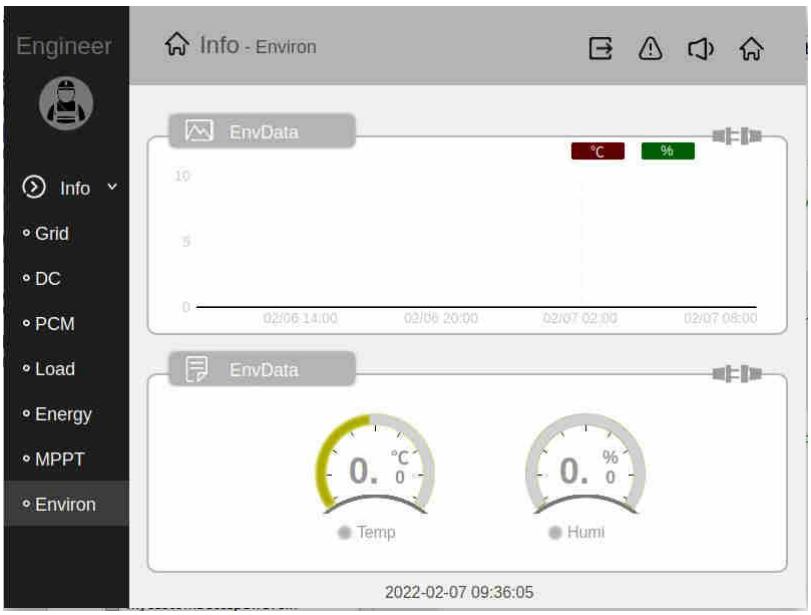

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Figure 1.6-8

Table 1.6-10

	Item	Meaning
1	Temp	Displays the current ambient temperature
2	Humi	Displays the current ambient humidity

■Alarm interface

Alarms are divided into current alarms and historical alarms. The current alarm can be accessed directly through the shortcut key on the main interface. When there is an alarm in the system, you can view the alarm through this shortcut key. When the alarm is generated, add one current alarm and one corresponding alarm generation record in the history; The maximum number of current alarms and history records is 1000.

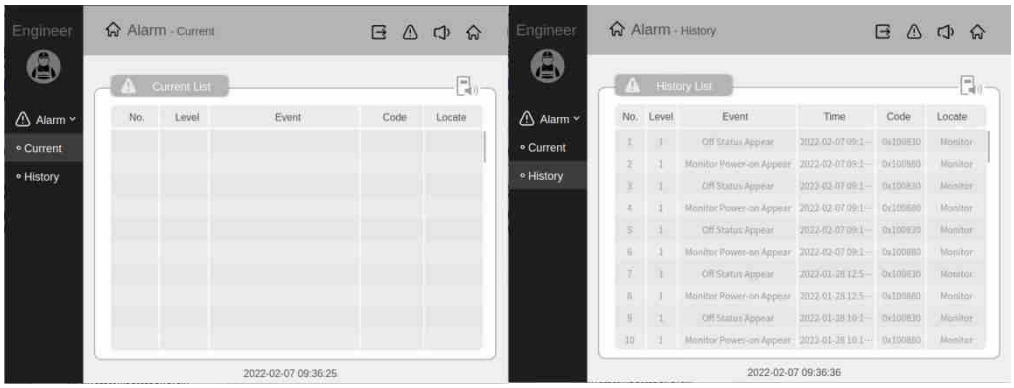

Figure 1.6-9

Table 1.6-11

	Item	Meaning
1	Current List	Display the current fault information generated by the system
2	History List	Record the operation records of the system

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Notice

- First, check the indicator light of the system to confirm the operation status of the system.
- Monitor the operating system, make the display screen enter the history screen, view each recorded information, and investigate the causes of the alarm.
- If you have any doubts, please contact your supplier.

■ Setting interface

The administrator setting interface is shown in Figure 3-5, and the settable contents are shown in table 3-5.

Notice

- You need to log in administrator or engineer permission to set parameters.
- The administrator authority is higher than the user authority. Users need to log in to the administrator system to set up and operate the system. For the login method, refer to the introduction of the main interface above.
- The engineer's authority is higher than the administrator's authority. Users need to log in to the administrator's system to set and operate the system. Refer to the introduction of the main interface above for the login method.

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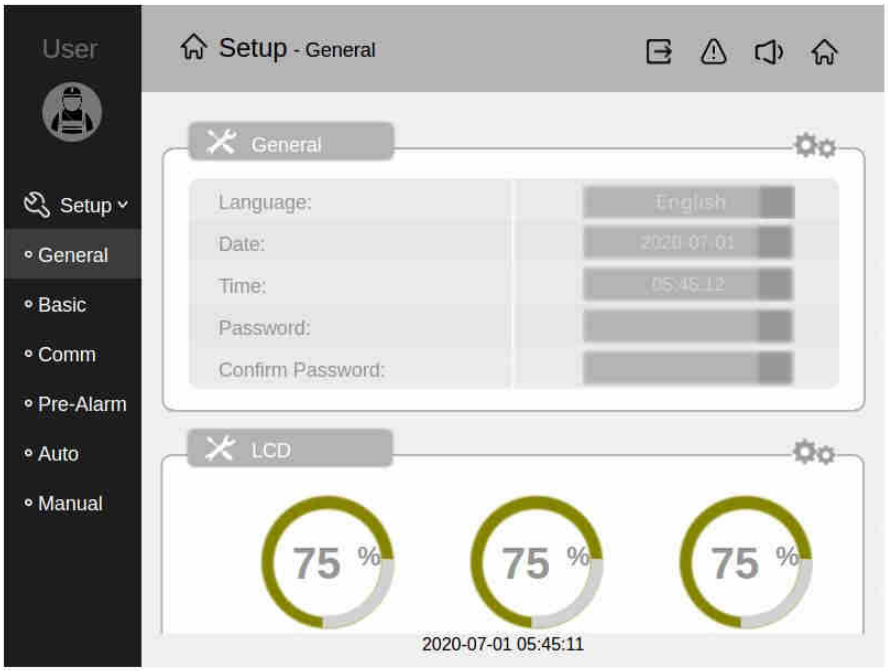

Figure 1.6-10 Setting interface

Table 1.6-12 item description of setting interface

	Item	Meaning
1	Language	Chinese / English Optional
2	Date	Settable
3	Time	Settable
4	Password	Settable
5	Confirm password	Confirm the password again
6	LCD	The default value is 75%, and the adjustable range is 0 ~ 100;

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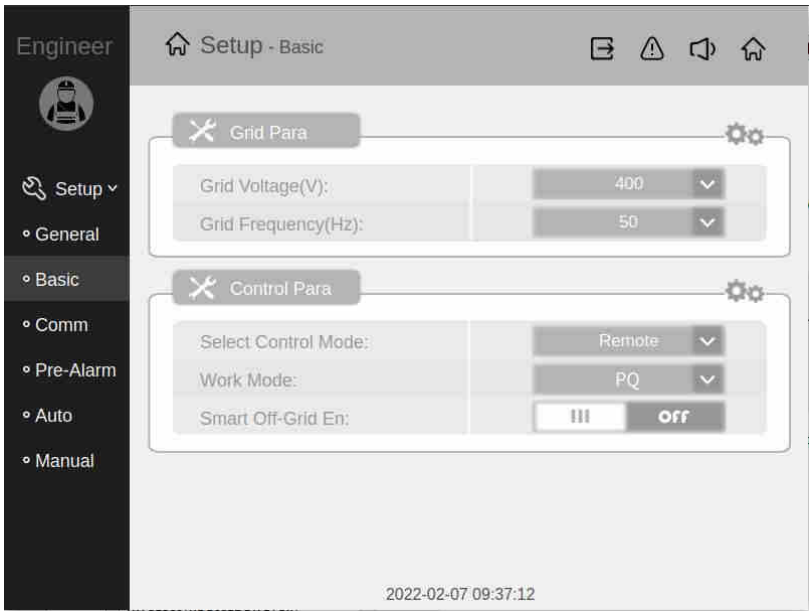

Figure 1.6-11

Table 1.6-13

	Item	Meaning
1	Grid Voltage	Grid voltage: 380V by default, 380 / 400 can be selected
2	Grid Frequency	Grid frequency: 50 Hz by default, and 50 / 60 can be selected
3	Select Control Mode	Control mode selection: default manual control, optional: manual control / automatic control / remote control Intelligent off grid mode enable: off by default, switch can be set
4	Work Mode	PQ mode: VR mode:
5	Smart Off-Grid En	Smart off-grid mode enable

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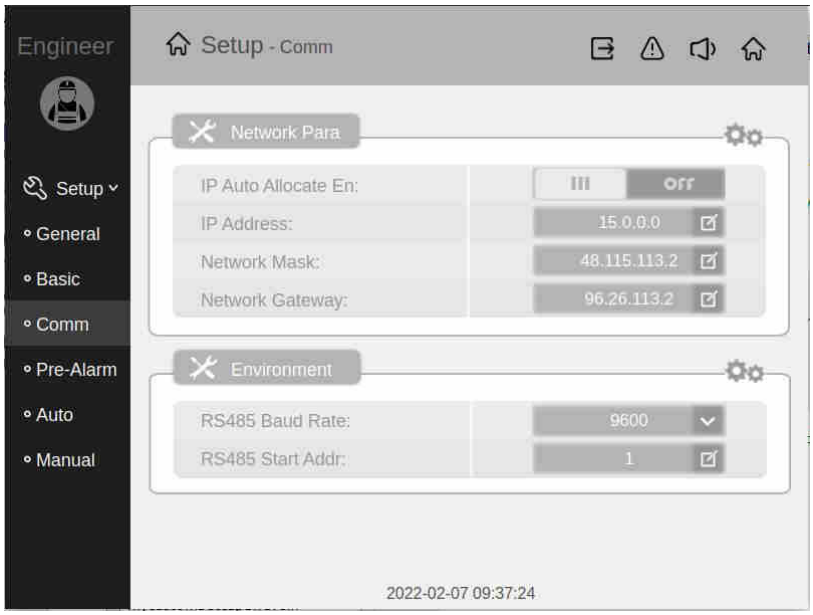

Figure 1.6-12

Table 1.6-14

	Item	Meaning
1	IP Auto Allocate En	It can be set whether it is enabled or not
2	IP Address	Can be set, default: 192.168.0.232
3	Network Mask	Can be set, default 255.255.255.0
4	Network Gateway	Can be set, default 192.168.0.1
5	RS485 Baud Rate	The default value is 9600, and the optional values are 1200, 2400, 4800, 9600, 19200 and 38400;
6	RS485 Start Addr	

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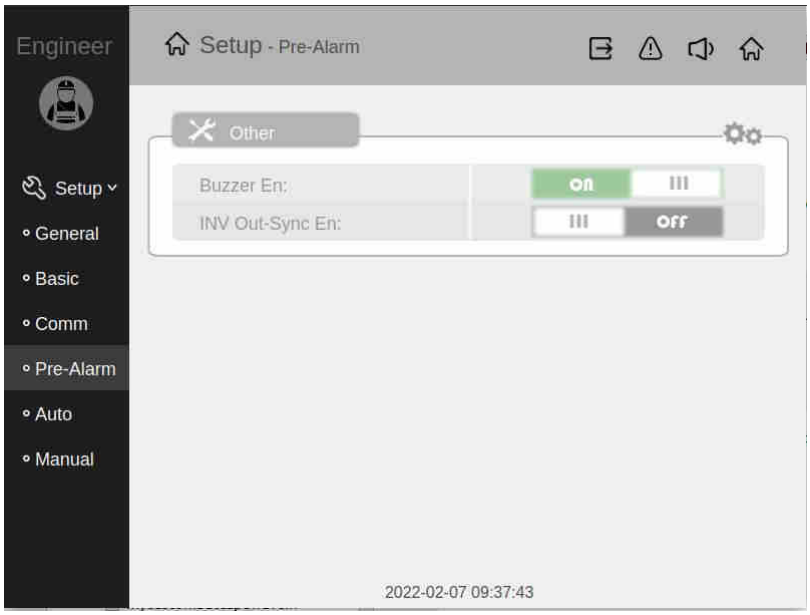

Figure 1.6-13

Table 1.6-15

	Item	Meaning
1	Buzzer En	There is no alarm tone when the alarm is turned off
2	INV Out-Sync En:	Not used yet

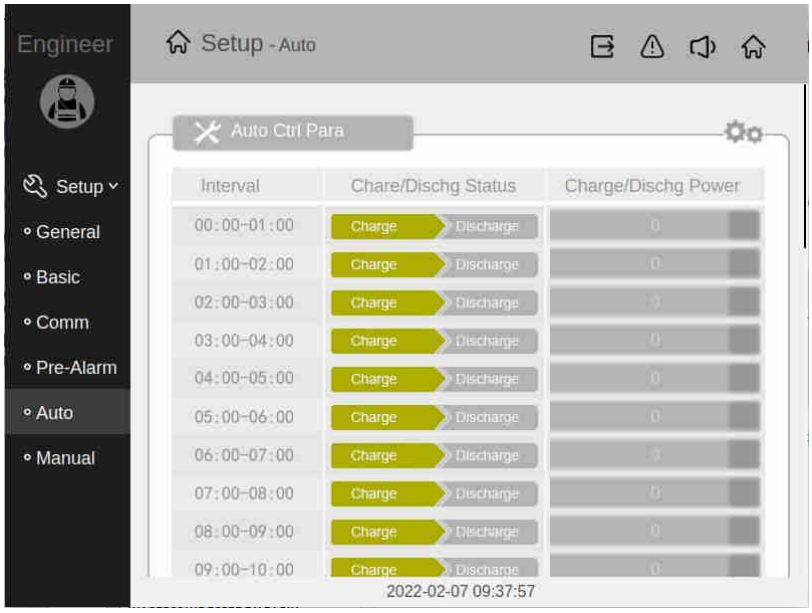

Figure 1.6-14

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Table 1.6-16

	Item	Meaning
1	Auto Ctrl Para	The charging and discharging mode and charging and discharging power in each period can be changed according to the actual needs.

Notice

- The time period is executed according to the display time. In the automatic operation mode, please calibrate the display time regularly.

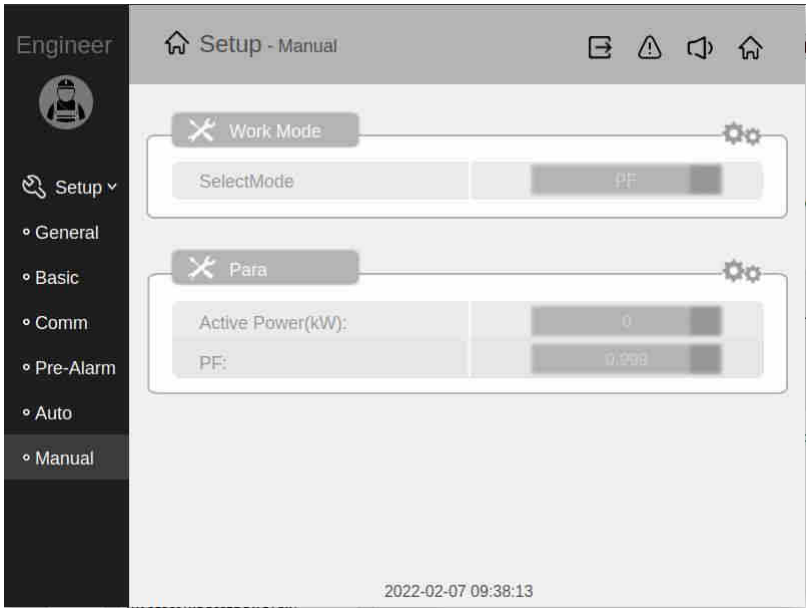

Figure 1.6-15

Table 1.6-17

	Item	Meaning
1	SelectMode	PQ mode: system active power and reactive power can be adjusted separately Pf mode: the system operates according to

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		the set power factor VR mode: DC voltage stabilizing mode. The system adjusts the working mode according to the voltage set at the DC side.
2	Active Power	Set the system output active power. A positive number indicates grid connected discharge and a negative number indicates grid connected charging
3	PF	Set grid connected power factor

■Maintenance interface

Notice

- You need to log in administrator or engineer permission to set parameters.
- the administrator authority is higher than the user authority. Users need to log in to the administrator system to set and operate the system. Refer to the introduction of the main interface above for the login method.
- The engineer's authority is higher than the administrator's authority. Users need to log in to the administrator's system to set and operate the system. For the login method, refer to the introduction of the main interface above.

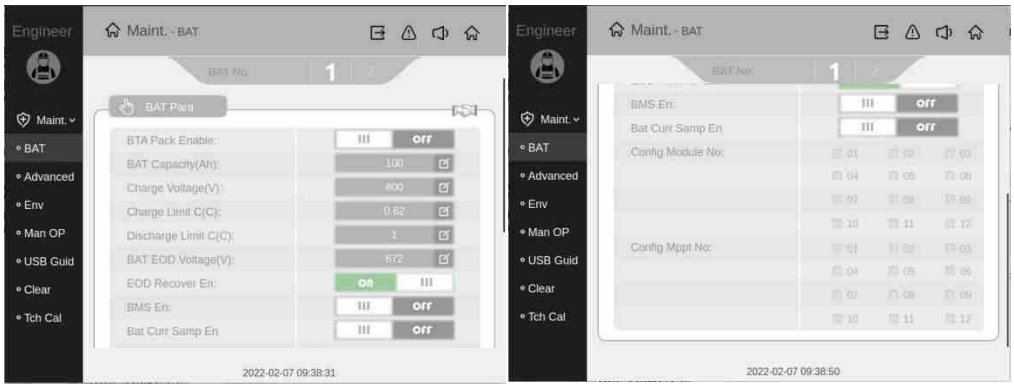

Figure 1.6-16

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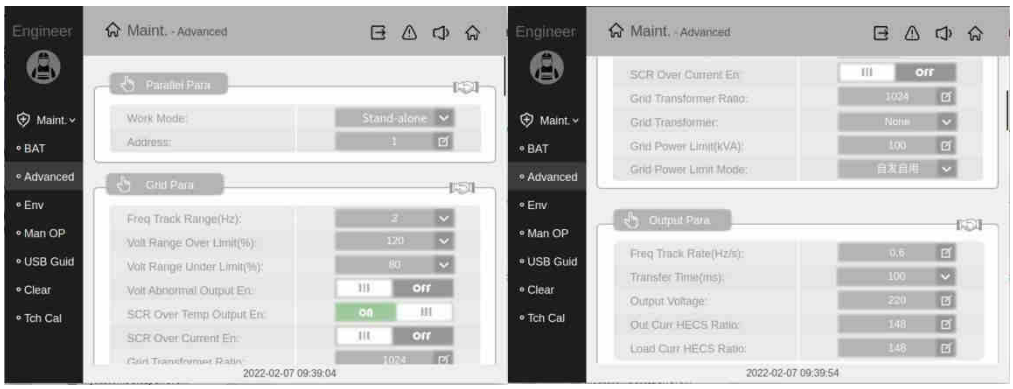
Table 1.6-18

	Item	Meaning
1	BTA Pack Enable	It can be set whether it is enabled or not;
2	BAT Capacity	Set the battery capacity of each battery pack;
3	Charge Voltage	Set the maximum charging voltage of the battery pack
4	Charge Limit C	Set the maximum charging current of the battery pack
5	Discharge limit C	Set the maximum discharge current of the battery pack
7	EOD Recover En	Set battery protection voltage
8	BMS En	Enable or not can be set; After enabling, the system operates according to BMS communication parameters
9	BAT Curr Samp En	Default enable
10	Config Module No	Set the PCS power module number corresponding to the battery pack
11	Config Mppt No	Set the MPPT power module number corresponding to the battery pack



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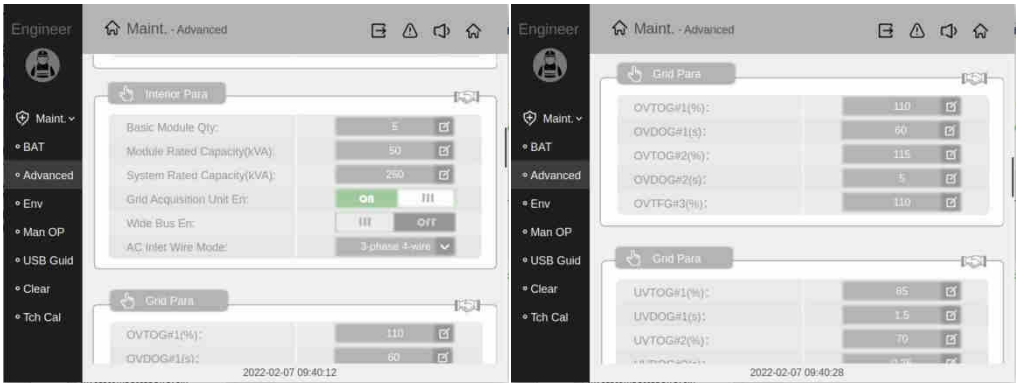

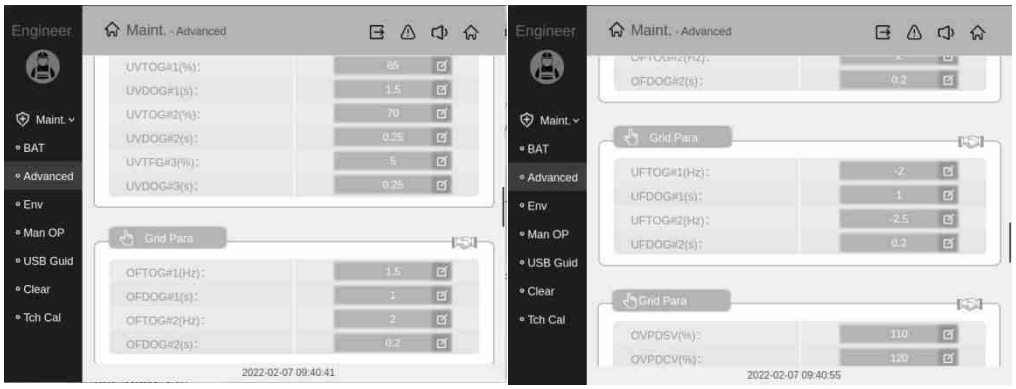

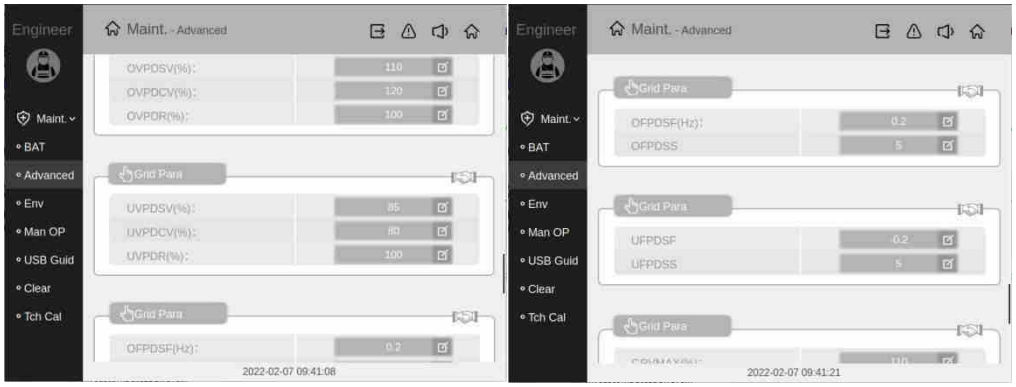

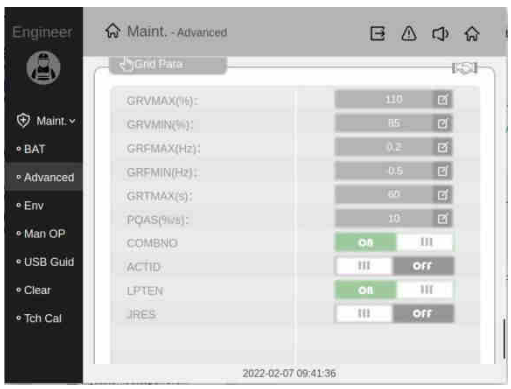

Figure 1.6-17

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Table 1.6-19

	Item	Meaning
1	Work mode	Set the "single cabinet mode" and "combined cabinet mode" of the system
2	Address	Number setting of the system under the cabinet parallel connection situation
3	Freq Track Range(Hz)	The default value is 2; Settable range: 0 ~ 5;
4	Volt Range Over Limit(%)	The default value is 115; Settable range: 100 ~ 120;
5	Volt Range Under Limit(%)	The default value is 80; Settable range: 80 ~ 100;
6	VoltAbnormal Output En	Enable or not can be set;
7	SCR Over Temp Output En	Enable or not can be set;
8	SCR Over Current En	Enable or not can be set;
9	Grid Transformer Ratio	Default 1024
10	Grid Transformer	None
13	Freq Track Rate(Hz/s)	The system output frequency tracking rate can be set
14	Transfer Time(ms)	The intermittent time of output switching can be set
15	Output Voltage	Adjustable and fine-tuning system output voltage
16	Out Curr HECS Ratio	Default 222
17	Load Curr HECS Ratio	Default 222
18	Basic Module Qty	According to the actual number of modules in the

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		rack, this set of system is set to 2
19	Module Rated Capacity(kVA)	Set the nominal capacity of the module, and the system adopts 50KVA
20	System Rated Capacity(kVA)	Set the nominal capacity of the whole machine, and the system is 100kVA
21	Grid Acquisition Unit En	Enable or not can be set; Default enable
22	Wide Bus En	Enable or not can be set; Default enable

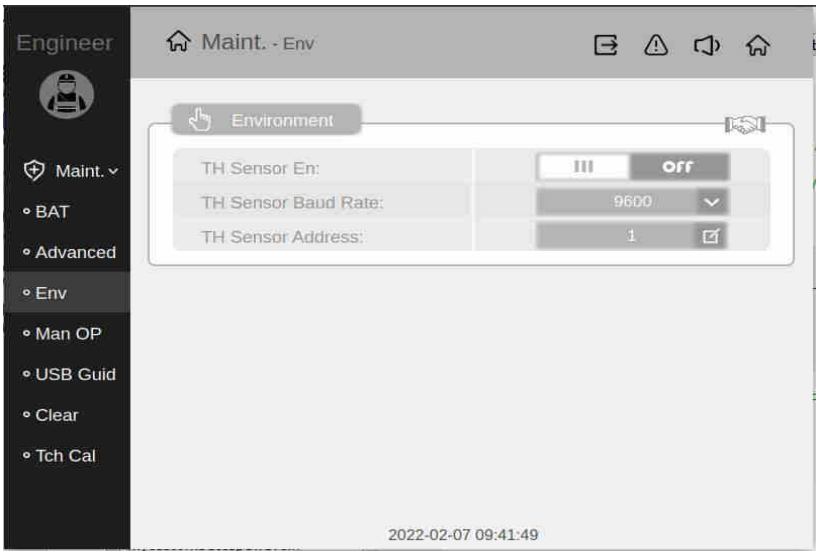

Figure 1.6-18

Table 1.6-20

	Item	Meaning
1	TH sensor En	Enable or not can be set;
2	TH Sensor Baud Rate:	The default is 9600; Optional: 1200, 2400, 4800, 9600, 19200, 38400;
3	TH Sensor Address	The default value is 1; Settable range: 0 ~ 255;

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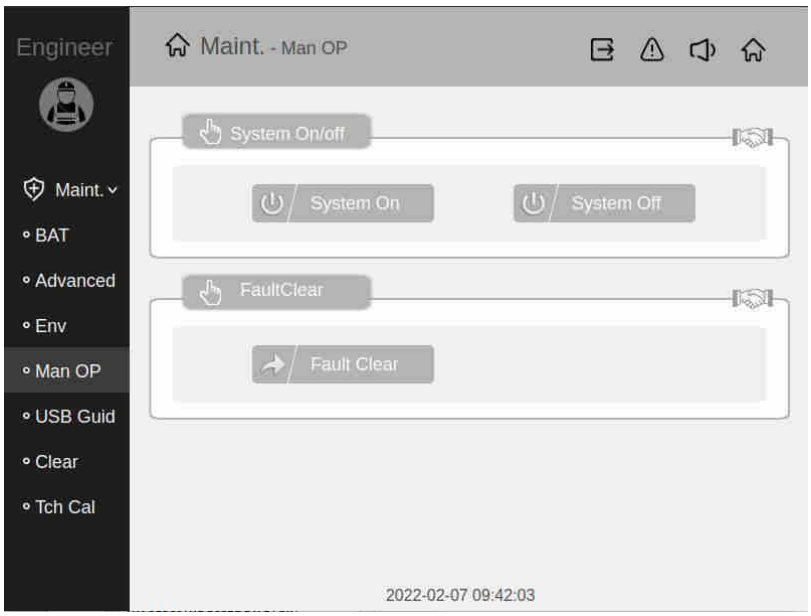

Figure 1.6-19

Table 1.6-21

	Item	Meaning
1	System On	PCS power on
2	System Off	PCAS shutdown
3	Fault Clear	Manually clear faults, such as EPO operation

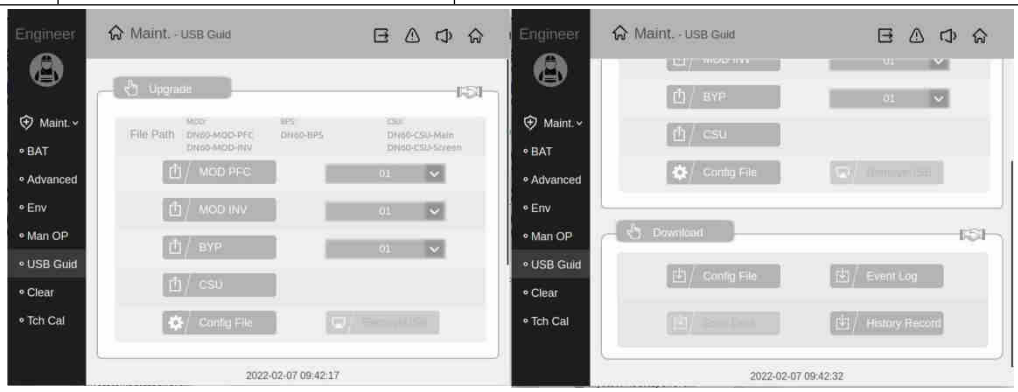

Figure 1.6-20

Table 1.6-22

	Item	Meaning
1	Upgrade	Upgrade the PCS module, MPPT module, STS module and display screen through USB flash disk. Program files shall be stored in USB flash disk according to the specified format and name.
2	Download	Downloaded system operation data

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Figure 1.6-21

Table 1.6-23

	Item	Meaning
1	Delete	Clear the historical alarm and system log of the system
2	Clear	Clear the system operation time, total discharge time, total charging time and battery discharge times
3	Reset	Restore system factory settings

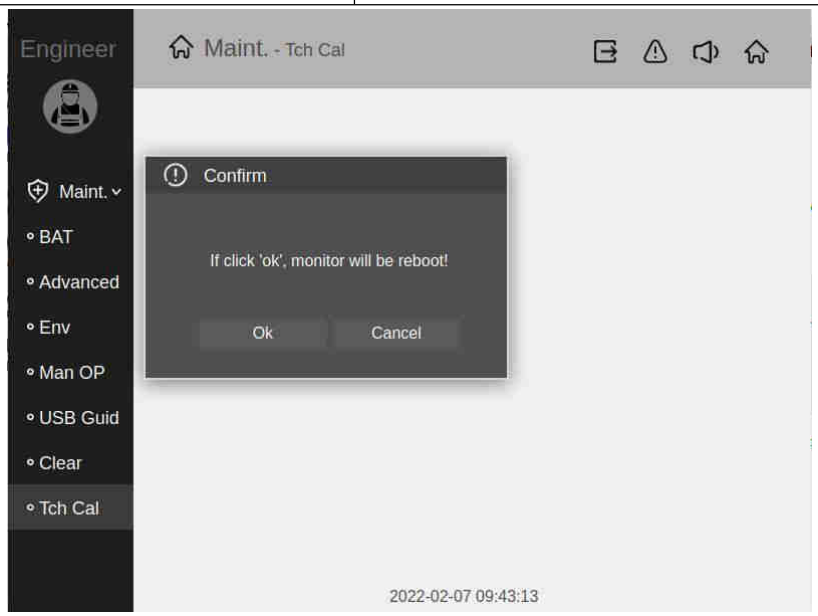

Figure 1.6-22

Table 1.6-24

	Item	Meaning
1	Tch Cal	LCD touch screen calibration

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■About interface

This screen displays and records the equipment model, manufacturer, software version number of the system, total system operation time, total battery charging and discharging time and battery discharging times.

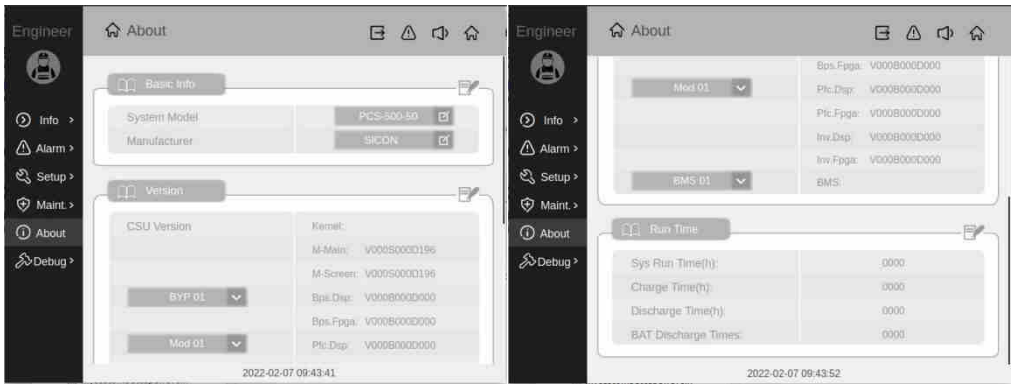

Figure 1.6-23

■Prompt window

When the system is running, when the system needs to remind the user to pay attention to some system states, or the user needs to confirm a command or carry out other operations, the system will pop up the prompt window.

Table 1.6-25 Prompt window information and its significance

Prompt window information	Operation selection
PCS power on	PCS power on (ok / cancel)
PCS shutdown	PCS shutdown (OK/ cancel)
Fault clearing	Clear fault (OK / cancel)

2. Equipment installation manual

2.1 Mechanical installation

Considering the turbulence, vibration and other uncertain factors in transit, the energy storage system is transported with battery modules and cabinet frame separately packed.

Take necessary auxiliary measures to ensure the safety of transport personnel.

Lithium ion battery cabinet as a whole, it must not be decomposed no matter transportation or installation. Failures caused by modification without authorization of the company is not covered by the warranty.

Pay attention to the weight and center of gravity of the battery cabinet when moving. Ensure

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that the transport equipment has sufficient carrying capacity and arrange support or lifting points reasonably.

When moving the battery cabinet, avoid mechanical impact, such as violent shaking or sudden drop. Ensure that the battery cabinet is moved slowly and smoothly, and place the battery cabinet only on a firm and stable ground.

Do not transport battery cabinets in rainy or bad weather conditions. If it cannot be avoided, please take necessary protective measures.

In order to ensure that the lithium ion battery cabinet and module are in a better protective state during transportation, please transport to the final installation point with packaging as far as possible, and transport according to various signs on the packaging. The packaging signs are illustrated as follows:

- Identification

Table 2.1-1

Icon	Signal
	Face up. It is forbidden to be placed horizontally, tilted or inverted
	Handle with care to avoid excessive collision and friction in the transportation environment to cause damage to the equipment
	Take precautions against moisture to avoid the equipment from rain or moisture

In addition, several important parameters are marked on the packing box:

Table 2.1-2

name	explain
MODEL NO:	Lithium ion battery cabinet model

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SIZE:	Outer package size
N.W	Net weight, weight of lithium electronic battery cabinet
G.W	Total weight, including the weight of lithium-ion battery cabinet with outer packing box

◆ Forklift transportation

Using a forklift or pallet truck to transport the battery cabinet is the standard transportation method. The center of gravity of the box should fall between the two forks of the forklift during transportation and test the fork. The length of the fork shall not be less than 1.2 m.

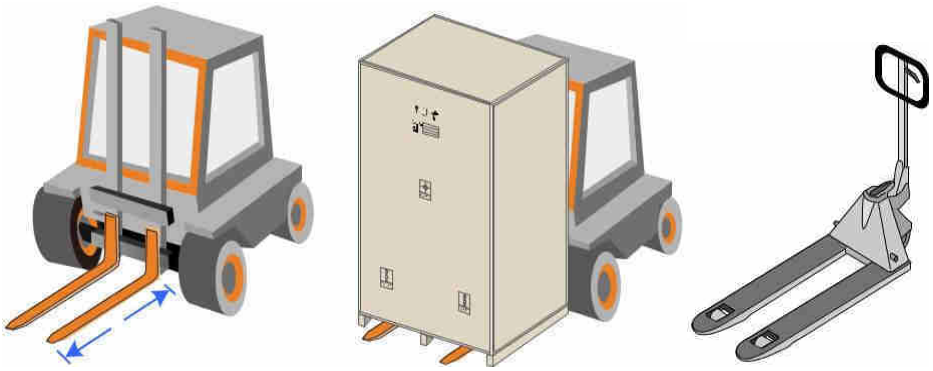

Figure 2.1-1

The safety operation rules of forklifts must be strictly observed during the whole transportation process. The larger size of the battery cabinet may block the driver's view, so it should be coordinated by the auxiliary personnel.

Notice

- Forklift can only be used with wooden pallet. Forklift cannot be used to transport the system cabinet directly.

2.1.1 Foundation requirements

The battery cabinet shall be installed on the cement foundation or channel steel support structure with flame retardant material on the surface. It must be ensured that the foundation is flat, solid, safe

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and stable, there is no ponding on the surface, and has sufficient bearing capacity (≥ 1000kg / m2). Depression or inclination on the foundation surface is prohibited.

When building the foundation, holes shall be made in advance according to the overall design of the power station and the cable access mode of the battery cabinet, and the size of the holes must be completely consistent with the positioning holes of the base of the battery cabinet. In order to firmly connect the battery cabinet to the foundation.

During indoor installation, a force relief frame shall be installed in advance according to the overall indoor design and the cable access mode of the battery cabinet. The opening size of the force relief frame must be completely consistent with the positioning hole of the base of the battery cabinet. In order to firmly connect the battery cabinet to the foundation.

During on-board installation, the bearing capacity of the trailer shall meet the weight requirements of GRES, and the trailer plate shall ensure the most sufficient strength. At the same time, according to the weight and height of GRES, it is necessary to meet its smooth transportation at the customer's application site, so as to avoid tilting, rollover or excessive height..

2.1.2 Space requirements

During the operation of GRES, PCS cabinet will generate a lot of heat. Too high equipment temperature will directly affect the electrical performance of the equipment and even damage the equipment. Therefore, it is strongly recommended that you keep an appropriate and sufficient distance (not less than 1m) between the ventilation louver of the cabinet and the wall and other obstacles when installing the cabinet, so as to meet the requirements of the narrowest maintenance channel, escape route and ventilation.

Notice

- when the heat dissipation distance cannot meet the above requirements, the heat dissipation air duct needs to be added
- The size of cooling air duct shall be designed by professionals.
- The manufacturer can provide assistance in the relevant design if necessary.

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Warning

- If the temperature of the battery room is too high or too low, it will directly affect the charge and discharge capacity and life of lithium ion batteries! An automatic temperature control device is recommended for the battery room to keep the indoor temperature at the optimum working temperature of the battery cabinet for 25℃ and comply with the following rules:
- Regularly cleaning of battery cabinets and temperature control devices inlet and outlet grid, filter and filter cotton;
- Regularly check whether the exhaust fan of the battery cabinet is running normally;

In order to meet the ventilation requirements of battery cabinets, the installation environment shall meet at least the following requirements:

- Battery cabinets should avoid installation in poor ventilation conditions, low gas flow. Air conditioning system and other construction measures can be used to obtain greater ventilation.
- The inlet should be provided with adequate fresh air.
- The air quality must be guaranteed. If the content of suspended matter such as wind sand and dust in the air is too large, the air quality can be improved to meet the requirements through construction measures (such as installing filters at the air conditioning inlet).

2.1.3 Wiring specification

The cable used in the system can be divided into power cable, power wire and communication wire.

When laying communication wire, keep away from power cables and keep them at right angles at the intersection. Try to keep the communication cable as short as possible and keep a distance from the power cable.

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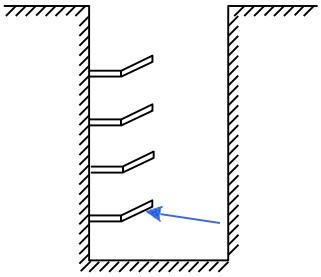

Figure 2.1-2

Power cables, power wires and data wires should be placed separately in different cable trenches to avoid long distance parallel wiring of power cables and other cables and to reduce electromagnetic interference caused by output voltage transients.

Distance between power cable, power wires and data wires shall be greater than 200 mm. When the wire cross distribution, the cross angle should be 90 degrees, and the distance can be reduced appropriately.

The recommended minimum space distance between parallel shielded data wire and power cable and the corresponding relationship between the field is shown in the following table

Table 2.1-3

Parallel line length	Minimum space distance
200	0.3
300	0.5
500	1.2

The data line shall be as close to the ground or support routing as possible, such as supporting beam, channel steel, metal guide rail, etc.

Notice

- The cabinet adopts the mode of lower incoming line and lower outgoing line. It is recommended that the cables connected with the outside should be routed from the overhead bridge for easy installation and maintenance

2.1.4 Installation of system cabinet

Due to the heavy weight of the battery module, it can be considered to install and fix the cabinet first, and then install the battery module. The base of the system cabinet is equipped with 12 14 mm ×

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14 mm positioning hole, see the following schematic diagram (unit: mm).

Considering the bumps, vibration and other uncertain factors during transportation, the energy storage system adopts the mode of separate transportation of cabinet and battery module during transportation, and the battery module and cabinet are packaged and transported separately with pallets.

Take necessary auxiliary measures to ensure the safety of transportation personnel.

The system cabinet is a whole and shall not be disassembled during transportation or installation. The failure caused by modification without authorization of the company is not within the scope of warranty.

When moving, pay attention to the weight and center of gravity position of the system cabinet. Ensure that the transportation equipment has sufficient bearing capacity, and reasonably arrange the support or lifting points.

In the process of moving, the system cabinet shall be protected from mechanical impact, such as violent shaking or sudden lowering. It shall be slow and stable. At the same time, the battery cabinet can only be placed on a solid and stable ground.

Avoid transporting the battery cabinet in rain or bad weather conditions. If it cannot be avoided, please take necessary protective measures.

In order to ensure that the lithium-ion battery cabinet and module are in a good protective state during transportation, please transport them to the final installation point with packaging as far as possible, and transport them according to the schematic diagram of various marks on the packaging. The illustration of packaging marks is as follows:

- Identification

Table 2.1-4

Icon	Signal
	The front side is upward. It is forbidden to place the energy storage generator horizontally, tilt or upside down
	Handle with care to avoid damage to the equipment caused by too fierce collision and friction in the transportation environment

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	Pay attention to moisture-proof and avoid rain or moisture on the equipment.

In addition, several important parameters are marked on the packing box:

Table 2.1-5

Item	Meaning
MODEL NO:	Lithium ion battery cabinet model
SIZE:	Outer package size
N.W	Net weight, weight of lithium electronic battery cabinet
G.W	Total weight, including the weight of lithium-ion battery cabinet with outer packing box

◆ Forklift transportation

Using forklift or pallet truck to transport the system cabinet is a standard transportation method. During transportation, the center of gravity of the box shall fall between the two forks of the forklift, and the forks shall be tested. The length of fork shall not be less than 1.2m.

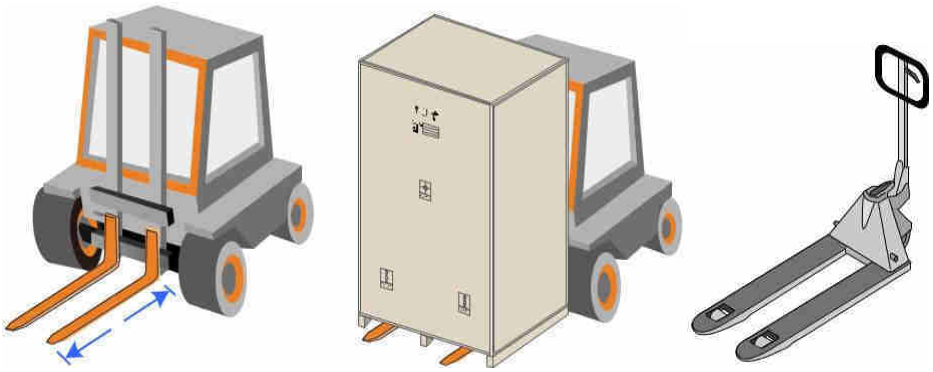

Figure 2.1-3

In the whole process of transportation with forklift, the safety operation regulations of forklift must be strictly observed. The large size of the system cabinet may block the driver's gauge line, which should be coordinated by auxiliary personnel.

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Notice

- Forklift can only be used with wooden pallet. Forklift cannot be used to transport the system cabinet directly.

2.1.5 Installation of system cabinet

Due to the heavy weight of the battery module, it can be considered to install and fix the cabinet first, and then install the battery module. The base of the system cabinet is equipped with 14 mm × 14 mm positioning holes, see the following schematic diagram (unit: mm).

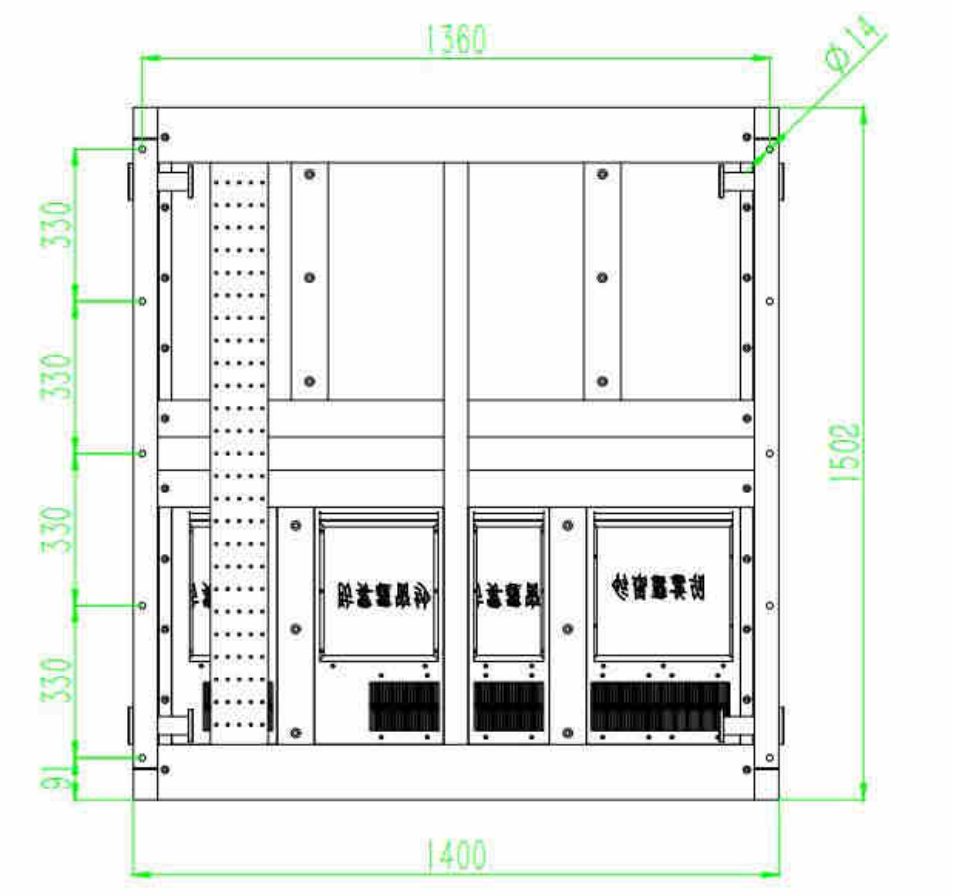

Figure 2.1-4 GRES-75-50 Cabinet fixing hole

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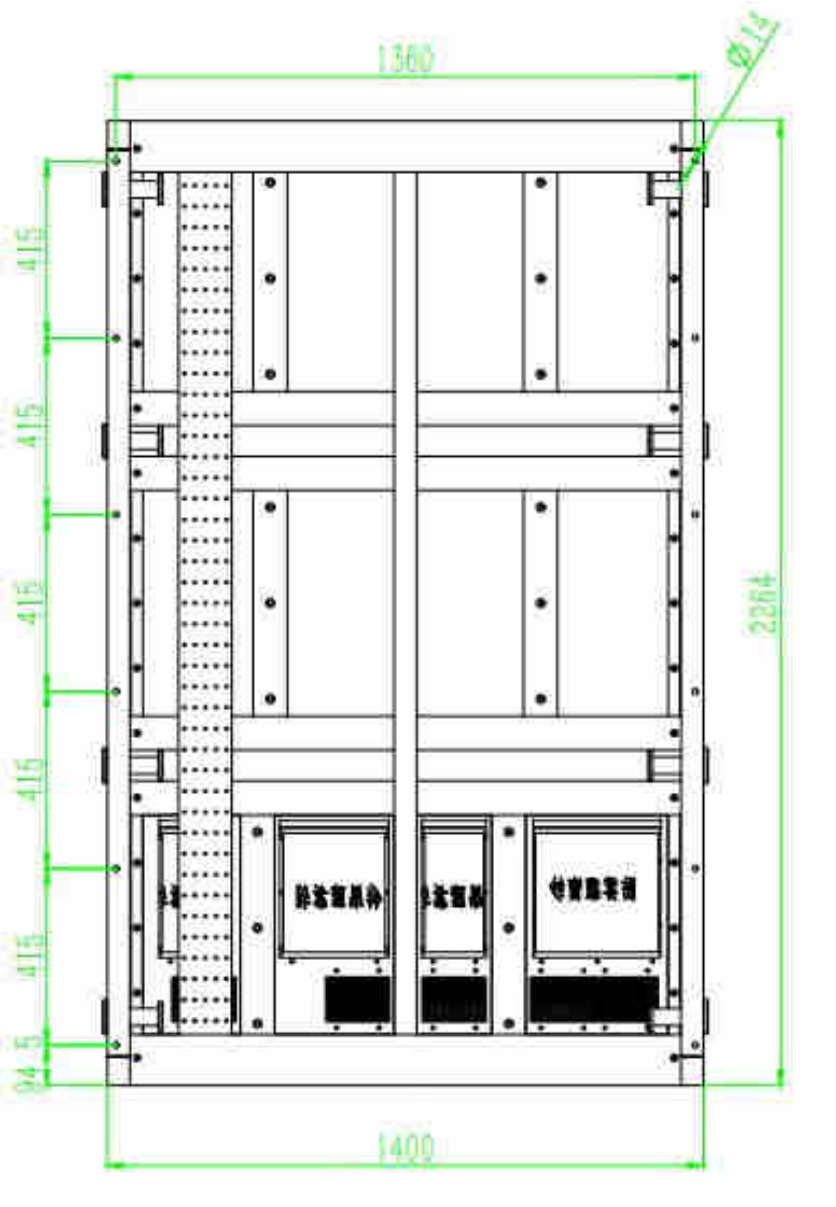

Figure 2.1-5 GRES-150-100 Cabinet fixing hole

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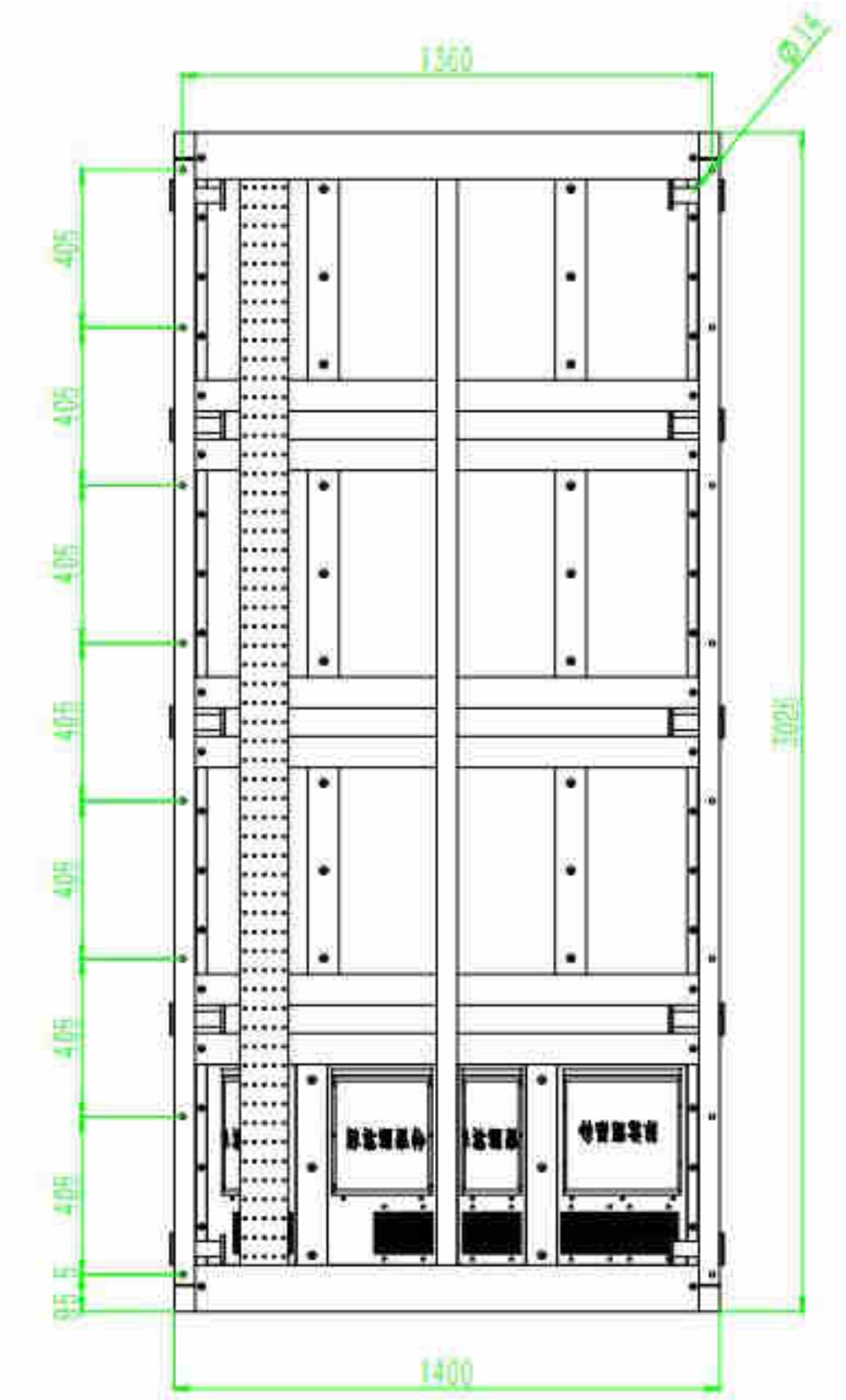

Figure 2.1-6 GRES-225-150 Cabinet fixing hole

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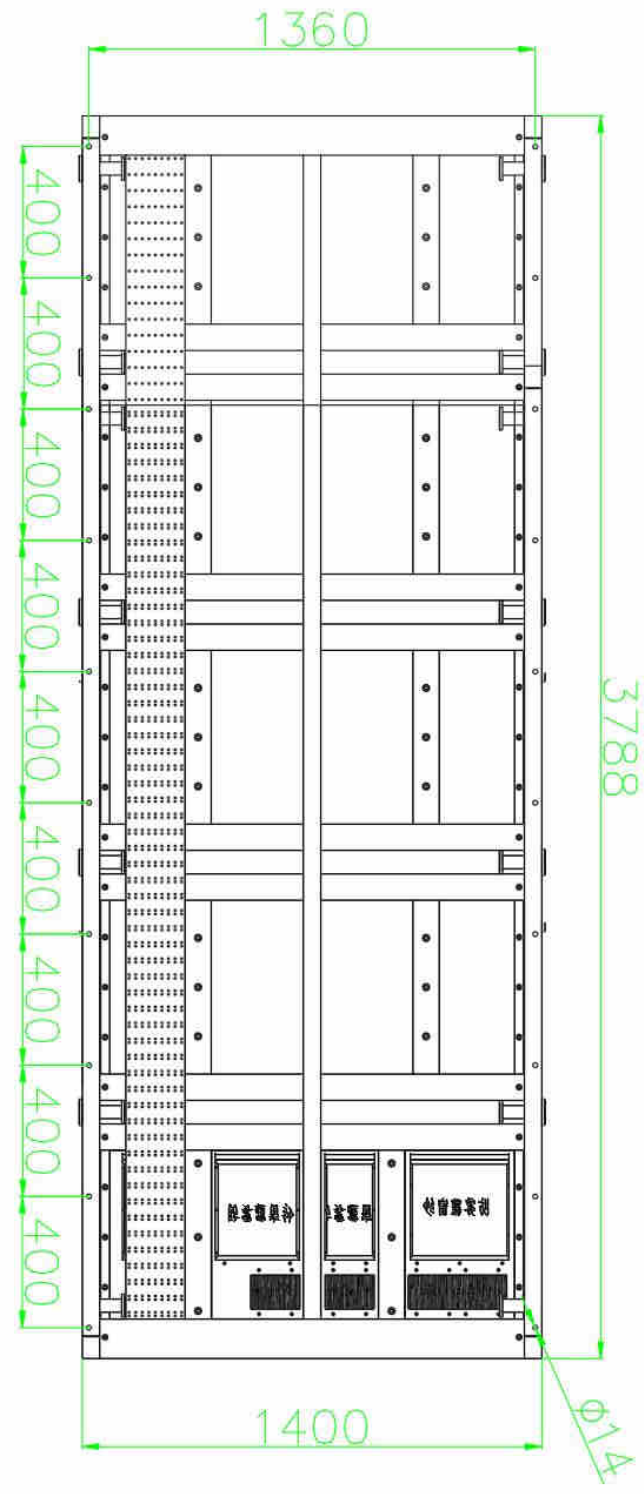

Figure 2.1-7 GRES-300-200 Cabinet fixing hole

Notice

- When installing the cabinet, consider whether the space around the cabinet meets the space required for the installation of battery modules;

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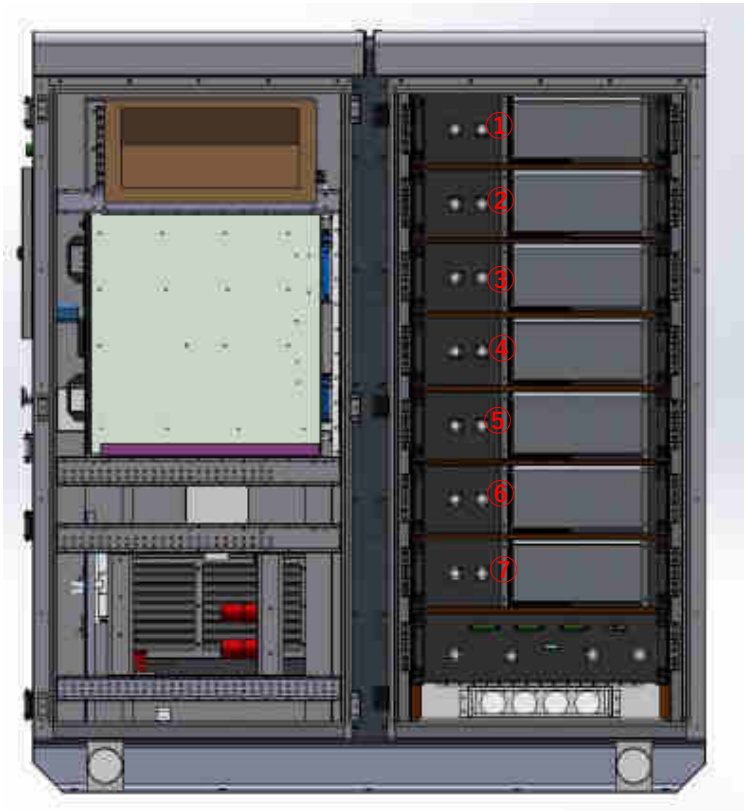
- Before the final fixing of the system cabinet, ensure that the fixing hole of the system cabinet meets the installation requirements.

2.1.6 Installation of battery module

■Battery module installation

After unpacking the battery module, put the battery module into the designated position of the cabinet according to the serial number of the battery module. Due to the heavy weight of the battery module, it is recommended to use the lifting truck and lifting truck for installation to prevent the loss caused by the falling of the battery module.



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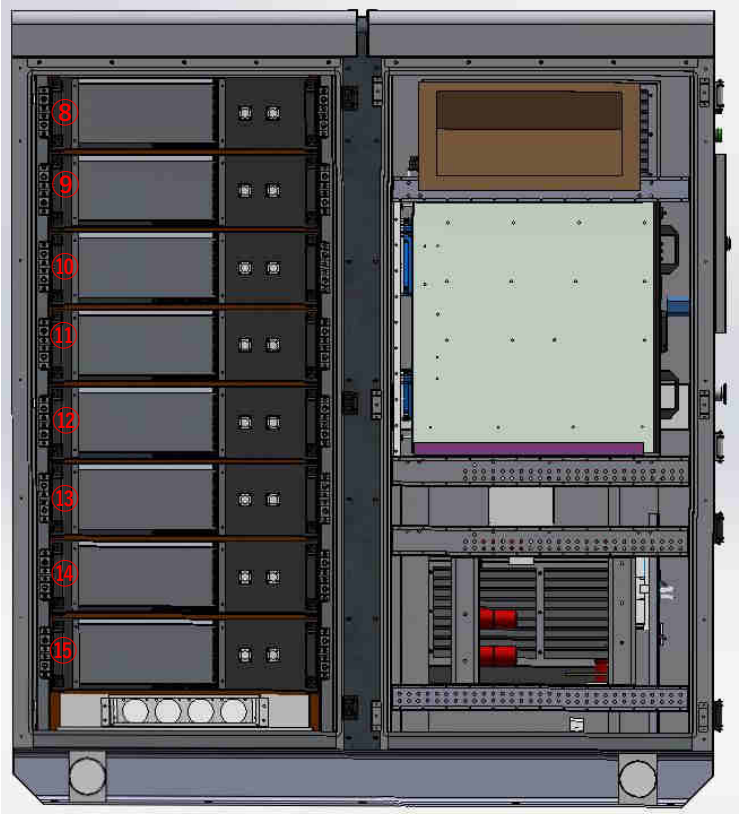

Figure 2.1-7

Notice

- Please put the battery module into the designated position marked on the battery cabinet according to the battery module code;
- The modules of two battery clusters cannot be mixed;

■Battery module fixing

After the battery module is placed in the specified position, the battery module needs to be fixed front and rear. The schematic diagram of the fixed position is as follows:

Table 2.1-6

	Modules fixing

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2.1.7 Installation of PCS and MPPT modules

After PCS module and MPPT module are directly inserted into the designated position of PCS system, fix the module panel.

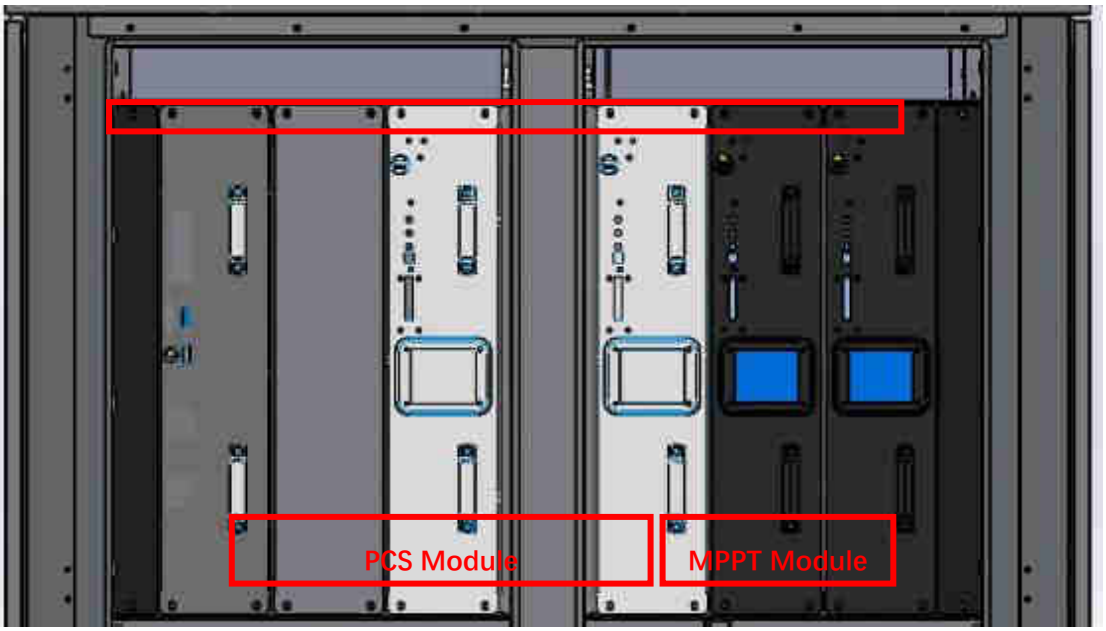

Figure 2.1-8

Notice

- PCS module and MPPT module can be directly inserted into PCS cabinet
- After PCS module and MPPT module are inserted into the system cabinet, the ready switch needs to be in place. Otherwise, it will not work normally.
- The panel of the module can be fixed after the test is completed

2.2 Electrical installation

2.2.1 Safety instructions

During the whole process of electrical connection between the battery cabinet and the system cabinet, as well as all other operations on the system cabinet, the following safety rules shall be observed:

◆ disconnect all external connections of the battery cabinet and the internal power supply of the

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equipment.

- ensure that the battery cabinet will not be accidentally re powered on.
- Use a multimeter to ensure that the interior of the battery cabinet is completely uncharged.
  - implement necessary grounding and short circuit connections.
  - for the possible live parts near the operation part, use the cloth of insulating material for insulation and covering.

Warning

- All electrical connections must comply with the electrical connection standards of the country and region where the project is located;
- Only professional electricians or qualified personnel can electrically connect the product;
- Please carry out wiring operation in strict accordance with the wiring identification of the equipment

2.2.2 Cable requirements

Cable selection requirements are as follows:

- The selected cable must have sufficient current carrying capacity. The current carrying capacity of the conductor is at least related to environmental conditions, conductor insulation material type, laying mode, conductor material and cross-sectional area.
- The wire diameter of all cables must be selected according to the maximum charging and discharging current of the system cabinet, and allowance must be reserved.
- Wires of the same specification and type shall be selected for connecting wires on the same side.
- Please select flame retardant cable.

Warning

- Cable overload is strictly prohibited**!**

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The recommended cross-sectional area of the GRES system stand-alone copper cable is shown in the following table (recommended values, adjusted according to the actual length and installation conditions)

Recommended cross-sectional area of stand-alone cable (unit: mm2, ambient temperature: 25°C)

Power	System photovoltaic side(50KW MPPT each Separate wiring)	Systems & Grids	System & load	N-line	Ground
50KW	50	35	35	35	16
100KW		70	70	70	35
150KW		95	95	95	50
200KW		150	150	150	75

2.2.3 Inspection before wiring

Before power cable wiring, the following checks shall be carried out:

- Measure the open circuit voltage of all wiring terminals to ensure that the open circuit voltage does not exceed the limit voltage borne by human body.
- confirm the positive and negative poles of battery cables and the phase sequence of AC cables, and make marks.

Notice

- please carry out the wiring operation in strict accordance with the wiring identification inside the equipment.
- Power cable wiring can be started only after all inspections and measurements are completed and meet the requirements.

2.2.4 Power cable connection steps

a. Confirm that the circuit breaker and the circuit breaker of the equipment connected to the later stage are disconnected.

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b. Peel off the insulating skin at the end of the cable. The stripped length of the insulating skin at the end of the cable shall be the depth of the copper nose pressing hole plus about 5mm.

c. Crimp wiring copper nose.

1 . Place the bare copper core part of the stripped wire head into the crimping hole of the copper nose.

2 . Use the terminal crimping machine to compress the copper nose of the wiring, and the number of crimping should be more than two.

d. Install the heat shrinkable sleeve.

1 . Select the heat shrinkable sleeve that conforms to the size of the cable, and the length shall exceed the copper nose crimping pipe for wiring by about 2cm.

2 . Put the heat shrinkable sleeve on the copper nose of the wiring to completely cover the wire pressing hole of the copper nose of the wiring.

3 . Tighten the heat shrinkable sleeve with a hot blower.

Notice

- If multi-core cables are used, it is recommended to add cable protective finger sleeves at the bifurcation to prevent cracking of the outer insulating skin.

e. Wiring.

1 Select the screws that conform to the copper nose of the wiring.

2 Crimp the connection copper nose on the DC connection copper bar and install it according to the connection sequence shown in the figure below.

3 Tighten the screws with a screwdriver or wrench. The tightening torque of copper cable is 60N m。

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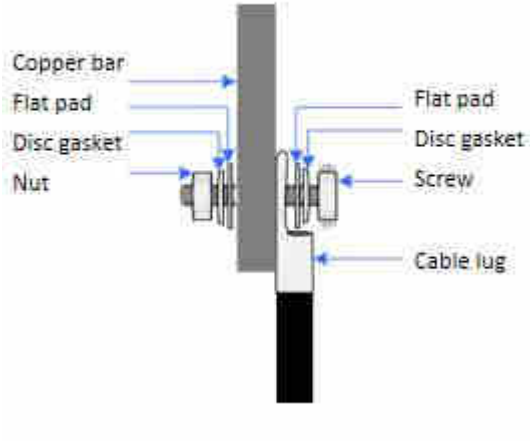

Figure 2.2-1

The size and number of cables shall be reasonably selected according to the site conditions. Up to 4 cables can be connected. If the number of cables is more than 2, the cables shall be connected according to the connection sequence shown in the figure below

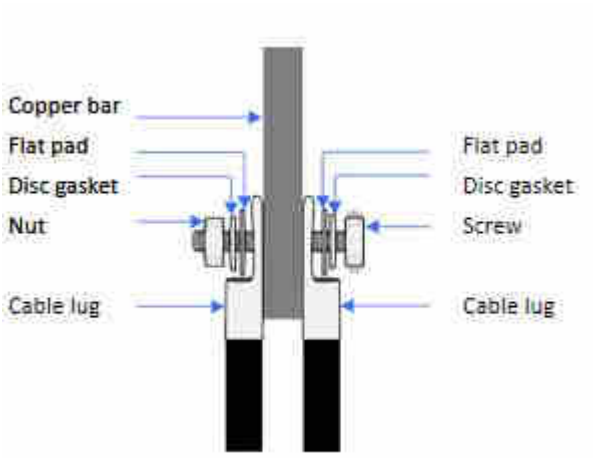

Figure 2.2-2

Notice

- please comply with all safety specifications listed by relevant equipment manufacturers on site. Incorrect wiring sequence may cause fire and combustion. Please pay attention to the connection sequence of wiring components.
- When connecting, ensure that the connectors are tight. Insufficient connection or oxidation of contact surface will also cause excessive heat, which may lead to fire and combustion.

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If aluminum cable is selected, copper aluminum transition piece or copper aluminum transition wire nose shall be used

Notice

- The length of the connecting screw shall be appropriate, and the copper bar mounting hole can be slightly exposed. Too long may affect the insulation performance or even short circuit.
- Check whether part of the heat shrinkable sleeve is clamped at the connection between the copper nose and the copper bar. If it is clamped, it should be removed immediately, otherwise it may lead to poor contact, even heating and damage.

f. Confirm that the wiring is firm.

In order to ensure safety, all battery cabinets need to be grounded through conductors.

2.2.5 Communication cable connection

Connection steps:

a. Peel off the insulation from the ends of two cables that need to be connected to the same terminal.

b. Insert the exposed copper wire part "I" into the cold pressed terminal and press it tightly with wire crimping pliers.

c. Connect the cold pressing terminal to the communication terminal.

d. The shielding layers of the two cables are twisted into a bundle, and the "I" is inserted into the cold pressing terminal after being sheathed with heat shrinkable sleeve.

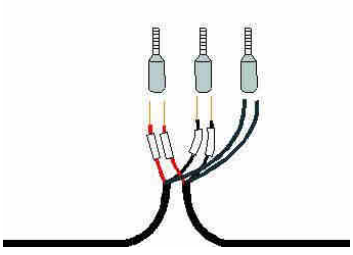

Figure 2.2-3

Notice

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- Please carry out the wiring operation in strict accordance with the wiring identification inside the equipment.

2.2.6 Battery cable installation instructions

The cables supporting the equipment have been identified, including power cables and signal cables. Both ends of the cables have been identified. Connect the cables according to the cable identification.

Please refer to the following schematic diagram for the installation of battery power cables. Battery power cables are represented by solid lines and limited number cables are represented by dotted lines.

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Figure 2.2-4

Power cable Mark and connection position:

Table 2.2-1

Cable	Marker	Connection location	Marker	Connection location
1	BAT1+	Module 1 + terminal	BAT2-	Module 2 - terminal
2	BAT2+	Module 2 + terminal	BAT3-	Module 3-terminal
3	BAT3+	Module 3 + terminal	BAT4-	Module 4-terminal
4	BAT4+	Module 4 + terminal	BAT5-	Module 5-terminal
5	BAT+	Module 5 + terminal		
6	BAT-	Module 1 - terminal		

Signal cable representation and significance:

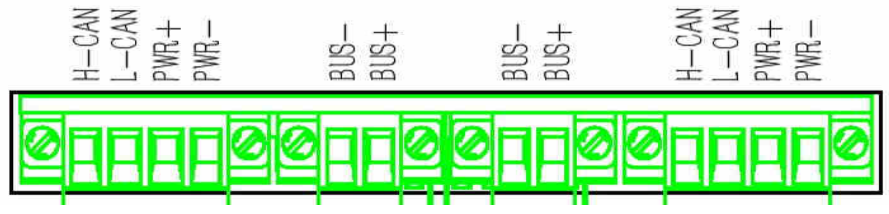

Figure 2.2-5

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Table 2.2-2

Marker	Significance
H-CAN，L-CAN	Can communication port of battery module
PWR+，PWR-	Battery module power supply
BUS+，BUS-	Battery module active equalization power supply

Danger

- when installing the battery power cable, please wear insulating gloves, goggles and other protective tools;
- when installing power cables, make sure the cables are connected correctly;
- when installing power cables, the installation tools shall be tools with insulated handle as far as possible;
- during cable installation, please ensure that the positive and negative of the battery module cannot be short circuited;
- during the installation process, if the battery module is not installed or the cable terminal has been installed, please be sure to install the protective shell to prevent short circuit.
- **during the installation process, the cables between modules should be installed with fastening screws from top to bottom to prevent the cables (clockwise or counterclockwise) from slipping, resulting in a short circuit between the positive and negative connecting cables of the battery module.**
- During the installation of power cables, avoid touching the cabinet shell and battery terminals at the same time, otherwise you may feel paralyzed.

Warning

- install the power cable first, and then the signal cable;
- After the signal cable is installed, the signal cable terminal shall be fixed with a small slotted screwdriver to prevent vibration and falling off.

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Notice

After the test is completed, the battery compartment door panel can be installed back to the corresponding position;

2.2.7 AC cable connection instructions

The position of copper bar of system power cable is shown in the figure below. During wiring, remove the cover plate of the upper (or lower) incoming hole according to the required incoming mode, and determine the number of removed cover plates according to the number of cables and the size of wire diameter.

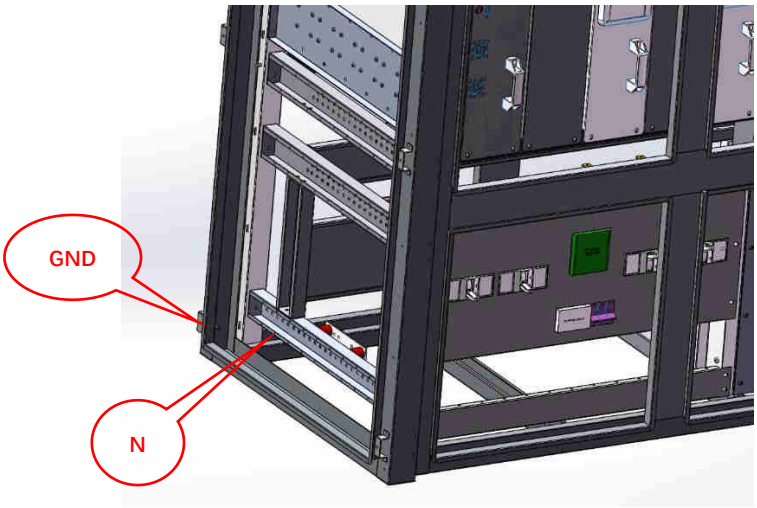

Figure 2.2-6

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Table 2.2-3

Item	Meaning
AC-OUT	Load connection port（L1、L2、L3）
AC-IN	AC input wiring port（L1、L2、L3）
PV1、PV2	PV input port (positive and negative)
N	AC input / output n-bank
GND	Grounding position

Table 2.2-4

Cable specification (Unit:mm2, with standing voltage:1000V,Environmental temperature: 25℃

PCS Power	Battery DC	PV DC Each Modules L:distance from PV to the system L<50m/50m≤L＜100m	System to grid	System to load	N	Ground
50KW	35	50/70	35	35	35	16
100KW	70	50/70	70	70	70	35
150KW	95	50/70	95	95	95	50

Warning

- the grounding cable must be well grounded! Otherwise:
  - ◇ in case of failure, it may cause fatal electric shock hazard to operators!
  - ◇ equipment damage may be caused by lightning stroke!

  It may cause the equipment to fail to operate normally!
- pay attention to the following points when grounding:
  - ◇ The grounding connection must comply with the grounding standards and specifications of the country / region where the project is located.

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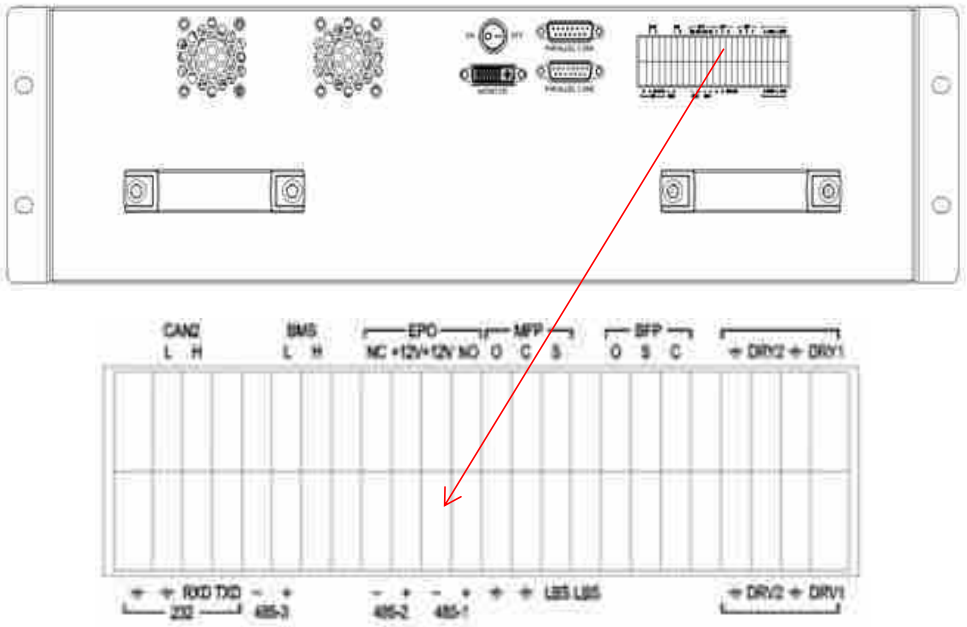
◇ the connection between grounding connection and equipment and grounding electrode must be firm and reliable.

After grounding, the grounding resistance must be measured, and the resistance value shall not be greater than 4 Ω

- Please carry out the wiring operation in strict accordance with the wiring identification inside the equipment.

2.2.8 Communication cable connection instructions

The communication interface with the upper computer, diesel start-stop, charging pile power limit, BMS, and remote EPO communication is on the front panel of STS, and the specific interfaces and functions are shown in the table below.



Functional interface	Interface silkscreen	Significance
BFP	O	Diesel start-stop (passive output dry contact) S-O: Normally open Chai Fa start and stop S-C:
	S	
	C	
EPO	NO	Remote emergency shutdown interface (normally open contact)
	+12V	
	+12V	Remote emergency shutdown interface (normally closed contact)
	NC	

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Functional interface	Interface silkscreen	Significance
BMS	L	BMS communication with the battery
	H	
485-1	+	The system communicates with the host computer
	-	
485-2	+	Charging pile power limit (adapted to SCU charging pile)
	-	

3. GRES System Operation

Danger

- The DC input terminal and AC grid-connected output terminal of the static generator system carry dangerous voltage at any time.
- Check the status of the system before starting.
  - Make sure that the system input switch on site is disconnected.
  - Make sure all power wiring is correct.

  Check the communication cable is connected correctly.

1. For all control switch keys and LCD display of system monitoring unit involved in the procedure, please refer to the introduction of the control display panel below..

2. Buzzer alarms may appear at any time during operation. Press LCD key of the system monitoring unit to cancel the alarm.

3.1. Perform operations before system startup.

1、Open the front door of GRES system and confirm the reliable connection between access and the wiring bar.

2、Turn on the STS and PCM ready switch.

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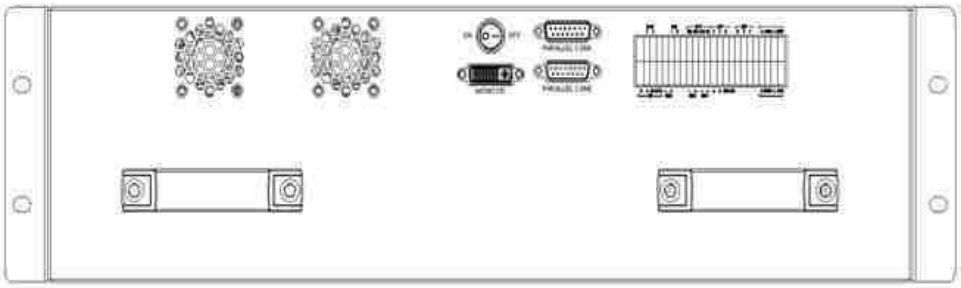


Figure 3-1 Front panel of the static transfer switch

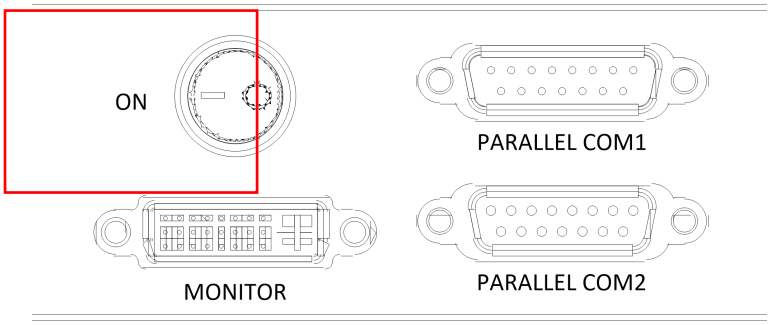


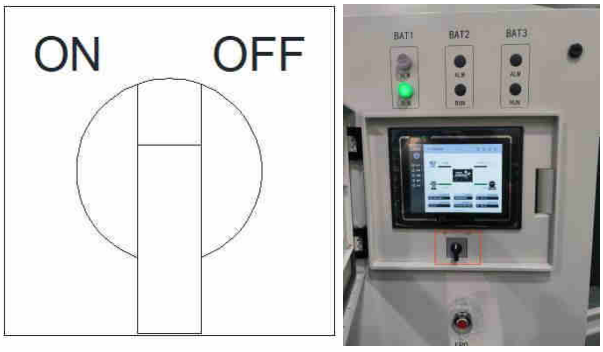
Figure 3-2 Communication interface of the static transfer switch

Figure 3-3 PCM front panel

Switch knob, turn to is module ready state, turn to is not ready state.

3、Turn on the battery system:

Rotate and hold the turn switch on the operation panel counterclockwise (turn to 'NO'), and release the turn switch after the battery status indicators are all on (the switch resets automatically)



Instruction of battery status indicator lights:

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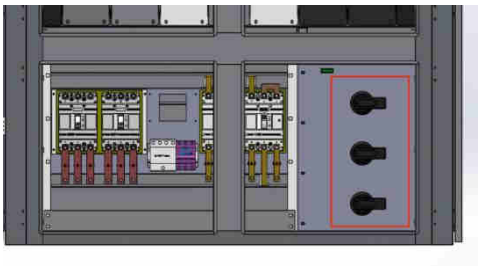
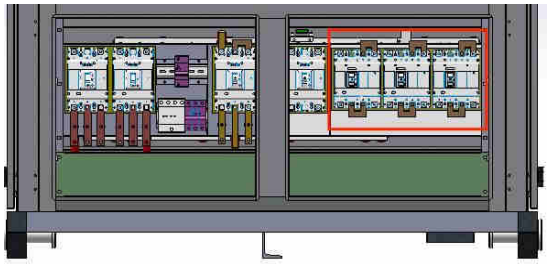
Statues	Cycle	Meaning
Flashing	0.25son-0.25s off	Starting
	3s on-1s off	Charging prohibited
	1s on-3s off	Discharge prohibited
	1s on-1s off	Charge and discharge prohibited, locked
Always on		Normal work
Off		Not started、 Shut down

Close the battery circuit breaker: Each battery system is equipped with a circuit breaker, and the system can be configured with a maximum of 3 battery systems.


Or


After the battery circuit breaker is closed, the GRES system powers up and the system operation display screen starts to activate. After a delay of about 3 minutes, the system display can start normally.

warning
● When two or more battery systems are used in parallel, all battery circuit breakers must be closed for normal charging and discharging. Otherwise the battery cluster capacity will be inconsistent;

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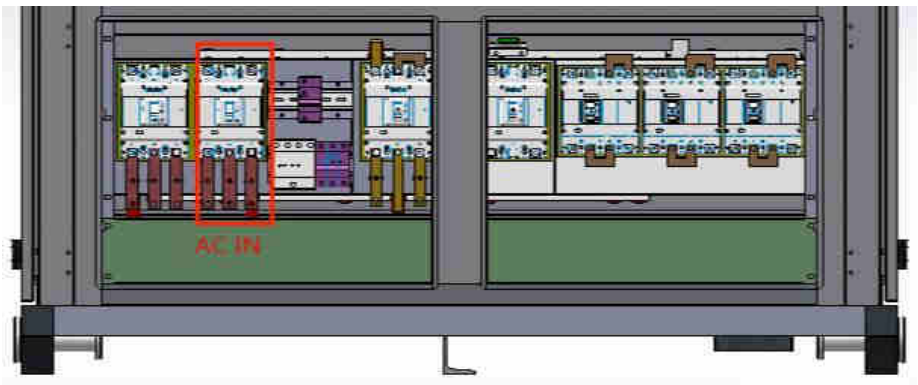
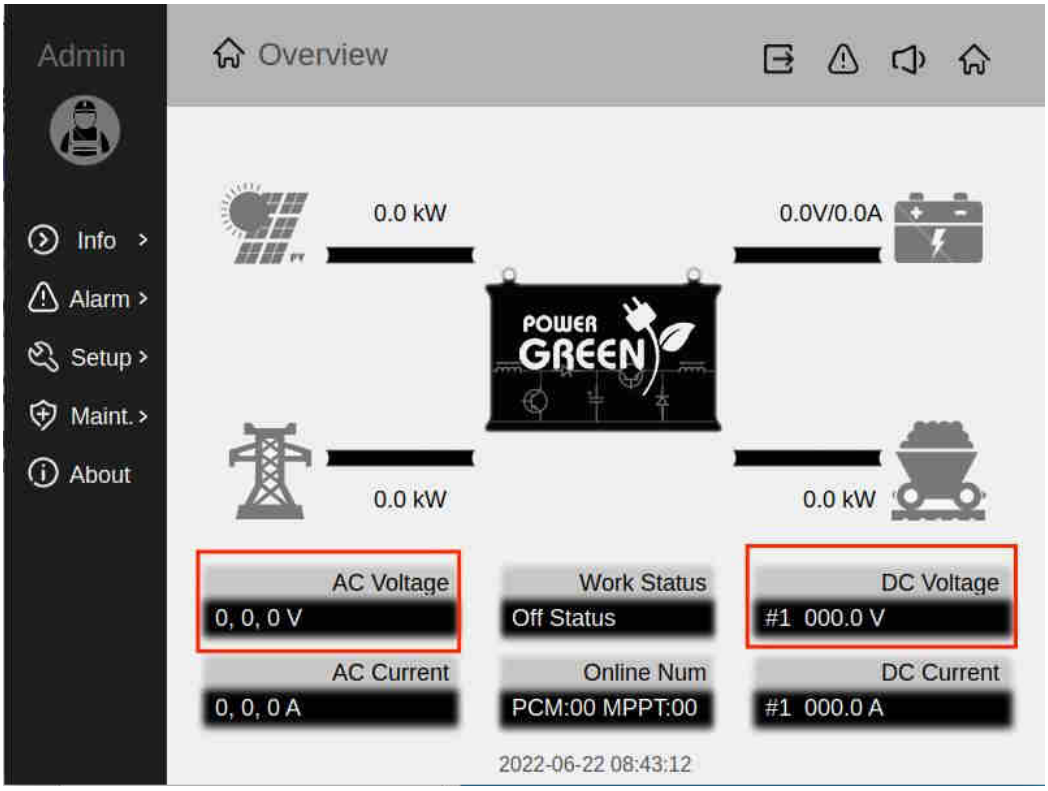
5、Close the AC input circuit breaker

After the system display screen shows normally, close the AC input circuit breaker and check whether the current AC input voltage, phase sequence and DC input voltage meet the actual voltage through the display screen.





6、Check whether there is any abnormal alarm in the system. The system reports grid abnormality as a normal alarm if only the battery DC switch is closed; If only the input AC switch is closed, the system reports DC battery abnormality as a normal alarm

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3.2. GRES setting operation before power on

The system settings are different for different usage environments;

3.2.1 PCS Model

The PCS mode is also divided into grid-connected charging mode, grid-connected discharging mode and off-grid discharging mode.

3.2.1.1 Grid-connected charge/discharge mode setting operation (manual control)

1、Click the user button on the monitoring screen, the login interface will pop up. Then enter the operation interface as an administrator, login password: 123456;

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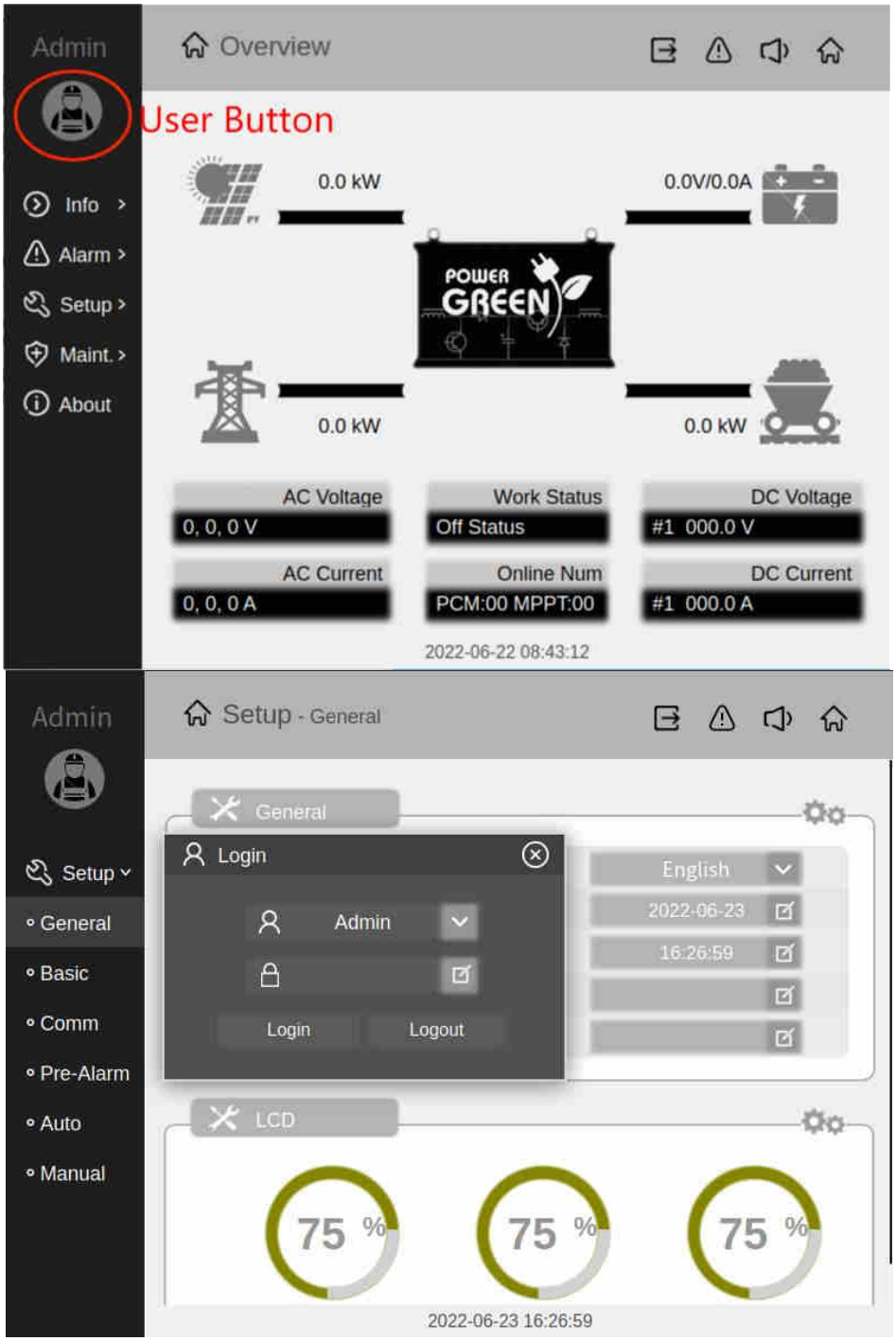

2、After logging in administrator account, click “Setup” to enter the Settings tab. Then click “Basic” to set basic parameters;

2.1 Generally the default value of the grid voltage and frequency is provided by the customer. If there is an error, you can change the setting when the PCS is powered off;

2.2 Select Control Mode: Manual;

2.3 Default “Work Mode”: PQ Mode;

2.4 Smart Off-Grid Enable: If you need to automatically switch off-grid mode after mains power supply failure, turn on enable;

2.5 Grid Power Limit Mode: PCS Mode;

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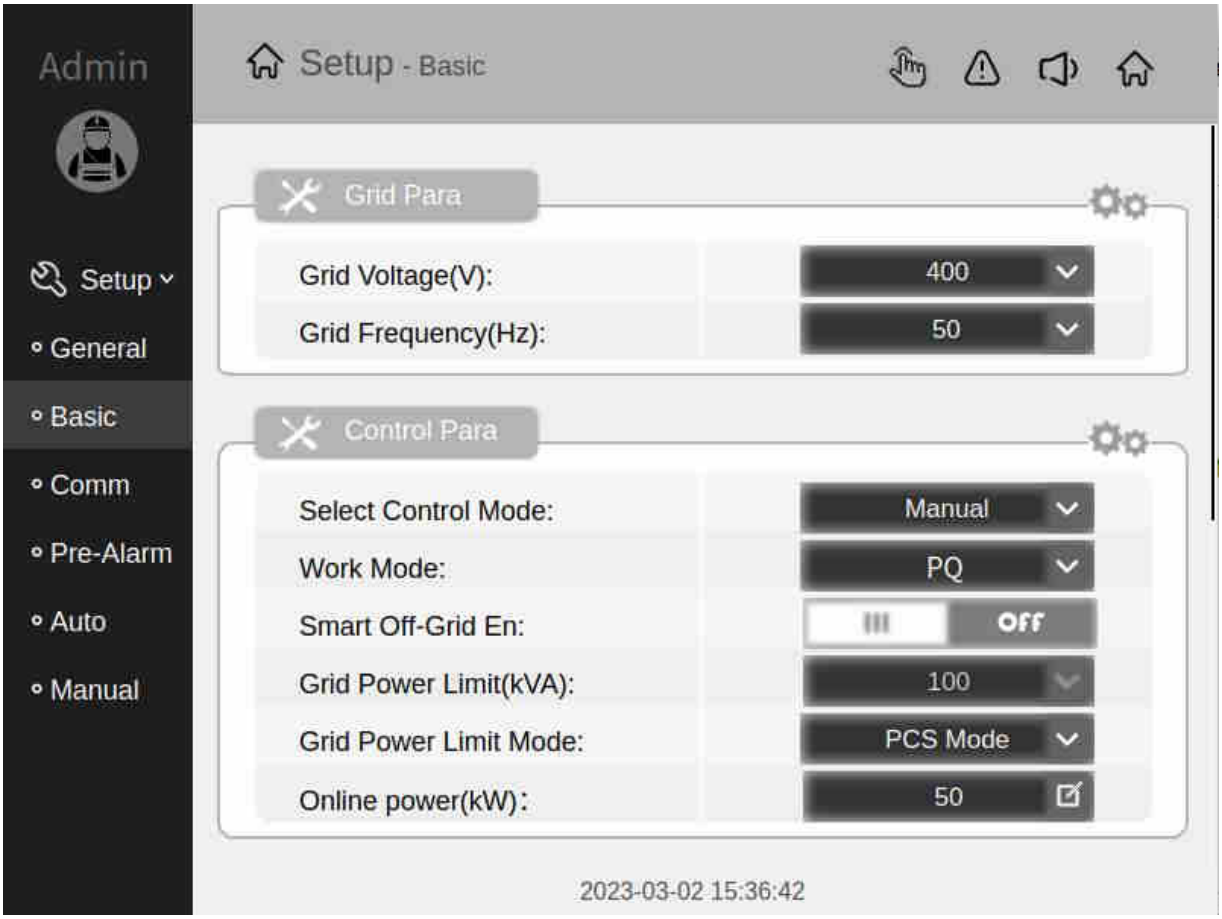
2.6 Grid-connected without going online: according to different scenario applications, set the grid-connected power, when set to 0, the system PQ mode discharge only uses the grid to connect to the grid, and does not feed energy to the grid;



3、Click “Manual control” to set parameters

3.1 Work Mode - SelectMode: PQ Mode

3.2 Grid-connected Parameters: set the power and power value according to the demand;

The settable range: 0～system power (set according to the system);

Negative value: charging power; Positive value: discharging power;

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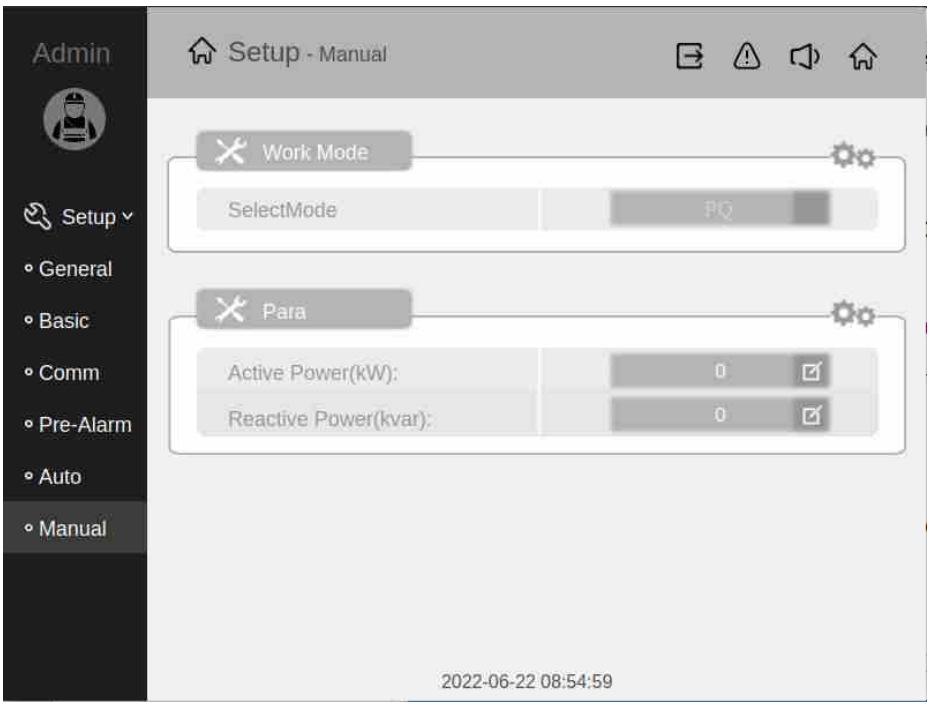
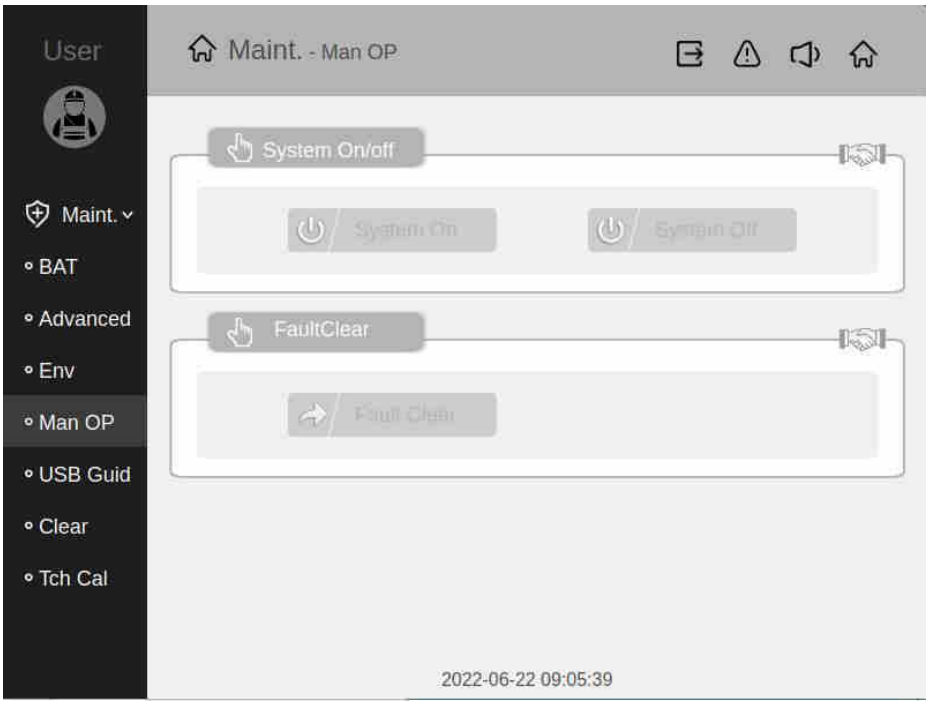


4、Return to the main interface, click “Maintenance-> Manual Operation-> System On-> Confirm”;



5、Click “Home” button and return to the main interface if the system boots successfully. Observe whether the data is correct, and whether the system operates according to the settings;

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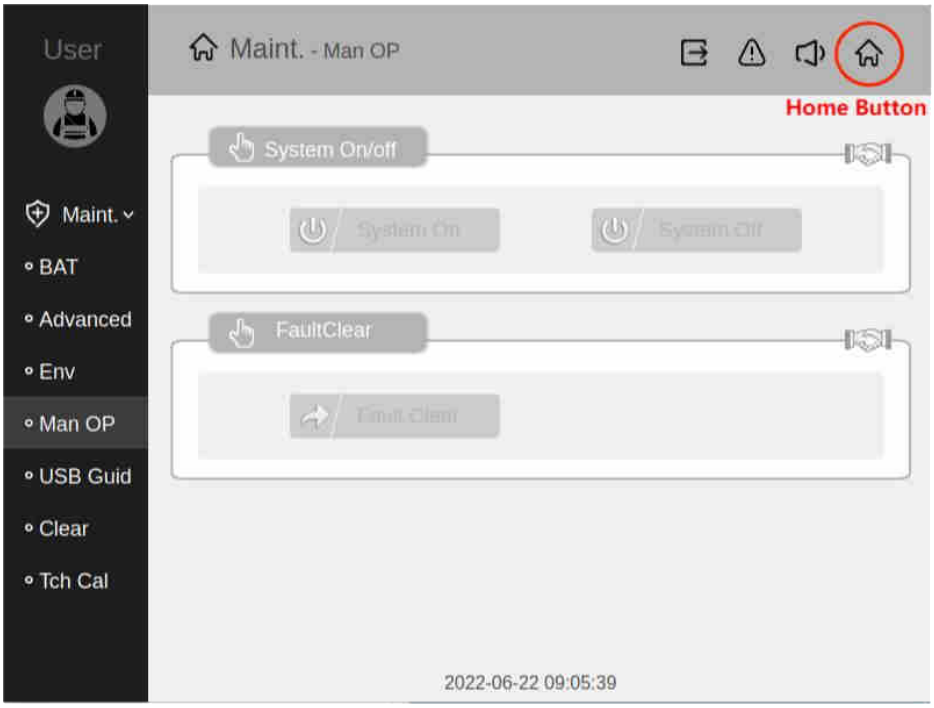
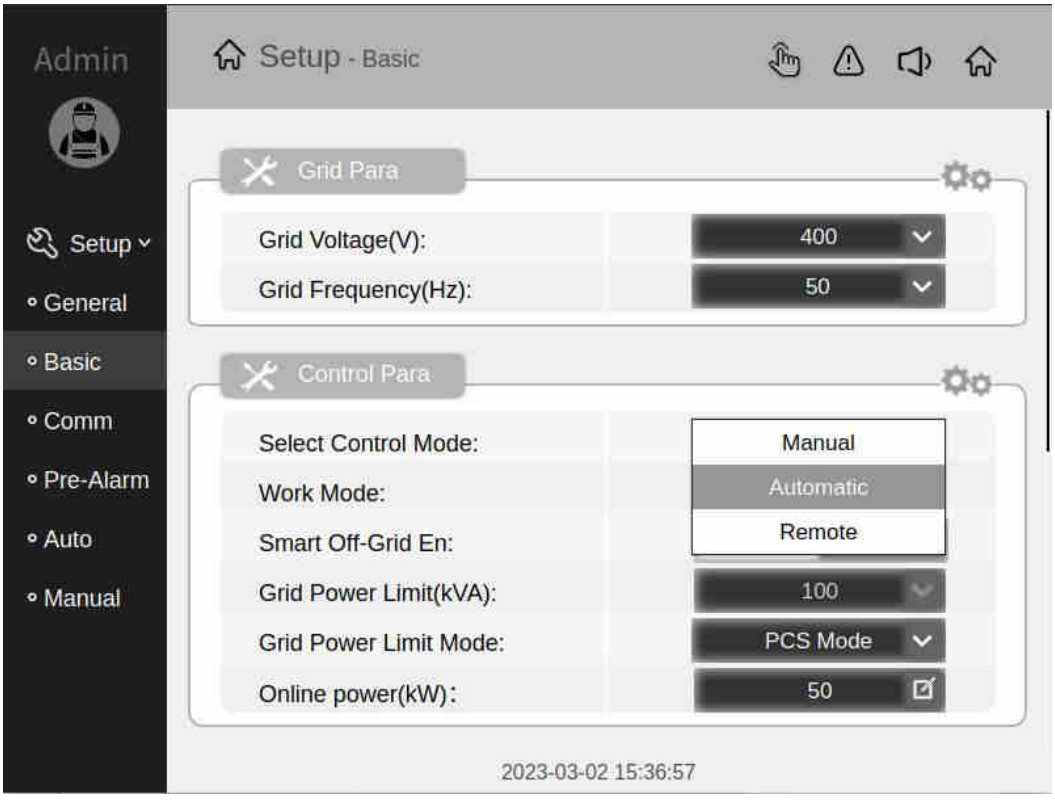


6、 You can set the positive and negative values of the numerical power in step 3.2 to switch the grid-connected charging/discharging mode;

3.2.1.2 Grid-connected charge/discharge mode setting operation (automatic control)

1、Enter the operation interface as an administrator.

2、Select “Automatic” control in the Basic parameter-control mode selection, and other operation options are consistent with manual operation;



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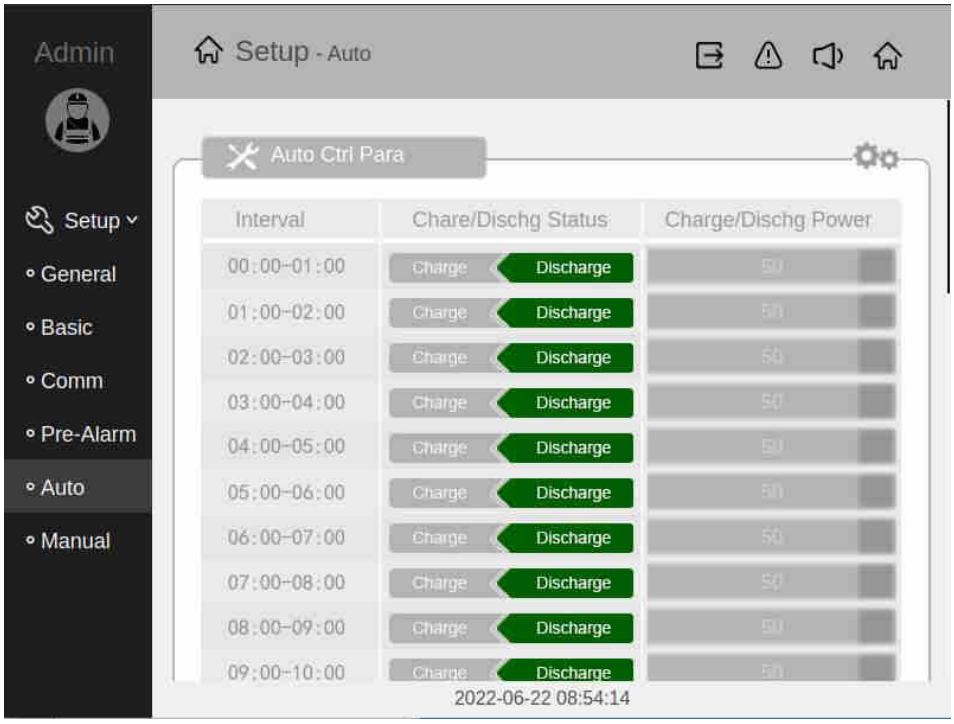
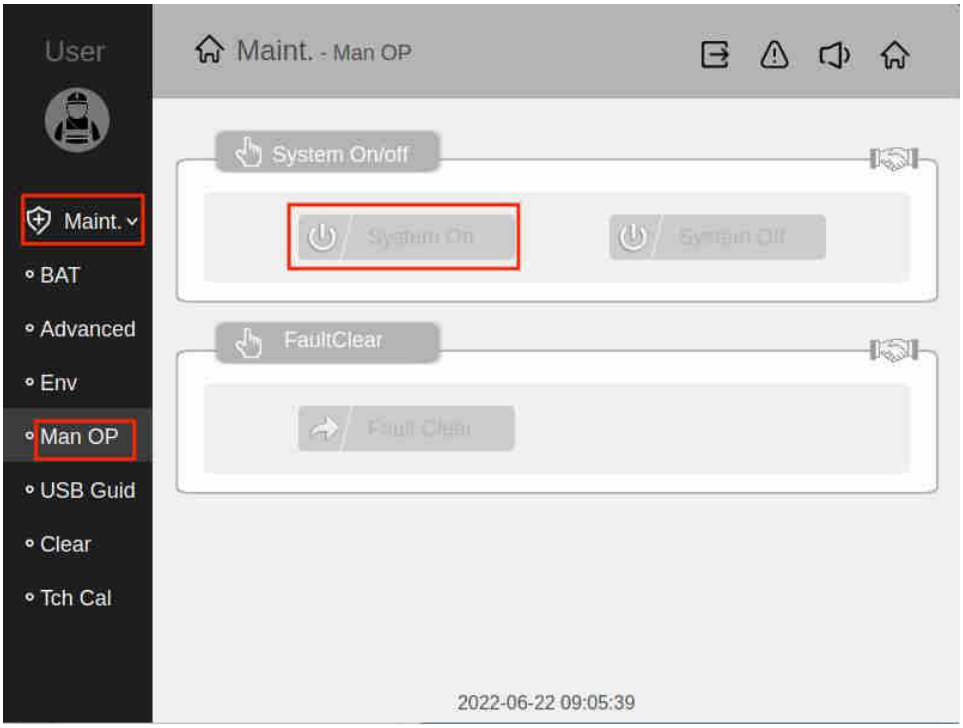
3、Click “Auto” to set the corresponding charging/discharging power within the period; If charging/discharging is not required within the period (negative value is charging, positive value is discharging); The charging/discharging power is 0;



4、Return to the main interface, click “Maintenance -> Manual Operation -> System On -> Confirm”;



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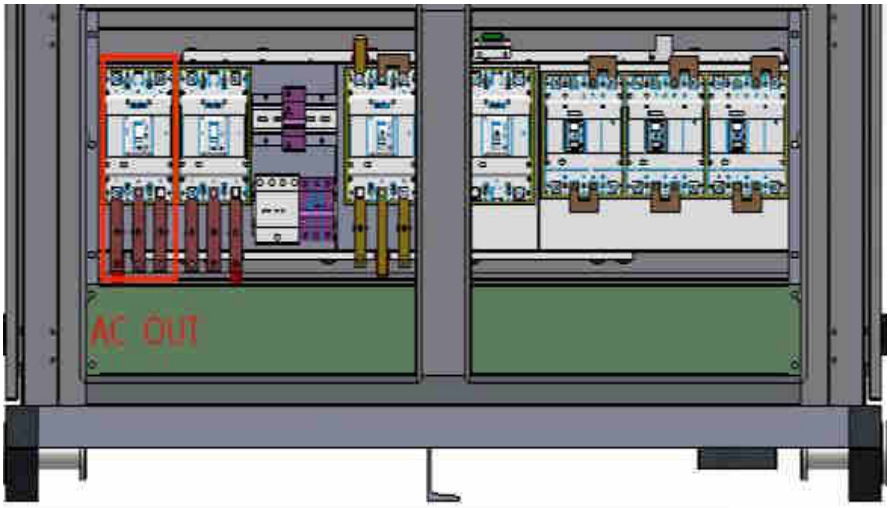
5、The system starts successfully - return to the main interface, observe whether the data is correct, and whether the operation is carried out according to the automatic control settings

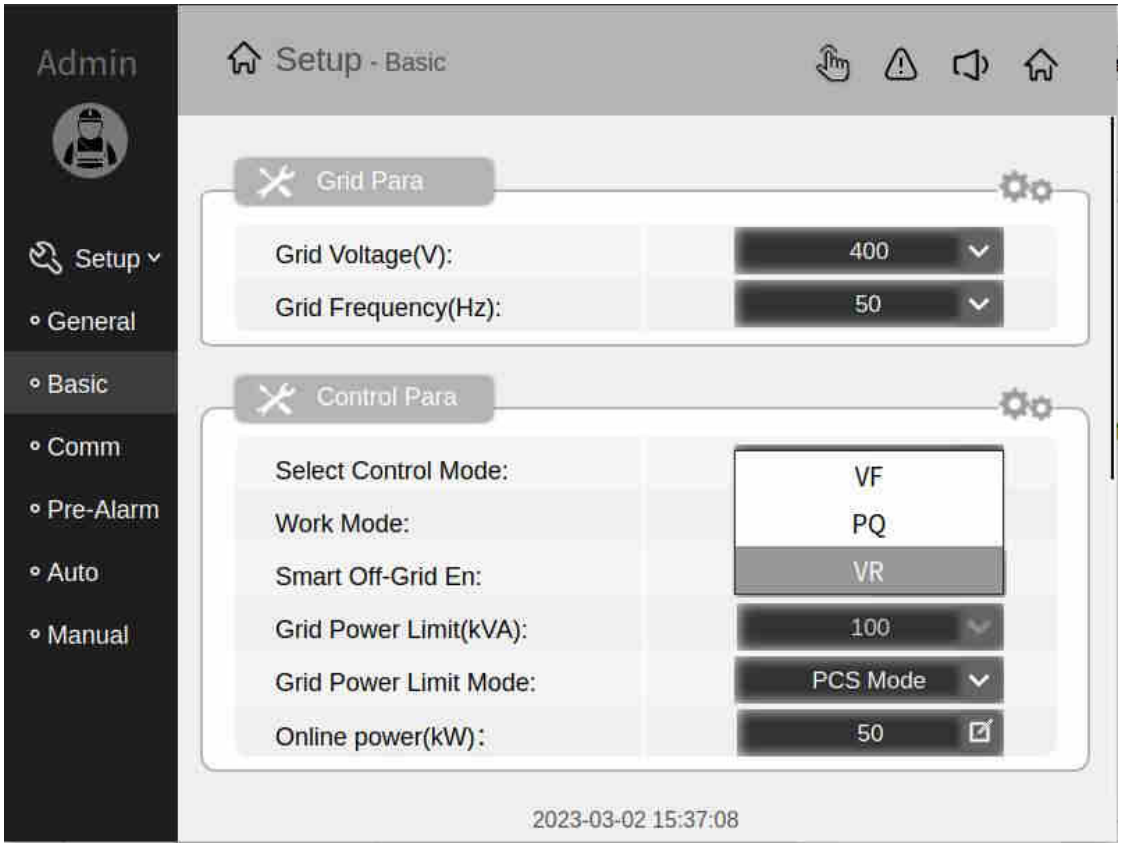
3.2.1.3 Off-grid discharge mode setting operation: Set the off-grid mode when there is no power grid. And the system discharges the load;

1、Close the load breaker;



2、Enter the operation interface as an administrator;

3、Click on “Basic parameters - Work mode - VF mode (Off-Line mode);



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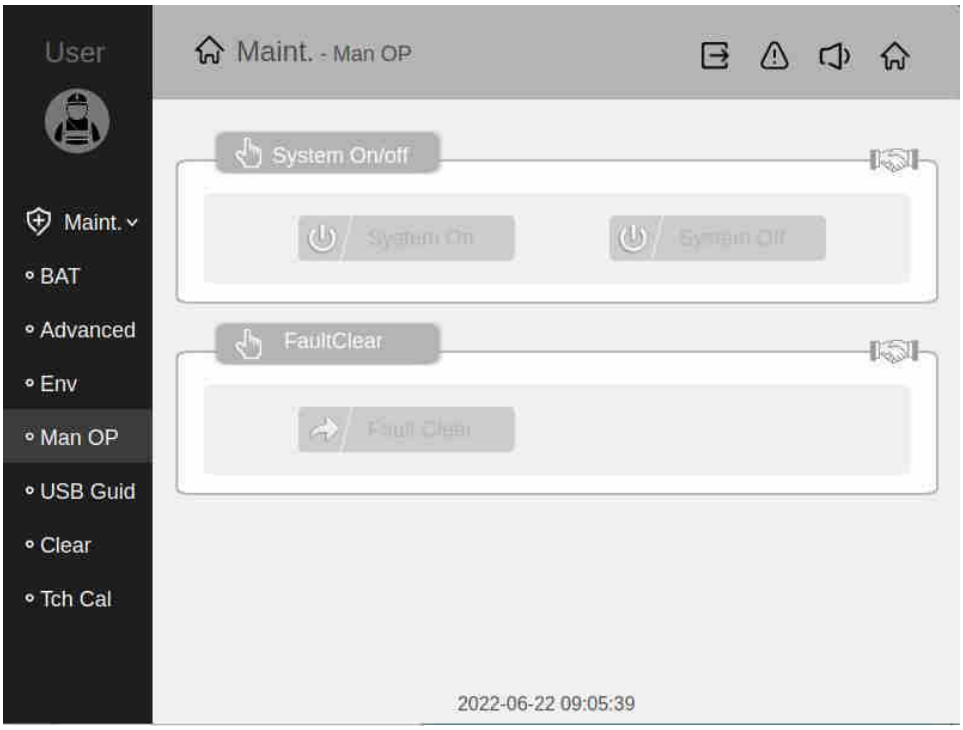
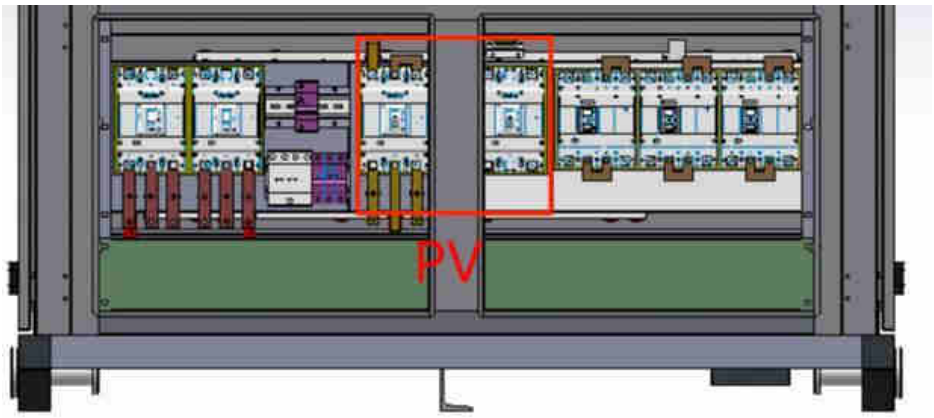
4、Return to the main interface, click “Maintenance -> Manual Operation -> System On -> Confirm”;



5、The system starts successfully - return to the main interface. Observe whether the data is correct, whether it works off-grid, and supply power to the load;

3.2.2 GRES configuration photovoltaic module (Private-Use mode)

1、Close the photovoltaic breaker;



2、Log in as administrator to enter the operation interface;

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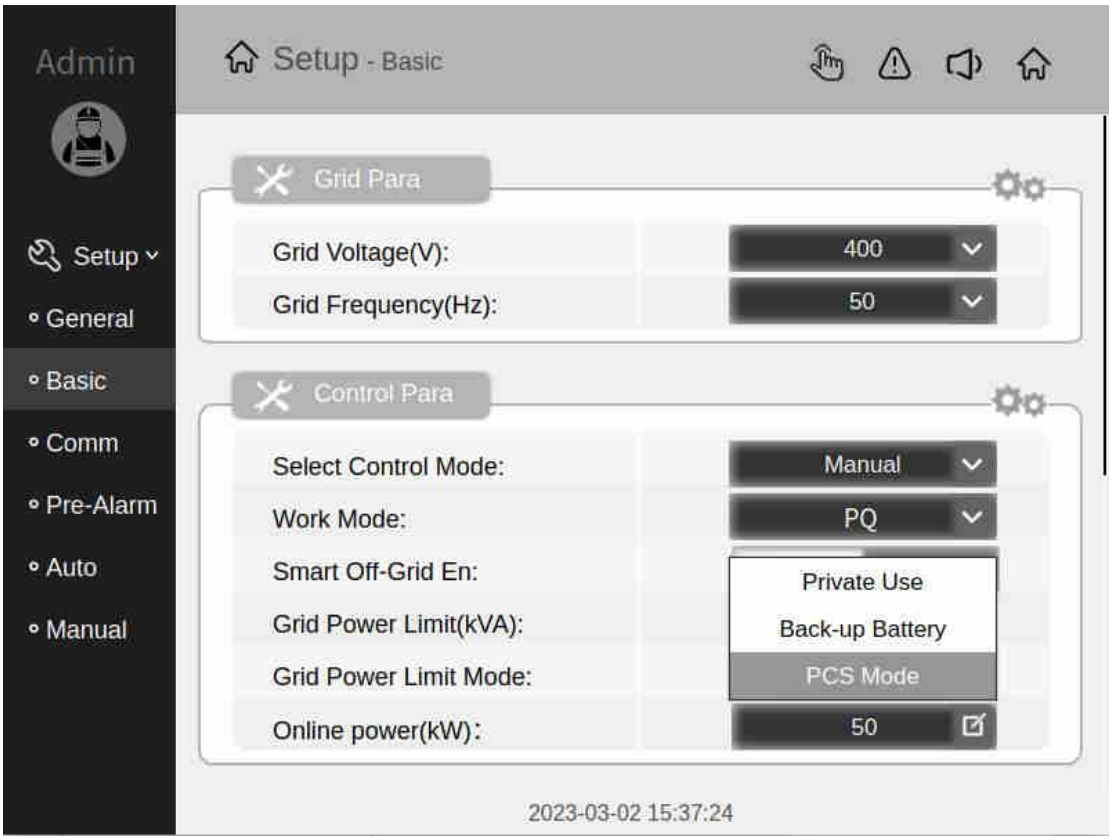
3、Click “Basic Parameters->Grid Power Limit Mode->Private-Use”;



3.1 Generally the default value of the grid voltage and frequency is provided by the customer. If there is an error, you can change the setting;

3.2 Control mode selection: Manual control - click the Manual control option - Work Mode defaults: PQ - power is set to 0;

3.3 Default working mode: PQ mode;

3.4 Smart Off-Grid Enable: If you need to automatically switch off-grid mode after power failure, turn on enable;

3.5 Grid power limit mode: Private Use mode;

3.6 Grid-connected but not feed energy (COMBNO): According to different scenarios, you can choose to turn on or off. When the system discharges in PQ mode, it only uses the grid to connect to the grid, and does not feed energy to the grid;

4、Return to the main interface, click “Maintenance -> Manual Operation -> System On -> Confirm”;

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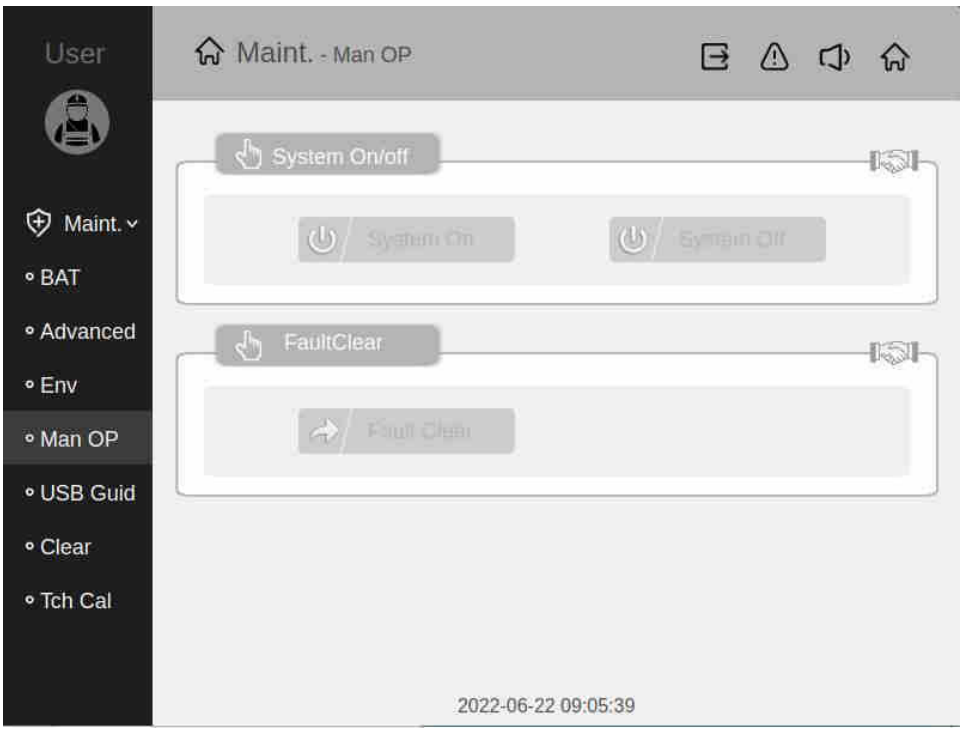

5、The system is successfully started - return to the main interface, observe whether the data is correct, and the photovoltaic will work spontaneously and self-consumed; Photovoltaic energy is sufficient, if the power of the grid-connected grid is not 0, the photovoltaic priority is supplied to the load, the excess power charges the battery, the battery is full, and the remaining power goes online according to the set power; If the grid-connected grid power is set to 0, the photovoltaic priority is to supply the load surplus power to charge the battery, the battery is full, the photovoltaic reduces the power, and does not discharge the power grid; (Note: SOC accuracy is 8%, 100% SOC is not used as a full charge standard, the system is based on the charging cut-off voltage and cut-off current as reference standards)

Extended function: If the photovoltaic is less than the load power in the spontaneous self-consumption mode, the battery and the grid supplement the residual power, which may cause the battery not to be replenished in the case of no battery power; In this case, do the following (6 or 7);

6、In the basic parameters, the control mode is Manual control. You can set the negative power value for grid-connected charging in the manual control option. The photovoltaic and grid can charge the battery when the load is satisfied;

7、In the basic parameters, the control mode is automatic.You can set the charging/discharging power within the time period in the automatic control option.

3.2.3 Backup Mode

Photovoltaic sufficient, priority charging battery, excess power for load, battery full, photovoltaic can be connected to the Internet (Internet power setting is not 0). Photovoltaic is

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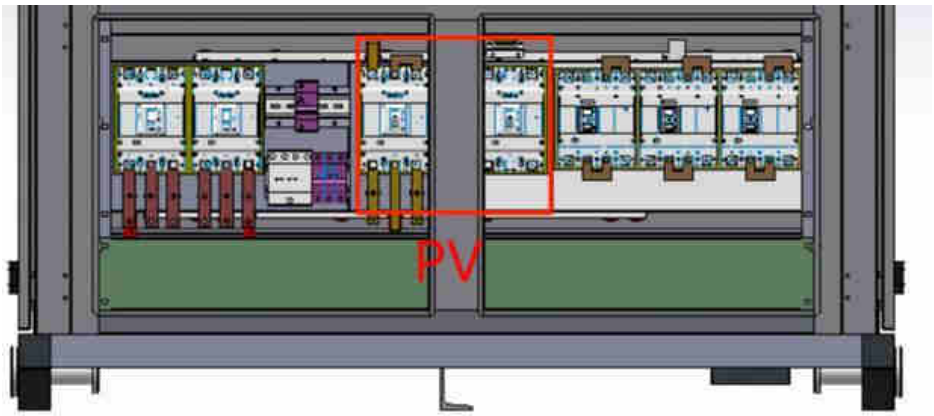
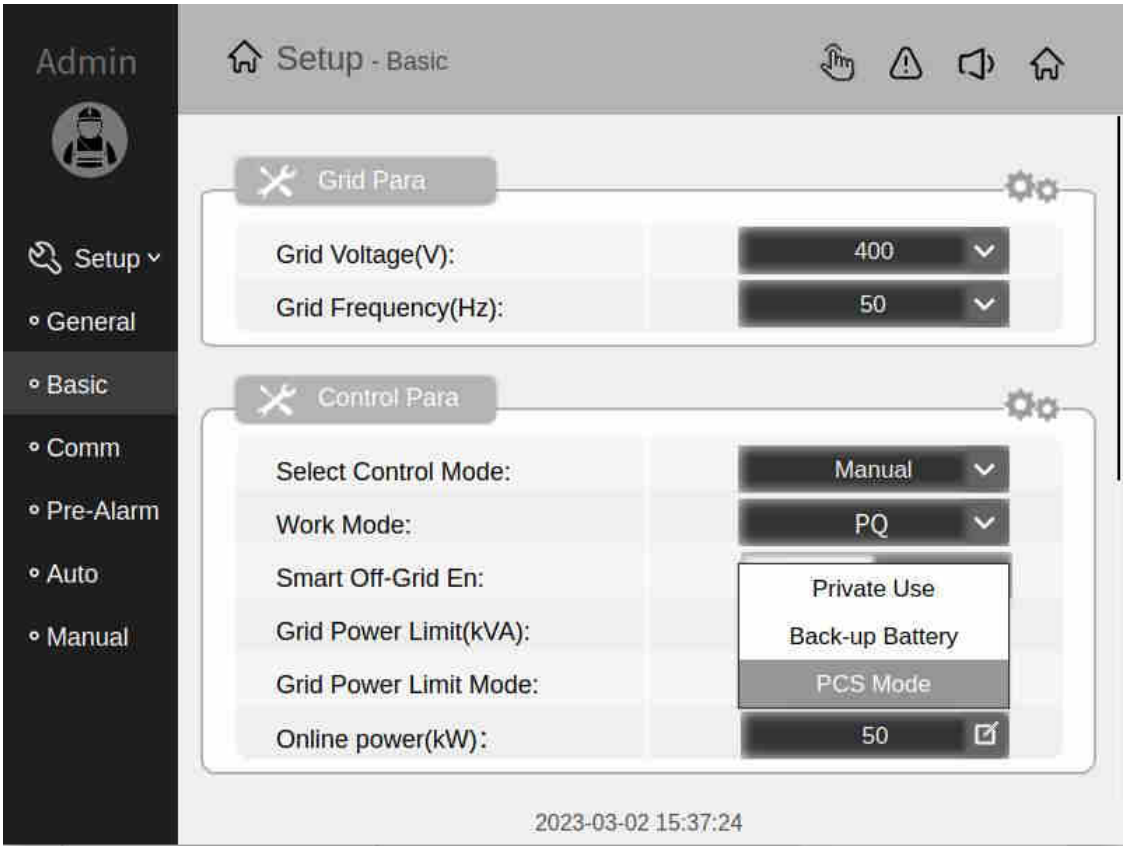
not sufficient (or not), mains power supply load, mains power < load, battery supplementation, battery can be set in automatic control to set the charging time period to replenish power.

1、Close the PV circuit breaker (if any);



2、Log in as an administrator to enter the operation interface;

3、Click the basic parameters - grid input power limitation mode - backup Battery;



3.1 Generally the default value of the grid voltage and frequency is provided by the customer. If there is an error, you can change the setting;

3.2 Control mode selection: Manual control - click the manual control option -> lost mode default PQ -> power is set to 0;

3.3 Click automatic control - set the corresponding charge/discharge power in the set period (negative charge, positive discharge); If no charge/discharge is required during the time period, the charge/discharge power is 0; Set the low-power charging during the time period

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when the load power is small, and set the discharge power to the maximum PCS during other time periods.

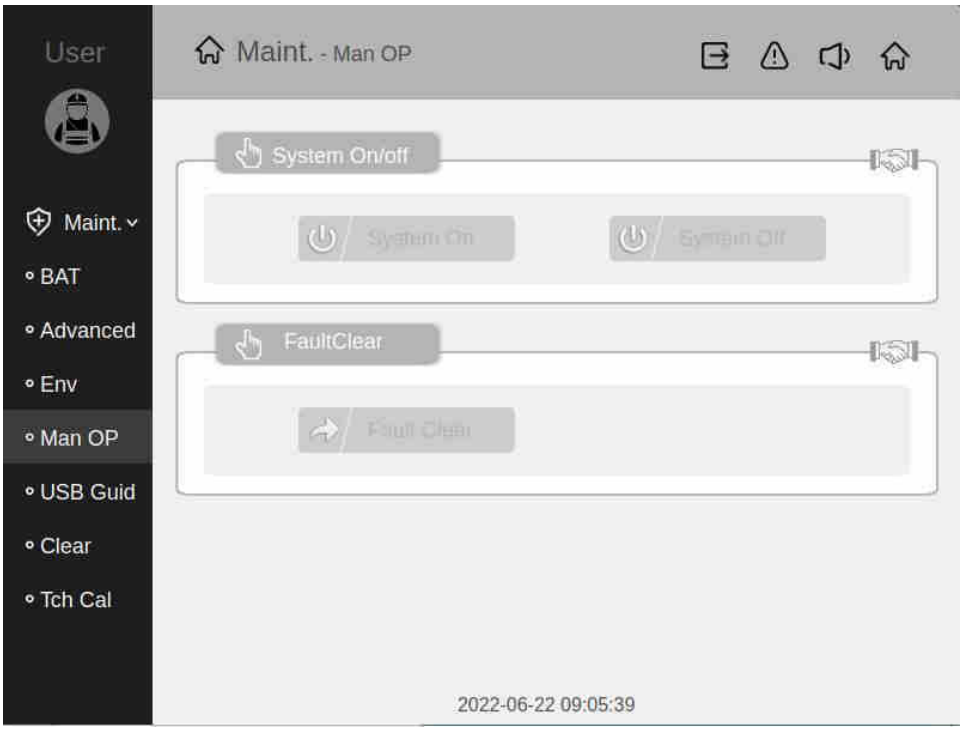
3.4 Intelligent off-grid mode enablement: automatically switch off-grid mode after power failure, and must turn on enable;

3.5 Grid power limit (KVA): Set power according to demand;

3.6 Grid power limit mode: Grid power limit mode;

3.7 On-grid power: Set to 0, grid-connected does not go online. If the setting is not 0, the photovoltaic excess electricity is on the grid;

4、Return to the main interface, click “Maintenance -> Manual Operation -> PCS Power On -> Confirm”;



5、The system is successfully booted - return to the main interface and observe whether the data is correct; When the load power exceeds the grid limit power, the photovoltaic and battery supplement the remaining load demand power;

6、When the load does not exceed the input limit power, the system works according to the backup mode, the photovoltaic is given priority to the battery, and the excess energy is given to the load;

7、Special circumstances: When the battery power cannot be replenished, you can set the control mode is manual control in the basic parameters. And set the negative power value for grid-connected charging in the manual control option.The photovoltaic and grid can charge the battery when the load is satisfied;

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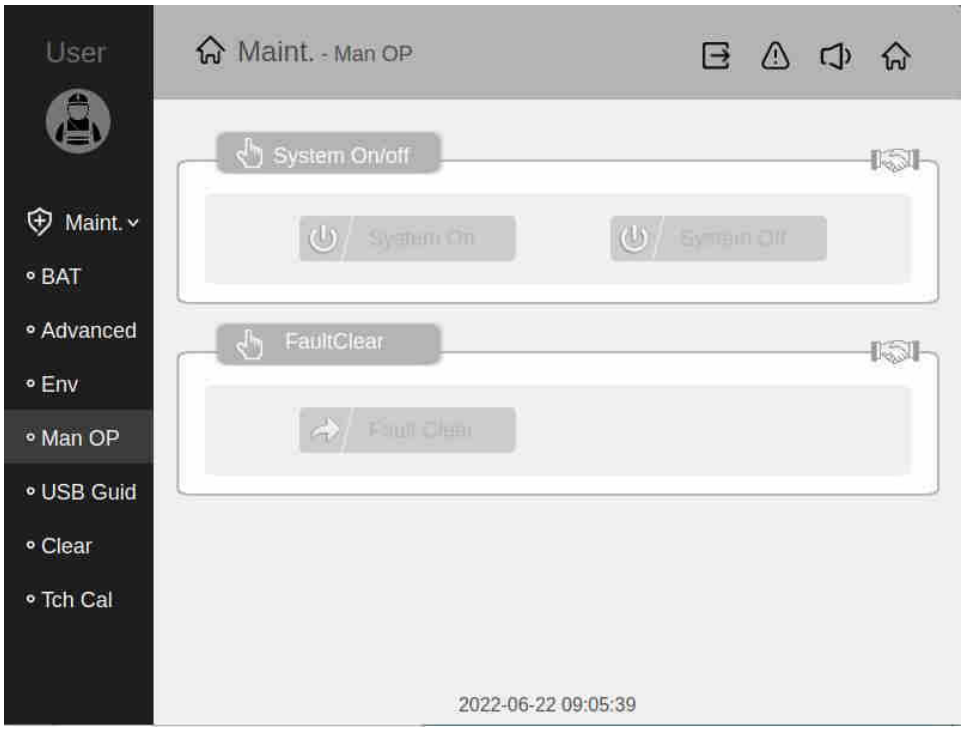
3.3. System shutdown operation

3.3.1 Shut down the PCS system

1、Press the main interface of the system monitoring screen->maintenance->manual operation->PCS Off, shut down the PCM power module, and the system will supply power to the load from the grid through the static transfer switch STS (if emergency power-off is required, you can press on the cabinet panel EPO button, the system will turn off the PCM power module and static transfer switch module).



2、PDMD module shutdown: Directly disconnect the photovoltaic input circuit breaker.

3、After disconnecting the AC input and output circuit breakers in turn, the PCS system is shut down at the same time.

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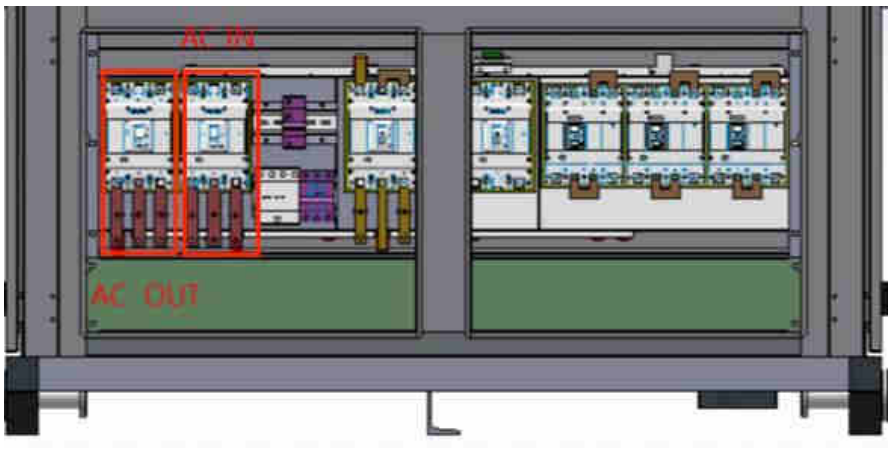

3.3.2 Turn off the battery system

After the PCS system is shut down, open the battery output circuit breaker. Rotate and hold the turn switch on the operation panel clockwise (turn to 'OFF'), and release the switch after the battery status indicators are all off (the turn switch automatically resets), and the system is powered off.

3.4. Battery operation

3.4.1 Battery information display

1、Click on the main interface-> Info-> DC information.

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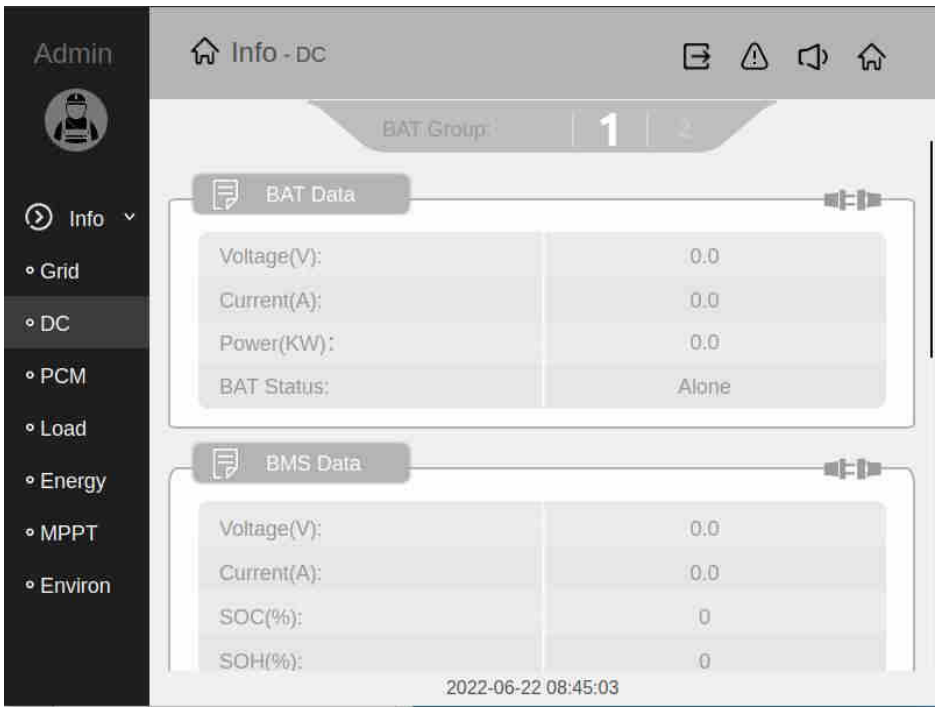
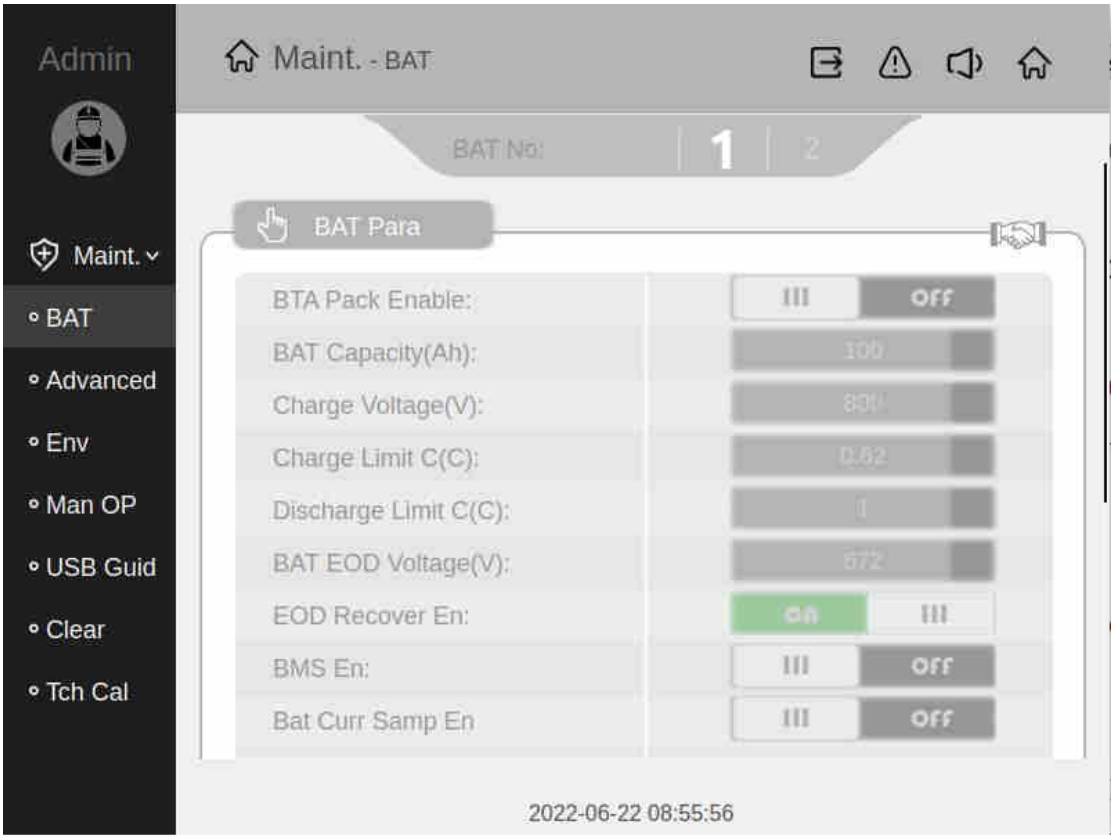


1.1 Battery data: Display the voltage, current and working status of the connected battery pack.

1.2 BMS data: Display the BMS information of the battery pack connected to the system. (BMS enable needs to be set, location: Main Interface->Maintenance->BAT Para)



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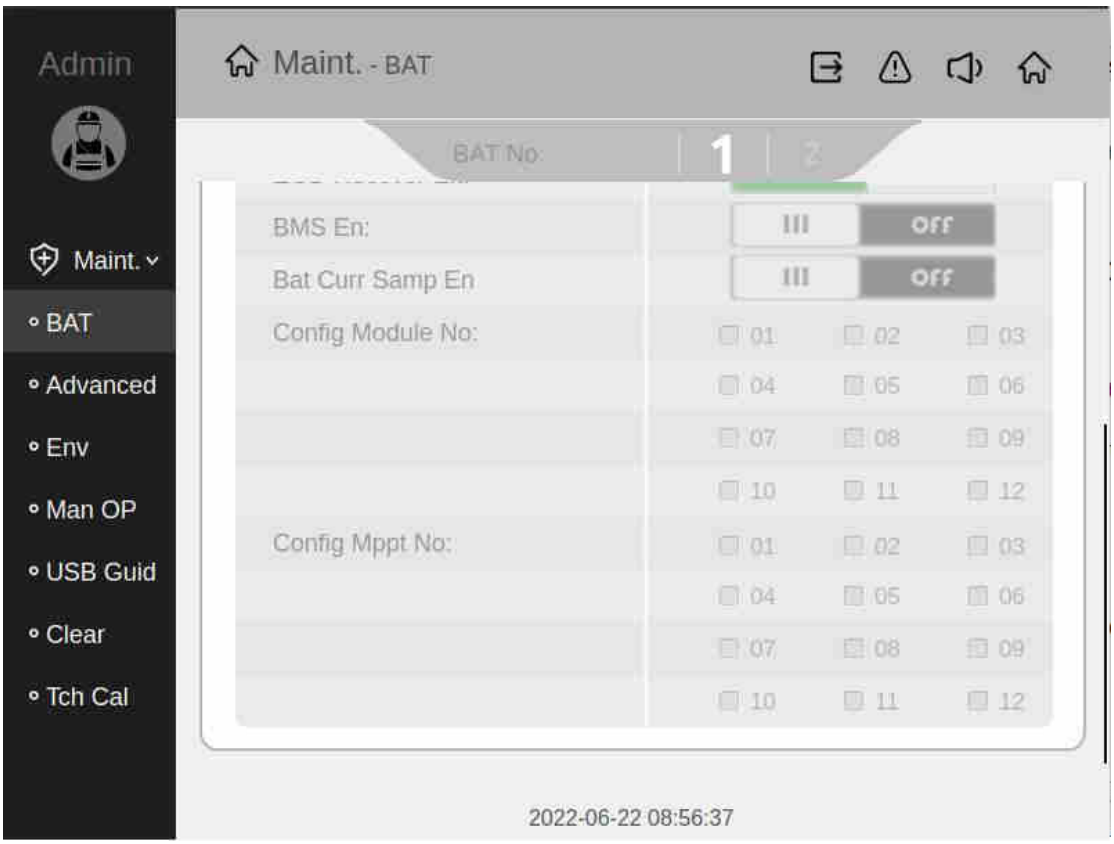

4. Product maintenance and fault troubleshooting

GRES system (including battery) needs regular maintenance during long-term operation. This chapter mainly describes the service life, regular inspection, maintenance and replacement of key components of the GRES system, as well as the maintenance and repair of the system and accessories. Effective maintenance of the system can reduce the risk of system failure and provide longer service life.

4.1 Safe

Warning

- The daily inspection of the PCS system may be carried out by the relevant trained personnel, and the inspection and replacement of its devices shall be operated by the authorized professionals.
- The components behind the protective cover plate with tools are user-inoperable parts, and are only allowed to be opened by qualified maintenance personnel.

When maintaining the PCS, note that the N line should be charged.

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4.2 Maintenance of the power module and STS

4.2.1 Notes

- Only the maintenance engineer can maintain the main power module and the bypass power module;
- The principle of removing the main power module is to remove from top down to prevent the cabinet from dumping due to too high center of gravity;
- Before maintaining the main power module, to ensure safety, always measure the voltage on the DC bus capacitance lower than 60Vdc with a multimeter, and measure the voltage between the operating site and the earth with a multimeter to ensure that it is below the dangerous voltage value, that is, the dc is below 60Vdc and the AC peak is lower than 42.4Vac.

4.2.2 Power module maintenance steps

- Turn the ready switch on the front panel of the main power module to the unready state, when the module status indicator is off and the red light is on;
- Verify that the status indicator light on the main power module is always red light, remove the fixed screws on both sides of the front panel of the main power module, and pull the module out of the cabinet;
- After completing the module maintenance, confirm that the ready switch is in an unready state;
- Push the module into the cabinet (each module is above 15s interval) and tighten the screws on both sides;
- Turning the ready switch of the module to the ready state so that the module is ready, the module automatically adds to the system work.

4.2.3 STS module maintenance steps

- Press the EPO switch to disconnect the DC output switch, module output switch, grid-connected switch and load switch;
- Turn the ready switch on the front panel of the electronic switch module to the unused state;
- Remove the fixing screws on both sides of the front panel of the electronic switch module, and the connecting terminal screws to the system, pull out and maintain the module;
- After completing module maintenance, plug the module back in place and tighten the fixing screws with the tool;
- The ready switch of the electronic module is dialed to the ready state, and all the switches disconnected in the first step are closed, and the power supply status of the main interface of

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the LCD of the system monitoring unit reads the information.The electronic switch module is running normally, and the power grid supplies the load through the electronic switch module.

Notice

The STS module does not support hot plug. If maintenance is required, disconnect the system output switch, main input switch, bypass input switch and battery switch. Part of the PCS circuit is still charged, and only qualified personnel are allowed to repair the new PCS system.

4.3 Key components of the GRES system and their service life

When the GRES system is used, some of these devices are shorter-lived than the GRES system itself due to the wear at work.Regular inspection and replacement of these devices are required for the power supply safety of the GRES system.This section describes the key components of the GRES system and the reference life of working life.For systems under different service conditions (environment, load rate, etc.), this section can be evaluated by professionals and advised on whether the devices need to be replaced.

4.3.1 Service life and recommended replacement time of key components

The key components in table 4-1 are used in PCS system. In order to prevent system failure caused by component wear and failure, it is recommended to check them regularly and replace them within their expected service life.

Table4.3-1 Service life of key components and recommended replacement time

Key devices	Expected life	Recommended replacement life	Recommended inspection cycle
Fan	≥7years	5years ~ 6years	1years
BUS capacitance	≥7years	5years ~ 6years	/
Dust net	1years ~ 3years	1years ~ 2years	2months
Energy storage battery (10-year service life)	10years	6years ~ 8years	6months

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4.3.2 Replace the dust screen

The dust screen must be inspected and replaced regularly. The time interval of inspection and replacement is related to the environmental conditions of PCS system. Under normal environmental conditions, the dust screen should be cleaned or replaced every two months. In dusty or other harsh environments, the dust screen needs to be cleaned and replaced more frequently. In new buildings, it should also be checked or replaced frequently.

The dust screen of the module cabinet is located inside the front door and can be replaced during the operation of the machine.

A fixing strip is used in the upper, lower, left and right middle of the dust screen of the module cabinet to fix the dust screen. The replacement steps of dust screen are as follows:

1．Open the front door of PCS system, and the dust screen inside the front door can be seen;

2．Remove all fixing strips;

3．Remove the dust screen to be replaced;

4．Put in a clean dust net;

5．Reinstall the fixing strip removed in step 2 to the original position and tighten the fixing screws.

Notice

If there are special environmental requirements and the main power module has its own dust screen, to replace the dust screen, only unscrew the spring screws on both sides of the module panel, remove the panel, take out the dust screen, replace the new dust screen, install the panel and tighten the spring screws. All operations can be carried out during the operation of the machine.

4.4 GRES system maintenance

The GRES system and some of its components require the following regular maintenance:

1．Keep a historical record. Making a good record of history is conducive to fault handling;

2．Keep the PCS clean from moisture and dust;

3．Check the connection. Check the tightness of all connecting screws and tighten them at least once a year;

4．Regularly check the upper or lower switches of PCS system for abnormalities to ensure that the input or output can be cut off when the current is too large;

5．Regularly clean the dust from vents, terminals and meshes to ensure that the air flow is free in the chassis. It is recommended to remove dust at least twice a year。

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6. Maintenance personnel shall be familiar with the typical environmental conditions of PCS system so that they can quickly locate which environmental conditions are abnormal; You should also be familiar with the setting of PCS system operation control display panel。

4.5 GRES system troubleshooting

In case of abnormality or failure of PCS system, please check and troubleshoot according to Table 4.5-1 and table 4.5-2. If the problem cannot be solved, please contact SCU for technical support.

Table 4.5-1 Solution to system failure

Failure	Recommended solutions
Abnormal shutdown of AC side	1、 Check whether the DC side switch is closed; 2、 Check whether the AC side switch is closed; 3、 Check whether the DC side voltage is normal; 4、 Check whether the voltage at AC side is normal; 5、 Check whether the electronic switch works normally;
Abnormal shutdown at DC side	
Reverse phase sequence of power grid	Check whether the three-phase phase sequence at the power grid side is correct;
Abnormal output voltage	1、Check whether the output air switch is closed; 2、Check whether the three-phase voltage at the upper end of the output air switch is normal; 3、Check whether the three-phase voltage at the upper end of the output terminal is normal; 4、Check whether the three-phase voltage at the lower end of the output terminal is normal;
Inverter fan abnormal	Check whether the corresponding module fan is blocked or damaged;
over load	Check whether the system load is within the specified range;
Output overload timeout	
Power module not ready	1、Check whether the power module is plugged in

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	properly; 2、Check whether the power module ready switch is in the "" position;
Power failure of bypass auxiliary power supply	Check whether the power supply at the grid side is normal;
Bypass control box not ready	1、Check whether the electronic switch control unit is plugged in properly; 2、The ready switch of the electronic switch is not pulled out;
Bypass SCR fan abnormal	Check whether the fan of the electronic switch is blocked or damaged;
Bypass overtemperature	Dedusting the static switch module of the system;
Bypass nozzle	Prompt alarm; No troubleshooting required;
Inverter out of synchronization	Please contact your supplier directly;
Inverter fault	
Inverter overtemperature	
Abnormal shutdown of bus	
DC bus overvoltage	
Inverter relay fault	

Table 4.5-2 Troubleshooting of MPPT module

Failure	Recommended solutions
Power module not ready	1、Check whether the power module is plugged in properly; 2、Check whether the power module ready switch is in the "" position;
Overpressure pool	When the battery voltage is higher than the set upper limit, restart the energy storage device after fault recovery
Battery undervoltage	The battery voltage is lower than the set lower limit.

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	Restart the energy storage device after fault recovery
DC input overvoltage	When the DC input voltage is higher than the upper limit, restart the energy storage device after fault recovery
Low DC voltage	When the DC input voltage is lower than the lower limit, restart the energy storage device after fault recovery
Abnormal bus voltage	The DC bus voltage is too high or too low, which leads to the system shutdown. After the fault is recovered, restart the energy storage device
Abnormal balance circuit	Unbalanced bus voltage (internal fault information)
Soft start failed	Soft start failure (internal fault information)
Emergency stop	EPO action, emergency stop
DC module over temperature	The temperature of inverter radiator is too high
Fan failure	At least one cooling fan has failed
Monitoring parameter setting failure	The monitoring parameter setting is incorrect, please change the setting

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File reference	Test report No.	Date of issue
PVP08104/21E-01	TRPVP08104/21E/01	2021-12-21

On the basis of the tests undertaken, the samples of the below product(s) have been found to comply with the essential requirements of the referenced specifications at the time the tests were carried out:

Applicant:	**Sicon Chat Union Electric Co., Ltd.** Bldg.14&15, No. 319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, Hebei, China (050035)
Manufacturer:	**Sicon Chat Union Electric Co., Ltd.** Bldg.14&15, No. 319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, Hebei, China (050035)
Factory:	**Sicon Chat Union Electric Co., Ltd.** Bldg.14&15, No. 319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, Hebei, China (050035)
Product:	EPCS- Series modular power conversion system
Type designation:	EPCS 50, EPCS 100, EPCS 150, EPCS 200, EPCS 250, EPCS 300, EPCS 400, EPCS 500, EPCS 600
Certification program:	BOS-P-01 Rev. 00
Certification fundamental(s):	Engineering Recommendation G99 Issue 1 – Amendment 6 See test report for detailed information.

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ANNEXURE B – AGREEMENT

Subject: "Expression of Interest (EoI) for the Selection of Agency for Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram",

With reference to the RFP Document for the captioned Project, I/we, I **Balasankar Menon KG, General Manager** authorised signatory of M/s **POM Systems & Services Pvt. Ltd.,** (Brand Name: **POM POWER**) Having registered office at No-75, 6th Main 3rd Phase, Peenya Industrial Area, Karnataka, Bengaluru-560058. having examined all relevant documents and understood their contents hereby undertake that the Proposal is unconditional and unqualified.

1. I/We confirm that I/we have examined the terms and conditions published in theEOI and accordingly submitting the Application. The proposal is unconditional and unqualified.
2. All information provided in the Proposal is true and correct and all documents accompanying such Proposal are true copies of their respective originals.

POM SYSTEMS & SOLUTIONS PVT LTD Thiruvananthapuram

No. 60612
1/3/24

POM SYSTEMS AND SERVICES PVT LTD TRIVANDRUM

KIRAVALOOR MANI
PRAVAM VENDOR
Institute of Commerce Bldg.,

PRINCIPAL SUB TREASURY Date

29 FEB 2024

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3. This statement is made for the express purpose of appointment Providing PMU services in terms of providing Consultancy and Technical Services
4. I/We shall make available to ANERT any additional information it may deem necessary or require for supplementing or authenticating the Proposal.
5. I/We acknowledge the right of the ANERT to reject our application without assigning any reason or otherwise and hereby waive our right to challenge the same on any account whatsoever.
6. I/We certify that in the last three years, I/we have neither failed to perform on any contract, as evidenced by imposition of a penalty by an arbitral or judicial Court or a judicial pronouncement or arbitration award against us, nor have beenexpelled from any project or contract nor have had any contract terminated for breach on our part.

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POM POWER
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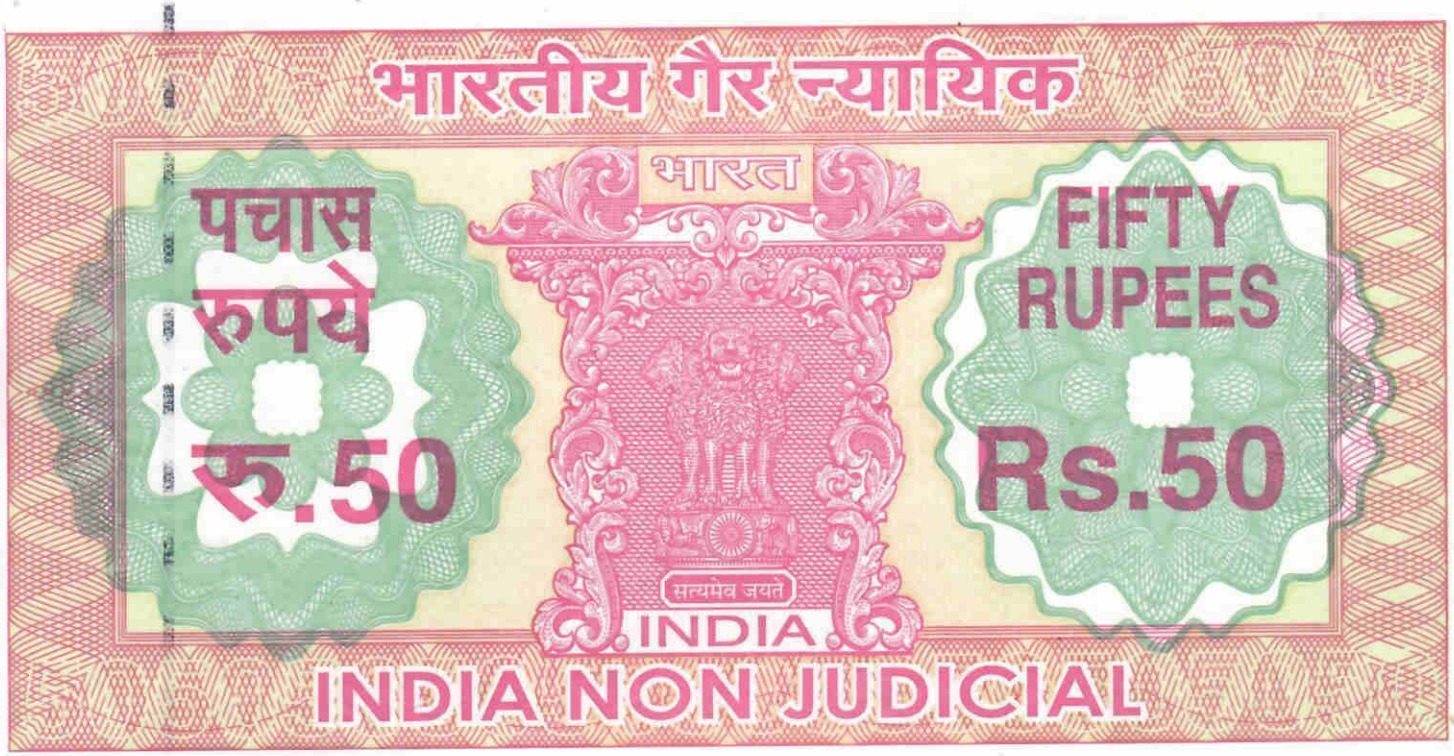

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1. I/We declare that I/We have examined and have no reservations to the EOI Documents, including any Addendum thereto, issued by the ANERT;
2. I/We do not have any conflict of interest in accordance with provisions of theEOI Document;
3. I/We have not directly or indirectly or through an agent engaged or indulgedin any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice, as defined in the EOI document, in respect ofany tender or request for proposal issued by or any agreement entered into with the ANERT or any other public sector enterprise or any Government, Central or State; and

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Pin:695 043
Thiruvananthapuram

No. 60613
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POM SYSTEMS AND SERVICES
PVT LTD, TRIVANDRUM

KILIYALLOOR MANI
PALAYAM VENDOR
Date.....

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4. I/We hereby certify that we have taken steps to ensure that in conformity with the provisions of this EOI, no person acting for us or on our behalf will engage in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice.

9. I / We understand that you may cancel the Selection Process at any time and thatANERT is neither bound to accept any Proposal that you may receive nor to select the Consultant, without incurring any liability to the Applicants in accordance with the EOI document.

8. I / We certify that in regard to matters other than security and integrity of the country, we or any of our Associates have not been convicted by a Court of Law orindicted or adverse orders passed by a regulatory authority which would cast a doubt on our ability to undertake the Consultancy for the Project or which relatesto a grave offence that outrages the moral sense of the community.

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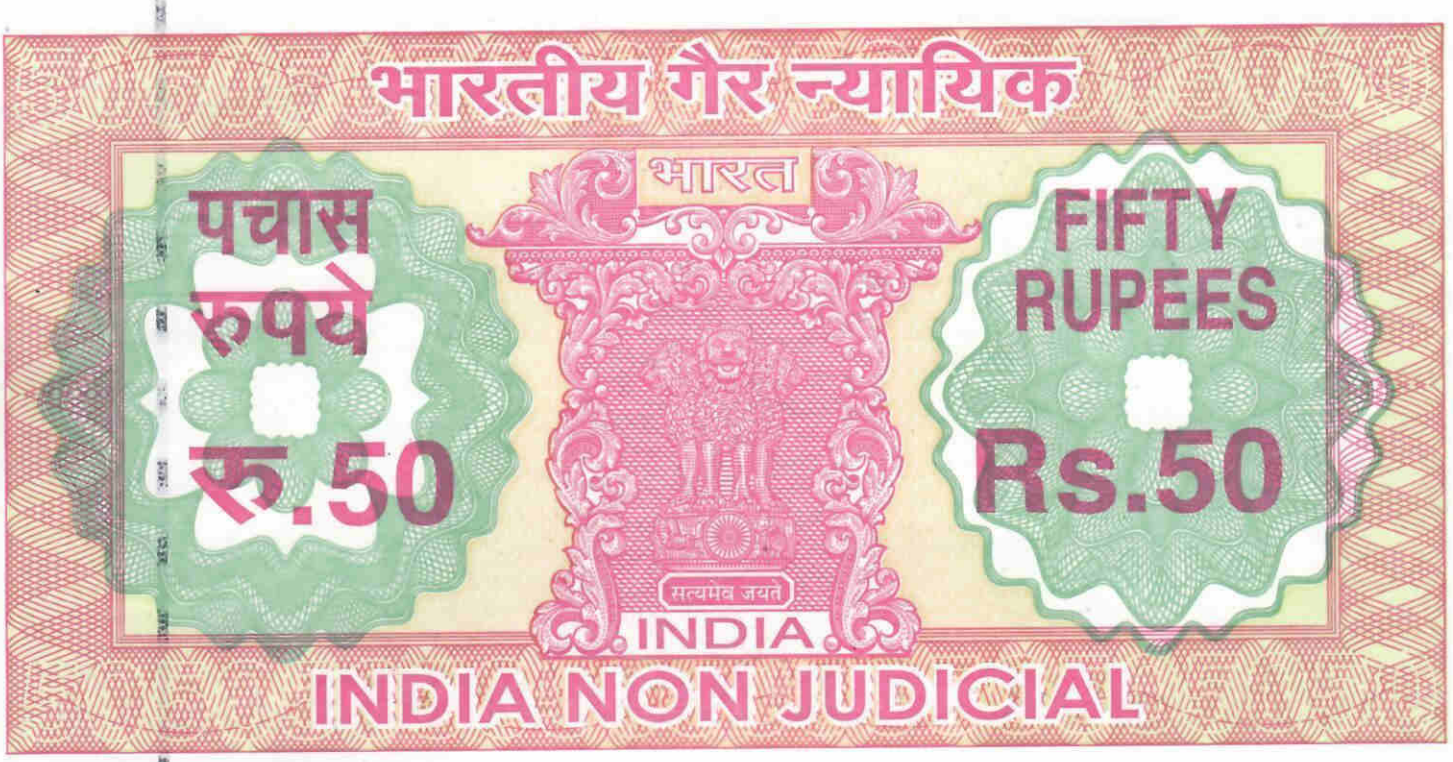

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DA 595814

10. I / We further certify that in regard to matters relating to security and integrity ofthe country, we have not been charge-sheeted by any agency of the Government or convicted by a Court of Law for any offence committed by us or by any of our Associates.

11. I / We hereby irrevocably waive any right or remedy which we may have at any stage at law or howsoever otherwise arising to challenge or question any decision taken by the ANERT (and/ or the Government of Kerala / India) in connection with the selection of Consultant or in connection with the Selection Process itself in respect of the above mentioned Project.

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12. I / We agree and understand that the proposal is subject to the provisions of the EOI document. In no case, shall I/we have any claim or right of whatsoever natureif the Consultancy for the Project is not awarded to me/us or our proposal is notopened or rejected.
13. I / We agree to keep this offer valid for (120) days from the date of opening of technical bid.
14. I/We have studied EOI and all other documents carefully. We understand that weshall have no claim, right or title arising out of any documents or information provided to us by the ANERT or in respect of any matter arising out of orconcerning or relating to the Selection Process including the award of Consultancy.
15. The Technical Proposals and Financial Proposals are being submitted in separateCovers available in the etenders portal.

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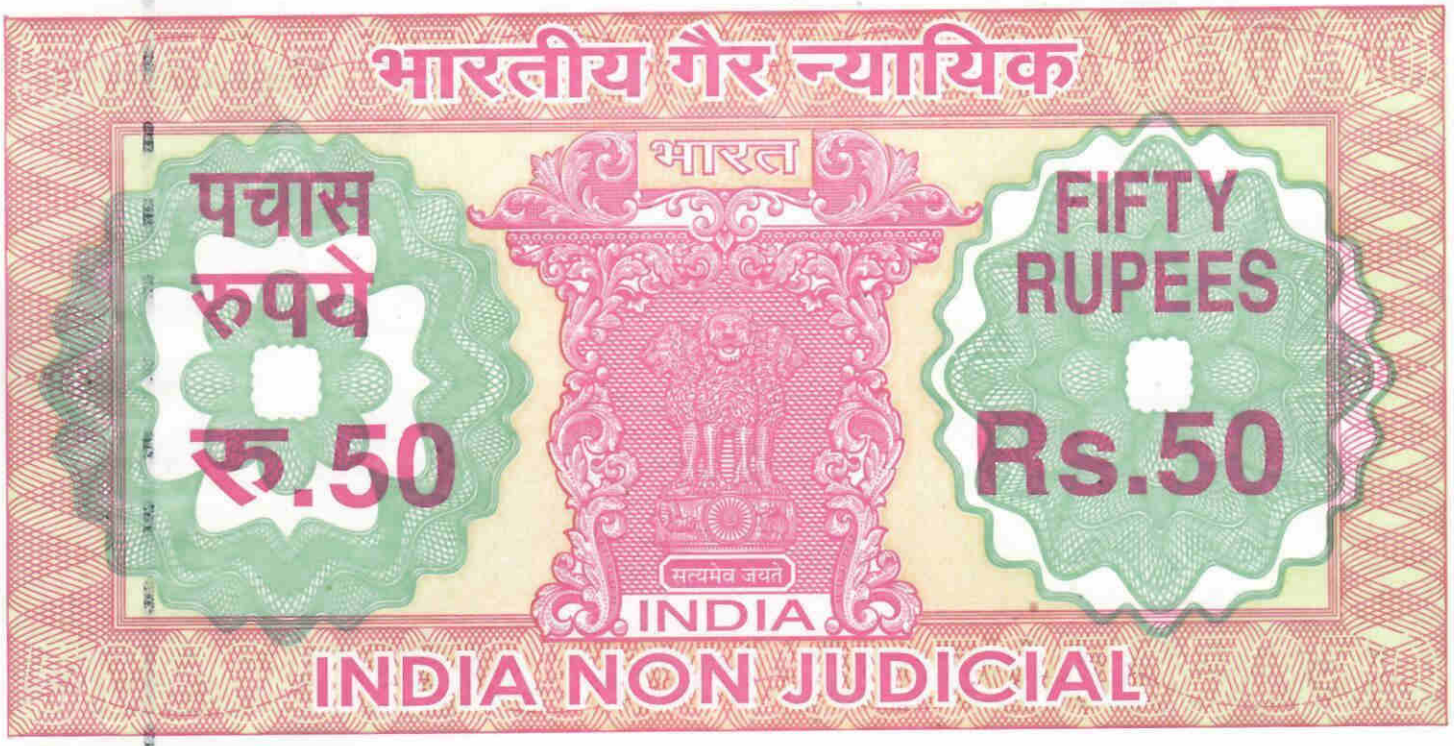

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DA 595815

16. I/We agree and undertake to abide by all the terms and conditions of the EOI Document. In witness thereof, I/we submit this Proposal under and in accordancewith the terms of the EOI Document.

POM SYSTEMS & SOLUTIONS PVT LTD. Pin:695 043 Thiruvananthapuram

Signed by Sri K G Balasubhar Menon

(Date) 29/2/04

in the presence of witnesses

1. Nicheesh Chandran Nidhesh

2. Srijith

Signed by Sri .....

(Date) .....

in the presence of witnesses

1.

2.

No: 60615

1/3/24

POM, SYSTEMS AND SERVICES PVT. LTD., TRIVANDRUM

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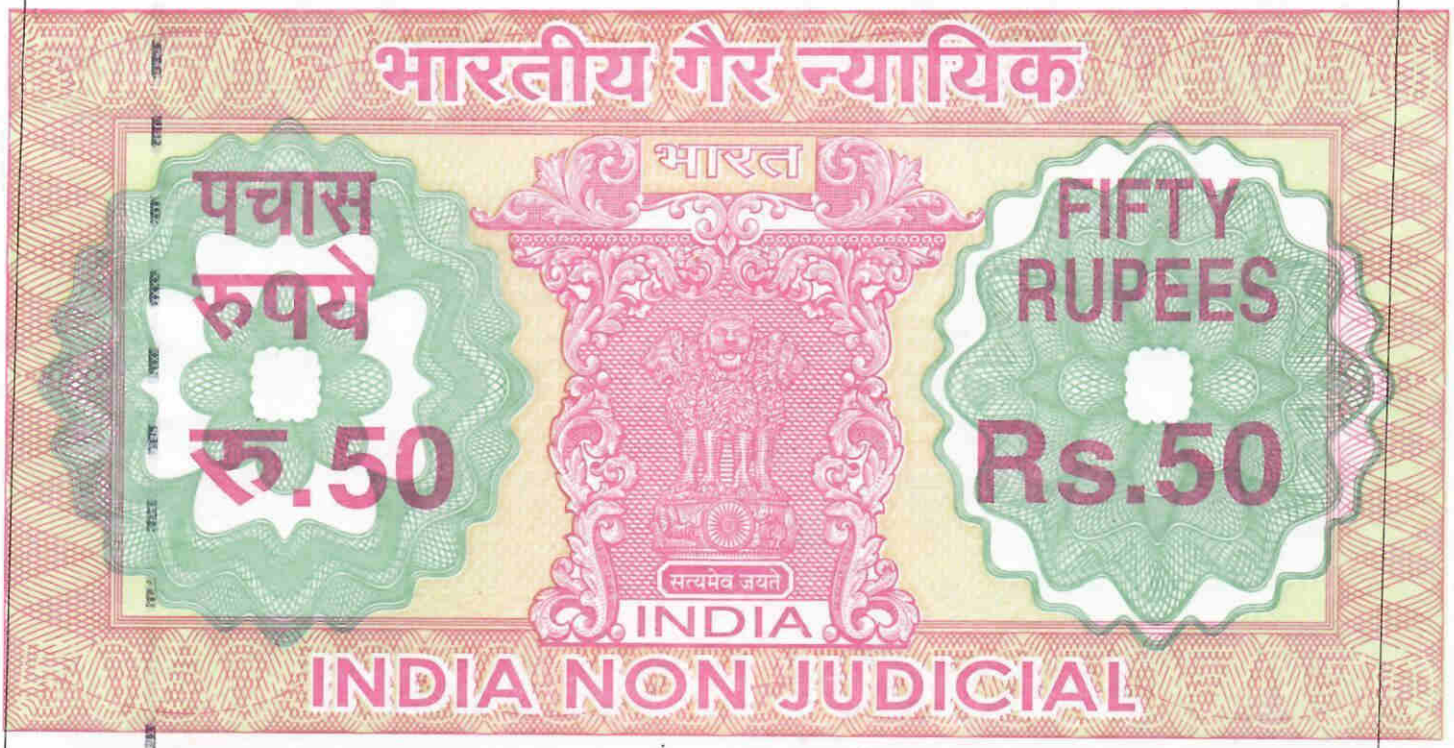

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CZ 150824

ANNEXURE F – UNDERTAKING FOR NO BLACKLISTING & NO BANNING

Undertaking for No Blacklisting & No Banning

To

The CEO
ANERT

Sub: Expression of Interest (EoI) for the Selection of Agency for Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram

I / We hereby declare that presently our Company/Limited Liability Partnership/Partnership Firm/ Sole Proprietorship is having unblemished record and is not declared ineligible for corrupt/fraudulent practices by any State/Central Government/PSU on thedate of Bid Submission.

I / We further declare that presently our Company/Limited Liability Partnership/ Partnership Firm/ Sole Proprietorship is not blacklisted and not declared ineligible for reasons other than corrupt/fraudulent practices by any State/Central Government/PSU on the date of Bid Submission.

POM SYSTEMS & SOLUTIONS PVT LTD. Thiruvananthapuram

No. 93138
2/8/2024

Pom Systems & Service Pvt Ltd

SINDHU.I.S
SASTHAMANGALAM VENDOR

PRINCIPAL ST. EAST FORT
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CZ 150825

If this declaration is found to be incorrect then without prejudice to any other action that may be taken, our security may be forfeited in full and the EoI if any to the extent accepted may be cancelled.

Date: 05.03.2024

Thanks, and Regards

For, POM Systems & Services Pvt. Ltd.,

Balasankar Menon KG (General Manager)

Email: gm@pompower.in

POM SYSTEMS & SOLUTIONS PVT LTD. POM POWER Pin:695 043 Thiruvananthapuram

No. 23139 Pom Systems & Service Pvt Ltd

2/3/2024

SINDHU.I.S

SASTHAMANGALAM VENDOR

22 FEB 2024

TÜV NORD

Certificate

of Conformity

Registered No.:

COCPVP08104/21E-02

File reference	Test report No.	Date of issue
PVP08104/21E-02	TRPVP08104/21E/02	2021-12-21

On the basis of the tests undertaken, the samples of the below product(s) have been found to comply with the essential requirements of the referenced specifications at the time the tests were carried out:

Applicant:	**Sicon Chat Union Electric Co., Ltd.** Bldg.14&15, No. 319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, Hebei, China (050035)
Manufacturer:	**Sicon Chat Union Electric Co., Ltd.** Bldg.14&15, No. 319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, Hebei, China (050035)
Factory:	**Sicon Chat Union Electric Co., Ltd.** Bldg.14&15, No. 319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, Hebei, China (050035)
Product:	EPCS-Series modular power conversion system
Type designation:	EPCS 50, EPCS 100, EPCS 150, EPCS 200, EPCS 250, EPCS 300, EPCS 400, EPCS 500, EPCS 600
Certification program:	BOS-P-01 Rev. 00
Certification fundamental(s):	EN 50549-1:2019+AC:2019-04 with national network and system protection for Norway into consideration See test report for detailed information.

This document is based on the evaluation of the samples of the above mentioned product(s). It does not imply an assessment of the mass-production of the product(s), and it does not permit the use of a TÜV NORD mark. The holder of this document may use it in connection with the related test report(s).

Renewable Energy

CNAS 中国认可 产品 PRODUCT CNAS C183-P

TÜV NORD (HANGZHOU) CO., LTD.
Member of TÜV NORD Group
Tel: +86-571-85386989
Fax: +86-571-85386986
www.tuv-nord.com/cn
P.R. China

Sicon Chat Union Electric Co., Ltd.
Add: Bldg.14 & 15, No.319 Xiangjiang Street, High-Tech Zone, Shijiazhuang, China
Email: enquiry@scupower.com
Tel:86-311-85903762 Fax:86-311-85903718 Post: 050035

To,
The CEO,
ANERT,
Thiruvananthapuram.

Ref: ANERT-TECH/41/2024-PE1(RTS)

Sir,

We refer our submission of EN IEC Certificates from M/s. Shenzhen STE Testing Laboratory. The company has stopped it's operation post-covid issues. Hence we submit a valid certificate of

M/s. Ente Certificazione Macchine Srl (ECM),
who has conducted tests as per

EN 62477-1:2012+A11:2014+A1:2017+A12:2021,
EN IEC 61000-6-4:2019,
EN IEC61000-3-2:2019,
EN IEC 61000-6-2:2019,
EN IEC 61000-6-2:2019,
EN 61000-3-12:2011.

This tests has been done at our subsidiary company M/s. Hebei Ecube New Energy technology Co. Ltd, Shijiazhuang, China. The model number and the products are same.

Please find attached the joint Statement by us and E Cube.

Sincerely,

Sherry Tsui
Sales Manager
Sicon Chat Union Electric Co., Ltd.

Statement

先控&电立方关系声明

Here is a statement to explain the relationship between Sicon Chat Union Electric Co., Ltd. (refer to SCU for short) and Hebei Ecube New Energy Technology Co., Ltd (refer to Ecube for short) .

在此声明先控捷联电器股份有限公司（以下简称 SCU）和河北电立方新能源科技有限公司(以下简称 Ecube)的关系如下所述：

We both parties (SCU and Ecube) declare that Ecube as the subsidiary company of SCU, it conducts the part of production for Battery Energy Storage which is one of SCU's business sector. Mr. Jisheng Chen is the main shareholder and also the actual holding person for SCU and Ecube. Moreover, we are working on the acquisition process for Ecube acquired by SCU, in the near future, Ecube will be fully owned by SCU.

我们公司双方均承认 Ecube 为 SCU 的子公司，执行 SCU 三大业务之一的储能板块的生产工作。陈冀生先生为两公司的实际控股人，并且是两公司的主要股东。此外，我们正在进行两公司合并的流程。

Hope this letter would be clear to you for good understanding of the relationship between SCU and Ecube.

希望此声明有助于贵方理解 SCU 和 Ecube 的关系认定。

Sicon Chat Union Electric Co., Ltd. 2024.3.12 Sherry Tsui

Hebei Ecube New Energy Technology Co., Ltd 2024.3.12

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Certificate of Compliance

No. 4Z211220.HENCN78

Test Report / Technical Construction File no. EMC-2021120901E, LVD-2021120902S

Certificate's Holder:	Hebei Ecube New Energy Technology Co., Ltd. Plant 6, 10th Haihe Road, Shijiazhuang, China
Certification ECM Mark:	ENTE CERTIFICAZIONE MACCHINE – European Conformity – SAFETY COMPLIANCE MARK – Type Approved
Product:	Integrated Energy Storage System
Brand Name:	ECUBE
Model(s):	*(see the following annex)*
Verification to:	Standard: EN 62477-1:2012+A11:2014+A1:2017+A12:2021, EN IEC 61000-6-4:2019, EN IEC 61000-3-2:2019, EN IEC 61000-6-2:2019, EN 61000-3-12:2011 related to CE Directive(s): 2014/35/EU (Low Voltage) 2014/30/EU (Electromagnetic Compatibility)

Remark: This document has been issued on a voluntary basis and upon request of the manufacturer. It is our opinion that the technical documentation received from the manufacturer is satisfactory for the requirements of the ECM Certification Mark. The conformity mark above can be affixed on the products accordingly to the ECM regulation about its release and its use.

Additional information and clarification about the Marking:

CE

The manufacturer is responsible for the CE Marking process, and if necessary, must refer to a Notified Body. This document has been issued on the basis of the regulation on ECM Voluntary Mark for the certification of products. RG01_ECM rev.3 available at: www.entecerma.it

Issuance date: 20 December 2021

Expiry date: 19 December 2026

Reviewer
Technical expert
Amanda Payne

Approver
ECM Service Director
Luca Bedonni

Ente Certificazione Macchine Srl
Via Ca' Bella, 243 – Loc. Castello di Serravalle – 40053 Valsamoggia (BO) - ITALY
☎ +39 051 6705141 🖷 +39 051 6705156 ✉ info@entecerma.it 🌍 www.entecerma.it

Certificate – Сертификат – 證明書 – Certificat – 증명서 – شهادة

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Certificate – Сертификат – 證明書 – Certificat – 증명서 – شهادة

Annex I

No. 4Z211220.HENCN78

Test Report / Technical Construction File no. EMC-2021120901E, LVD-2021120902S

Model(s):

GRES-150-100, GRES-75-50, GRES-150-50, GRES-225-100, GRES-225-150, GRES-300-200, GRES-300-150, GRES-300-100, GRES-600-400, GRES-900-600

Ente Certificazione Macchine Srl
Via Ca' Bella, 243 – Loc. Castello di Serravalle – 40053 Valsamoggia (BO) - ITALY
☎ +39 051 6705141 🖷 +39 051 6705156 ✉ info@entecerma.it 🌍 www.entecerma.it

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POM/BESS/ANERT-TEN-24
06.04.2024

To,
The Chief Executive Officer,
ANERT,
Thiruvannathapuram

Sir,

We refer your Tender no. ANERT-TECH/41/2024-PE1(RTS)

We have demonstrated our GRES Solution to the technical Committee. Some of the photos has been attached herewith. The equipment is installed at Bangalore. We are in to the container-based solutions since 2014. We have similar installations in Europe, US and Africa.

Basically, we have splited all important sections of Power conditioning to Easy replaceable Modules.

1. Power Conditioning Modules 2x50 kW

   Basically SCU is the global Manufacturer of AC-DC-AC Converter since 2003. We have developed Modules of 15,30,50,75,100 kW. Also today, we make all power modules used in UPS, PCS and EV

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Chargers in Modular form. By providing such modules, we have reduced MTTR to almost 10 minutes.

2. Static Transfer Switch 100 kW

   Unlike Independent Hybrid Inverters, in PCS, a STS is used for fast Switching from On-grid to Off-grid State and vice-versa. This enable seamless switching between PV and Batteries which is a Critical part to provide uninterrupted output. Co-operating with EMS and PCS, it can realise unattended automatic Operation of Energy Storage System. This will be missed when multiple Hybrid Inverters are used with out STS.

3. MPPT Module 100 kW

   The MPPT control panel, or Maximum Power Point Tracking control panel, tracks the voltage and current of solar panels in real time to maximize the panel's effectiveness. It then adjusts the solar panels' output to match the voltage of the battery. This helps improve charging efficiency by increasing the voltage output.

4. Isolation transformer 100 KW

   The demonstrated system was connected on 415V LT Side. The Isolation transformer is on the left side of the power cabinet which provides the interface between GRID and Inverter and also provides protections from Spikes, Harmonics etc on the Grid Side. The same can be customized for 11 kV Application with a 11 kV step up transformer and required switchgears.

5. Li-Ion Batteries

   The Rear cabinet house the Li – Ion Battery Bank . This 768V – 75 kWhr Li Ion Batter Bank has 16 Modules with 48V DC, all connected in series to achieve 768V DC. This cabinet is fitted with intelligent & efficient Air conditioner on both side. This Air conditioner comes on and cools the cabinet, when the temperature inside cabinet exceeds the set value and goes off, as soon as the temperature reaches below set value

We have demonstrated the usage of The GRES for many applications like

Peak Management – Power generated during the day shall be stored in the battery and released later in the day, during peak demand. When ever there is a peak demand [for a duration], GRES shall, pump the Power to grid to shave off the Peaks. This can be programmed from the front Display with a Time Chart. The GRES can be programmed to dispatch the power for a particular duration, keeping the system in ON Grid Mode [PQ Mode]

Frequency Regulation – In case, If the frequency comes down to gap in Supply & demand, the GRES shall pump the power to grid to reduce the GAP which regulates the frequency

Var Compensation. GRES shall take care of VAR compensation also This can be programmed from the front Display with The GRES can be programmed to dispatch the Active / Reactive power with required Power Limits which are settable/programmable from the front display, keeping the system in ON Grid Mode [PQ Mode]

GRES shall also take care of Intermittent Resource support like Voltage Flicker & Ramp rate control.

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Micro-grid Solution for Electrification of Villages in Africa
December 21, 2023
Vivian
Energy Storage
Views: 317
Current situation of rural electricity in Africa

The electricity supply on the African continent is at an extremely low level. The current population is about 1.3 billion people, 62% of whom do not have access to electricity. The per capita energy consumption is the lowest in the world, and there are high power generation costs and unstable energy supply. , low electrification rate and other issues. There are huge differences between economically developed cities and rural areas.

In the event of a power shortage, people usually use diesel generators as backup power. However, diesel power generation is not only expensive but also pollutes the environment. In many countries where diesel generators are used to supplement or fully support daily life, the cost of electricity can be three times higher than relying on the grid.

Therefore, using solar panels and energy storage system is an efficient and cost-effective way for residents who are far away from the existing transmission and distribution system. Especially in rural areas, it can effectively reduce dependence on polluting and inefficient energy.

Customer demand for power solutions

The head of rural electrification in Africa said: "Now, the microgrid system of photovoltaic + inverter + lead-acid battery + diesel generator used in this rural area provides a solution for power supply, but the lead-acid battery has a short service life, takes up a lot of space, and is troublesome to maintain. The problem challenges the reliability and economy of the system."

GRES in Africa. SCU Microgrid Solutions with PV + BESS + Diesel Generator

In order to solve the above problems, the customer found SCU to provide them with a solution, SCU's GRES energy storage system. SCU uses a direct current (DC) solution to connect to the photovoltaic system directly and comprehensively monitors and manages the entire microgrid system, including photovoltaic power generation, energy storage and diesel generators, through our advanced power management system (PMS).

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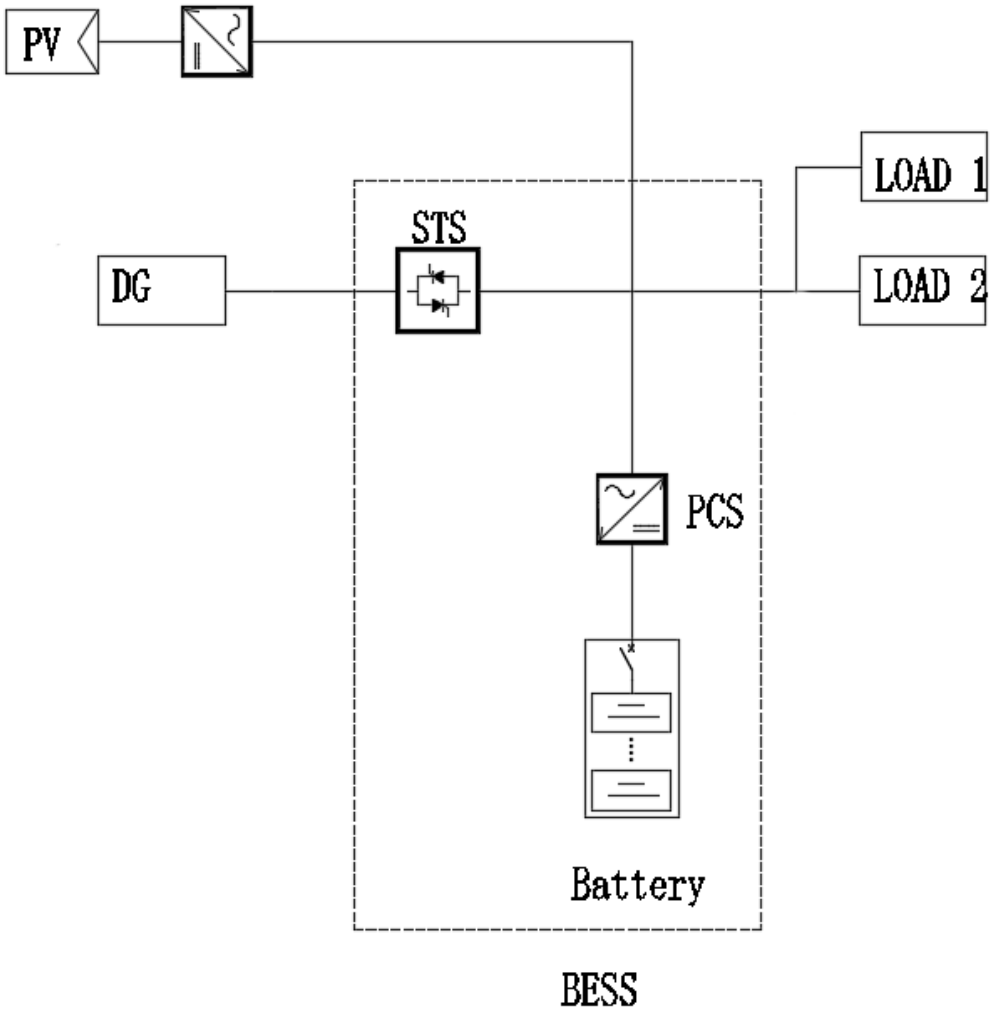

BESS

Microgrids can significantly reduce the power generation cost of the power supply system, reduce air pollution and noise pollution to the environment, and provide a reliable, stable, and high-quality power supply for factories and enterprises. The microgrid background energy management system optimizes the control of the microgrid based on pre-customized control strategies to achieve rational utilization of energy and ensure the economical and reliable operation of the system.

Innovation Highlights

- Long-life energy storage solution: SCU's energy storage system uses advanced lithium-ion battery technology, which has a longer service life and greatly reduces the frequency of replacement and maintenance.
- Space efficiency: Compared with traditional lead-acid batteries, SCU's energy storage system provides greater capacity while occupying less space, helping to make full use of limited site resources.
- Intelligent management: SCU's monitoring unit (PMS) provides customers with real-time monitoring and refined management to ensure the coordinated operation of photovoltaic power generation, energy storage and diesel generators to maximize system efficiency.
- Higher energy density: Energy storage systems generally have higher energy density and are able to store more energy in a relatively smaller volume. This is important for applications with limited space, such as urban microgrids or small home systems.

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- Environmentally friendly: Energy storage technologies such as lithium-ion batteries are relatively environmentally friendly because they contain no harmful substances and produce less pollution during production and processing.

Conclusion

This solution has been successfully installed and used. SCU's energy storage system has demonstrated strong performance in a hybrid system of photovoltaic power generation and diesel power generation. By cleverly integrating photovoltaic energy, efficient energy storage equipment and reliable diesel generator sets, SCU has successfully solved the problem. It has solved the problem of weak rural power facilities and provided local residents with more reliable and efficient power services. It has brought significant changes to the rural area and has been reported by well-known local media. It has become an example of rural electrification in Africa.

The successful application of SCU's energy storage technology in rural Africa has also set an example for promoting the application of renewable energy in African countries. SCU will continue to be committed to making more contributions to rural electrification in Africa and helping it achieve sustainable development and clean energy utilization.

PV BESS Solution for a Supermarket in Europe to Save Electricity Costs

January 24, 2024
Vivian
Energy Storage
Views: 198

The lighting system of electronic equipment supermarkets provides customers with a bright and comfortable shopping environment but consumes huge amounts of electricity. Large-area electronic screen displays such as TVs and computers consume a lot of power when running continuously. Powerful air conditioning and refrigeration equipment require large amounts of electricity to maintain the indoor environment. Payment, security, and monitoring systems are critical to operations and place demands on electricity demand. Considering power consumption, supermarkets need to adopt appropriate solutions to reduce electricity costs.

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An electronic equipment supermarket in Europe, in response to rising energy costs and environmental pressure, chose to introduce SCU's commercial and industrial energy storage system, GRES. The spontaneous self-use model of PV + energy storage comprehensively improved energy utilization efficiency and significantly saved energy costs.

Project Overview

Introducing photovoltaic systems is an earlier step taken by the supermarket to reduce environmental impact and save costs. However, to reduce energy costs further and improve power availability, SCU added an energy storage system. This upgrade includes supplying the electricity generated by photovoltaics directly to the load and storing the excess electricity in the battery, forming a self-contained photovoltaic + energy storage system, making the photovoltaic system more intelligent and efficient. When the photovoltaic system is unavailable due to weather or other reasons, the energy storage battery will automatically release the stored power to ensure continuous power supply to the load.

PV + Energy Storage System Configuration:

Photovoltaic capacity: 70kWp
Load requirement: 35kW
Energy storage system model: GRES, including MPPT module
Coupling method: DC coupling

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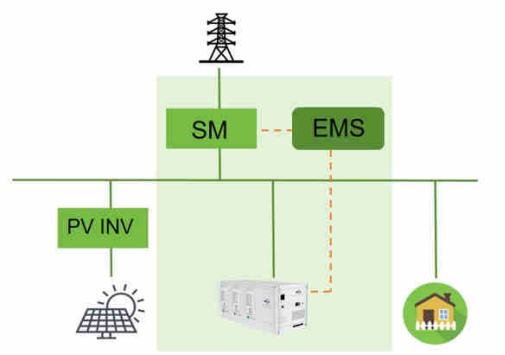
Operating Principle

1. PV power generation stage: During the day, the electric energy generated by the photovoltaic system is first supplied to the load of the electronic equipment supermarket, and the excess electric energy is used for storage.

2. Energy storage power supply stage: At night or when photovoltaics are unavailable, the energy storage system automatically releases the stored power to meet the supermarket's power needs. This process does not rely on mains electricity, reducing reliance on traditional electricity.



Economic & Environmental Benefits

- Reduce energy costs: The photovoltaic + energy storage system helps supermarkets effectively reduce power purchase costs, especially during the day when they can rely more on photovoltaic power generation.

- Coping with electricity price fluctuations: In Europe, electricity prices fluctuate significantly. Energy storage systems allow supermarkets to respond flexibly to fluctuations in electricity prices, choosing to store electricity when prices are low for use during peak periods.

- Improve energy efficiency: By storing excess electrical energy, it can be used when needed, thereby avoiding waste caused by excess power. This helps improve energy efficiency and reduce resource waste.

- Reduced carbon emissions: Using green energy not only reduces the supermarket's carbon footprint but also earns it an environmentally friendly image and meets growing consumer concerns about sustainable operations.

This commercial energy storage solution not only provides reliable power support for supermarkets but also brings significant economic benefits, sets an industry benchmark for environmental protection and sustainable operations, and demonstrates the broad scope of green energy in the field of shopping malls and supermarkets. Application prospects.

The successful operation of this industrial and commercial energy storage project provides a powerful demonstration for other companies, proving that commercial energy storage can not only save energy expenses for companies but also help promote the sustainable development of clean energy. As this trend expands, expanding commercial energy storage in Europe will benefit businesses and the environment.

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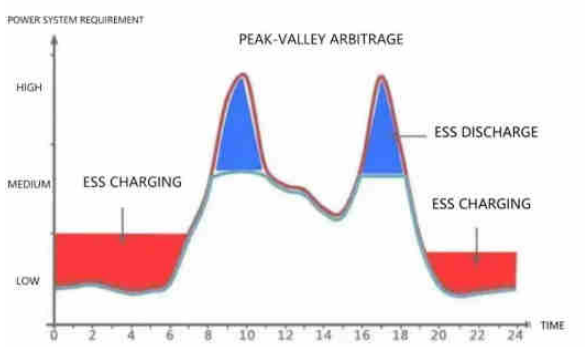

Application of C&I ESS in Shopping Malls and Supermarkets

Applying commercial and industrial energy storage in shopping malls, supermarkets and other places has brought significant benefits. Shopping malls and supermarkets have high power consumption, and their lighting, air conditioning, refrigeration and other systems have a huge electricity demand. By deploying energy storage systems, flexible management and scheduling of energy can be achieved, and electric energy can be stored during off-peak hours and released during peak hours, thereby reducing electricity costs and improving energy efficiency.

Shopping malls and supermarkets usually have irregular power demand, and energy storage systems can smooth power fluctuations and ensure a stable power consumption experience. Especially when power demand peaks, energy storage systems can quickly release power to help cope with peak loads and avoid energy waste and rising electricity costs caused by peak power consumption.

Commercial and Industrial energy storage systems also provide backup power for shopping malls and supermarkets. In the event of a sudden power outage or power failure, the energy storage system can be activated quickly to ensure the basic operations of shopping malls and supermarkets and prevent losses caused by power interruptions.

Generally speaking, the application of industrial and commercial energy storage in shopping malls, supermarkets and other places not only provides economic and energy benefits for enterprises but also improves the reliability and sustainability of energy, bringing more stability and reliability to commercial operations. Continuous power protection.

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SOLAR SYSTEMS
Inspiration for green family living

PLOT NO 41A, INDUSTRIAL PARK, SARPAVARAM, KAKINADA-533005
PH: 0884-2361069 / 9440573389.
E-mail: solarsystemsindia@yahoo.com

COVERING LETTER

Sir,

I/We M/s **Solar Systems** hereby e-tender to render the services under annexed terms and conditions

of contract, the whole of the articles referred to and described in the attached specification and quantity decided by the Agency for New & Renewable Energy Research and Technology (ANERT), at the rates quoted against each item.

I am/We are remitting herewith the required amount of Rs**. NIL** towards the registration Fee by electronic payment vide transaction No **NIL**

Yours Faithfully

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SOLAR SYSTEMS
Inspiration for green family living

PLOT NO 41A, INDUSTRIAL PARK, SARPAVARAM, KAKINADA-533005
PH : 0884-2361069 / 9440573389.
E-mail: solarsystemsindia@yahoo.com

ANNEXURE A – SUMMARY OF BID QUALIFICATION REQUIREMENTS

1.	Name of the applicant and address with email, phone etc.	Solar Systems Plot No 41A, Industrial Park, Sarpavaram, Kakinada : 533005 Email : solarsystemsindia@yahoo.com Phone : 9440573389
2.	Main area of Business	Solar Inverters, Solar Energy systems, BESS
3.	Registered Office in Kerala	Perumal Pullampada Pallippad P.O Paripadi, Alappuzha District, Kerala-690512 Ph. +91 9035325159
4.	Details of Power of Attorney	Mr. AVVV Prasad – Manager Residing at 4-91/1 Velalapudi Kakinada
5.	Proof for Experience	Please find the Enclosed

Documentary evidence for the bid qualification requirements are submitted along withthis document and the details furnished above are true and correct.

Date: 07.03.2024

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भारतीय गैर न्यायिक

भारत

पचास रुपये रु.50

FIFTY RUPEES Rs.50

सत्यमेव जयते

INDIA

INDIA NON JUDICIAL

കേരളം केरल KERALA

CZ 150828

ANNEXURE B – AGREEMENT

Subject: "Expression of Interest (EoI) for the Selection of Agency for Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram",

With reference to the RFP Document for the captioned Project, I/we,I **AVVV Prasad, Sr. Manager** authorised signatory of M/s **Solar Systems** Having registered office at **No-41/A, I.D.A. SARPAVARAM, KAKINADA, EAST GODAVARI, Andhra Pradesh -533005**. having examined all relevant documents and understood their contents hereby undertake that the Proposal is unconditional and unqualified.

1. I/We confirm that I/we have examined the terms and conditions published in theEOI and accordingly submitting the Application. The proposal is unconditional and unqualified.
2. All information provided in the Proposal is true and correct and all documents accompanying such Proposal are true copies of their respective originals.

No. 23142

Solar Systems

2/3/2024

Kakinada

SINDHU S

PRINCIPAL STEAST FORT

22 FEB 2024

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കേരളം केरल KERALA

CZ 150829

1. I/We declare that I/We have examined and have no reservations to the EOI Documents, including any Addendum thereto, issued by the ANERT;
2. I/We do not have any conflict of interest in accordance with provisions of theEOI Document;
3. I/We have not directly or indirectly or through an agent engaged or indulgedin any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice, as defined in the EOI document, in respect ofany tender or request for proposal issued by or any agreement entered into with the ANERT or any other public sector enterprise or any Government, Central or State; and

N/o 23143

Solar Systems

22 FEB 2024

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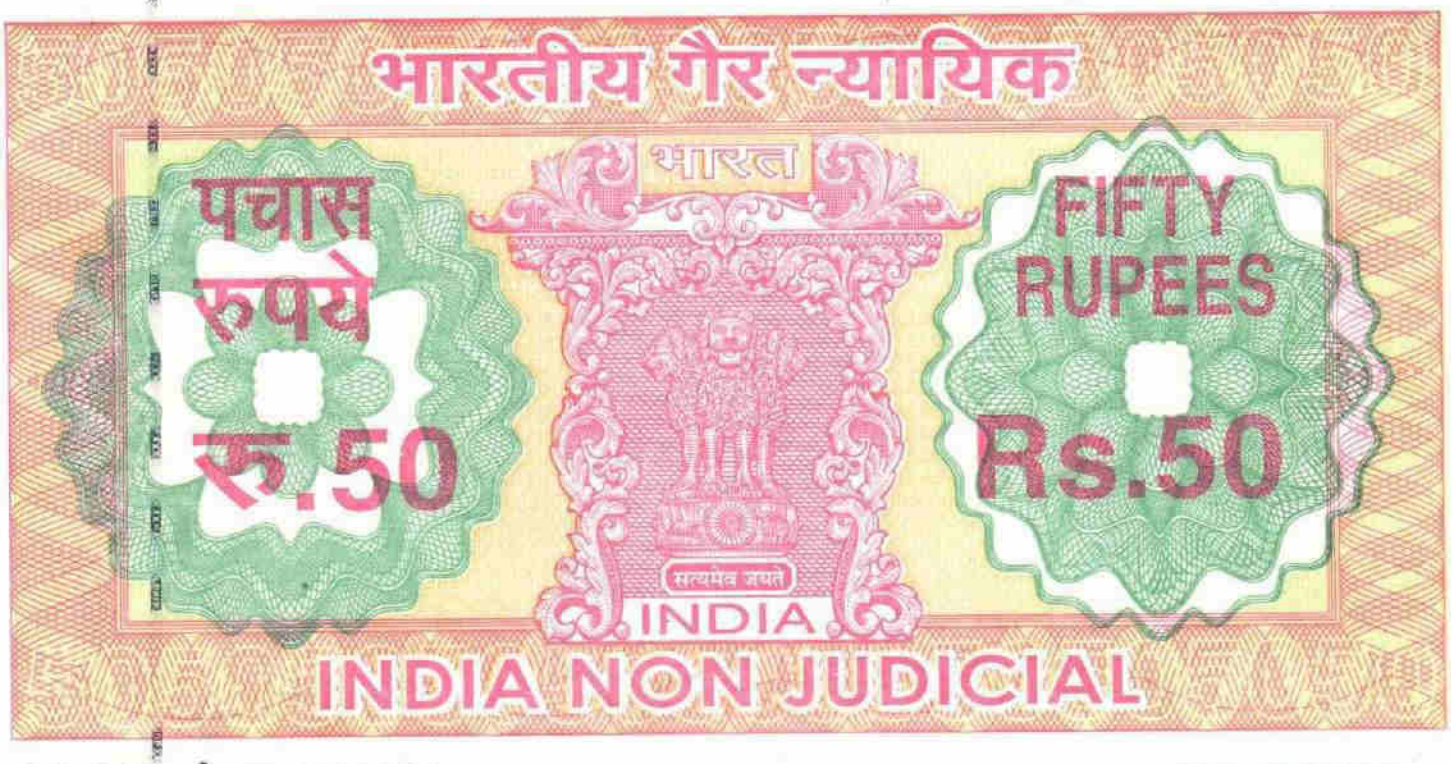

കേരളം केरल KERALA

CZ 150830

10. I / We further certify that in regard to matters relating to security and integrity ofthe country, we have not been charge-sheeted by any agency of the Government or convicted by a Court of Law for any offence committed by us or by any of our Associates.

11. I / We hereby irrevocably waive any right or remedy which we may have at any stage at law or howsoever otherwise arising to challenge or question any decision taken by the ANERT (and/ or the Government of Kerala / India) in connection with the selection of Consultant or in connection with the Selection Process itself in respect of the above mentioned Project.

No. 23144 Solar Systems

22 FEB 2024

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കേരളം केरल KERALA CZ 150831

16. I/We agree and undertake to abide by all the terms and conditions of the EOI Document. In witness thereof, I/we submit this Proposal under and in accordancewith the terms of the EOI Document.

Signed by Sri .....
..

(Date) .....

in the presence of witnesses

1.

2.

Signed by Sri .....
.

(Date) .....

in the presence of witnesses

1.

2.

No. 3145 Solar Systems
27/8/2024 Ealanad

22 FEB 2024

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Received too.

Phone No:
Sold To/Issued To:
A VVV Prasad
For Whom/ID Proof:
Self

भारत INDIA
INDIA NON JUDICIAL

MAR-05-2024 15:16:27
₹ 0000100/-
ZERO ZERO ZERO ZERO ONE ZERO ZERO
Agreement
391537317096625873 26-00108070
3816373 17/2021

ANNEXURE C – POWER OF ATTORNEY

(On Stamp Paper of requisite Stamp value)

Know all men by these presents, we, M/s Solar Systems (name of Firm and address of the registered office) do hereby constitute, nominate, appoint and authorise Mr / Ms. A V V V Prasad son/daughter/wife/Husband and presently residing at H-9/1 Vakalapudi Kakinada, who is presently employed with us and holding the position of Sr. Manager as our true and lawful attorney (Hereinafter referred to as the —Authorized Representative) to do in our name and on our behalf, all such acts, deeds and things as are necessary or required in connection with or incidental to submission of our Proposal for and selection as the Consultant for

including but not limited to signing and submission of all applications, proposals and other documents and writings, participating in pre-bid and other conferences and providing information/ responses to the ANERT, representing us in all matters before the ANERT, signing and execution of all contracts and undertakings consequent to acceptance of our proposal and generally dealing with the Authority in all matters in connection with or relating to or arising out of our Proposal for the said Project and/or upon award thereof to us till the entering into of the Agreement with the ANERT.

AND, we do hereby agree to ratify and confirm all acts, deeds and things lawfully done or caused to be done by our said Authorised Representative pursuant to and in exercise of the powers conferred by this Power of Attorney and that all acts, deeds and things done by our said Authorised Representative in exercise of the powers hereby conferred shall and shall always be deemed to have been done by us.

IN WITNESS WHEREOF WE, M/s Solar Systems THE ABOVE - NAMED AUTHORISED REPRESENTATIVE HAVE EXECUTED THIS POWER OF ATTORNEY ON THIS DAY OF 05.03., 2024

P. Seshu Rao 5/3/2024.

NOTARY
PILLI SESHA RAO M.A. B.L.
KAKINADA A.P.
Appointed Regd. No. 1

ATTESTED

PILLI SESHA RAO, M.A. B.L.
ADVOCATE-NOTARY
D.No. 6-83, DUGGUDURU,
Kajuluru Mandal, E.G. Dt., A.P.
Approved by Govt. of A.P.
Ref. G.O.Ms. No.2747 (77) Dated 26
Renewed Notary License Valid upto 25..
Cell : 9949147926

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For

(Signature, name, designation and address) Witnesses:

1. K [illegible] (PRASAD)
2. K. Srinu (Srinu)

Notarized

Accepted (Signature, name, designation and address of the Attorney)

NOTARY PILLI SESHA RAO M.A., B.L KAKINADA Appointed by Govt. A.P Regd. No. 2747 (77) NOTARIAL GOVT. OF A.P

ATTESTED P. Sesha Rao 5/3/2024
PILLI SESHA RAO, M.A. B.L
ADVOCATE-NOTARY
D.No. 6-83, DUGGUDURU,
Kajuluru Mandal,E.G. Dt., A.P.
Approved by Govt. of A.P
Ref. G.O.Ms. No.2747 (77) Dated 2[illegible]
Renewed Notary License Valid upto 25-
Cell : 9949147926

Government of India

Form GST REG-06

[See Rule 10(1)]

Registration Certificate

Registration Number : 37AVSPB0729L1Z9

1.	**Legal Name**	RAMA DEVI BOLLA			
2.	**Trade Name, if any**	SOLAR SYSTEMS			
3.	**Constitution of Business**	Proprietorship			
4.	**Address of Principal Place of Business**	PLOT NO 41/A, I.D.A,SARPAVARAM, KAKINADA, East Godavari, Andhra Pradesh, 533005			
5.	**Date of Liability**	01/07/2017			
6.	**Period of Validity**	From	01/07/2017	To	NA
7.	**Type of Registration**	Regular			
8.	**Particulars of Approving Authority**				
Signature	Signature Not Verified Digitally signed by DS GOODS AND SERVICES TAX NETWORK 1 Date: 2018.07.17 02:38:02 IST				
Name					
Designation					
Jurisdictional Office					
9. Date of issue of Certificate	17/07/2018				
Note: The registration certificate is required to be prominently displayed at all places of business in the State.					

This is a system generated digitally signed Registration Certificate issued based on the deemed approval of application on 01/07/2017 .

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Annexure A

GSTIN	37AVSPB0729L1Z9
Legal Name	RAMA DEVI BOLLA
Trade Name, if any	SOLAR SYSTEMS

Details of Additional Places of Business

Total Number of Additional Places of Business in the State	0

File No. ANERT-TECH/41/2024-PE1(RTS) (Computer No. 7540)

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Annexure B

GSTIN	37AVSPB0729L1Z9
Legal Name	RAMA DEVI BOLLA
Trade Name, if any	SOLAR SYSTEMS

Details of Proprietor

1

Name	RAMA DEVI BOLLA
Designation/Status	PROPRIETOR
Resident of State	Andhra Pradesh

आयकर विभाग
INCOME TAX DEPARTMENT
भारत सरकार
GOVT. OF INDIA
RAMA DEVI BOLLA
SURYA SATYANARAYANA BOLLA
21/05/1981
Permanent Account Number
AVSPB0729L
Signature
31122009

ఆంధ్రప్రదేశ్ నూతన మరియు పునరుద్ధరణీయ ఇంధన వనరుల అభివృద్ధి సంస్థ లి.
New & Renewable Energy Development Corporation of Andhra Pradesh Ltd.
NREDCAP
Clean Energy for Sustainability
(A State Government Company - ISO 9001:2015 Certified)

Ref: NREDCAP/SE/SPVSSL/EAST GODAVARI/07/2021-22 **Date: 31.03.2022**

To
M/s. Solar Systems,
Plot No: 41A, Industrial park,
Sarpavaram, Kakinada – 533 005.

Email :solarsystemsindia@yahoo.com
M : 09440573389

Sir,

Sub: Supply & Installation of 94 nos of 18W LED based Solar Street Lighting Systems in East Godavari District – Placing of work order – Reg.

Ref: Lr no: NREDCAP/KKD/SSL/4/2021-22/393, dt: 31.03.2022 of PD, Kakinada.

*****

We are pleased to place work order for supply & installation of 94 Nos of 18W LED based solar street lighting systems at different remote locations in East Godavari District as mentioned in the **Annexure - A** and the details are as follows:

S.No	Description	Qty (Nos)	Unit Rate (Rs)	Total Value (Rs)
01	Supply, Installation and Commissioning of 18W LED based Solar Street Lighting System with the following components including installation and transportation charges on Turnkey basis.(Remote areas) i) 100Wp SPV Module ii) 18W LED based luminaire iii) 12.8V, 24 Ah Lithium Ferro Phosphate (LiFePO4) Battery Bank iv) 6 mtrs length GI Pole v) Civil foundation vi) Other Electrical & Electronic items **Autonomy:** 3 days or 36 operating hours per permissible discharge. **Warranty:** SPV Modules – 25 years, Battery – 5 years Total System – 5 years	94	22,240.00	20,90,560.00
02	Add GST @ 12% on 70% of item no: 01	**94**	**1,868.16**	**1,75,607.04**
03	Add GST @ 18% on 30% of item no: 01	**94**	**1,200.96**	**1,12,890.24**
04	**Grand Total**	**94**	**25,309.12**	**23,79,057.28**

(Rupees Twenty three lakhs seventy nine thousand fifty seven and twenty eight paisa only)

You are requested to supply and install the above systems to the beneficiary under prior intimation to O/o Project Director, NREDCAP, Kakinada, East Godavari District on or **before 30.04.2022** as per enclosed terms and conditions.

Yours faithfully,
Sd/-
VC & Managing Director

Encl: Annexure-A, Terms & Conditions
Copy to the Manager (F&A), NREDCAP, Tadepalli for information.
Copy to the Project Director, NREDCAP, East Godavari District for information.

// FBO //

Project Director (SE)

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Annexure - A

Location details for installation of 94 Nos of 18W LED based Solar Street Lighting Systems

S.No	Name of the Beneficiary Organization	Name of the Location to be installed	No of Systems (Nos)
1	The Project Officer, ITDA, Rampachodavaram, East Godavari District.	Bhimavaram (V), Maredumilli (M)	15
		Arjuna Lova (V), Maredumilli (M)	15
		Ivvampalli (V), Maredumilli (M)	15
		P M Kota(V), Maredumilli (M)	30
		Mulasalapalem (V), Y Ramavaram (M)	10
		Boddapalli (V), Y Ramavaram (M)	09
Total			**94 Nos**

Sd/-
VC & Managing Director

// FBO //

Project Director (SE)

File No. ANERT-TECH/41/2024-PE1(RTS) (Computer No. 7540)

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NREDCAP: TADEPALLI

TERMS & CONDITIONS:

1. The supply & installation of solar street lighting systems are to be made as per the specifications given in the work order. The work shall be executed in consultation with our District Manager concerned on or before **30.04.2022.**
2. Please engrave the SPV Module numbers and Battery numbers on the backside of the PV Modules with permanent marker with Bold letters which can be visible from the downside of the installed Solar Street Lighting Systems.
3. The Solar PV modules shall be warranted for a minimum period of 25 years from the date of completion of installation and the PV module should have crystalline silicon solar cells and must have a certificate of testing conforming to IEC 61215 Edition II / BIS 14286 from an NABL or IECQ accredited laboratory.
4. The solar street lighting systems including Battery shall be warranted for a period of 05 years from the date of installation.
5. The Prices indicated in the work order are inclusive of taxes, transportation and installation & commissioning.
6. The materials shall be supplied at the sites specified as detailed in the given enclosure **Annexure-A** and breakages/damages under transit will be at suppliers risk and responsibility. The solar street lighting system should be tested by the supplier at factory site before dispatch to the consignee. In case, found any variations/deviations at a later stage and the systems/ materials are to be replaced at the cost of supplier.
7. The supplier has to inform to the concerned MPDOs/Panchayat Secretaries of villages & Officials of NREDCAP, Kakinada before installation of the solar street lights and also furnish the acquittances certified by the respective MPDOs/Panchayat Secretaries after completion of the work.
8. Payment will be made after supply & installation of solar street lighting systems on submission of certified bills by raising GST invoice in favour of VC&MD, NREDCAP and on submission of Installation, commissioning and Handing over certificate in the prescribed format & on receipt of funds from concerned Beneficiary / Organization (Installation, commissioning and Handing over certificate Formats Enclosed).
9. Payment will be released as follows:
   i) 72% of the Invoice amount will be released on submission of the certified bills and other documents in the prescribed formats.
   ii) 25% of the Invoice amount will be released on receipt of payment from Project Officer, ITDA, Rampachodavaram, East Godavari District.
   iii) Balance 03% of the invoice amount will be made against Bank guarantee or after completion of five (05) years of guarantee / warranty period for the system.
10. The delivery challan and invoice shall be raised as per GST ACT w.e.f. 01.07.2017 and followed by further amendments.
11. The user's manual and warranty / guarantee cards are to be provided to the end user for proper maintenance under copy to the concerned District Manager, NREDCAP for record purpose.
12. Periodical Status on supply & installation of solar street lighting systems at the site may please be intimated to concerned District Manager, NREDCAP, concerned.
13. For the delayed installation beyond the stipulated period, penalty @1% on the cost of the systems per week will be levied subject to the maximum of 5%. For valid reasons, if the supplier is not able to supply the systems within the time prescribed, the VC & Managing Director, NREDCAP, on receipt of representation from the supplier prior to due date, may grant extension of time. If the work is not completed within 30 days beyond scheduled date, the entire work will be cancelled.
14. The VC&MD, NREDCAP may relax any of the conditions mentioned above for any valid reasons.
15. The decision of Vice-Chairman & Managing Director, NREDCAP is the final and binding.

Sd/-
VC & Managing Director

// FBO //

Project Director (SE)

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New & Renewable Energy Development Corporation of Andhra Pradesh Ltd.
NREDCAP
Clean Energy for Sustainability
(A State Government Company - ISO 9001:2015 Certified)

Ref: NREDCAP/SE/SPVSSL/EAST GODAVARI/07/2021-22 **Date: 31.03.2022**

To
M/s. Solar Systems,
Plot No: 41A, Industrial park,
Sarpavaram, Kakinada – 533 005.

Email :solarsystemsindia@yahoo.com
M : 09440573389

Sir,

Sub: Supply & Installation of 94 nos of 18W LED based Solar Street Lighting Systems in East Godavari District – Placing of work order – Reg.

Ref: Lr no: NREDCAP/KKD/SSL/4/2021-22/393, dt: 31.03.2022 of PD, Kakinada.

*****

We are pleased to place work order for supply & installation of 94 Nos of 18W LED based solar street lighting systems at different remote locations in East Godavari District as mentioned in the **Annexure - A** and the details are as follows:

S.No	Description	Qty (Nos)	Unit Rate (Rs)	Total Value (Rs)
01	Supply, Installation and Commissioning of 18W LED based Solar Street Lighting System with the following components including installation and transportation charges on Turnkey basis.(Remote areas) i) 100Wp SPV Module ii) 18W LED based luminaire iii) 12.8V, 24 Ah Lithium Ferro Phosphate (LiFePO4) Battery Bank iv) 6 mtrs length GI Pole v) Civil foundation vi) Other Electrical & Electronic items **Autonomy:** 3 days or 36 operating hours per permissible discharge. **Warranty:** SPV Modules – 25 years, Battery – 5 years Total System – 5 years	94	22,240.00	20,90,560.00
02	Add GST @ 12% on 70% of item no: 01	**94**	**1,868.16**	**1,75,607.04**
03	Add GST @ 18% on 30% of item no: 01	**94**	**1,200.96**	**1,12,890.24**
04	**Grand Total**	**94**	**25,309.12**	**23,79,057.28**

(Rupees Twenty three lakhs seventy nine thousand fifty seven and twenty eight paisa only)

You are requested to supply and install the above systems to the beneficiary under prior intimation to O/o Project Director, NREDCAP, Kakinada, East Godavari District on or **before 30.04.2022** as per enclosed terms and conditions.

Yours faithfully,
Sd/-
VC & Managing Director

Encl: Annexure-A, Terms & Conditions
Copy to the Manager (F&A), NREDCAP, Tadepalli for information.
Copy to the Project Director, NREDCAP, East Godavari District for information.

// FBO //

Project Director (SE)

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Annexure - A

Location details for installation of 94 Nos of 18W LED based Solar Street Lighting Systems

S.No	Name of the Beneficiary Organization	Name of the Location to be installed	No of Systems (Nos)
1	The Project Officer, ITDA, Rampachodavaram, East Godavari District.	Bhimavaram (V), Maredumilli (M)	15
		Arjuna Lova (V), Maredumilli (M)	15
		Ivvampalli (V), Maredumilli (M)	15
		P M Kota(V), Maredumilli (M)	30
		Mulasalapalem (V), Y Ramavaram (M)	10
		Boddapalli (V), Y Ramavaram (M)	09
Total			**94 Nos**

Sd/-
VC & Managing Director

// FBO //

Project Director (SE)

File No. ANERT-TECH/41/2024-PE1(RTS) (Computer No. 7540)

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NREDCAP: TADEPALLI

TERMS & CONDITIONS:

1. The supply & installation of solar street lighting systems are to be made as per the specifications given in the work order. The work shall be executed in consultation with our District Manager concerned on or before **30.04.2022.**
2. Please engrave the SPV Module numbers and Battery numbers on the backside of the PV Modules with permanent marker with Bold letters which can be visible from the downside of the installed Solar Street Lighting Systems.
3. The Solar PV modules shall be warranted for a minimum period of 25 years from the date of completion of installation and the PV module should have crystalline silicon solar cells and must have a certificate of testing conforming to IEC 61215 Edition II / BIS 14286 from an NABL or IECQ accredited laboratory.
4. The solar street lighting systems including Battery shall be warranted for a period of 05 years from the date of installation.
5. The Prices indicated in the work order are inclusive of taxes, transportation and installation & commissioning.
6. The materials shall be supplied at the sites specified as detailed in the given enclosure **Annexure-A** and breakages/damages under transit will be at suppliers risk and responsibility. The solar street lighting system should be tested by the supplier at factory site before dispatch to the consignee. In case, found any variations/deviations at a later stage and the systems/ materials are to be replaced at the cost of supplier.
7. The supplier has to inform to the concerned MPDOs/Panchayat Secretaries of villages & Officials of NREDCAP, Kakinada before installation of the solar street lights and also furnish the acquittances certified by the respective MPDOs/Panchayat Secretaries after completion of the work.
8. Payment will be made after supply & installation of solar street lighting systems on submission of certified bills by raising GST invoice in favour of VC&MD, NREDCAP and on submission of Installation, commissioning and Handing over certificate in the prescribed format & on receipt of funds from concerned Beneficiary / Organization (Installation, commissioning and Handing over certificate Formats Enclosed).
9. Payment will be released as follows:
   i) 72% of the Invoice amount will be released on submission of the certified bills and other documents in the prescribed formats.
   ii) 25% of the Invoice amount will be released on receipt of payment from Project Officer, ITDA, Rampachodavaram, East Godavari District.
   iii) Balance 03% of the invoice amount will be made against Bank guarantee or after completion of five (05) years of guarantee / warranty period for the system.
10. The delivery challan and invoice shall be raised as per GST ACT w.e.f. 01.07.2017 and followed by further amendments.
11. The user's manual and warranty / guarantee cards are to be provided to the end user for proper maintenance under copy to the concerned District Manager, NREDCAP for record purpose.
12. Periodical Status on supply & installation of solar street lighting systems at the site may please be intimated to concerned District Manager, NREDCAP, concerned.
13. For the delayed installation beyond the stipulated period, penalty @1% on the cost of the systems per week will be levied subject to the maximum of 5%. For valid reasons, if the supplier is not able to supply the systems within the time prescribed, the VC & Managing Director, NREDCAP, on receipt of representation from the supplier prior to due date, may grant extension of time. If the work is not completed within 30 days beyond scheduled date, the entire work will be cancelled.
14. The VC&MD, NREDCAP may relax any of the conditions mentioned above for any valid reasons.
15. The decision of Vice-Chairman & Managing Director, NREDCAP is the final and binding.

Sd/-
VC & Managing Director

// FBO //

Project Director (SE)

ఆంధ్రప్రదేశ్ నూతన మరియు పునరుద్ధరణీయ ఇంధన వనరుల అభివృద్ధి సంస్థ లి.
New & Renewable Energy Development Corporation of Andhra Pradesh Ltd.
(A State Government Company - ISO 9001:2015 Certified)
Regd.Office : # 12-464/5/1, River Oaks Apartment, CSR Kalyana Mandapam Road,
Tadepalli, Guntur District. Andhra Pradesh - 522 501, India.
Tel : 08645 797162 / 797163 E-mail : info@nredcap.in Website : www.nredcap.in

Ref: NREDCAP/SE/SPVPS/Issue of Experience Certificate/121/2018-19 Dt: 17 -01-2019

TO WHOM SO EVER IT MAY CONCERN

This is to certify that M/s Solar Systems, Kakinada have supplied and installed 775 nos of 5 HP Solar P V Pump Sets with RMS facility for Agriculture purpose in the state of Andhra Pradesh as detailed below during the years 2015-16 to 2018-19 as on 10-01-2019. The systems are working satisfactory.

S. No	Year	No. of Pumpsets installed		Expenditure on work (Rs in Lakhs)
		3 HP	5 HP	
1	2015-16	0	181	862.50
2	2016-17	0	122	526.43
3	2017-18	0	283	883.55
4	2018-19	0	189	609.76
	Total	**0**	**775**	**2882.24**

This certificate is issued as per the request made by the Supplier.

For New & Renewable Energy
Development Corporation of A.P. Ltd.

General Manager
General Manager

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NREDCAP
Clean Energy for Sustainability

ఆంధ్రప్రదేశ్ నూతన మరియు పునరుద్ధరణీయ ఇంధన వనరుల అభివృద్ధి సంస్థ లి.
New & Renewable Energy Development Corporation of Andhra Pradesh Ltd.
(A State Government Company - ISO 9001:2015 Certified)

Ref: NREDCAP/SE/SSL/KKD/03/2022-23 **Date: 14.06.2022**

TO WHOM SO EVER IT MAY CONCERN

This is to certify that M/s. Solar Systems has supplied & installed 437 nos of LED based Solar Street Lighting Systems at various locations in the State of Andhra Pradesh during the years 2021-22 & 2022-23 against our work orders with a financial value of Rs. 1,08,08,636.29 (Rupees One crore eight lakhs eight thousand six hundred thirty six and twenty nine paisa only). The systems are working satisfactorily. The details are given below.

S.No	Year	District	Qty (Nos)	Capacity	Value (Rs)
1	2021-22	East Godavari	363	18W	81,12,672.23
		East Godavari	10	120W (2 X 60W)	11,97,900.00
		Visakhapatnam	20	18W	4,84,788.00
		Vizianagaram	14	18W	2,86,094.06
2	2022-23	Kakinada	30	18W	7,27,182.00
Total			**437**		**1,08,08,636.29**

This certificate is issued on the request made by the suppiier.

General Manager

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SOLAR SYSTEMS
Inspiration for green family living

PLOT NO 41A, INDUSTRIAL PARK, SARPAVARAM, KAKINADA-533005
PH : 0884-2361069 / 9440573389.
E-mail: solarsystemsindia@yahoo.com

ANNEXURE D – DECLARATION BY THE BIDDER

e-EoI Notification No: **ANERT-TECH/41/2024-PE1(RTS)** dtd 27.2.2024 for Expression of Interest (EoI) for the Selection of Agency for Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram

To
The CEO
ANERT

We, the undersigned, declare that:

1. We have examined and have no reservations to the Bidding Document, including Addenda No. (if any)
2. We offer to supply in conformity with the Bidding Document and in accordance with the delivery schedule
3. Our Bid shall be valid for a period of 4 months from the date fixed as deadline for the submission of EoIs in accordance with the Bidding Document, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;
4. If our Bid is accepted, we commit to submit a Security Deposit in the amount of 3 percent of the Contract Price for the due performance of the Contract;
5. We are not participating, as Bidders, in more than one Bid in this bidding process;
6. Our firm, its affiliates or subsidiaries, including any subcontractors or suppliers for any part of the Contract, has not been declared ineligible by the ANERT or Government of Kerala;
7. We understand that this Bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal Contract is prepared and executed.
8. Our firm has obtained the certifications from MNRE or NABL approved Test laboratories that the goods and services are satisfying the technical criteria specified in the bid.

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SOLAR SYSTEMS
Inspiration for green family living

PLOT NO 41A, INDUSTRIAL PARK, SARPAVARAM, KAKINADA-533005
PH : 0884-2361069 / 9440573389.
E-mail: solarsystemsindia@yahoo.com

ANNEXURE E – DECLARATION OF RELATIONSHIP WITH ANERT EMPLOYEE

EoI Notification No.: ANERT-TECH/41/2024-PE1(RTS)

Expression of Interest (EoI) for the Selection of Agency for Pilot Implementation ofBattery Energy Storage System at ANERT HQ, Thiruvananthapuram

To

The CEO
ANERT

Name of the ANERT employee with Designation: **NONE**

Name of the bidder related to the employee: **NONE**

This is to put on record that Shri/Smt **NONE**
currently working as **N O N E** in ANERT is related to, who is the bidder in the bid. We are aware of the Anti-corruption policy of ANERT and will observe the highest standards during the execution of contract and shall retain from corrupt, fraudulent, collusive or coercive practices on competing for the contract.

Date: 07.03.2024

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DA 595817

ANNEXURE F – UNDERTAKING FOR NO BLACKLISTING & NO BANNING

Undertaking for No Blacklisting & No Banning

To

The CEO
ANERT

Sub: Expression of Interest (EoI) for the Selection of Agency for Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram

I / We hereby declare that presently our Company/Limited Liability Partnership/Partnership Firm/ Sole Proprietorship is having unblemished record and is not declared ineligible for corrupt/fraudulent practices by any State/Central Government/PSU on thedate of Bid Submission.

I / We further declare that presently our Company/Limited Liability Partnership/ Partnership Firm/ Sole Proprietorship is not blacklisted and not declared ineligible for reasons other than corrupt/fraudulent practices by any State/Central Government/PSU on the date of Bid Submission.

SOLAR SYSTEMS ★ KAKINADA, AP - 533 005 ★

No. 60612
11/2/24
SOLAR SYSTEMS

PRINCIPAL SUB REGISTRAR

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കേരളം केरल KERALA

DA 595819

If this declaration is found to be incorrect then without prejudice to any other action that may be taken, our security may be forfeited in full and the EoI if any to the extent accepted may be cancelled.

Date: 07.03.2024

SOLAR SYSTEMS ★ KAKINADA ★ 533 005

No. 60619
1/3/24

SOLAR SYSTEMS

KILIYALLOOR MANI
PALAKKAD VENDOR

PRINCIPAL SUB TREA...

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INDIAN INCOME TAX RETURN ACKNOWLEDGEMENT

[Where the data of the Return of Income in Form ITR-1 (SAHAJ), ITR-2, ITR-3, ITR-4 , ITR-5, ITR-6,ITR-7 transmitted electronically with digital signature]

Assessment Year 2018-19

PERSONAL INFORMATION AND THE DATE OF ELECTRONIC TRANSMISSION

Name			PAN
BOLLA RAMA DEVI			AVSPB0729L
Flat/Door/Block No	Name Of Premises/Building/Village		Form No. which has been electronically transmitted: ITR-3
Plot No. 41A	Sarpavaram		
Road/Street/Post Office	Area/Locality		
	Industrial Park		Status: Individual
Town/City/District	State	Pin/ZipCode	Aadhaar Number/Enrollment ID
KAKINADA	ANDHRA PRADESH	533005	XXXX XXXX 6733

Designation of AO(Ward/Circle): KAKINADA WARD 2 | Original or Revised: ORIGINAL

E-filing Acknowledgement Number: 370289601311018 | Date(DD/MM/YYYY): 31-10-2018

COMPUTATION OF INCOME AND TAX THEREON

1	Gross total income				1	3878767
2	Deductions under Chapter-VI-A				2	76995
3	Total Income				3	3801770
3a	Current Year loss, if any				3a	0
4	Net tax payable				4	981622
5	Interest and Fee Payable				5	2178
6	Total tax, interest and Fee payable				6	983800
7	Taxes Paid	a Advance Tax	7a	0		
		b TDS	7b	964874		
		c TCS	7c	0		
		d Self Assessment Tax	7d	18930		
		e Total Taxes Paid (7a+7b+7c +7d)			7e	983804
8	Tax Payable (6-7e)				8	0
9	Refund (7e-6)				9	0
10	Exempt Income	Agriculture			10	
		Others				

This return has been digitally signed by BOLLA RAMA DEVI in the capacity of Self

having PAN AVSPB0729L from IP Address 157.48.117.113 on 31-10-2018 at KAKINADA

Dsc Sl No & issuer 249639842885958193 6CN=SafeScrypt sub-CA for RCAI Class 2 2014,OU=Sub-CA,O=Sify Technologies Limited,C=IN

DO NOT SEND THIS ACKNOWLEDGEMENT TO CPC, BENGALURU

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A.Y. 2018-2019

Name : BOLLA RAMA DEVI
Father's Name : Surya Satyanarayana
Address : Plot No. 41A
Sarpavaram
Industrial Park, KAKINADA - 533 005

Previous Year : 2017-2018
PAN : AVSPB 0729 L
Ward/Circle : KAKINADA WARD 2
Status : Individual
Date of Birth : 21-May-1981
Aadhaar No. : 3961 4545 6733

Resident

Statement of Income

		Rs.	Rs.	Rs.
■ Profits and gains of Business or Profession				
Business-1				
Net Profit Before Tax as per P & L a/c			38,78,767	
Total income of Business and Profession			38,78,767	
Income chargeable under the head "Business and Profession"				38,78,767
				38,78,767
■ Gross Total Income				
Deductions under Chapter VI-A				
Investment u/s 80C, CCC, CCD				
Life insurance premium		56,995		
Tuition fees		20,000		
Deduction subject to ceiling u/s 80CCE				76,995
				38,01,772
■ Total Income				
Agricultural Income	1	0		
Total income rounded off u/s 288A				38,01,770
Tax on total income				9,53,031
Add: Education cess				28,591
Tax with cess				9,81,622
Net Tax				9,81,622
TDS	2		9,64,874	
Total prepaid taxes				9,64,874
Balance Tax				16,748
Interest u/s 234A			167	
Interest u/s 234B			1,169	
Interest u/s 234C			842	2,178
Net tax payable				18,926
Self-assessment tax paid	3			18,930
■ Balance tax payable				0

Schedule 1

Agricultural Income

	Amount

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Gross Receipts	0
Net income	0

Schedule 2

TDS as per Form 16A

Deductor, TAN & Certificate No.	TDS deducted	TDS claimed in current year	Gross Receipts as per 26AS
Eastern Power Distribution Company Of Ap Limited, TAN- VPNE00240C	6,42,780	6,42,780	3,21,39,000
New And Renewable Energy Development Corporation Of Andhra Pradesh Limited, TAN- HYDN01369E	3,913	3,913	3,38,191
Senior Accounts Officer B And R Apspdcl Tirupati, TAN- VPNS10781B	2,87,270	2,87,270	1,43,63,638
Syndicate Bank - Main Branch Kakinada, TAN- VPNS03602E	24,413	24,413	1,22,066
Syndicate Bank-vakalapudi, TAN- VPNS02408A	6,498	6,498	32,491
Total	9,64,874	9,64,874	4,69,95,386

Schedule 3

Self Assessment tax paid

Name of the Bank and BSR Code	Date of deposit	Challan Sl.no.	Challan Amount
Syndicate Bank - 0331906	31-Oct-18	02021	18,930

Bank A/c: SYNDICATE BANK 32501250002078 IFSC: SYNB0003258

Date : 31-Oct-2018

Place : KAKINADA

[BOLLA RAMA DEVI]

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SOLAR SYSTEMS -2017-18

KAKINADA

Profit & Loss A/c

1-Apr-2017 to 31-Mar-2018

Particulars	1-Apr-2017 to 31-Mar-2018		Particulars	1-Apr-2017 to 31-Mar-2018	
Opening Stock		19,50,000.00	**Sales Accounts**		9,21,48,102.70
Closing Stock	*19,50,000.00*		Closing Stock		
			Closing Stock		
Purchase Accounts		7,65,66,894.62			
Gross Profit c/o		*1,36,31,208.08*			
		9,21,48,102.70			9,21,48,102.70
Indirect Expenses		99,30,031.25	Gross Profit b/f		*1,36,31,208.08*
Labour Charges	*38,25,640.00*		**Indirect Incomes**		1,77,590.01
General Maintenance	*44,690.60*		*Interest on Fdr*	*1,54,557.00*	
Interest on Loans	*9,49,644.19*		*Interest on R D*	*14,973.66*	
Salaries & Staff Welfare	*39,28,990.00*		*Interest on Sb/a.C*	*8,059.35*	
Taxes & Licences	*3,04,054.00*				
Bank Charges	*36,490.38*				
Electricity Charges	*21,200.08*				
Material Insurance	*2,25,703.00*				
Office Rent	*52,800.00*				
Printing & Stationary	*2,260.00*				
Transportation Charges	*3,16,189.00*				
Travelling Expenses	*2,22,370.00*				
Nett Profit		*38,78,766.84*			
Total		1,38,08,798.09	**Total**		1,38,08,798.09

For **K.P.G. & Co**
Chartered Accountants

P. Mallikharjuna Sastry
(P. Mallikharjuna Sastry)
Partner M. no. 215023
Firm Reg No. 012136S

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SOLAR SYSTEMS -2017-18

KAKINADA

Balance Sheet

1-Apr-2017 to 31-Mar-2018

Liabilities	as at 31-Mar-2018		Assets	as at 31-Mar-2018	
Capital Account		1,57,10,560.79	**Fixed Assets**		96,88,052.00
Loans (Liability)		1,69,48,721.52	**Investments**		25,60,174.46
Bank OD A/c	89,55,619.67		**Current Assets**		5,48,16,728.31
Secured Loans	30,31,101.85		Deposits (Asset)	75,59,628.20	
Unsecured Loans	49,62,000.00		Loans & Advances (Asset)	9,55,035.00	
Current Liabilities		3,44,05,672.46	Sundry Debtors	4,37,45,566.40	
Sundry Creditors	3,44,05,672.46		Cash-in-hand	3,88,722.25	
Profit & Loss A/c			Bank Accounts	7,98,027.06	
Opening Balance			*Gst Refund*	4,04,875.40	
Current Period	38,78,766.84		*TDS RECEIVABLE 2017-18*	9,64,874.00	
Less: Transferred	38,78,766.84				
Total		6,70,64,954.77	**Total**		6,70,64,954.77

For K.P.G. & Co
Chartered Accountants
P. Mall Sah
(P. Mallikharjuna ~~Sastry~~)
Partner M. no. 215023
Firm Reg No. 012136S

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SOLAR SYSTEMS -2017-18

KAKINADA

Bank OD A/c

Group Summary

1-Apr-2017 to 31-Mar-2018

	Closing Balance	
	Debit	Credit
Syndicate Bank -2078 (OD)		89,55,619.67
Grand Total		**89,55,619.67**

K.P.G. & Co. Chartered Accountants KAKINADA

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SOLAR SYSTEMS -2017-18

KAKINADA

Secured Loans

Group Summary

1-Apr-2017 to 31-Mar-2018

	Closing Balance	
	Debit	Credit
Gold Loan-1652		5,000.00
Lic Housing Lone-12571		13,44,361.88
Syndicate Bank - 573		16,37,057.43
Syndicate Bank T.Loan -0099		44,682.54
Grand Total		**30,31,101.85**

K.P.G. & CO. KAKINADA Chartered Accountants

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SOLAR SYSTEMS -2017-18

KAKINADA

Bank Accounts

Group Summary

1-Apr-2017 to 31-Mar-2018

	Closing Balance	
	Debit	Credit
Syndicate Bank-00045	47,371.26	
Syndicate Bank - 453	2,33,643.03	
Syndicate Bank -475	5,17,012.77	
Grand Total	**7,98,027.06**	

K.P.G. & Co. * Chartered Accountants * KAKINADA

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FORM NO. 3CB

[See rule 6G(1)(b)]

Audit report under section 44AB of the Income-tax Act, 1961 in the case of a person referred to in clause (b) of sub-rule (1) of rule 6G

1. We have examined the balance sheet as at 31st March 2018 and the Profit and loss account for the period beginning from 01/04/2017 to ending on 31/03/2018 attached herewith, of BOLLA RAMA DEVI Plot No. 41A, Sarpavaram, Industrial Park, , KAKINADA, ANDHRA PRADESH, 533005 AVSPB0729L.

2. We certify that the balance sheet and the Profit and loss account are in agreement with the books of account maintained at the head office at KAKINADA, and 0 branches.

3. (a) We report the following observations/comments/discrepancies/inconsistencies; if any:

(b) Subject to above,-

(A) We have obtained all the information and explanations which, to the best of Our knowledge and belief, were necessary for the purposes of the audit.

(B) In Our opinion, proper books of account have been kept by the head office and branches of the assessee so far as appears from Our knowledge and belief, were necessary for the examination of the books.

(C) In Our opinion and to the best of Our information and according to the explanations given to Us the said accounts, read with notes thereon, if any, give a true and fair view:-

(i) in the case of the balance sheet, of the state of the affairs of the assessee as at 31st March, 2018 ;and

(ii) in the case of the Profit and loss account of the Profit of the assessee for the year ended on that date.

4. The statement of particulars required to be furnished under section 44AB is annexed herewith in Form No. 3CD.

5. In Our opinion and to the best of Our information and according to explanations given to Us the particulars given in the said Form No. 3CD and the Annexure thereto are true and correct subject to following observations/qualifications, if any:-

Sl No.	Qualification Type	Observations/Qualifications
1		Confirmation balances of Sundry Debtors and Creditors as on 31/3/2018 were not produced for my verification
2		I have not physically Verified the cash balance and stock as on 31/03/2018 and i have placed reliance on the certificate given by the management in this regard
3		GST Returns for the finanacial year 2017-18 were not produced for my verification

Place KAKINADA
Date 31/10/2018

Name P MALLIKHARJUNA SASTRY
Membership Number 215028
FRN (Firm Registration Number) 012136S
Address 8-5-5, GANDHINAGAR, , KAKINADA, ANDHRA PRADESH, 533003

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FORM NO. 3CD

[See rule 6G(2)]

Statement of particulars required to be furnished under section 44AB of the Income-tax Act, 1961

1	Name of the assessee	BOLLA RAMA DEVI
2	Address	Plot No. 41A, Sarpavaram, , Industrial Park, , KAKINADA, ANDHRA PRADESH, 533005
3	Permanent Account Number (PAN)	AVSPB0729L
4	Whether the assessee is liable to pay indirect tax like excise duty, service tax, sales tax, goods and services tax,customs duty,etc. if yes, please furnish the registration number or,GST number or any other identification number allotted for the same	Yes

Sl No.	Type	Registration Number
1	Sales VAT/Tax ANDHRA PRADESH	37660989415

5	Status	Individual
6	Previous year from	01/04/2017 to 31/03/2018
7	Assessment Year	2018-19
8	Indicate the relevant clause of section 44AB under which the audit has been conducted	

Sl No.	Relevant clause of section 44AB under which the audit has been conducted
1	Clause 44AB(a)-Total sales/turnover/gross receipts of business exceeding specified limits

9	a	If firm or Association of Persons, indicate names of partners/members and their profit sharing ratios. In case of AOP, whether shares of members are indeterminate or unknown ?	

Name	Profit Sharing Ratio (%)
Nil	

9	b	If there is any change in the partners or members or in their profit sharing ratio since the last date of the preceding year, the particulars of such change.	

Date of change	Name of Partner/Member	Type of change	Old profit sharing ratio	New profit Sharing Ratio	Remarks

10	a	Nature of business or profession (if more than one business or profession is carried on during the previous year, nature of every business or profession).	

Sector	Sub Sector	Code
WHOLESALE AND RETAIL TRADE	Retail sale of other products n.e.c	09028
MANUFACTURING	Other manufacturing n.e.c.	04097

10	b	If there is any change in the nature of business or profession, the particulars of such change	No

Business	Sector	SubSector	Code
Nil			

11	a	Whether books of accounts are prescribed under section 44AA, if yes, list of books so prescribed	No

Books prescribed

11	b	List of books of account maintained and the address at which the books of accounts are kept. (In case books of account are maintained in a computer system, mention the books of account generated by such computer system. If the books of accounts are not kept at one location, please furnish the addresses of locations along with the details of books of accounts maintained at each location.) Same as 11(a) above

Books maintained	Address Line 1	Address Line 2	City or Town or District	State	PinCode
Bank book	Plot No. 41A,Sarpavaram,,Industrial Park		KAKINADA	ANDHRA PRADESH	533005
Cash book	Plot No. 41A,Sarpavaram,,Industrial Park		KAKINADA	ANDHRA PRADESH	533005
Journal	Plot No. 41A,Sarpavaram,,Industrial Park		KAKINADA	ANDHRA PRADESH	533005
Ledger	Plot No. 41A,Sarpavaram,,Industrial Park		KAKINADA	ANDHRA PRADESH	533005
Purchase register	Plot No. 41A,Sarpavaram,,Industrial Park		KAKINADA	ANDHRA PRADESH	533005
Sales register	Plot No. 41A,Sarpavaram,,Industrial Park		KAKINADA	ANDHRA PRADESH	533005

11	c	List of books of account and nature of relevant documents examined. Same as 11(b) above

Books Examined
Bank book

Cash book	
Journal	
Ledger	
Purchase register	
Sales register	

12	Whether the profit and loss account includes any profits and gains assessable on presumptive basis, if yes, indicate the amount and the relevant section (44AD, 44AE, 44AF, 44B, 44BB, 44BBA, 44BBB, Chapter XII-G, First Schedule or any other relevant section).		**No**

Section	Amount
Nil	

13	a	Method of accounting employed in the previous year	**Mercantile system**
13	b	Whether there has been any change in the method of accounting employed vis-a-vis the method employed in the immediately preceding previous year.	**No**
13	c	If answer to (b) above is in the affirmative, give details of such change , and the effect thereof on the profit or loss.	

Particulars	Increase in profit(Rs.)	Decrease in profit(Rs.)

13	d	Whether any adjustment is required to be made to the profits or loss for complying with the provisions of income computation and disclosure standards notified under section 145(2).	**No**
13	e	If answer to (d) above is in the affirmative, give details of such adjustments.	

ICDS	Increase in profit(Rs.)	Decrease in profit(Rs.)	Net effect(Rs.)
Total			

13	f	Disclosure as per ICDS.

ICDS	Disclosure
ICDS I - Accounting Policies	**No Prescribed Changes were found**
ICDS II - Valuation of Inventories	**No Prescribed Changes were found**
ICDS IV - Revenue Recognition	**No Prescribed Changes were found**

14	a	Method of valuation of closing stock employed in the previous year.	**Lower of cost or net realisable value [Section 145A]**
14	b	In case of deviation from the method of valuation prescribed under section 145A, and the effect thereof on the profit or loss, please furnish:	**No**

Particulars	Increase in profit(Rs.)	Decrease in profit(Rs.)

15 Give the following particulars of the capital asset converted into stock-in-trade

(a) Description of capital asset	(b) Date of acquisition	(c) Cost of acquisition	(d) Amount at which the asset is converted into stock-in trade
Nil			

16 Amounts not credited to the profit and loss account, being:-

16	a	The items falling within the scope of section 28	

Description	Amount
Nil	

16	b	The proforma credits, drawbacks, refund of duty of customs or excise or service tax, or refund of sales tax or value added tax, where such credits, drawbacks or refund are admitted as due by the authorities concerned	

Description	Amount

16	c	Escalation claims accepted during the previous year	

Description	Amount
Nil	

16	d	Any other item of income	

Description	Amount
Nil	

16	e	Capital receipt, if any	

Description	Amount
Nil	

17 Where any land or building or both is transferred during the previous year for a consideration less than value adopted or assessed or assessable by any authority of a State Government referred to in section 43CA or 50C, please furnish:

Details of property	Address Line 1	Address Line 2	City/Town	State	Pincode	Consideration received or accrued	Value adopted or assessed or assessable

18 Particulars of depreciation allowable as per the Income-tax Act, 1961 in respect of each asset or block of assets, as the case may be, in the:-

Block of Asset	Rate of depreciation (In Percentage)	Opening WDV (A)	Additions					Deductions (C)	Depreciation Allowable (D)	Written Down Value at the end of the year (A+B-C-D)
			Purchase Value (1)	MOD-VAT (2)	Change in Rate of Ex-	Subsidy/ Grant (4)	Total Value of Purchases			

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	Class of Assets					change (3)		(B) (1+2+3+4)			

Nil

*** For Addition and Deduction Details refer Addition and Deduction Detail Tables At the End of the Page**

19 Amounts admissible under sections :

S.No	Section	Amount debited to profit and loss account	Amounts admissible as per the provisions of the Income-tax Act, 1961 and also fulfils the conditions, if any specified under the relevant 14provisions of Income-tax Act, 1961 or Income-tax Rules,1962 or any other guidelines, circular, etc., issued in this behalf.

Nil

20 a Any sum paid to an employee as bonus or commission for services rendered, where such sum was otherwise payable to him as profits or dividend. [Section 36(1)(ii)]

Description	Amount

20 b Details of contributions received from employees for various funds as referred to in section 36(1)(va):

Nature of fund	Sum received from employees	Due date for payment	The actual amount paid	The actual date of payment to the concerned authorities

Nil

21 a Please furnish the details of amounts debited to the profit and loss account, being in the nature of capital, personal, advertisement expenditure etc

Capital expenditure

Particulars	Amount in Rs.

Personal expenditure

Particulars	Amount in Rs.

Advertisement expenditure in any souvenir, brochure, tract, pamphlet or the like published by a political party

Particulars	Amount in Rs.

Expenditure incurred at clubs being entrance fees and subscriptions

Particulars	Amount in Rs.

Expenditure incurred at clubs being cost for club services and facilities used.

Particulars	Amount in Rs.

Expenditure by way of penalty or fine for violation of any law for the time being force

Particulars	Amount in Rs.

Expenditure by way of any other penalty or fine not covered above

Particulars	Amount in Rs.

Expenditure incurred for any purpose which is an offence or which is prohibited by law

Particulars	Amount in Rs.

(b) Amounts inadmissible under section 40(a):-

(i) as payment to non-resident referred to in sub-clause (i)

(A) Details of payment on which tax is not deducted:

Date of payment	Amount of payment	Nature of payment	Name of the payee	PAN of the payee,if avaliable	Address Line 1	Address Line 2	City or Town or District	Pincode

(B) Details of payment on which tax has been deducted but has not been paid during the previous year or in the subsequent year before the expiry of time prescribed under section200(1)

Date of payment	Amount of payment	Nature of payment	Name of the payee	PAN of the payee,if avaliable	Address Line 1	Address Line 2	City or Town or District	Pincode	Amount of tax deducted

(ii) as payment referred to in sub-clause (ia)

(A) Details of payment on which tax is not deducted:

Date of payment	Amount of payment	Nature of payment	Name of the payee	PAN of the payee,if avaliable	Address Line 1	Address Line 2	City or Town or District	Pincode

(B) Details of payment on which tax has been deducted but has not been paid on or before the due date specified in sub- section (1) of section 139.

Date of payment	Amount of payment	Nature of payment	Name of the payer	PAN of the payee,if avaliable	Address Line 1	Address Line 2	City or Town or District	Pincode	Amount of tax deducted	Amount out of (VI) deposited, if any

(iii) as payment referred to in sub-clause (ib)

(A) Details of payment on which levy is not deducted:

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	Date of payment	Amount of payment	Nature of payment	Name of the payee	PAN of the payee,if avaliable	Address Line 1	Address Line 2	City or Town or District	Pincode

(B) Details of payment on which levy has been deducted but has not been paid on or before the due date specified in sub- section (1) of section 139.

	Date of payment	Amount of payment	Nature of payment	Name of the payer	PAN of the payee,if avaliable	Address Line 1	Address Line 2	City or Town or District	Pincode	Amount of levy deducted	Amount out of (VI) deposited, if any

(iv) fringe benefit tax under sub-clause (ic)	
(v) wealth tax under sub-clause (iia)	
(vi) royalty, license fee, service fee etc. under sub-clause (iib).	

(vii) salary payable outside India/to a non resident without TDS etc. under sub-clause (iii).

	Date of payment	Amount of payment	Name of the payee	PAN of the payee,if avaliable	Address Line 1	Address Line 2	City	Pincode

(viii) payment to PF /other fund etc. under sub-clause (iv)	
(ix) tax paid by employer for perquisites under sub-clause (v)	

(c) Amounts debited to profit and loss account being, interest, salary, bonus, commission or remuneration inadmissible under section 40(b)/40(ba) and computation thereof;

	Particulars	Section	Amount debited to P/L A/C	Amount Admissible	Amount Inadmissible	Remarks

(d) Disallowance/deemed income under section 40A(3):

	(A) On the basis of the examination of books of account and other relevant documents/evidence, whether the expenditure covered under section 40A(3) read with rule 6DD were made by account payee cheque drawn on a bank or account payee bank draft. If not, please furnish the details:	Yes

	Date Of Payment	Nature Of Payment	Amount in Rs	Name of the payee	Permanent Account Number of the payee, if available

	(B) On the basis of the examination of books of account and other relevant documents/evidence, whether the payment referred to in section 40A(3A) read with rule 6DD were made by account payee cheque drawn on a bank or account payee bank draft If not, please furnish the details of amount deemed to be the profits and gains of business or profession under section 40A(3A)	Yes

	Date Of Payment	Nature Of Payment	Amount in Rs	Name of the payee	Permanent Account Number of the payee, if available

(e) Provision for payment of gratuity not allowable under section 40A(7)	0
(f) Any sum paid by the assessee as an employer not allowable under section 40A(9)	0

(g) Particulars of any liability of a contingent nature

	Nature Of Liability	Amount in Rs.

(h) Amount of deduction inadmissible in terms of section 14A in respect of the expenditure incurred in relation to income which does not form part of the total income

	Nature Of Liability	Amount in Rs.

(i) Amount inadmissible under the proviso to section 36(1)(iii)		
22	Amount of interest inadmissible under section 23 of the Micro, Small and Medium Enterprises Development Act, 2006	0

23 Particulars of any payment made to persons specified under section 40A(2)(b).

	Name of Related Person	PAN of Related Person	Relation	Nature of trasaction	Payment Made(Amount)

24 Amounts deemed to be profits and gains under section 32AC or 32AD or 33AB or 33AC or 33ABA.

	Section	Description	Amount
	Nil		

25 Any amount of profit chargeable to tax under section 41 and computation thereof.

	Name of Person	Amount of income	Section	Description of Transaction	Computation if any
	Nil				

26 (i)(A) In respect of any sum referred to in clause (a),(c),(d),(e),(f) or (g) of section 43B the liability for which:-

26 (i)(A)(a) pre-existed on the first day of the previous year but was not allowed in the assessment of any preceding previous year and was :-

26	(i)(A)(a)	Paid during the previous year	
		Section	Nature of liability	Amount
		Nil		
26	(i)(A)(b)	Not paid during the previous year	

		Section	Nature of liability	Amount
		Nil		
26	(i)B	was incurred in the previous year and was		
26	(i)(B)(a)	Paid on or before the due date for furnishing the return of income of the previous year under section 139(1)		
		Section	Nature of liability	Amount
		Nil		
26	(i)(B)(b)	not paid on or before the aforesaid date		
		Section	Nature of liability	Amount
		Nil		

(State whether sales tax, goods & service Tax, customs duty, excise duty or any other indirect tax, levy, cess, impost, etc., is passed through the profit and loss account.)		**No**	
27	a	Amount of Central Value Added Tax Credits/ Input Tax Credit(ITC) availed of or utilised during the previous year and its treatment in profit and loss account and treatment of outstanding Central Value Added Tax Credits/ Input Tax Credit(ITC) in accounts	**No**

CENVAT/ITC	Amount	Treatment in Profit and Loss/Accounts
Opening Balance		
Credit Availed		
Credit Utilized		
Closing/Outstanding Balance		

27 b — Particulars of income or expenditure of prior period credited or debited to the profit and loss account :-

Type	Particulars	Amount	Prior period to which itrelates(Year in yyyy-yyformat)
Nil			

28 Whether during the previous year the assessee has received any property, being share of a company not being a company in which the public are substantially interested, without consideration or for inadequate consideration as referred to in section 56(2)(viia)

Name of the person from which shares received	PAN of the person, if available	Name of the company from which shares received	CIN of the company	No. of Shares Received	Amount of consideration paid	Fair Market value of the shares
Nil						

29 Whether during the previous year the assessee received any consideration for issue of shares which exceeds the fair market value of the shares as referred to in section 56(2)(viib). If yes, please furnish the details of the same

Name of the person from whom consideration received for issue of shares	PAN of the person, if available	No. of Shares	Amount of consideration received	Fair Market value of the shares
Nil				

A(a) Whether any amount is to be included as income chargeable under the head Income from other sources as referred to in clause (ix) of sub-section (2) of section 56? (b) If yes, please furnish the following details: — **No**

Sl No.	Nature of Income	Amount
Nil		

B(a) Whether any amount is to be included as income chargeable under the head Income from other sources as referred to in clause (x) of sub-section (2) of section 56?(Yes/No) (b) If yes, please furnish the following details: — **No**

Sl No.	Nature of Income	Amount
Nil		

30 Details of any amount borrowed on hundi or any amount due thereon (including interest on the amount borrowed) repaid,otherwise than through an account payee cheque,(Section 69D) — **No**

Name of the person from whom amount borrowed or repaid on hundi	PAN of the person, if available	Address Line 1	Address Line 2	City or Town or District	State	Pincode	Amount borrowed	Date of Borrowing	Amount due including interest	Amount repaid	Date of Repayment
Nil											

A(a) Whether primary adjustment to transfer price, as referred to in sub-section (1) of section 92CE, has been made during the previous year. — **No**

(b) If yes, please furnish the following details

Sl No.	Under which clause of sub-section (1) of section 92CE primary adjustment is made ?	Amount (in Rs.) of primary adjustment	Whether the excess money available with the associated enterprise is required to be repatriated to India as per the provisions of sub-section (2) of section 92CE.	If yes, whether the excess money has been repatriated within the prescribed time.	If no, the amount (in Rs.) of imputed interest income on such excess money which has not been repatriated within the prescribed time	Expected date of repatriation of money
Nil						

B(a) Whether the assessee has incurred expenditure during the previous year by way of interest or of similar nature exceeding one crore rupees as referred to in sub-section (1) of section 94B. **No**

(b) If yes, please furnish the following details

Sl No.	Amount (in Rs.) of expenditure by way of interest or of similar nature incurred	Earnings before interest, tax, depreciation and amortization (EBITDA) during the previous year (in Rs.)	Amount (in Rs.) of expenditure by way of interest or of similar nature as per (i) above which exceeds 30% of EBITDA as per (ii) above.	Details of interest expenditure brought forward as per sub-section (4) of section 94B.		Details of interest expenditure carried forward as per sub-section (4) of section 94B:	
				Assessment Year	Amount (in Rs.)	Assessment Year	Amount (in Rs.)
Nil							

C(a) Whether the assessee has entered into an impermissible avoidance arrangement, as referred to in section 96, during the previous year.(This Clause is applicable from 1st April,2019).

(b) If yes, please furnish the following details

Sl No.	Nature of the impermissible avoidance arrangement	Amount (in Rs.) of tax benefit in the previous year arising, in aggregate, to all the parties to the arrangement
Nil		

31 a Particulars of each loan or deposit in an amount exceeding the limit specified in section 269SS taken or accepted during the previous year :-

S.No	Name of the lender or depositor	Address of the lender or depositor	Permanent Account Number(if available with the assessee) of the lender or the depositor	Amount of loan or deposit taken or accepted	Whether the loan or deposit was squared up during the previous year	Maximum amount outstanding in the account at any time during the previous year	Whether the loan or deposit was taken or accepted by cheque or bank draft or use of electronic clearing system through a bank account.	In case the loan or deposit was taken or accepted by cheque or bank draft, whether the same was taken or accepted by an account payee cheque or an account payee bank draft.
Nil								

31 b Particulars of each specified sum in an amount exceeding the limit specified in section 269SS taken or accepted during the previous year:-

S.No.	Name of the person from whom specified sum is received	Address of the person from whom specified sum is received	Permanent Account Number (if available with the assessee) of the person from whom specified sum is received	Amount of specified sum taken or accepted	Whether the specified sum was taken or accepted by cheque or bank draft or use of electronic clearing system through a bank account	In case the specified sum was taken or accepted by cheque or bank draft, whether the same was taken or accepted by an account payee cheque or an account payee bank draft.
Nil						

(Particulars at (a) and (b) need not be given in the case of a Government company, a banking company or a corporation established by Central, State or Provincial Act.)

31 b(a) Particulars of each receipt in an amount exceeding the limit specified in section 269ST, in aggregate from a person in a day or in respect of a single transaction or in respect of transactions relating to one event or occasion from a person, during the previous year, where such receipt is otherwise than by a cheque or bank draft or use of electronic clearing system through a bank account

		S.No.	Name of the Payer	Address of the Payer	Permanent Account Number (if available with the assessee) of the Payer	Nature of transaction	Amount of receipt	Date Of receipt
		Nil						
31	b(b)	Particulars of each receipt in an amount exceeding the limit specified in section 269ST, in aggregate from a person in a day or in respect of a single transaction or in respect of transactions relating to one event or occasion from a person, received by a cheque or bank draft, not being an account payee cheque or an account payee bank draft, during the previous year :-						
		S.No.	Name of the Payer	Address of the Payer	Permanent Account Number (if available with the assessee) of the Payer	Amount of receipt		
		Nil						
31	b(c)	Particulars of each payment made in an amount exceeding the limit specified in section 269ST, in aggregate to a person in a day or in respect of a single transaction or in respect of transactions relating to one event or occasion to a person, otherwise than by a cheque or bank draft or use of electronic clearing system through a bank account during the previous year						
		S.No.	Name of the Payer	Address of the Payer	Permanent Account Number (if available with the assessee) of the Payer	Nature of transaction	Amount of Payment	Date Of Payment
		Nil						
31	b(d)	Particulars of each payment in an amount exceeding the limit specified in section 269ST, in aggregate to a person in a day or in respect of a single transaction or in respect of transactions relating to one event or occasion to a person, made by a cheque or bank draft, not being an account payee cheque or an account payee bank draft, during the previous year						
		S.No.	Name of the Payee	Address of the Payee	Permanent Account Number (if available with the assessee) of the Payee	Amount of Payment		
		Nil **(Particulars at (ba), (bb), (bc) and (bd) need not be given in the case of receipt by or payment to a Government company, a banking Company, a post office savings bank, a cooperative bank or in the case of transactions referred to in section 269SS or in the case of persons referred to in Notification No. S.O. 2065(E) dated 3rd July, 2017)"**						
31	c	Particulars of each repayment of loan or deposit or any specified advance in an amount exceeding the limit specified in section 269T made during the previous year :-						
		S.No.	Name of the payee	Address of the payee	Permanent Account Number(if available with the assessee)of the payee	Amount of the repayment	Maximum amount outstanding in the account at any time during the previous year	Whether the repayment was made by cheque or bank draft or use of electronic clearing system through a bank account.	In case the repayment was made by cheque or bank draft, whether the same was repaid by an account payee cheque or an account payee bank draft.
		Nil							
31	d	Particulars of repayment of loan or deposit or any specified advance in an amount exceeding the limit specified in section 269T received otherwise than by a cheque or bank draft or use of electronic clearing system through a bank account during the previous year:—						
		S.No	Name of the lender, or depositor or person from whom specified advance is received	Address of the lender, or depositor or person from whom specified advance is received	Permanent Account Number (if available with the assessee)of the lender, or depositor or person from whom specified advance is received	Amount of repayment of loan or deposit or any specified advance received otherwise than by a cheque or bank draft or use of electronic clearing system through a bank account during the previous year			
		Nil							

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31	e	Particulars of repayment of loan or deposit or any specified advance in an amount exceeding the limit specified in section 269T received by a cheque or bank draft which is not an account payee cheque or account payee bank draft during the previous year:—					
		S.No	Name of the lender, or depositor or person from whom specified advance is received	Address of the lender, or depositor or person from whom specified advance is received	Permanent Account Number (if available with the assessee)of the lender, or depositor or person from whom specified advance is received	Amount of repayment of loan or deposit or any specified advance received otherwise than by a cheque or bank draft or use of electronic clearing system through a bank account during the previous year	
		Nil					
Note: (Particulars at (c), (d) and (e) need not be given in the case of a repayment of any loan or deposit or any specified advance taken or accepted from Government, Government company, banking company or a corporation established by a Central, State or Provincial Act)							
32	a	Details of brought forward loss or depreciation allowance, in the following manner, to extent available					
		S.No	Assessment Year	Nature of loss/allowance	Amount as returned	Amount as assessed	Order U/S and Date	Remarks
		Nil						
32	b	Whether a change in shareholding of the company has taken place in the previous year due to which the losses incurred prior to the previous year cannot be allowed to be carried forward in terms of section 79.					**Not Applicable**
32	c	Whether the assessee has incurred any speculation loss referred to in section 73 during the previous year.					**No**
		If yes, please furnish the details below					
32	d	Whether the assessee has incurred any loss referred to in section 73A in respect of any specified business during the previous year					**No**
		If yes, please furnish details of the same					
32	e	In case of a company, please state that whether the company is deemed to be carrying on a speculation business as referred in explanation to section 73					
		If yes, please furnish the details of speculation loss if any incurred during the previous year					
33		Section-wise details of deductions, if any admissible under Chapter VIA or Chapter III (Section 10A, Section 10AA)					**Yes**
		S.No	Section	Amount			
		1	80C	76995			
34	a	Whether the assessee is required to deduct or collect tax as per the provisions of Chapter XVII-B or Chapter XVII-BB, if yes please furnish					**No**
		S.No	Tax deduction and collection Account Number (TAN)	Section	Nature of payment	Total amount of payment or receipt of the nature specified in column (3)	Total amount on which tax was required to be deducted or collected out of (4)	Total amount on which tax was deducted or collected at specified rate out of (5)	Amount of tax deducted or collected out of (6)	Total amount on which tax was deducted or collected at less than specified rate out of (7)	Amount of tax deducted or collected on (8)	Amount of tax deducted or collected not deposited to the credit of the Central Government out of (6) and (8)
		Nil										
34	b	Whether the assessee is required to furnish the statement of tax deducted or tax collected. If yes ,please furnish the details:										**No**
		S.No	Tax deduction and collection Account Number (TAN)	Type of Form	Due date for furnishing	Date of furnishing, if furnished	Whether the statement of tax deducted or collected contains information about all details/transactions which are required to be reported.	If not, please furnish list of details/ transactions which are not reported.				
		Nil										
34	c	Whether the assessee is liable to pay interest under section 201(1A) or section 206C(7).If yes, please furnish										**Not Applicable**

S.No	Tax deduction and collection Account Number (TAN)	Amount of interest under section 201(1A)/206C(7) is payable	Amount	Dates of payment
Nil				

35 a In the case of a trading concern, give quantitative details of principal items of goods traded

S.No	Item Name	Unit	Opening stock	Purchases during the previous year	Sales during the previous year	Closing stock	Shortage/ excess, if any
Nil							

35 b In the case of a manufacturing concern, give quantitative details of the principal items of raw materials, finished products and by-products :-

35 bA Raw materials :

S.No	Item Name	Unit	Opening stock	Purchases during the previous year	Consumption during the previous year	Sales during the previous year	Closing stock	*Yield of finished products	*Percentage of yield	Shortage/ excess, if any
Nil										

35 bB Finished products :

S.No	Item Name	Unit	Opening stock	Purchases during the previous year	Quantity manufactured during the previous year	Sales during the previous year	Closing stock	Shortage/ excess, if any
Nil								

35 bC By products :

S.No	Item Name	Unit	Opening stock	Purchases during the previous year	Quantity manufactured during the previous year	Sales during the previous year	Closing stock	Shortage/ excess, if any
Nil								

36 In the case of a domestic company, details of tax on distributed profits under section 115-O in the following forms :-

S.No	(a) Total amount of distributed profits	(b) Amount of reduction as referred to in section 115-O(1A)(i)	(c) Amount of reduction as referred to in section 115-O(1A)(ii)	(d) Total tax paid thereon	(e) Total tax paid thereon	
					Amount	Dates of payment
Nil						

A(a) Whether the assessee has received any amount in the nature of dividend as referred to in sub-clause (e) of clause (22) of section 2.If yes, please furnish the following details:- **No**

Sl No.	Amount received (in Rs.)	Date of receipt
Nil		

37 Whether any cost audit was carried out **Not Applicabl**

If yes, give the details, if any, of disqualification or disagreement on any matter/item/value/quantity as may be reported/identified by the cost auditor

38 Whether any audit was conducted under the Central Excise Act, 1944 **Not Applicabl**

If yes, give the details, if any, of disqualification or disagreement on any matter/item/value/quantity as may be reported/identified by the auditor

39 Whether any audit was conducted under section 72A of the Finance Act,1994 in relation to valuation of taxable services as may be reported/identified by the auditor **Not Applicabl**

If yes, give the details, if any, of disqualification or disagreement on any matter/item/value/quantity as may be reported/identified by the auditor

40 Details regarding turnover, gross profit, etc., for the previous year and preceding previous year:

Sl No	Particulars	Previous Year	Preceding previous Year

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a	Total turnover of the assessee		92148103			73519752	
b	Gross profit / Turnover		92148103	%		73519752	%
c	Net profit / Turnover	3878767	92148103	4.21%	4380092	73519752	5.96%
d	Stock-in-Trade / Turnover		92148103	%	1950000	73519752	2.65%
e	Material consumed/ Finished goods produced			%			%

(The details required to be furnished for principal items of goods traded or manufactured or services rendered)

41 Please furnish the details of demand raised or refund issued during the previous year under any tax laws other than Income-tax Act, 1961 and Wealth tax Act, 1957 alongwith details of relevant proceedings

Financial year to which demand/ refund relates to	Name of other Tax law	Type (Demand raised/Refund received)	Date of demand raised/refund received	Amount	Remarks
Nil					

42 Whether the assessee is required to furnish statement in Form No.61 or Form No. 61A or Form No. 61B? If yes, please furnish — **No**

Sl No.	Income-tax Department Reporting Entity Identification Number	Type of Form	Due date for furnishing	Date of furnishing, if furnished	Whether the Form contains information about all details/ transactions which are required to be reported.	If not, please furnish list of the details/ transactions which are not reported.
Nil						

43 (a)Whether the assessee or its parent entity or alternate reporting entity is liable to furnish the report as referred to in sub-section (2) of section 286 — **No**

Sl No.	Whether report has been furnished by the assessee or its parent entity or an alternate reporting entity	Name of parent entity	Name of alternate reporting entity (if applicable)	Date of furnishing of report
Nil				

A(c) If Not due , please enter expected date of furnishing the report

44 Break-up of total expenditure of entities registered or not registered under the GST:(This Clause is applicable from 1st April,2019)

Sl No.	Total amount of Expenditure incurred during the year	Expenditure in respect of entities registered under GST				Expenditure relating to entities not registered under GST
		Relating to goods or services exempt from GST	Relating to entities falling under composition scheme	Relating to other registered entities	Total payment to registered entities	
Nil						

Place **KAKINADA**
Date **31/10/2018**

Name **P MALLIKHARJUNA SASTRY**
Membership Number **215025**
FRN (Firm Registration Number) **012136S**
Address **8-5-5, GANDHI NAGAR, , KAKINADA, ANDHRA PRADESH, 533003,**

Form Filing Details	
Revision/Original	Original

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Addition Details(From Point No. 18)								
Description of Block of Assets	Sl.No.	Date of Purchase	Date put to use	Amount	Adjustment on account of			Total Amount
					MODVAT	Exchange Rate Change	Subsidy Grant	

Deduction Details(From Point No. 18)				
Description of Block of Assets	Sl.No.	Date of Sale etc.	Amount	

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INDIAN INCOME TAX RETURN ACKNOWLEDGEMENT

[Where the data of the Return of Income in Form ITR-1 (SAHAJ), ITR-2, ITR-3, ITR-4 , ITR-5, ITR-6,ITR-7 filed and verified electronically]

Assessment Year 2019-20

PERSONAL INFORMATION AND THE ACKNOWLEDGEMENT NUMBER

Name			PAN
BOLLA RAMA DEVI			AVSPB0729L
Flat/Door/Block No	**Name Of Premises/Building/Village**		**Form Number.** ITR-3
Plot No. 41A	Sarpavaram		
Road/Street/Post Office	**Area/Locality**		
	Industrial Park		**Status** Individual
Town/City/District	**State**	**Pin/ZipCode**	**Filed u/s**
KAKINADA	ANDHRA PRADESH	533005	139(1)-On or before due date

Assessing Officer Details (Ward/Circle) CIRCLE 1,KAKINADA

e-filing Acknowledgement Number 237963811311019

COMPUTATION OF INCOME AND TAX THEREON

1	Gross total income				1	2245431
2	Total Deductions under Chapter-VI-A				2	200000
3	Total Income				3	2045430
3a	Deemed Total Income under AMT/MAT				3a	2045430
3b	Current Year loss, if any				3b	0
4	Net tax payable				4	443174
5	Interest and Fee Payable				5	14450
6	Total tax, interest and Fee payable				6	457624
7	Taxes Paid	a Advance Tax	7a	200000		
		b TDS	7b	184719		
		c TCS	7c	10903		
		d Self Assessment Tax	7d	62000		
		e Total Taxes Paid (7a+7b+7c +7d)			7e	457622
8	Tax Payable (6-7e)				8	0
9	Refund (7e-6)				9	0
10	Exempt Income	Agriculture			10	
		Others				

Income Tax Return submitted electronically on **31-10-2019 10:54:32** from IP address **175.101.144.139** and verified by **BOLLA RAMA DEVI** having PAN **AVSPB0729L** on **31-10-2019 10:54:32** from IP address **175.101.144.139** using **Digital Signature Certificate (DSC)**

DSC details: **249639842885958193 6CN=SafeScrypt sub-CA for RCAI Class 2 2014,OU=Sub-CA,O=Sify Technologies Limited,C=IN**

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A.Y. 2019-2020

Name : BOLLA RAMA DEVI
Father's Name : Surya Satyanarayana
Address : Plot No. 41A
Sarpavaram
Industrial Park, KAKINADA - 533 005

Previous Year : 2018-2019
PAN : AVSPB 0729 L
Status : Individual
Date of Birth : 21-May-1981
Aadhaar No. : 3961 4545 6733

Resident

Statement of Income

		Rs.	Rs.	Rs.
■ **Income from House Property**				
Self occupied property: 1	1			
Gross annual value u/s 23(2)(a)			NIL	
Less:Interest on borrowed capital u/s 24(b)			1,12,614	
Income from self occupied property			-1,12,614	
Let-out properties				
Property-1: 1, Tenant - Murali	2			
Description			Amount	
Rents received			72,000	
Gross annual value			72,000	
Less: Municipal taxes			NIL	
Net annual value			72,000	
Less: Standard deduction u/s 24(a)		21,600		
Interest on borrowed capital u/s 24(b)		1,27,500	1,49,100	
Net Income from Property-1			-77,100	
Income chargeable under the head "House Property"				-1,89,714
■ **Profits and gains of Business or Profession**				
Business-1				
Net Profit Before Tax as per P & L a/c			24,35,145	
Add: Inadmissible expenses & Income not included				
Depreciation debited to P & L a/c			7,73,111	
			32,08,256	
Less: Deductible expenditure & income to be excluded				
Incomes considered separately	3		2,21,972	
Adjusted Profit of Business-1			29,86,284	
Total income of Business and Profession			29,86,284	
Less: Depreciation as per IT Act	9		7,73,111	
Income chargeable under the head "Business and Profession"				22,13,173
■ **Income from other sources**				
Interest income	4		2,21,972	
Income chargeable under the head "other sources"				2,21,972

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■ **Gross Total Income**				22,45,431
Deductions under Chapter VI-A				
80G - Donations	5		50,000	
Investment u/s 80C, CCC, CCD				
Life insurance premium		18,675		
Housing loan repayment		2,49,000		
Deduction subject to ceiling u/s 80CCE			1,50,000	2,00,000
■ **Total Income**				20,45,431
Total income rounded off u/s 288A				20,45,430
Tax on total income				4,26,129
Add: Cess				17,045
Tax with cess				4,43,174
Net Tax				4,43,174
TDS	6		1,95,622	
Advance Tax	7		2,00,000	
Total prepaid taxes				3,95,622
Balance Tax				47,552
Interest u/s 234A			630	
Interest u/s 234B			3,325	
Interest u/s 234C			10,495	14,450
Net tax payable				62,002
Self-assessment tax paid	8			62,000
■ **Balance tax payable**				0

Schedule 1

Details of the property

1, KAKINADA, EAST GODAVARI-533002, Andhra pradesh

Owner	Self
Assessee's share in the property (%)	100

Schedule 2

Details of property - for filling ITR

1, Kakinada, East Godavari-533001, Andhra pradesh

Name	PAN of Tenant	TAN of Tenant	Section
Murali			
Owner	Self		
Assessee's share in the property (%)	100		

Schedule 3

	Amount

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Income considered under other heads	
Interest received	2,21,972
Grand total	2,21,972

Schedule 4

Interest income (other than NSC/KVP interest)

Name of the Bank	Interest
Interest on Time Deposits	
State Bank of India	2,21,972

Schedule 5

80G-Donations

	subject to ceiling	
Donations with 100% deduction		
Cm Relief Fund, PAN-GGGGG 0000 G, Kakinada	30,000	
Cyclone Relief Fund, PAN-GGGGG 0000 G, Kakinada	20,000	
Total	50,000	
Qualifying Amount	50,000	
Deductible amount -100%	50,000	
Total deduction		50,000
Total Income for qualifying limit	20,95,431	

Schedule 6

TDS as per Form 16A

Deductor, TAN	TDS deducted	TDS claimed in current year	Gross receipt offered
Eastern Power Distribution Company Of Ap Limited, TAN-VPNE00240C	1,37,368	1,37,368	68,68,400
New And Renewable Energy Development Corporation Of Andhra Pradesh Limited, TAN- HYDN01369E	575	575	28,620
Sree Veera Venkata Satyanarayana Swamy Devasthanam, TAN- VPNS02146E	2,382	2,382	2,38,094
Syndicate Bank - Main Branch Kakinada, TAN- VPNS03602E	40,948	40,948	2,04,742
Syndicate Bank-vakalapudi, TAN- VPNS02408A	3,446	3,446	17,230
Total	1,84,719	1,84,719	73,57,086

Tax collected at source

Collector & TAN	TCS collected	TCS claimed in current year	Expenditure as per 26AS
Varun Motors Private Limited, TAN- VPNV00142C	10,903	10,903	10,90,290
Grand Total	1,95,622	1,95,622	73,57,086

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Schedule 7

Advance tax paid

Name of the Bank and BSR Code	Date of deposit	Challan Sl.no.	Amount
Syndicate Bank-0331906	15-Mar-19	02765	2,00,000

Schedule 8

Self Assessment tax paid

Name of the Bank and BSR Code	Date of deposit	Challan Sl.no.	Amount paid
Syndicate Bank - 0331906	30-Oct-19	00005	62,000

Bank A/c: SYNDICATE BANK 32501250002078 IFSC: SYNB0003258

Date : 31-Oct-2019

Place : KAKINADA

[BOLLA RAMA DEVI]

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BOLLA RAMA DEVI

CONSOLIDATED PROFIT AND LOSS ACCOUNT FOR THE YEAR ENDING 31.3.2019

PARTICULARS	AMOUNT	AMOUNT	PARTICULARS	AMOUNT	AMOUNT
PURCHASE			**SALES**		
Solar System	90026304		Solar System	102055809	
SMART Automation	16315006	106341310	SMART Automation	16541494	118597303
			CLOSING STOCK		
			Solar System	2000000	
			SMART Automation	207600	2207600
Gross Profit		14463593			
		120804903			**120804903**
			Gross Profit		14463593
EXPENSES					
Audit Fee		22000	Interest Received		335013
Bank Charges		128758			
Car Maintenance		22000			
Depreciation		773111			
Electrical Charges		67570			
Fabrication Works		162810			
H/W & Electrical Material		319899			
Interest on Loans		704809			
Meterial Insurance		175086			
Office Maintenance		295012			
Office Rent		50300			
Salaries & Wages		8688965			
Taxes&Licences		126238			
Transportation Charges		529417			
Traveling Charges		297487			
Net profit		2435145			
		14798607			**14798607**

For K.P.G. & Co
Chartered Accountants
P Mall Sastry
(P. Mallikharjuna Sastry)
Partner M. no. 215023
Firm Reg No. 012136S

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BOLLA RAMA DEVI
CONSOLIDATED BALANCE SHEET AS ON 31.3.2019

LIA BILITIES		AMOUNT	ASSETS	AMOUNT
CAPITAL ACCOUNT			FIXED ASSTS	19133432
Bolla Rama Devi Capital	15710561			
Add: Profit	2435145		INVESTMENTS	1230987
	18145706			
Less: Drawings	1678822	16466884	**CURRENT ASSETS**	
			Closing Stock	2207600
LOANS (LIABILITY)			Deposits (Asset)	7549360
Bank OD A/c	13128203		Loans & Advances (Asset)	380972
Secured Loans	2567349		Sundry Debtors	9046901
Unsecured Loans	2707000	18402551	Cash-in-hand	612030
			Bank Accounts	534621
CURRENT LIABILITES			Advance Tax	200000
Sundry Creditors		7273609	Gst Refund 2018-19	1051520
			TCS Receiveble 2018-19	10903
			TDS Receiveble 2018-19	184719
		42143045		**42143045**

For K.P.G. & Co
Chartered Accountants
P. Mallikharjuna Sastry
(P. Mallikharjuna Sastry)
Partner M. no. 215023
Firm Reg No. 012136S

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FORM NO. 3CB

[See rule 6G(1)(b)]

Audit report under section 44AB of the Income-tax Act, 1961 in the case of a person referred to in clause (b) of sub-rule (1) of rule 6G

1. We have examined the balance sheet as at 31st March 2019 and the Profit and loss account for the period beginning from 01/04/2018 to ending on 31/03/2019 attached herewith, of BOLLA RAMA DEVI Plot No. 41A, Sarpavaram, Industrial Park, , KAKINADA, ANDHRA PRADESH, 533005 AVSPB0729L,

2. We certify that the balance sheet and the Profit and loss account are in agreement with the books of account maintained at the head office at KAKINADA, and 0 branches.

3. (a) We report the following observations/comments/discrepancies/inconsistencies; if any:

(b) Subject to above,-

(A) We have obtained all the information and explanations which, to the best of Our knowledge and belief, were necessary for the purposes of the audit.

(B) In Our opinion, proper books of account have been kept by the head office and branches of the assessee so far as appears from Our knowledge and belief, were necessary for the examination of the books.

(C) In Our opinion and to the best of Our information and according to the explanations given to Us the said accounts, read with notes thereon, if any, give a true and fair view:-

(i) in the case of the balance sheet, of the state of the affairs of the assessee as at 31st March, 2019 ;and

(ii) in the case of the Profit and loss account of the Profit of the assessee for the year ended on that date.

4. The statement of particulars required to be furnished under section 44AB is annexed herewith in Form No. 3CD.

5.In Our opinion and to the best of Our information and according to explanations given to Us the particulars given in the said Form No. 3CD and the Annexure thereto are true and correct subject to following observations/qualifications, if any:-

Sl No.	Qualification Type	Observations/Qualifications
1	Others.	I have not Pysically verified the Cash Balances & Closing Stock as on 31st march 2018
2	Others.	Confirmation of balances with Sundry and Trade Debtors, Sundry Creditors and Unsecured Loans were not produced form my verification.
3	Others.	Some expenses were not covered by Vouchers

Place KAKINADA
Date 31/10/2019

Name P MALLIKARJUNA SASTRY
Membership Number 215023
FRN (Firm Registration Number) 012136S
Address D.No.8-5-5, Beside Andhra Bank, Opp Venkateswara Swamy Temple,Gandhi Nagar , , KAKINADA, ANDHRA PRADESH, 533004

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FORM NO. 3CD

[See rule 6G(2)]

Statement of particulars required to be furnished under section 44AB of the Income-tax Act, 1961

1	Name of the assessee	**BOLLA RAMA DEVI**
2	Address	**Plot No. 41A, Sarpavaram, , Industrial Park, , KAKINADA, ANDHRA PRADESH, 533005**
3	Permanent Account Number (PAN)	**AVSPB0729L**
4	Whether the assessee is liable to pay indirect tax like excise duty, service tax, sales tax, goods and services tax,customs duty,etc. if yes, please furnish the registration number or,GST number or any other identification number allotted for the same	**Yes**

Sl No.	Type	Registration Number
1	**Sales VAT/Tax ANDHRA PRADESH**	**37660989415**
2	**Goods and Services Tax ANDHRA PRADESH**	**37 AVSPB0729L 1Z9**
3	**Goods and Services Tax ANDHRA PRADESH**	**37 AVSPB0729L 2Z8**

5	Status	**Individual**
6	Previous year from	**01/04/2018 to 31/03/2019**
7	Assessment Year	**2019-20**
8	Indicate the relevant clause of section 44AB under which the audit has been conducted	

Sl No.	Relevant clause of section 44AB under which the audit has been conducted
1	**Clause 44AB(a)-Total sales/turnover/gross receipts of business exceeding specified limits**

9 a If firm or Association of Persons, indicate names of partners/members and their profit sharing ratios. In case of AOP, whether shares of members are indeterminate or unknown ?

Name	Profit Sharing Ratio (%)
Nil	

9 b If there is any change in the partners or members or in their profit sharing ratio since the last date of the preceding year, the particulars of such change.

Date of change	Name of Partner/Member	Type of change	Old profit sharing ratio	New profit Sharing Ratio	Remarks

10 a Nature of business or profession (if more than one business or profession is carried on during the previous year, nature of every business or profession).

Sector	Sub Sector	Code
WHOLESALE AND RETAIL TRADE	**Retail sale of other products n.e.c**	**09028**
MANUFACTURING	**Other manufacturing n.e.c.**	**04097**

10 b If there is any change in the nature of business or profession, the particulars of such change **No**

Business	Sector	SubSector	Code
Nil			

11 a Whether books of accounts are prescribed under section 44AA, if yes, list of books so prescribed **No**

Books prescribed

11 b List of books of account maintained and the address at which the books of accounts are kept. (In case books of account are maintained in a computer system, mention the books of account generated by such computer system. If the books of accounts are not kept at one location, please furnish the addresses of locations along with the details of books of accounts maintained at each location.) Same as 11(a) above

Books maintained	Address Line 1	Address Line 2	City or Town or District	State	PinCode
Bank book	**Plot No. 41A, Sarpavaram, Industrial Park**		**KAKINADA**	**ANDHRA PRADESH**	**533005**
Cash book	**Plot No. 41A, Sarpavaram, Industrial Park**		**KAKINADA**	**ANDHRA PRADESH**	**533005**
Journal	**Plot No. 41A, Sarpavaram, Industrial Park**		**KAKINADA**	**ANDHRA PRADESH**	**533005**
Ledger	**Plot No. 41A, Sarpavaram, Industrial Park**		**KAKINADA**	**ANDHRA PRADESH**	**533005**
Purchase register	**Plot No. 41A, Sarpavaram, Industrial Park**		**KAKINADA**	**ANDHRA PRADESH**	**533005**
Sales register	**Plot No. 41A, Sarpavaram, Industrial Park**		**KAKINADA**	**ANDHRA PRADESH**	**533005**

11 c List of books of account and nature of relevant documents examined. Same as 11(b) above

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	Books Examined	
	Bank book	
	Cash book	
	Journal	
	Ledger	
	Purchase register	
	Sales register	
12	Whether the profit and loss account includes any profits and gains assessable on presumptive basis, if yes, indicate the amount and the relevant section (44AD, 44AE, 44AF, 44B, 44BB, 44BBA, 44BBB, Chapter XII-G, First Schedule or any other relevant section).	**No**
	Section	Amount
	Nil	
13 a	Method of accounting employed in the previous year	**Mercantile system**
13 b	Whether there has been any change in the method of accounting employed vis-a-vis the method employed in the immediately preceding previous year.	**No**
13 c	If answer to (b) above is in the affirmative, give details of such change , and the effect thereof on the profit or loss.	

Particulars	Increase in profit(Rs.)	Decrease in profit(Rs.)

13 d	Whether any adjustment is required to be made to the profits or loss for complying with the provisions of income computation and disclosure standards notified under section 145(2).	**No**
13 e	If answer to (d) above is in the affirmative, give details of such adjustments.	

ICDS	Increase in profit(Rs.)	Decrease in profit(Rs.)	Net effect(Rs.)
Total			

13 f	Disclosure as per ICDS.	

ICDS	Disclosure
ICDS I - Accounting Policies	**Going Concern, consistency and Accrual are followed. ICDS I was Complied with**
ICDS IV - Revenue Recognition	**Revenue is recognized as and when sales is made and entered in the books of account. ICDS IV was complied with**
ICDS V - Tangible Fixed Assets	**Tangible fixed assets are whom at cost of acquisition less depreciation. ICDS IV was complied with**

14 a	Method of valuation of closing stock employed in the previous year.	**Lower of cost or net realisable value [Section 145A]**
14 b	In case of deviation from the method of valuation prescribed under section 145A, and the effect thereof on the profit or loss, please furnish:	**No**

Particulars	Increase in profit(Rs.)	Decrease in profit(Rs.)

15 Give the following particulars of the capital asset converted into stock-in-trade

(a) Description of capital asset	(b) Date of acquisition	(c) Cost of acquisition	(d) Amount at which the asset is converted into stock-in trade
Nil			

16 Amounts not credited to the profit and loss account, being:-

16 a	The items falling within the scope of section 28	
	Description	Amount
	Nil	
16 b	The proforma credits, drawbacks, refund of duty of customs or excise or service tax, or refund of sales tax or value added tax, where such credits, drawbacks or refund are admitted as due by the authorities concerned	
	Description	Amount
16 c	Escalation claims accepted during the previous year	
	Description	Amount
	Nil	
16 d	Any other item of income	
	Description	Amount
	Nil	
16 e	Capital receipt, if any	
	Description	Amount
	Nil	

17 Where any land or building or both is transferred during the previous year for a consideration less than value adopted or assessed or assessable by any authority of a State Government referred to in section 43CA or 50C, please furnish:

Details of property	Address Line 1	Address Line 2	City/Town	State	Pincode	Consideration received or accrued	Value adopted or assessed or assessable

K.P.S. & Co. Chartered Accountants KAKINADA

18 Particulars of depreciation allowable as per the Income-tax Act, 1961 in respect of each asset or block of assets, as the case may be, in the:-

Description of Block of Assets/ Class of Assets	Rate of depreciation (In Percentage)	Opening WDV (A)	Additions					Deductions (C)	Depreciation Allowable (D)	Written Down Value at the end of the year (A+B-C-D)
			Purchase Value (1)	MOD-VAT (2)	Change in Rate of Exchange (3)	Subsidy/ Grant (4)	Total Value of Purchases (B) (1+2+3+4)			
Building @ 10%	**10%**	**0**	**7029940**	**0**	**0**	**0**	**7029940**	**0**	**634633**	**6395307**
Plant & Machinery @ 15%	**15%**	**0**	**1467554**	**0**	**0**	**0**	**1467554**	**0**	**124767**	**1342787**
Plant & Machinery @ 40%	**40%**	**0**	**35654**	**0**	**0**	**0**	**35654**	**0**	**13711**	**21943**

*** For Addition and Deduction Details refer Addition and Deduction Detail Tables At the End of the Page**

19 Amounts admissible under sections :

S.No	Section	Amount debited to profit and loss account	Amounts admissible as per the provisions of the Income-tax Act, 1961 and also fulfils the conditions, if any specified under the relevant 14provisions of Income-tax Act, 1961 or Income-tax Rules,1962 or any other guidelines, circular, etc., issued in this behalf.
Nil			

20 a Any sum paid to an employee as bonus or commission for services rendered, where such sum was otherwise payable to him as profits or dividend. [Section 36(1)(ii)]

Description	Amount

20 b Details of contributions received from employees for various funds as referred to in section 36(1)(va):

Nature of fund	Sum received from employees	Due date for payment	The actual amount paid	The actual date of payment to the concerned authorities
Nil				

21 a Please furnish the details of amounts debited to the profit and loss account, being in the nature of capital, personal, advertisement expenditure etc

Capital expenditure

Particulars	Amount in Rs.

Personal expenditure

Particulars	Amount in Rs.

Advertisement expenditure in any souvenir, brochure, tract, pamphlet or the like published by a political party

Particulars	Amount in Rs.

Expenditure incurred at clubs being entrance fees and subscriptions

Particulars	Amount in Rs.

Expenditure incurred at clubs being cost for club services and facilities used.

Particulars	Amount in Rs.

Expenditure by way of penalty or fine for violation of any law for the time being force

Particulars	Amount in Rs.

Expenditure by way of any other penalty or fine not covered above

Particulars	Amount in Rs.

Expenditure incurred for any purpose which is an offence or which is prohibited by law

Particulars	Amount in Rs.

(b) Amounts inadmissible under section 40(a):-

(i) as payment to non-resident referred to in sub-clause (i)

(A) Details of payment on which tax is not deducted:

Date of payment	Amount of payment	Nature of payment	Name of the payee	PAN of the payee,if avaliable	Address Line 1	Address Line 2	City or Town or District	Pincode

(B) Details of payment on which tax has been deducted but has not been paid during the previous year or in the subsequent year before the expiry of time prescribed under section200(1)

Date of payment	Amount of payment	Nature of payment	Name of the payee	PAN of the payee,if avaliable	Address Line 1	Address Line 2	City or Town or District	Pincode	Amount of tax deducted

(ii) as payment referred to in sub-clause (ia)

(A) Details of payment on which tax is not deducted:

	Date of payment	Amount of payment	Nature of payment	Name of the payee	PAN of the payee,if avaliable	Address Line 1	Address Line 2	City or Town or District	Pincode	

(B) Details of payment on which tax has been deducted but has not been paid on or before the due date specified in sub- section (1) of section 139.

	Date of payment	Amount of payment	Nature of payment	Name of the payer	PAN of the payee,if avaliable	Address Line 1	Address Line 2	City or Town or District	Pincode	Amount of tax deducted	Amount out of (VI) deposited, if any

(iii) as payment referred to in sub-clause (ib)

(A) Details of payment on which levy is not deducted:

	Date of payment	Amount of payment	Nature of payment	Name of the payee	PAN of the payee,if avaliable	Address Line 1	Address Line 2	City or Town or District	Pincode

(B) Details of payment on which levy has been deducted but has not been paid on or before the due date specified in sub- section (1) of section 139.

	Date of payment	Amount of payment	Nature of payment	Name of the payer	PAN of the payee,if avaliable	Address Line 1	Address Line 2	City or Town or District	Pincode	Amount of levy deducted	Amount out of (VI) deposited, if any

(iv) fringe benefit tax under sub-clause (ic)

(v) wealth tax under sub-clause (iia)

(vi) royalty, license fee, service fee etc. under sub-clause (iib).

(vii) salary payable outside India/to a non resident without TDS etc. under sub-clause (iii).

	Date of payment	Amount of payment	Name of the payee	PAN of the payee,if avaliable	Address Line 1	Address Line 2	City	Pincode

(viii) payment to PF /other fund etc. under sub-clause (iv)

(ix) tax paid by employer for perquisites under sub-clause (v)

(c) Amounts debited to profit and loss account being, interest, salary, bonus, commission or remuneration inadmissible under section 40(b)/40(ba) and computation thereof;

	Particulars	Section	Amount debited to P/L A/C	Amount Admissible	Amount Inadmissible	Remarks

(d) Disallowance/deemed income under section 40A(3):

(A) On the basis of the examination of books of account and other relevant documents/evidence, whether the expenditure covered under section 40A(3) read with rule 6DD were made by account payee cheque drawn on a bank or account payee bank draft. If not, please furnish the details: **Yes**

	Date Of Payment	Nature Of Payment	Amount in Rs	Name of the payee	Permanent Account Number of the payee, if available

(B) On the basis of the examination of books of account and other relevant documents/evidence, whether the payment referred to in section 40A(3A) read with rule 6DD were made by account payee cheque drawn on a bank or account payee bank draft If not, please furnish the details of amount deemed to be the profits and gains of business or profession under section 40A(3A) **Yes**

	Date Of Payment	Nature Of Payment	Amount in Rs	Name of the payee	Permanent Account Number of the payee, if available

(e) Provision for payment of gratuity not allowable under section 40A(7) **0**

(f) Any sum paid by the assessee as an employer not allowable under section 40A(9) **0**

(g) Particulars of any liability of a contingent nature

	Nature Of Liability	Amount in Rs.

(h) Amount of deduction inadmissible in terms of section 14A in respect of the expenditure incurred in relation to income which does not form part of the total income

	Nature Of Liability	Amount in Rs.

(i) Amount inadmissible under the proviso to section 36(1)(iii)

22 Amount of interest inadmissible under section 23 of the Micro, Small and Medium Enterprises Development Act, 2006 **0**

23 Particulars of any payment made to persons specified under section 40A(2)(b).

Name of Related Person	PAN of Related Person	Relation	Nature of trasaction	Payment Made(Amount)

24 Amounts deemed to be profits and gains under section 32AC or 32AD or 33AB or 33AC or 33ABA.

	Section	Description	Amount
	Nil		

25 Any amount of profit chargeable to tax under section 41 and computation thereof.

Name of Person	Amount of income	Section	Description of Transaction	Computation if any
Nil				

26 (i)* In respect of any sum referred to in clause (a),(c),(d),(e),(f) or (g) of section 43B the liability for which:-

26 (i)A pre-existed on the first day of the previous year but was not allowed in the assessment of any preceding previous year and was :-

26 (i)(A)(a) Paid during the previous year

Section	Nature of liability	Amount
Nil		

26 (i)(A)(b) Not paid during the previous year

Section	Nature of liability	Amount
Nil		

26 (i)B was incurred in the previous year and was

26 (i)(B)(a) Paid on or before the due date for furnishing the return of income of the previous year under section 139(1)

Section	Nature of liability	Amount
Nil		

26 (i)(B)(b) not paid on or before the aforesaid date

Section	Nature of liability	Amount
Nil		

(State whether sales tax, goods & service Tax, customs duty, excise duty or any other indirect tax, levy, cess, impost, etc., is passed through the profit and loss account.)	No	

27 a Amount of Central Value Added Tax Credits/ Input Tax Credit(ITC) availed of or utilised during the previous year and its treatment in profit and loss account and treatment of outstanding Central Value Added Tax Credits/ Input Tax Credit(ITC) in accounts — No

CENVAT/ITC	Amount	Treatment in Profit and Loss/Accounts
Opening Balance		
Credit Availed		
Credit Utilized		
Closing/Outstanding Balance		

27 b Particulars of income or expenditure of prior period credited or debited to the profit and loss account :-

Type	Particulars	Amount	Prior period to which itrelates(Year in yyyy-yyformat)
Nil			

28 Whether during the previous year the assessee has received any property, being share of a company not being a company in which the public are substantially interested, without consideration or for inadequate consideration as referred to in section 56(2)(viia)

Name of the person from which shares received	PAN of the person, if available	Name of the company from which shares received	CIN of the company	No. of Shares Received	Amount of consideration paid	Fair Market value of the shares
Nil						

29 Whether during the previous year the assessee received any consideration for issue of shares which exceeds the fair market value of the shares as referred to in section 56(2)(viib). If yes, please furnish the details of the same

Name of the person from whom consideration received for issue of shares	PAN of the person, if available	No. of Shares	Amount of consideration received	Fair Market value of the shares
Nil				

A(a) Whether any amount is to be included as income chargeable under the head Income from other sources as referred to in clause (ix) of sub-section (2) of section 56? (b) If yes, please furnish the following details: — No

Sl No.	Nature of Income	Amount
Nil		

B(a) Whether any amount is to be included as income chargeable under the head Income from other sources as referred to in clause (x) of sub-section (2) of section 56?(Yes/No) (b) If yes, please furnish the following details: — No

Sl No.	Nature of Income	Amount
Nil		

30 Details of any amount borrowed on hundi or any amount due thereon (including interest on the amount borrowed) repaid otherwise than through an account payee cheque,(Section 69D) — No

Name of the person from whom amount borrowed or repaid on hundi	PAN of the person, if available	Address Line 1	Address Line 2	City or Town or District	State	Pincode	Amount borrowed	Date of Borrowing	Amount due including interest	Amount repaid	Date of Repayment
Nil											

A(a)	Whether primary adjustment to transfer price, as referred to in sub-section (1) of section 92CE, has been made during the previous year.	No
	(b) If yes, please furnish the following details	

Sl No.	Under which clause of sub-section (1) of section 92CE primary adjustment is made ?	Amount (in Rs.) of primary adjustment	Whether the excess money available with the associated enterprise is required to be repatriated to India as per the provisions of sub-section (2) of section 92CE.	If yes, whether the excess money has been repatriated within the prescribed time.	If no, the amount (in Rs.) of imputed interest income on such excess money which has not been repatriated within the prescribed time	Expected date of repatriation of money
Nil						

B(a)	Whether the assessee has incurred expenditure during the previous year by way of interest or of similar nature exceeding one crore rupees as referred to in sub-section (1) of section 94B.	No
	(b) If yes, please furnish the following details	

Sl No.	Amount (in Rs.) of expenditure by way of interest or of similar nature incurred	Earnings before interest, tax, depreciation and amortization (EBITDA) during the previous year (in Rs.)	Amount (in Rs.) of expenditure by way of interest or of similar nature as per (i) above which exceeds 30% of EBITDA as per (ii) above.	Details of interest expenditure brought forward as per sub-section (4) of section 94B.		Details of interest expenditure carried forward as per sub-section (4) of section 94B:	
				Assessment Year	Amount (in Rs.)	Assessment Year	Amount (in Rs.)
Nil							

C(a)	Whether the assessee has entered into an impermissible avoidance arrangement, as referred to in section 96, during the previous year.(This Clause is kept in abeyance till 31st March, 2020).	
	(b) If yes, please furnish the following details	

Sl No.	Nature of the impermissible avoidance arrangement	Amount (in Rs.) of tax benefit in the previous year arising, in aggregate, to all the parties to the arrangement
Nil		

31 a Particulars of each loan or deposit in an amount exceeding the limit specified in section 269SS taken or accepted during the previous year :-

S.No	Name of the lender or depositor	Address of the lender or depositor	Permanent Account Number(if available with the assessee) of the lender or the depositor	Amount of loan or deposit taken or accepted	Whether the loan or deposit was squared up during the previous year	Maximum amount outstanding in the account at any time during the previous year	Whether the loan or deposit was taken or accepted by cheque or bank draft or use of electronic clearing system through a bank account.	In case the loan or deposit was taken or accepted by cheque or bank draft, whether the same was taken or accepted by an account payee cheque or an account payee bank draft.
Nil								

31 b Particulars of each specified sum in an amount exceeding the limit specified in section 269SS taken or accepted during the previous year:-

S.No.	Name of the person from whom specified sum is received	Address of the person from whom specified sum is received	Permanent Account Number (if available with the assessee) of	Amount of specified sum taken or accepted	Whether the specified sum was taken or accepted by cheque or bank draft or use	In case the specified sum was taken or accepted by cheque or bank draft, whether the same was taken

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					the person from whom specified sum is received		of electronic clearing system through a bank account	or accepted by an account payee cheque or an account payee bank draft.
		Nil							

(Particulars at (a) and (b) need not be given in the case of a Government company, a banking company or a corporation established by a Central, State or Provincial Act.)

31 b(a) Particulars of each receipt in an amount exceeding the limit specified in section 269ST, in aggregate from a person in a day or in respect of a single transaction or in respect of transactions relating to one event or occasion from a person, during the previous year, where such receipt is otherwise than by a cheque or bank draft or use of electronic clearing system through a bank account

S.No.	Name of the Payer	Address of the Payer	Permanent Account Number (if available with the assessee) of the Payer	Nature of transaction	Amount of receipt	Date Of receipt
Nil						

31 b(b) Particulars of each receipt in an amount exceeding the limit specified in section 269ST, in aggregate from a person in a day or in respect of a single transaction or in respect of transactions relating to one event or occasion from a person, received by a cheque or bank draft, not being an account payee cheque or an account payee bank draft, during the previous year :-

S.No.	Name of the Payer	Address of the Payer	Permanent Account Number (if available with the assessee) of the Payer	Amount of receipt
Nil				

31 b(c) Particulars of each payment made in an amount exceeding the limit specified in section 269ST, in aggregate to a person in a day or in respect of a single transaction or in respect of transactions relating to one event or occasion to a person, otherwise than by a cheque or bank draft or use of electronic clearing system through a bank account during the previous year

S.No.	Name of the Payer	Address of the Payer	Permanent Account Number (if available with the assessee) of the Payer	Nature of transaction	Amount of Payment	Date Of Payment
Nil						

31 b(d) Particulars of each payment in an amount exceeding the limit specified in section 269ST, in aggregate to a person in a day or in respect of a single transaction or in respect of transactions relating to one event or occasion to a person, made by a cheque or bank draft, not being an account payee cheque or an account payee bank draft, during the previous year

S.No.	Name of the Payee	Address of the Payee	Permanent Account Number (if available with the assessee) of the Payee	Amount of Payment
Nil				

(Particulars at (ba), (bb), (bc) and (bd) need not be given in the case of receipt by or payment to a Government company, a banking Company, a post office savings bank, a cooperative bank or in the case of transactions referred to in section 269SS or in the case of persons referred to in Notification No. S.O. 2065(E) dated 3rd July, 2017)"

31 c Particulars of each repayment of loan or deposit or any specified advance in an amount exceeding the limit specified in section 269T made during the previous year :-

S.No.	Name of the payee	Address of the payee	Permanent Account Number(if available with the assessee)of the payee	Amount of the repayment	Maximum amount outstanding in the account at any time during the previous year	Whether the repayment was made by cheque or bank draft or use of electronic clearing system through a bank account.	In case the repayment was made by cheque or bank draft, whether the same was repaid by an account payee cheque or an account payee bank draft.
Nil							

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31	d	Particulars of repayment of loan or deposit or any specified advance in an amount exceeding the limit specified in section 269T received otherwise than by a cheque or bank draft or use of electronic clearing system through a bank account during the previous year:—					
		S.No	Name of the lender, or depositor or person from whom specified advance is received	Address of the lender, or depositor or person from whom specified advance is received	Permanent Account Number (if available with the assessee)of the lender, or depositor or person from whom specified advance is received	Amount of repayment of loan or deposit or any specified advance received otherwise than by a cheque or bank draft or use of electronic clearing system through a bank account during the previous year	
		Nil					
31	e	Particulars of repayment of loan or deposit or any specified advance in an amount exceeding the limit specified in section 269T received by a cheque or bank draft which is not an account payee cheque or account payee bank draft during the previous year:—					
		S.No	Name of the lender, or depositor or person from whom specified advance is received	Address of the lender, or depositor or person from whom specified advance is received	Permanent Account Number (if available with the assessee)of the lender, or depositor or person from whom specified advance is received	Amount of repayment of loan or deposit or any specified advance received otherwise than by a cheque or bank draft or use of electronic clearing system through a bank account during the previous year	
		Nil					
Note: (Particulars at (c), (d) and (e) need not be given in the case of a repayment of any loan or deposit or any specified advance taken or accepted from Government, Government company, banking company or a corporation established by a Central, State or Provincial Act)							
32	a	Details of brought forward loss or depreciation allowance, in the following manner, to extent available					
		S.No	Assessment Year	Nature of loss/allowance	Amount as returned	Amount as assessed	Order U/S and Date	Remarks
		Nil						
32	b	Whether a change in shareholding of the company has taken place in the previous year due to which the losses incurred prior to the previous year cannot be allowed to be carried forward in terms of section 79.					**Not Applicable**
32	c	Whether the assessee has incurred any speculation loss referred to in section 73 during the previous year.					**No**
		If yes, please furnish the details below					
32	d	Whether the assessee has incurred any loss referred to in section 73A in respect of any specified business during the previous year					**No**
		If yes, please furnish details of the same					
32	e	In case of a company, please state that whether the company is deemed to be carrying on a speculation business as referred in explanation to section 73					
		If yes, please furnish the details of speculation loss if any incurred during the previous year					
33		Section-wise details of deductions, if any admissible under Chapter VIA or Chapter III (Section 10A, Section 10AA)					**Yes**
	S.No	Section	Amount				
	1	80C	150000				
	2	80G	50000				
34	a	Whether the assessee is required to deduct or collect tax as per the provisions of Chapter XVII-B or Chapter XVII-BB, if yes please furnish					**No**

S.No	Tax deduction and collection Account Number (TAN)	Section	Nature of payment	Total amount of payment or receipt of the nature specified in column (3)	Total amount on which tax was required to be deducted or collected out of (4)	Total amount on which tax was deducted or collected at specified rate out of (5)	Amount of tax deducted or collected out of (6)	Total amount on which tax was deducted or collected at less than specified	Amount of tax deducted or collected on (8)	Amount of tax deducted or collected not deposited to the credit of the Central Government

										rate out of (7)		out of (6) and (8)
Nil												

34	b	Whether the assessee is required to furnish the statement of tax deducted or tax collected. If yes ,please furnish the details:						No
		S.No	Tax deduction and collection Account Number (TAN)	Type of Form	Due date for furnishing	Date of furnishing, if furnished	Whether the statement of tax deducted or collected contains information about all details/transactions which are required to be reported.	If not, please furnish list of details/ transactions which are not reported.
		Nil						

34	c	Whether the assessee is liable to pay interest under section 201(1A) or section 206C(7).If yes, please furnish				Not Applicable
		S.No	Tax deduction and collection Account Number (TAN)	Amount of interest under section 201(1A)/206C(7) is payable	Amount	Dates of payment
		Nil				

35	a	In the case of a trading concern, give quantitative details of prinicipal items of goods traded							
		S.No	Item Name	Unit	Opening stock	Purchas-es during the previous year	Sales during the previous year	Closing stock	Shortage/ excess, if any
		Nil							

35	b	In the case of a manufacturing concern, give quantitative details of the principal items of raw materials, finished products and by-products :-									
35	bA	Raw materials :									
		S.No	Item Name	Unit	Opening stock	Purchases during the previous year	Consumpti-on during the previous year	Sales during the previous year	Closing stock	*Yield of finished products	*Percent-age of yield	Shortage/ excess, if any
		Nil										

35	bB	Finished products :							
		S.No	Item Name	Unit	Opening stock	Purchases during the previous year	Quantity manufactur-ed during the previous year	Sales during the previous year	Closing stock	Shortage/ excess, if any
		Nil								

35	bC	By products :							
		S.No	Item Name	Unit	Opening stock	Purchases during the previous year	Quantity manufactur-ed during the previous year	Sales during the previous year	Closing stock	Shortage/ excess, if any
		Nil								

36	In the case of a domestic company, details of tax on distributed profits under section 115-O in the following forms :-							
	S.No	(a) Total amount of distributed profits	(b) Amount of reduction as referred to in section 115-O(1A)(i)	(c) Amount of reduction as referred to in section 115-O(1A)(ii)	(d) Total tax paid thereon	(e) Total tax paid thereon		
						Amount	Dates of payment	
	Nil							

A(a)	Whether the assessee has received any amount in the nature of dividend as referred to in sub-clause (e) of clause (22) of section 2.If yes, please furnish the following details:-			No
	Sl No.	Amount received (in Rs.)	Date of receipt	
	Nil			

37	Whether any cost audit was carried out	Not Applicable

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	If yes, give the details, if any, of disqualification or disagreement on any matter/item/value/quantity as may be reported/identified by the cost auditor	
38	Whether any audit was conducted under the Central Excise Act, 1944	Not Applicable
	If yes, give the details, if any, of disqualification or disagreement on any matter/item/value/quantity as may be reported/identified by the auditor	
39	Whether any audit was conducted under section 72A of the Finance Act,1994 in relation to valuation of taxable services as may be reported/identified by the auditor	Not Applicable
	If yes, give the details, if any, of disqualification or disagreement on any matter/item/value/quantity as may be reported/identified by the auditor	

40 Details regarding turnover, gross profit, etc., for the previous year and preceding previous year:

Sl No	Particulars	Previous Year			Preceding previous Year		
a	Total turnover of the assessee		118597303			92148103	
b	Gross profit / Turnover	14463593	118597303	12.2%		92148103	%
c	Net profit / Turnover	2435145	118597303	2.05%	3878767	92148103	4.21%
d	Stock-in-Trade / Turnover	2207600	118597303	1.86%		92148103	%
e	Material consumed/ Finished goods produced			%			%

(The details required to be furnished for principal items of goods traded or manufactured or services rendered)

41 Please furnish the details of demand raised or refund issued during the previous year under any tax laws other than Income-tax Act, 1961 and Wealth tax Act, 1957 alongwith details of relevant proceedings

Financial year to which demand/ refund relates to	Name of other Tax law	Type (Demand raised/Refund received)	Date of demand raised/refund received	Amount	Remarks
Nil					

42 Whether the assessee is required to furnish statement in Form No.61 or Form No. 61A or Form No. 61B? If yes, please furnish — **No**

Sl No.	Income-tax Department Reporting Entity Identification Number	Type of Form	Due date for furnishing	Date of furnishing, if furnished	Whether the Form contains information about all details/ transactions which are required to be reported.	If not, please furnish list of the details/ transactions which are not reported.
Nil						

43 (a)Whether the assessee or its parent entity or alternate reporting entity is liable to furnish the report as referred to in sub-section (2) of section 286 — **No**

Sl No.	Whether report has been furnished by the assessee or its parent entity or an alternate reporting entity	Name of parent entity	Name of alternate reporting entity (if applicable)	Date of furnishing of report
Nil				

A(c) If Not due , please enter expected date of furnishing the report

44 Break-up of total expenditure of entities registered or not registered under the GST:(This Clause is kept in abeyance till 31st March, 2020)

Sl No.	Total amount of Expenditure incurred during the year	Expenditure in respect of entities registered under GST				Expenditure relating to entities not registered under GST
		Relating to goods or services exempt from GST	Relating to entities falling under composition scheme	Relating to other registered entities	Total payment to registered entities	
Nil						

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Place	KAKINADA	Name	P MALLIKARJUNA SASTRY
Date	31/10/2019	Membership Number	215023
		FRN (Firm Registration Number)	012136S
		Address	D.No.8-5-5, Beside Andhra Bank, Opp Venkateswara Swamy Temple,Gandhi Nagar , , KAKINADA, ANDHRA PRADESH, 533004,

Form Filing Details	
Revision/Original	Original

Addition Details(From Point No. 18)

Description of Block of Assets	Sl.No.	Date of Purchase	Date put to use	Amount	Adjustment on account of			Total Amount
					MODVAT	Exchange Rate Change	Subsidy Grant	
Building @ 10%	1	01/04/2018	01/04/2018	5662727				5662727
	2	30/10/2018	30/10/2018	1367213				1367213
Total of Building @ 10%								7029940
Plant & Machinery @ 15%	1	10/10/2018	10/10/2018	18180				18180
	2	27/08/2018	27/08/2018	129911				129911
	3	28/02/2019	28/02/2019	13690				13690
	4	19/05/2018	19/05/2018	66100				66100
	5	10/01/2019	10/01/2019	108275				108275
	6	22/11/2018	22/11/2018	1131398				1131398
Total of Plant & Machinery @ 15%								1467554
Plant & Machinery @ 40%	1	22/08/2018	22/08/2018	32900				32900
	2	19/10/2018	19/10/2018	2754				2754
Total of Plant & Machinery @ 40%								35654

Deduction Details(From Point No. 18)

Description of Block of Assets	Sl.No.	Date of Sale etc.	Amount
Building @ 10%			
Total of Building @ 10%			0
Plant & Machinery @ 15%			
Total of Plant & Machinery @ 15%			0
Plant & Machinery @ 40%			
Total of Plant & Machinery @ 40%			0

INDIAN INCOME TAX RETURN ACKNOWLEDGEMENT

[Where the data of the Return of Income in Form ITR-1 (SAHAJ), ITR-2, ITR-3, ITR-4(SUGAM), ITR-5, ITR-6, ITR-7 filed and verified]

(Please see Rule 12 of the Income-tax Rules, 1962)

Assessment Year 2020-21

PAN	AVSPB0729L		
Name	BOLLA RAMA DEVI		
Address	Plot No. 41A, Sarpavaram, , Industrial Park, KAKINADA, ANDHRA PRADESH, 533005		
Status	Individual	**Form Number**	ITR-3
Filed u/s	139(1)-On or before due date	**e-Filing Acknowledgement Number**	175659421100121

Taxable Income and Tax details	**Current Year business loss, if any**	1	0
	Total Income		885090
	Book Profit under MAT, where applicable	2	0
	Adjusted Total Income under AMT, where applicable	3	885090
	Net tax payable	4	93099
	Interest and Fee Payable	5	9890
	Total tax, interest and Fee payable	6	102989
	Taxes Paid	7	102993
	(+)Tax Payable /(-)Refundable (6-7)	8	(-
Dividend Distribution Tax details	**Dividend Tax Payable**	9	(-
	Interest Payable	10	(-
	Total Dividend tax and interest payable	11	(-
	Taxes Paid	12	
	(+)Tax Payable /(-)Refundable (11-12)	13	
Accreted Income & Tax Detail	**Accreted Income as per section 115TD**	14	
	Additional Tax payable u/s 115TD	15	
	Interest payable u/s 115TE	16	
	Additional Tax and interest payable	17	
	Tax and interest paid	18	
	(+)Tax Payable /(-)Refundable (17-18)	19	

Income Tax Return submitted electronically on **10-01-2021 12:56:26** from IP address **175.101.156.41** and verified by

BOLLA RAMA DEVI usin

having PAN **AVSPB0729L** on **10-01-2021 12:56:26** from IP address **175.101.156.41**

Digital Signature Certificate (DSC).

DSC details: **20355943CN=e-Mudhra Sub CA for Class 2 Individual 2014,OU=Certifying Authority,O=eMudhra Consumer Services Limited,C=IN**

DO NOT SEND THIS ACKNOWLEDGEMENT TO CPC, BENGALURU

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A.Y. 2020-2021

Name : BOLLA RAMA DEVI
Father's Name : Surya Satyanarayana
Address : Plot No. 41A
Sarpavaram
Industrial Park, KAKINADA - 533 005

Previous Year : 2019-2020
PAN : AVSPB 0729 L

Status : Individual
Date of Birth : 21-May-1981
Aadhaar No. : 3961 4545 6733

Resident

Statement of Income

		Rs.	Rs.	Rs.
■ Income from House Property				
Self occupied property				
Property-1: 1	1			
Gross annual value u/s 23(2)(a)			NIL	
Less:Interest on borrowed capital u/s 24(b)			1,00,731	
Income from self occupied property			-1,00,731	
Let-out properties				
Property-1: 1, Tenant - Murali	2			
Description			Amount	
Rents received			72,000	
Gross annual value			72,000	
Less: Municipal taxes			NIL	
Net annual value			72,000	
Less: Standard deduction u/s 24(a)			21,600	
Net Income from Property-1			50,400	
Income chargeable under the head "House Property"				-50,331
■ Profits and gains of Business or Profession				
Business-1				
Net Profit Before Tax as per P & L a/c			10,85,421	
Add: Inadmissible expenses & Income not included				
Depreciation debited to P & L a/c			8,55,002	
			19,40,423	
Less: Deductible expenditure & income to be excluded				
Incomes considered separately	3		1,99,266	
Adjusted Profit of Business-1			17,41,157	
Total income of Business and Profession			17,41,157	
Less: Depreciation as per IT Act	8		8,55,002	
Income chargeable under the head "Business and Profession"				8,86,155
■ Income from other sources				
Interest income	4		1,99,266	
Income chargeable under the head "other sources"				1,99,266
■ Gross Total Income				10,35,090

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Deductions under Chapter VI-A				
Investment u/s 80C, CCC, CCD		1,80,141		
Housing loan repayment				1,50,000
Deduction subject to ceiling u/s 80CCE				
Deduction in respect of payments from 01-Apr-20 to 31-Jul-20 (For Sch.DI)	5	0		
				8,85,090
■ **Total Income**				89,518
Tax on total income				3,581
Add: Cess				93,099
Tax with cess				93,099
Net Tax	6		27,393	
TDS				27,393
Total prepaid taxes				65,706
Balance Tax			6,570	
Interest u/s 234B			3,320	9,890
Interest u/s 234C				75,596
Net tax payable				75,600
Self-assessment tax paid	7			0
■ **Balance tax payable**				

Schedule 1

Details of the property

1, KAKINADA, EAST GODAVARI-533002, Andhra pradesh

Details of Owner	Self
Owner	100
Assessee's share in the property (%)	

Schedule 2

Details of property

1, Kakinada, East Godavari-533001, Andhra pradesh

Details of the Tenant	PAN / Aadhaar No.	TAN	Section
Name			
Murali			
Details of Owner	Self		
Owner	100		
Assessee's share in the property (%)			

Schedule 3

	Amount
Income considered under other heads	1,99,266
Interest received	1,99,266
Grand total	

Schedule 4

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Interest income (other than NSC/KVP interest)

Name of the Bank	Interest
Interest on Time Deposits	
Syndicate Bank	1,13,690
Sb	85,576
Total	1,99,266

Schedule 5

Schedule 6

TDS as per Form 16A

Deductor, TAN	TDS deducted	TDS claimed in current year	Gross receipt offered
Executive Engineer A P S Police Housing Corporation Limited Kadapa, TAN- HYDE00900E	4,655	4,655	2,32,728
Syndicate Bank - Main Branch Kakinada, TAN- VPNS03602E	22,738	22,738	1,13,690
Total	27,393	27,393	3,46,418

Schedule 7

Self Assessment tax paid

Name of the Bank and BSR Code	Date of deposit	Challan Sl.no.	Amount paid
Syndicate Bank - 0331906	02-Jan-21	00410	75,600

Bank A/c: SYNDICATE BANK 32501250002078 IFSC: SYNB0003258

Date : 10-Jan-2021

Place : KAKINADA

[BOLLA RAMA DEVI]

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BOLLA RAMA DEVI

CONSOLIDATED PROFIT & LOSS ACCOUNT FOR THE YEAR ENDING 31.03.2020

Particulars	AMOUNT	AMOUNT	Particulars	AMOUNT	AMOUNT
Opening Stock		22,07,600	**Sales Accounts**		4,10,50,626
Opening stock	22,07,600		*Solar system*	3,94,96,546	
		1,95,61,712	*SMART Automation*	15,54,080	
Purchase Accounts					
Solar system	1,91,41,125		**Closing Stock**		8,75,670
SMART Automation	4,20,587		*Closing Stock*	8,75,670	
Gross Profit		2,01,56,984			
		4,19,26,296			4,19,26,296
		1,92,70,828	***Gross Profit b/f***		***2,01,56,984***
Indirect Expenses			**Indirect Incomes**		1,99,266
Interest on Loans	15,32,347		*Interest Received*	1,99,266	
Salaries & wages	1,38,54,170				
Taxes&Licences	1,77,708				
Bank Charges	1,15,617				
Depriciation	8,55,002				
Electricity Charges	1,00,789				
Garden Maintenence	96,000				
Meterial Insurance	1,19,533				
Office Maintenance	3,26,670				
Office Rent	50,300				
Repairs Maintainence	5,95,613				
Sadar	40,926				
Telephone Charges	10,875				
Transportation Charges	5,29,954				
Traveling Charges	3,36,954				
Vehicle Maintance	5,28,370				
Nett Profit		***10,85,421***			
Total		**2,03,56,249**	**Total**		**2,03,56,249**

For K.P.G. & Co
Chartered Accountants
P. Mallikharjuna Sastry
(P. Mallikharjuna Sastry)
Partner M. no. 215023
Firm Reg No. 012136S

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BOLLA RAMA DEVI

CONSOLIDATED BALANCE SHEET AS ON 31.03.2020

Liabilities	AMOUNT	AMOUNT	Assets	AMOUNT	AMOUNT
Capital Account		1,80,47,728	**Fixed Assets**		1,83,48,780
B. RAMA DEVI (Capital)	*1,80,47,728*				
			Investments		12,94,587
Loans (Liability)		3,55,14,478			
Bank OD A/c	*2,03,81,587*		**Current Assets**		3,43,48,839
Secured Loans	*32,94,492*		Closing Stock	*8,75,670*	
Unsecured Loans	*1,18,38,399*		Deposits (Asset)	*36,88,917*	
			Sundry Debtors	*2,87,24,004*	
Current Liabilities		4,30,000	Cash-in-hand	*8,80,535*	
Advances	*1,50,000*		Bank Accounts	*1,46,032*	
Salaries Payble	*2,80,000*		Gst	*6,289*	
			Tds Receiveble 2019-20	*27,393*	
Total		5,39,92,206	**Total**		5,39,92,206

For K.P.G. & Co
Chartered Accountants

P. Mallikharjuna Sastry
(P, Mallikharjuna Sastry)
Partner M. no. 215023
Firm Reg No. 012136S

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FORM NO. 3CB
[See rule 6G(1)(b)]
Audit report under section 44AB of the Income-tax Act, 1961 in the case of a person referred to in clause (b) of sub-rule (1) of rule 6G

1. **We** have examined the balance sheet as at 31st March **2020** and the **Profit and loss account** for the period beginning from **0 1/04/2019** to ending on **31/03/2020** attached herewith, of **BOLLA RAMA DEVI** **Plot No. 41A, Sarpavaram, Industrial Park, , KAKINADA, ANDHRA PRADESH, 533005** **AVSPB0729L.**

2. **We** certify that the balance sheet and the **Profit and loss account** are in agreement with the books of account maintained at the head office at **KAKINADA,** and **0** branches.

3. (a) **We** report the following observations/comments/discrepancies/inconsistencies; if any:

(b) Subject to above,-

(A) **We** have obtained all the information and explanations which, to the best of **Our** knowledge and belief, were necessary for the purposes of the audit.
(B) In **Our** opinion, proper books of account have been kept by the head office and branches of the assessee so far as appears from **Our** knowledge and belief, were necessary for the examination of the books.
(C) In **Our** opinion and to the best of **Our** information and according to the explanations given to **Us** the said accounts, read with notes thereon, if any, give a true and fair view:-
(i) in the case of the balance sheet, of the state of the affairs of the assessee as at 31st March, **2020** ;and
(ii) in the case of the **Profit and loss account** of the **Profit** of the assessee for the year ended on that date.

4. The statement of particulars required to be furnished under section 44AB is annexed herewith in Form No. 3CD.

5. In **Our** opinion and to the best of **Our** information and according to explanations given to **Us** the particulars given in the said Form No. 3CD and the Annexure thereto are true and correct subject to following observations/qualifications, if any:-

Sl No.	Qualification Type	Observations/Qualifications
1	Valuation of closing stock is not possible.	I have not Pysically verified the Cash Balances & Closing Stock as on 31st march 2020
2	Others.	Confirmation of balances with Sundry and Trade Debtors, Sundry Creditors and Unsecured Loans were not produced form my verification.
3	Others.	Some expenses were not covered by Vouchers

Place	**KAKINADA**	Name	**P MALLIKARJUNA SASTRY**
Date	**10/01/2021**	Membership Number	**215023**
		FRN (Firm Registration Number)	**012136S**
		Address	**D.No.8-5-5, Beside Andhra Bank, Opp Venkateswara Swamy Temple,Gandhi Nagar , , KAKINADA, ANDHRA PRADESH, 533004**

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FORM NO. 3CD

[See rule 6G(2)]

Statement of particulars required to be furnished under section 44AB of the Income-tax Act, 1961

1	Name of the assessee	**BOLLA RAMA DEVI**
2	Address	**Plot No. 41A, Sarpavaram, , Industrial Park, , KAKINADA, ANDHRA PRADESH, 533005**
3	Permanent Account Number (PAN)	**AVSPB0729L**
4	Whether the assessee is liable to pay indirect tax like excise duty, service tax, sales tax, goods and services tax,customs duty,etc. if yes, please furnish the registration number or,GST number or any other identification number allotted for the same	**Yes**

Sl No.	Type	Registration Number
1	**Sales VAT/Tax ANDHRA PRADESH**	**37660989415**
2	**Goods and Services Tax ANDHRA PRADESH**	**37 AVSPB0729L 1Z9**
3	**Goods and Services Tax ANDHRA PRADESH**	**37 AVSPB0729L 2Z8**

5	Status	**Individual**
6	Previous year from	**01/04/2019 to 31/03/2020**
7	Assessment Year	**2020-21**
8	Indicate the relevant clause of section 44AB under which the audit has been conducted	

Sl No.	Relevant clause of section 44AB under which the audit has been conducted
1	**Clause 44AB(a)-Total sales/turnover/gross receipts of business exceeding specified limits**

8	a	Whether the assessee has opted for taxation under section 115BA/115BAA/115BAB	
		Section under which option exercised	
9	a	If firm or Association of Persons, indicate names of partners/members and their profit sharing ratios. In case of AOP, whether shares of members are indeterminate or unknown ?	

Name	Profit Sharing Ratio (%)
Nil	

9	b	If there is any change in the partners or members or in their profit sharing ratio since the last date of the preceding year, the particulars of such change.	

Date of change	Name of Partner/Member	Type of change	Old profit sharing ratio	New profit Sharing Ratio	Remarks

10	a	Nature of business or profession (if more than one business or profession is carried on during the previous year, nature of every business or profession).	

Sector	Sub Sector	Code
WHOLESALE AND RETAIL TRADE	**Retail sale of other products n.e.c**	**09028**
MANUFACTURING	**Other manufacturing n.e.c.**	**04097**

10	b	If there is any change in the nature of business or profession, the particulars of such change		**No**
Business		Sector	SubSector	Code
Nil				

11	a	Whether books of accounts are prescribed under section 44AA, if yes, list of books so prescribed	**No**
Books prescribed			

11	b	List of books of account maintained and the address at which the books of accounts are kept. (In case books of account are maintained in a computer system, mention the books of account generated by such computer system. If the books of accounts are not kept at one location, please furnish the addresses of locations along with the details of books of accounts maintained at each location.) Same as 11(a) above

Books maintained	Address Line 1	Address Line 2	City or Town or District	State	PinCode
Bank book	**Plot No. 41A, Sarpavaram, Industrial Park**		**KAKINADA**	**ANDHRA PRADESH**	**533005**
Cash book	**Plot No. 41A, Sarpavaram, Industrial Park**		**KAKINADA**	**ANDHRA PRADESH**	**533005**
Journal	**Plot No. 41A, Sarpavaram, Industrial Park**		**KAKINADA**	**ANDHRA PRADESH**	**533005**
Ledger	**Plot No. 41A, Sarpavaram, Industrial Park**		**KAKINADA**	**ANDHRA PRADESH**	**533005**
Purchase register	**Plot No. 41A, Sarpavaram, Industrial Park**		**KAKINADA**	**ANDHRA PRADESH**	**533005**

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Sales register	Plot No. 41A, Sarpavaram, Industrial Park		KAKINADA	ANDHRA PRADESH	533005	

11	c	List of books of account and nature of relevant documents examined. Same as 11(b) above		
	Books Examined			
	Bank book			
	Cash book			
	Journal			
	Ledger			
	Purchase register			
	Sales register			
12		Whether the profit and loss account includes any profits and gains assessable on presumptive basis, if yes, indicate the amount and the relevant section (44AD, 44AE, 44AF, 44B, 44BB, 44BBA, 44BBB, Chapter XII-G, First Schedule or any other relevant section).		No
	Section			Amount
	Nil			
13	a	Method of accounting employed in the previous year	Mercantile system	
13	b	Whether there has been any change in the method of accounting employed vis-a-vis the method employed in the immediately preceding previous year.		No
13	c	If answer to (b) above is in the affirmative, give details of such change , and the effect thereof on the profit or loss.		
	Particulars		Increase in profit(Rs.)	Decrease in profit(Rs.)
13	d	Whether any adjustment is required to be made to the profits or loss for complying with the provisions of income computation and disclosure standards notified under section 145(2).		No
13	e	If answer to (d) above is in the affirmative, give details of such adjustments.		
	ICDS		Increase in profit(Rs.)	Decrease in profit(Rs.) / Net effect(Rs.)
	Total			
13	f	Disclosure as per ICDS.		
	ICDS		Disclosure	
	ICDS I - Accounting Policies		Going Concern, consistency and Accrual are followed. ICDS I was Complied with	
	ICDS IV - Revenue Recognition		Revenue is recognized as and when sales is made and entered in the books of account. ICDS IV was complied with	
	ICDS V - Tangible Fixed Assets		Tangible fixed assets are whom at cost of acquisition less depreciation. ICDS IV was complied with	
14	a	Method of valuation of closing stock employed in the previous year.	Lower of cost or net realisable value [Section 145A]	
14	b	In case of deviation from the method of valuation prescribed under section 145A, and the effect thereof on the profit or loss, please furnish:		No
	Particulars		Increase in profit(Rs.)	Decrease in profit(Rs.)
15		Give the following particulars of the capital asset converted into stock-in-trade		
	(a) Description of capital asset		(b) Date of acquisition	(c) Cost of acquisition / (d) Amount at which the asset is converted into stock-in trade
	Nil			
16		Amounts not credited to the profit and loss account, being:-		
16	a	The items falling within the scope of section 28		
	Description			Amount
	Nil			
16	b	The proforma credits, drawbacks, refund of duty of customs or excise or service tax, or refund of sales tax or value added tax, where such credits, drawbacks or refund are admitted as due by the authorities concerned		
	Description			Amount
16	c	Escalation claims accepted during the previous year		
	Description			Amount
	Nil			
16	d	Any other item of income		
	Description			Amount
	Nil			
16	e	Capital receipt, if any		
	Description			Amount
	Nil			

17 Where any land or building or both is transferred during the previous year for a consideration less than value adopted assessed or assessable by any authority of a State Government referred to in section 43CA or 50C, please furnish:

Details of property	Address Line 1	Address Line 2	City/Town	State	Pincode	Consideration received or accrued	Value adopted or assessed assessable

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18 Particulars of depreciation allowable as per the Income-tax Act, 1961 in respect of each asset or block of assets, as the case may be, in the:-

Description of Block of Assets/ Class of Assets	Rate of depreciation (In Percentage)	Opening WDV (A)	Adjustment to WDV u/s 115BA	Adjustment written down value	Additions					Deductions(C)	Depreciation Allowable (D)	Written Down Value at the end of the year (A+B-C-D)
					Purchase Value (1)	MOD-VAT (2)	Change in Rate of Exchange (3)	Subsidy/ Grant (4)	Total Value of Purchases (B) (1+2+3+4)			
Building @ 10%	**10%**	**6395307**		**6395307**	**0**	**0**	**0**	**0**	**0**	**0**	**639531**	**5755776**
Plant & Machinery @ 15%	**15%**	**1342787**		**1342787**	**70350**	**0**	**0**	**0**	**70350**	**0**	**206694**	**1206443**
Plant & Machinery @ 40%	**40%**	**21943**		**21943**	**0**	**0**	**0**	**0**	**0**	**0**	**8777**	**13166**

*** For Addition and Deduction Details refer Addition and Deduction Detail Tables At the End of the Page**

19 Amounts admissible under sections :

S.No	Section	Amount debited to profit and loss account	Amounts admissible as per the provisions of the Income-tax Act, 1961 and also fulfils the conditions, if any specified under the relevant 14provisions of Income-tax Act, 1961 or Income-tax Rules,1962 or any other guidelines, circular, etc., issued in this behalf.
Nil			

20 a Any sum paid to an employee as bonus or commission for services rendered, where such sum was otherwise payable to him as profits or dividend. [Section 36(1)(ii)]

Description	Amount

20 b Details of contributions received from employees for various funds as referred to in section 36(1)(va):

Nature of fund	Sum received from employees	Due date for payment	The actual amount paid	The actual date of payment to the concerned authorities
Nil				

21 a Please furnish the details of amounts debited to the profit and loss account, being in the nature of capital, personal, advertisement expenditure etc

Capital expenditure

Particulars	Amount in Rs.

Personal expenditure

Particulars	Amount in Rs.

Advertisement expenditure in any souvenir, brochure, tract, pamphlet or the like published by a political party

Particulars	Amount in Rs.

Expenditure incurred at clubs being entrance fees and subscriptions

Particulars	Amount in Rs.

Expenditure incurred at clubs being cost for club services and facilities used.

Particulars	Amount in Rs.

Expenditure by way of penalty or fine for violation of any law for the time being force

Particulars	Amount in Rs.

Expenditure by way of any other penalty or fine not covered above

Particulars	Amount in Rs.

Expenditure incurred for any purpose which is an offence or which is prohibited by law

Particulars	Amount in Rs.

(b) Amounts inadmissible under section 40(a):-

(i) as payment to non-resident referred to in sub-clause (i)

(A) Details of payment on which tax is not deducted:

Date of payment	Amount of payment	Nature of payment	Name of the payee	PAN of the payee,if avaliable	Address Line 1	Address Line 2	City or Town or District	Pincode

(B) Details of payment on which tax has been deducted but has not been paid during the previous year or in the subsequent yea before the expiry of time prescribed under section200(1)

Date of payment	Amount of payment	Nature of payment	Name of the payee	PAN of the payee,if avaliable	Address Line 1	Address Line 2	City or Town or District	Pincode	Amount of tax deducted

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(ii) as payment referred to in sub-clause (ia)

(A) Details of payment on which tax is not deducted:

Date of payment	Amount of payment	Nature of payment	Name of the payee	PAN of the payee,if avaliable	Address Line 1	Address Line 2	City or Town or District	Pincode

(B) Details of payment on which tax has been deducted but has not been paid on or before the due date specified in sub- section (1) of section 139.

Date of payment	Amount of payment	Nature of payment	Name of the payer	PAN of the payee,if avaliable	Address Line 1	Address Line 2	City or Town or District	Pincode	Amount of tax deducted	Amount out of (VI) deposited, if any

(iii) as payment referred to in sub-clause (ib)

(A) Details of payment on which levy is not deducted:

Date of payment	Amount of payment	Nature of payment	Name of the payee	PAN of the payee,if avaliable	Address Line 1	Address Line 2	City or Town or District	Pincode

(B) Details of payment on which levy has been deducted but has not been paid on or before the due date specified in sub- section (1) of section 139.

Date of payment	Amount of payment	Nature of payment	Name of the payer	PAN of the payee,if avaliable	Address Line 1	Address Line 2	City or Town or District	Pincode	Amount of levy deducted	Amount out of (VI) deposited, if any

(iv) fringe benefit tax under sub-clause (ic)

(v) wealth tax under sub-clause (iia)

(vi) royalty, license fee, service fee etc. under sub-clause (iib).

(vii) salary payable outside India/to a non resident without TDS etc. under sub-clause (iii).

Date of payment	Amount of payment	Name of the payee	PAN of the payee,if avaliable	Address Line 1	Address Line 2	City	Pincode

(viii) payment to PF /other fund etc. under sub-clause (iv)

(ix) tax paid by employer for perquisites under sub-clause (v)

(c) Amounts debited to profit and loss account being, interest, salary, bonus, commission or remuneration inadmissible under section 40(b)/40(ba) and computation thereof;

Particulars	Section	Amount debited to P/L A/C	Amount Admissible	Amount Inadmissible	Remarks

(d) Disallowance/deemed income under section 40A(3):

(A) On the basis of the examination of books of account and other relevant documents/evidence, whether the expenditure covered under section 40A(3) read with rule 6DD were made by account payee cheque drawn on a bank or account payee bank draft. If not, please furnish the details: — Yes

Date Of Payment	Nature Of Payment	Amount in Rs	Name of the payee	Permanent Account Number of the payee, if available

(B) On the basis of the examination of books of account and other relevant documents/evidence, whether the payment referred to in section 40A(3A) read with rule 6DD were made by account payee cheque drawn on a bank or account payee bank draft If not, please furnish the details of amount deemed to be the profits and gains of business or profession under section 40A(3A) — Yes

Date Of Payment	Nature Of Payment	Amount in Rs	Name of the payee	Permanent Account Number of the payee, if available

(e) Provision for payment of gratuity not allowable under section 40A(7) — 0

(f) Any sum paid by the assessee as an employer not allowable under section 40A(9) — 0

(g) Particulars of any liability of a contingent nature

Nature Of Liability	Amount in Rs.

(h) Amount of deduction inadmissible in terms of section 14A in respect of the expenditure incurred in relation to income which does not form part of the total income

Nature Of Liability	Amount in Rs.

(i) Amount inadmissible under the proviso to section 36(1)(iii)

22 Amount of interest inadmissible under section 23 of the Micro, Small and Medium Enterprises Development Act, 2006 — 0

23 Particulars of any payment made to persons specified under section 40A(2)(b).

	Name of Related Person	PAN of Related Person	Relation	Nature of trasaction	Payment Made(Amount)

24	Amounts deemed to be profits and gains under section 32AC or 32AD or 33AB or 33AC or 33ABA.		
	Section	Description	Amount
	Nil		
25	Any amount of profit chargeable to tax under section 41 and computation thereof.		
	Name of Person	Amount of income	Section	Description of Transaction	Computation if any
	Nil				
26	(i)*	In respect of any sum referred to in clause (a),(c),(d),(e),(f) or (g) of section 43B the liability for which:-			
26	(i)A	pre-existed on the first day of the previous year but was not allowed in the assessment of any preceding previous year and was :-			
26	(i)(A)(a)	Paid during the previous year			
	Section		Nature of liability		Amount
	Nil				
26	(i)(A)(b)	Not paid during the previous year			
	Section		Nature of liability		Amount
	Nil				
26	(i)B	was incurred in the previous year and was			
26	(i)(B)(a)	Paid on or before the due date for furnishing the return of income of the previous year under section 139(1)			
	Section		Nature of liability		Amount
	Nil				
26	(i)(B)(b)	not paid on or before the aforesaid date			
	Section		Nature of liability		Amount
	Nil				

(State whether sales tax, goods & service Tax, customs duty, excise duty or any other indirect tax, levy, cess, impost, etc., is passed through the profit and loss account.)	No	
27 a	Amount of Central Value Added Tax Credits/ Input Tax Credit(ITC) availed of or utilised during the previous year and its treatment in profit and loss account and treatment of outstanding Central Value Added Tax Credits/ Input Tax Credit(ITC) in accounts	No

CENVAT/ITC	Amount	Treatment in Profit and Loss/Accounts
Opening Balance		
Credit Availed		
Credit Utilized		
Closing/Outstanding Balance		

27 b Particulars of income or expenditure of prior period credited or debited to the profit and loss account :-

Type	Particulars	Amount	Prior period to which itrelates(Year in yyyy-yyformat)
Nil			

28 Whether during the previous year the assessee has received any property, being share of a company not being a company in which the public are substantially interested, without consideration or for inadequate consideration as referred to in section 56(2)(viia)

Name of the person from which shares received	PAN of the person, if available	Name of the company from which shares received	CIN of the company	No. of Shares Received	Amount of consideration paid	Fair Marke value of th shares
Nil						

29 Whether during the previous year the assessee received any consideration for issue of shares which exceeds the fair market value of the shares as referred to in section 56(2)(viib). If yes, please furnish the details of the same

Name of the person from whom consideration received for issue of shares	PAN of the person, if available	No. of Shares	Amount of consideration received	Fair Market value of the shares
Nil				

A(a)	Whether any amount is to be included as income chargeable under the head Income from other sources as referred to in clause (ix) of sub-section (2) of section 56? (b) If yes, please furnish the following details:	No

Sl No.	Nature of Income	Amount
Nil		

B(a)	Whether any amount is to be included as income chargeable under the head Income from other sources as referred to in clause (x) of sub-section (2) of section 56?(Yes/No) (b) If yes, please furnish the following details:	No

Sl No.	Nature of Income	Amount

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Nil

30	Details of any amount borrowed on hundi or any amount due thereon (including interest on the amount borrowed) repaid,otherwise than through an account payee cheque,(Section 69D)	No

Name of the person from whom amount borrowed or repaid on hundi	PAN of the person, if available	Address Line 1	Address Line 2	City or Town or District	State	Pincode	Amount borrowed	Date of Borrowing	Amount due including interest	Amount repaid	Date of Repayment

Nil

A(a)	Whether primary adjustment to transfer price, as referred to in sub-section (1) of section 92CE, has been made during the previous year.	No

(b) If yes, please furnish the following details

Sl No.	Under which clause of sub-section (1) of section 92CE primary adjustment is made ?	Amount (in Rs.) of primary adjustment	Whether the excess money available with the associated enterprise is required to be repatriated to India as per the provisions of sub-section (2) of section 92CE.	If yes, whether the excess money has been repatriated within the prescribed time.	If no, the amount (in Rs.) of imputed interest income on such excess money which has not been repatriated within the prescribed time	Expected date of repatriation of money

Nil

B(a)	Whether the assessee has incurred expenditure during the previous year by way of interest or of similar nature exceeding one crore rupees as referred to in sub-section (1) of section 94B.	No

(b) If yes, please furnish the following details

Sl No.	Amount (in Rs.) of expenditure by way of interest or of similar nature incurred	Earnings before interest, tax, depreciation and amortization (EBITDA) during the previous year (in Rs.)	Amount (in Rs.) of expenditure by way of interest or of similar nature as per (i) above which exceeds 30% of EBITDA as per (ii) above.	Details of interest expenditure brought forward as per sub-section (4) of section 94B.		Details of interest expenditure carried forward as per sub-section (4) of section 94B:	
				Assessment Year	Amount (in Rs.)	Assessment Year	Amount (in Rs.)

Nil

C(a)	Whether the assessee has entered into an impermissible avoidance arrangement, as referred to in section 96, during the previous year.(This Clause is kept in abeyance till 31st March, 2021)	

(b) If yes, please furnish the following details

Sl No.	Nature of the impermissible avoidance arrangement	Amount (in Rs.) of tax benefit in the previous year arising, in aggregate, to all the parties to the arrangement

Nil

31 a Particulars of each loan or deposit in an amount exceeding the limit specified in section 269SS taken or accepted during the previous year :-

S.No	Name of the lender or depositor	Address of the lender or depositor	Permanent Account Number(if available with the assessee) of the lender or the depositor	Amount of loan or deposit taken or accepted	Whether the loan or deposit was squared up during the previous year	Maximum amount outstanding in the account at any time during the previous year	Whether the loan or deposit was taken or accepted by cheque or bank draft or use of electronic clearing system through a bank account.	In case the loan or deposit was taken or accepted by cheque or bank draft, whether the same was taken or accepted by an account payee cheque or an account payee bank draft.

Nil

31 b Particulars of each specified sum in an amount exceeding the limit specified in section 269SS taken or accepted during the previous year:-

S.No.	Name of the person from whom specified sum is received	Address of the person from whom specified sum is received	Permanent Account Number (if available	Amount of specified sum taken	Whether the specified sum was taken or accepted by	In case the specified sum was taken or accepted by cheque or bank

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					with the assessee) of the person from whom specified sum is received	or accepted	cheque or bank draft or use of electronic clearing system through a bank account	draft, whether the same was taken or accepted by an account payee cheque or an account payee bank draft.

Nil

(Particulars at (a) and (b) need not be given in the case of a Government company, a banking company or a corporation established by a Central, State or Provincial Act.)

31 b(a) Particulars of each receipt in an amount exceeding the limit specified in section 269ST, in aggregate from a person in a day or in respect of a single transaction or in respect of transactions relating to one event or occasion from a person, during the previous year, where such receipt is otherwise than by a cheque or bank draft or use of electronic clearing system through a bank account

S.No.	Name of the Payer	Address of the Payer	Permanent Account Number (if available with the assessee) of the Payer	Nature of transaction	Amount of receipt	Date Of receipt

Nil

31 b(b) Particulars of each receipt in an amount exceeding the limit specified in section 269ST, in aggregate from a person in a day or in respect of a single transaction or in respect of transactions relating to one event or occasion from a person, received by a cheque or bank draft, not being an account payee cheque or an account payee bank draft, during the previous year :-

S.No.	Name of the Payer	Address of the Payer	Permanent Account Number (if available with the assessee) of the Payer	Amount of receipt

Nil

31 b(c) Particulars of each payment made in an amount exceeding the limit specified in section 269ST, in aggregate to a person in a day or in respect of a single transaction or in respect of transactions relating to one event or occasion to a person, otherwise than by a cheque or bank draft or use of electronic clearing system through a bank account during the previous year

S.No.	Name of the Payer	Address of the Payer	Permanent Account Number (if available with the assessee) of the Payer	Nature of transaction	Amount of Payment	Date Of Payment

Nil

31 b(d) Particulars of each payment in an amount exceeding the limit specified in section 269ST, in aggregate to a person in a day or in respect of a single transaction or in respect of transactions relating to one event or occasion to a person, made by a cheque or bank draft, not being an account payee cheque or an account payee bank draft, during the previous year

S.No.	Name of the Payee	Address of the Payee	Permanent Account Number (if available with the assessee) of the Payee	Amount of Payment

Nil

(Particulars at (ba), (bb), (bc) and (bd) need not be given in the case of receipt by or payment to a Government company, a banking Company, a post office savings bank, a cooperative bank or in the case of transactions referred to in section 269SS or in the case of persons referred to in Notification No. S.O. 2065(E) dated 3rd July, 2017)"

31 c Particulars of each repayment of loan or deposit or any specified advance in an amount exceeding the limit specified in section 269T made during the previous year :-

S.No.	Name of the payee	Address of the payee	Permanent Account Number(if available with the assessee)of the payee	Amount of the repayment	Maximum amount outstanding in the account at any time during the previous year	Whether the repayment was made by cheque or bank draft or use of electronic clearing system through a bank account.	In case the repayment was made by cheque or bank draft, whether the same was repaid by an account payee cheque or an account payee bank draft.

		Nil

31	d	Particulars of repayment of loan or deposit or any specified advance in an amount exceeding the limit specified in section 269T received otherwise than by a cheque or bank draft or use of electronic clearing system through a bank account during the previous year:—

S.No	Name of the lender, or depositor or person from whom specified advance is received	Address of the lender, or depositor or person from whom specified advance is received	Permanent Account Number (if available with the assessee)of the lender, or depositor or person from whom specified advance is received	Amount of repayment of loan or deposit or any specified advance received otherwise than by a cheque or bank draft or use of electronic clearing system through a bank account during the previous year
Nil				

31	e	Particulars of repayment of loan or deposit or any specified advance in an amount exceeding the limit specified in section 269T received by a cheque or bank draft which is not an account payee cheque or account payee bank draft during the previous year:—

S.No	Name of the lender, or depositor or person from whom specified advance is received	Address of the lender, or depositor or person from whom specified advance is received	Permanent Account Number (if available with the assessee)of the lender, or depositor or person from whom specified advance is received	Amount of repayment of loan or deposit or any specified advance received otherwise than by a cheque or bank draft or use of electronic clearing system through a bank account during the previous year
Nil				

Note: (Particulars at (c), (d) and (e) need not be given in the case of a repayment of any loan or deposit or any specified advance taken or accepted from Government, Government company, banking company or a corporation established by a Central, State or Provincial Act)

32	a	Details of brought forward loss or depreciation allowance, in the following manner, to extent available

S.No	Assessment Year	Nature of loss/allowance	Amount as returned	All losses/ allowance not allowed under section 115BAA	Amount as adjusted by withdrawal of additional depreciation on account of opting for taxation under section 115BAA(To be filled in for assessment year 2020-21 only)	Amount as assessed	Order U/S and Date	Remarks
Nil								

32	b	Whether a change in shareholding of the company has taken place in the previous year due to which the losses incurred prior to the previous year cannot be allowed to be carried forward in terms of section 79.	**Not Applicable**
32	c	Whether the assessee has incurred any speculation loss referred to in section 73 during the previous year.	**No**
		If yes, please furnish the details below	
32	d	Whether the assessee has incurred any loss referred to in section 73A in respect of any specified business during the previous year	**No**
		If yes, please furnish details of the same	

32	e	In case of a company, please state that whether the company is deemed to be carrying on a speculation business as referred in explanation to section 73	
		If yes, please furnish the details of speculation loss if any incurred during the previous year	
			Yes

33 Section-wise details of deductions, if any admissible under Chapter VIA or Chapter III (Section 10A, Section 10AA)

S.No	Section	Amount
1	**80C**	**150000**

34 a Whether the assessee is required to deduct or collect tax as per the provisions of Chapter XVII-B or Chapter XVII-BB, if yes please furnish **No**

S.No	Tax deduction and collection Account Number (TAN)	Section	Nature of payment	Total amount of payment or receipt of the nature specified in column (3)	Total amount on which tax was required to be deducted or collected out of (4)	Total amount on which tax was deducted or collected at specified rate out of (5)	Amount of tax deducted or collected out of (6)	Total amount on which tax was deducted or collected at less than specified rate out of (7)	Amount of tax deducted or collected on (8)	Amount of tax deducted or collected not deposited to the credit of the Central Governmer out of (6) and (8)
Nil										

34 b Whether the assessee is required to furnish the statement of tax deducted or tax collected. If yes ,please furnish the details: **No**

S.No	Tax deduction and collection Account Number (TAN)	Type of Form	Due date for furnishing	Date of furnishing, if furnished	Whether the statement of tax deducted or collected contains information about all details/transactions which are required to be reported.	If not, please furnish list of details/ transactions which are not reported.
Nil						

34 c Whether the assessee is liable to pay interest under section 201(1A) or section 206C(7).If yes, please furnish **Not Applica**

S.No	Tax deduction and collection Account Number (TAN)	Amount of interest under section 201(1A)/206C(7) is payable	Amount	Dates of payment
Nil				

35 a In the case of a trading concern, give quantitative details of prinicipal items of goods traded

S.No	Item Name	Unit	Opening stock	Purchas-es during the previous year	Sales during the previous year	Closing stock	Shortag excess, if any
Nil							

35 b In the case of a manufacturing concern, give quantitative details of the principal items of raw materials, finished produc and by-products :-

35 bA Raw materials :

S.No	Item Name	Unit	Opening stock	Purchases during the previous year	Consumpti-on during the previous year	Sales during the previous year	Closing stock	*Yield of finished products	*Percent-age of yield	Shorta excess if any
Nil										

35 bB Finished products :

S.No	Item Name	Unit	Opening stock	Purchases during the previous year	Quantity manufactur-ed during the previous year	Sales during the previous year	Closing stock	Shorta excess if any
Nil								

35 bC By products :

S.No	Item Name	Unit	Opening stock	Purchases during the previous year	Quantity manufactured during the previous year	Sales during the previous year	Closing stock	Shortage/ excess, if any
Nil								

36 In the case of a domestic company, details of tax on distributed profits under section 115-O in the following forms :-

S.No	(a) Total amount of distributed profits	(b) Amount of reduction as referred to in section 115-O(1A)(i)	(c) Amount of reduction as referred to in section 115-O(1A)(ii)	(d) Total tax paid thereon	(e) Total tax paid thereon	
					Amount	Dates of payment
Nil						

A(a) Whether the assessee has received any amount in the nature of dividend as referred to in sub-clause (e) of clause (22) of section 2.If yes, please furnish the following details:- **No**

Sl No.	Amount received (in Rs.)	Date of receipt
Nil		

37 Whether any cost audit was carried out **Not Applicabl**

If yes, give the details, if any, of disqualification or disagreement on any matter/item/value/quantity as may be reported/identified by the cost auditor

38 Whether any audit was conducted under the Central Excise Act, 1944 **Not Applicab**

If yes, give the details, if any, of disqualification or disagreement on any matter/item/value/quantity as may be reported/identified by the auditor

39 Whether any audit was conducted under section 72A of the Finance Act,1994 in relation to valuation of taxable services as may be reported/identified by the auditor **Not Applicab**

If yes, give the details, if any, of disqualification or disagreement on any matter/item/value/quantity as may be reported/identified by the auditor

40 Details regarding turnover, gross profit, etc., for the previous year and preceding previous year:

Sl No	Particulars	Previous Year			Preceding previous Year		
a	Total turnover of the assessee		41050626			118597303	
b	Gross profit / Turnover	20156984	41050626	49.1%	14463593	118597303	12.2%
c	Net profit / Turnover	1085421	41050626	2.64%	2435145	118597303	2.05%
d	Stock-in-Trade / Turnover	875670	41050626	2.13%	2207600	118597303	1.86%
e	Material consumed/ Finished goods produced			%			%

(The details required to be furnished for principal items of goods traded or manufactured or services rendered)

41 Please furnish the details of demand raised or refund issued during the previous year under any tax laws other than Income tax Act, 1961 and Wealth tax Act, 1957 alongwith details of relevant proceedings

Financial year to which demand/ refund relates to	Name of other Tax law	Type (Demand raised/Refund received)	Date of demand raised/refund received	Amount	Remarks
Nil					

42 Whether the assessee is required to furnish statement in Form No.61 or Form No. 61A or Form No. 61B? If yes, please furnish **No**

Sl No.	Income-tax Department Reporting Entity Identification Number	Type of Form	Due date for furnishing	Date of furnishing, if furnished	Whether the Form contains information about all details/ transactions which are required to be reported.	If not, please furnis list of the details transactions whic are not reported.
Nil						

43	(a)Whether the assessee or its parent entity or alternate reporting entity is liable to furnish the report as referred to in sub-section (2) of section 286		No

Sl No.	Whether report has been furnished by the assessee or its parent entity or an alternate reporting entity	Name of parent entity	Name of alternate reporting entity (if applicable)	Date of furnishing of report
Nil				

A(c)	If Not due , please enter expected date of furnishing the report	
44	Break-up of total expenditure of entities registered or not registered under the GST:(This Clause is kept in abeyance till 31st March, 2021)	

Sl No.	Total amount of Expenditure incurred during the year	Expenditure in respect of entities registered under GST				Expenditure relating to entities not registered under GST
		Relating to goods or services exempt from GST	Relating to entities falling under composition scheme	Relating to other registered entities	Total payment to registered entities	
Nil						

Place KAKINADA
Date 10/01/2021

Name P MALLIKARJUNA SASTRY
Membership Number 215023
FRN (Firm Registration Number) 012136S
Address D.No.8-5-5, Beside Andhra Bank, Opp Venkateswara Swamy Temple,Gandhi Nagar , , KAKINADA, ANDHRA PRADESH, 533004,

Form Filing Details	
Revision/Original	Original

Addition Details(From Point No. 18)

Description of Block of Assets	Sl.No.	Date of Purchase	Date put to use	Amount	Adjustment on account of			Total Amount
					MODVAT	Exchange Rate Change	Subsidy Grant	
Building @ 10%								0
Total of Building @ 10%								2560
Plant & Machinery @ 15%	1	01/11/2019	01/11/2019	2560				20000
	2	31/10/2019	31/10/2019	20000				47790
	3	30/10/2019	30/10/2019	47790				70350
Total of Plant & Machinery @ 15%								
Plant & Machinery @ 40%								0
Total of Plant & Machinery @ 40%								

Deduction Details(From Point No. 18)

Description of Block of Assets	Sl.No.	Date of Sale etc.	Amount
Building @ 10%			0
Total of Building @ 10%			
Plant & Machinery @ 15%			

Total of **Plant & Machinery @ 15%**	**0**
Plant & Machinery @ 40%	
Total of **Plant & Machinery @ 40%**	**0**

This form has been digitally signed by **MALLIKHARJUNA SASTRY PULLE** having PAN **ALMPP7018E** from IP Address **175.101.156.41** on **2021-01-10 12:53:26.0** .
Dsc Sl No and issuer **17828713CN=e-Mudhra Sub CA for Class 2 Individual 2014,OU=Certifying Authority,O=eMudhra Consumer Services Limited,C=IN**

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INDIAN INCOME TAX RETURN ACKNOWLEDGEMENT

Assessment Year 2021-22

[Where the data of the Return of Income in Form ITR-1 (SAHAJ), ITR-2, ITR-3, ITR-4(SUGAM), ITR-5, ITR-6, ITR-7 filed and verified]
(Please see Rule 12 of the Income-tax Rules, 1962)

PAN	AVSPB0729L		
Name	RAMA DEVI BOLLA		
Address	Plot No. 41A , Sarpavaram , Industrial Park , KAKINADA . 02-Andhra Pradesh , 91-India , 533005		
Status	Individual	Form Number	ITR-3
Filed u/s	139(1) Return filed on or before due date	e-Filing Acknowledgement Number	174741110130222

Taxable Income and Tax details

Current Year business loss, if any	1	0
Total Income		8,91,200
Book Profit under MAT, where applicable	2	0
Adjusted Total Income under AMT, where applicable	3	8,91,200
Net tax payable	4	94,370
Interest and Fee Payable	5	0
Total tax, interest and Fee payable	6	94,370
Taxes Paid	7	1,57,162
(+)Tax Payable /(-)Refundable (6-7)	8	(-) 62,790

Distribution Tax details

Dividend Tax Payable	9	0
Interest Payable	10	0
Total Dividend tax and interest payable	11	0
Taxes Paid	12	0
(+)Tax Payable /(-)Refundable (11-12)	13	0

Accreted Income & Tax Detail

Accreted Income as per section 115TD	14	0
Additional Tax payable u/s 115TD	15	0
Interest payable u/s 115TE	16	0
Additional Tax and interest payable	17	0
Tax and interest paid	18	0
(+)Tax Payable /(-)Refundable (17-18)	19	0

This return has been digitally signed by RAMA DEVI BOLLA in the capacity of Self having PAN AVSPB0729L from IP address 10.1.82.124 on 13-02-2022 10:17:52

DSC Sl. No. & Issuer 5560772 & 22093572CN=e-Mudhra Sub CA for Class 3 Individual 2014,OU=Certifying Authority,O=eMudhra Consumer Services Limited,C=IN

System Generated Barcode/QR Code

AVSPB0729L031747411101302222FB5C7D9165FA48F44F3F28D528DDE151970ABFD8

DO NOT SEND THIS ACKNOWLEDGEMENT TO CPC, BENGALURU

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A.Y. 2021-2022

Name : BOLLA RAMA DEVI
Father's Name : Surya Satyanarayana
Address : Plot No. 41A
Sarpavaram
Industrial Park, KAKINADA - 533 005

Previous Year : 2020-2021
PAN : AVSPB 0729 L
Status : Individual
Date of Birth : 21-May-1981
Aadhaar No. : 3961 4545 6733

Resident

Statement of Income

		Rs.	Rs.	Rs.
Income from House Property				
Self occupied properties				
Property-1: 1	1			
Gross annual value u/s 23(2)(a)			NIL	
Less:Interest on borrowed capital u/s 24(b)			83,441	
Income from self occupied properties			-83,441	
Income chargeable under the head "House Property"				-83,441
Profits and gains of Business or Profession				
Business-1				
Net Profit Before Tax as per P & L a/c			11,24,638	
Add: Inadmissible expenses & Income not included				
Depreciation debited to P & L a/c			7,61,810	
			18,86,448	
Less: Deductible expenditure & income to be excluded				
Incomes considered separately	2		2,72,695	
Adjusted Profit of Business-1			16,13,753	
Total income of Business and Profession			16,13,753	
Less: Depreciation as per IT Act	6		7,61,810	
Income chargeable under the head "Business and Profession"				8,51,943
Income from other sources				
Interest income	3		2,72,695	
Income chargeable under the head "other sources"				2,72,695
Gross Total Income				10,41,197
Deductions under Chapter VI-A				
Investment u/s 80C, CCC, CCD				
Housing loan repayment		1,97,431		
Deduction subject to ceiling u/s 80CCE				1,50,000
Total Income				8,91,197
Total income rounded off u/s 288A				8,91,200
Tax on total income				90,740
Add: Cess				3,630
Tax with cess				94,370

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Net Tax			94,370
TDS	4	1,27,162	
Advance Tax	5	30,000	
Total prepaid taxes			1,57,162
Refund Due			62,790

Schedule 1

Details of the property

1, KAKINADA, EAST GODAVARI-533002, Andhra pradesh

Details of Owner

Owner	Self
Assessee's share in the property (%)	100

Schedule 2

	Amount
Income considered under other heads	
Interest received	2,72,695
Grand total	2,72,695

Schedule 3

Interest income (other than NSC/KVP interest)

Name of the Bank	Interest
Interest on Time Deposits	
Canara Bank	2,70,079
Sb	1,607
Total	2,71,686
Other Interest	
Interest on gold bonds	1,009
Taxable Interest	2,72,695

Schedule 4

TDS as per Form 16A

Deductor, TAN	TDS deducted	TDS claimed in current year	Gross receipt offered
Canara Bank, TAN- HYDC10600C	13,615	13,615	85,424
New & Renewable Energy Development Corporation Of Andhra Pradesh Limited, TAN- HYDN00008B	1,10,904	1,10,904	73,93,637
Total	1,24,519	1,24,519	74,79,061

Tax collected at source

Collector & TAN	TCS collected	TCS claimed in current year	Expenditure as per 26AS
Cg Power And Industrial Solutions Limited, TAN- BPLC02783E	605	605	8,06,552
Hari Narayan Gupta, TAN- JBPH00970E	5	5	6,615

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Renewsys India Private Limited, TAN- HYDR10198G	2,033	2,033	27,10,667
Total	2,643	2,643	35,23,834
Grand Total	1,27,162	1,27,162	

Schedule 5

Advance tax paid

Canara Bank-0242465	15-Mar-21	31140	30,000

Bank A/c for Refund: CANARA BANK 32501250002078 IFSC: CNRB0013258

Date : 13-Feb-2022
Place : KAKINADA

[BOLLA RAMA DEVI]

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BOLLA RAMA DEVI
KAKINADA

Profit & Loss A/c
1-Apr-2020 to 31-Mar-2021

Particulars	1-Apr-2020 to 31-Mar-2021		Particulars	1-Apr-2020 to 31-Mar-2021	
Opening Stock		8,75,670.00	**Sales Accounts**		4,99,89,049.66
Purchase Accounts		6,47,30,347.83	Closing Stock		2,60,30,000.00
Gross Profit c/o		*1,04,13,031.83*			
		7,60,19,049.66			7,60,19,049.66
Indirect Expenses		95,61,088.73	Gross Profit b/f		*1,04,13,031.83*
Bank Interest & Charges	*22,89,037.15*		**Indirect Incomes**		2,72,694.96
Salaries & Staff Welfare	*55,80,109.32*		*Interest on Fdr*	*2,70,079.06*	
Taxes & Liscence	*58,212.00*		*Interest on Gold Bonds*	*1,009.26*	
Association Fees	*5,000.00*		*Interest on Sb*	*1,606.64*	
Computer Maintenance	*17,500.00*				
Depriciation	*7,61,810.00*				
Electricity Charges	*81,449.46*				
Insurance	*54,975.00*				
Office Maintenance	*52,094.00*				
Printing & Stationary	*4,100.00*				
Testing Charges	*3,86,450.00*				
Transportation Charges	*1,18,350.00*				
Traveling Charges	*1,18,900.80*				
Vehicle Maintance	*33,101.00*				
Nett Profit		*11,24,638.06*			
Total		1,06,85,726.79	**Total**		1,06,85,726.79

For K.P.G. & Co
Chartered Accountants
P Mallikharjuna Sastry
(P. Mallikharjuna Sastry)
Partner M. no. 215023
Firm Reg No. 012136S

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BOLLA RAMA DEVI
KAKINADA

Balance Sheet
1-Apr-2020 to 31-Mar-2021

Liabilities	as at 31-Mar-2021		Assets	as at 31-Mar-2021	
Capital Account		1,76,44,710.03	**Fixed Assets**		1,77,82,881.23
B. RAMA DEVI (Capital)	*1,76,44,710.03*				
			Investments		6,19,080.00
Loans (Liability)		3,92,87,335.73			
Bank OD A/c	*1,69,94,677.75*		**Current Assets**		5,93,07,768.37
Secured Loans	*1,03,54,259.18*		Closing Stock	*2,60,30,000.00*	
Unsecured Loans	*1,19,38,398.80*		Deposits (Asset)	*45,45,380.57*	
			Sundry Debtors	*2,58,69,955.29*	
Current Liabilities		2,07,77,683.84	Cash-in-hand	*16,88,843.20*	
Sundry Creditors	*2,07,77,683.84*		Bank Accounts	*10,15,931.31*	
			Advance Tax F.Y 2020-21	*30,000.00*	
Profit & Loss A/c			*Tcs Receivable 2020-21*	*3,139.00*	
Opening Balance			*Tds Receivable 2020-21*	*1,24,519.00*	
Current Period	*11,24,638.06*				
Less: Transferred	*11,24,638.06*				
Total		7,77,09,729.60	**Total**		7,77,09,729.60

For K.P.G. & Co
Chartered Accountants
P Mallikharjuna Sastry
(P. Mallikharjuna Sastry)
Partner M. no. 215023
Firm Reg No. 012136S

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Acknowledgement Number : 130899270050222

FORM 3CB [See rule 6G(1)(b)]

Audit report under section 44AB of the Income-tax Act, 1961, in the case of a person referred to in clause (b) of sub-rule (1) of rule 6G

1. We have examined the **balance sheet** as on 31st March 2021 , and the **profit and loss account** for the period beginning from 01-Apr-2020 to ending on 31-Mar-2021 attached herewith, of

Name	BOLLA RAMA DEVI
Address	Plot No. 41A, Sarpavaram . . . , 02-Andhra Pradesh , 91-India , Pincode - 533005
PAN	AVSPB0729L
Aadhaar Number of the assessee, if available	396145456733

2. We certify that the balance sheet and the **profit and loss account** are in agreement with the books of account maintained at the head office at KAKINADA and 0 branches.

3. a. We report the following observations/comments/discrepancies/inconsistencies if any:

b. Subject to above,-

A. We have obtained all the information and explanations which, to the best of our knowledge and belief, were necessary for the purposes of the audit.

B. In our opinion, proper books of account have been kept by the head office and branches of the assessee so far as appears from our examination of the books.

C. In our opinion and to the best of our information and according to the explanations given to us the said accounts, read with notes thereon, if any, give a true and fair view:-

i. In the case of the balance sheet, of the state of the affairs of the assessee as at 31st March 2021 ; and

ii. In the case of the profit and loss account, of the Profit of the assessee for the year ended on that date.

4. The statement of particulars required to be furnished under section 44AB is annexed herewith in Form No. 3CD.

5. In our opinion and to the best of our information and according to the explanations given to us , the particulars given in the said Form No. 3CD are true and correct, subject to the following observations/qualifications, if any:

Sl. No.	Qualification Type	Observations/Qualifications
1	Valuation of closing stock is not possible.	Closing stock as on 31/03/2021 has not been physically verified by us.
2	Others	Confirmation from sundry debtors and creditors were not produced for my verification.
3	Others	Cash balance has not been physically verified by us.
4	Others	Some of the vouchers are not available for expenses.

Accountant Details

Name P MALLIKHARJUNA SASTRY

Membership Number 215023

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FRN (Firm Registration Number)	012136S
Address	Gandhinagar . . . . . 02-Andhra Pradesh , 91-India , Pincode - 533004
Date of signing Tax Audit Report	05-Feb-2022
Place	175.101.156.30
Date	05-Feb-2022

This form has been digitally signed by MALLIKHARJUNA SASTRY PULLE having PAN ALMPP7018E from IP Address 175.101.156.30 on 05/02/2022 05:12:32 PM Dsc Sl.No and issuer 18818725CN=e-Mudhra Sub CA for Class 2 Individual 2014,C=IN,O=eMudhra Consumer Services Limited,OU=Certifying Authority

For K.P.G. & Co
Chartered Accountants
P Mall Sastry
(P. Mallikharjuna Sastry)
Partner M. no. 215023
Firm Reg No. 012136S

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FORM 3CD [See rule 6 G(2)]

Statement of particulars required to be furnished under section 44AB of the Income-tax Act, 1961

PART - A

1. Name of the Assessee	**BOLLA RAMA DEVI**
2. Address of the Assessee	**Plot No. 41A, Sarpavaram . . . . , 02-Andhra Pradesh , 91-India , Pincode - 533005**
3. Permanent Account Number (PAN)	**AVSPB0729L**
Aadhaar Number of the assessee, if available	**396145456733**
4. Whether the assessee is liable to pay indirect tax like excise duty, service tax, sales tax, goods and services tax,customs duty,etc. if yes, please furnish the registration number or,GST number or any other identification number allotted for the same ?	**Yes**

Sl. No.	Type	Registration /Identification Number
1	Sales Tax/VAT 02-Andhra Pradesh	37660989415
2	Goods and Services Tax 02-Andhra Pradesh	37 AVSPB0729L 1Z9
3	Goods and Services Tax 02-Andhra Pradesh	37 AVSPB0729L 2Z8

5. Status	**Individual**
6. Previous year	01-Apr-2020 to 31-Mar-2021
7. Assessment year	2021-22

8. Indicate the relevant clause of section 44AB under which the audit has been conducted

Sl. No.	Relevant clause of section 44AB under which the audit has been conducted
1	Clause 44AB(a)- Total sales/turnover/gross receipts of business exceeding specified limits

8(a). Whether the assessee has opted for taxation under section 115BA / 115BAA /115BAB / 115BAC /115BAD ? **No**

Section under which option exercised

PART - B

9.(a). If firm or Association of Persons, indicate names of partners/members and their profit sharing ratios. In case of AOP, whether shares of members are indeterminate or unknown?

Sl. No.	Name	Profit Sharing Ratio (%)

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(b). If there is any change in the partners or members or in their profit sharing ratio since the last date of the preceding year, the particulars of such change ?

Sl. No.	Date of change	Name of Partner/Member	Type of change	Old profit sharing ratio (%)	New profit Sharing Ratio (%)	Remarks
No records added						

10.(a) Nature of business or profession (if more than one business or profession is carried on during the previous year, nature of every business or profession).

Sl. No.	Sector	Sub Sector	Code
1	WHOLESALE AND RETAIL TRADE	Retail sale of other products n.e.c	09028
2	MANUFACTURING	Other manufacturing n.e.c.	04097

(b). If there is any change in the nature of business or profession, the particulars of such change ? **No**

Sl. No.	Business	Sector	Sub Sector	Code
No records added				

11.(a) Whether books of accounts are prescribed under section 44AA, list of books so prescribed ? **No**

Sl .No.	Books prescribed

(b). List of books of account maintained and the address at which the books of accounts are kept. (In case books of account are maintained in a computer system, mention the books of account generated by such computer system. If the books of accounts are not kept at one location, please furnish the addresses of locations along with the details of books of accounts maintained at each location.)

Same as 11(a) above

Sl. No.	Books maintained	Address Line 1	Address Line 2	City Or Town Or District	Zip Code / Pin Code	Country	State
1	Bank book	Plot No. 41A, Sar pavaram , Industri al Park		KAKINADA	533005	91-India	02-Andhra Pradesh
2	Cash book	Plot No. 41A, Sar pavaram , Industri al Park		KAKINADA	533005	91-India	02-Andhra Pradesh
3	Journal	Plot No. 41A, Sar pavaram , Industri al Park		KAKINADA	533005	91-India	02-Andhra Pradesh

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4	Ledger	Plot No. 41A, Sar pavaram , Industri al Park	KAKINADA	533005	91-India	02-Andhra Pradesh
5	Purchase re gister	Plot No. 41A, Sar pavaram , Industri al Park	KAKINADA	533005	91-India	02-Andhra Pradesh
6	Sales regist er	Plot No. 41A, Sar pavaram , Industri al Park	KAKINADA	533005	91-India	02-Andhra Pradesh

(c). List of books of account and nature of relevant documents examined.

Same as 11(b) above

Sl. No.	Books examined
1	Bank book
2	Cash book
3	Journal
4	Ledger
5	Purchase register
6	Sales register

12. Whether the profit and loss account includes any profits and gains assessable on presumptive basis, if yes, indicate the amount and the relevant section (44AD, 44ADA, 44AE, 44AF, 44B, 44BB, 44BBA, 44BBB, Chapter XII-G, First Schedule or any other relevant section.) ? **No**

Sl. No.	Section	Amount
No records added		

13.(a). Method of accounting employed in the previous year. **Mercantile system**

(b). Whether there had been any change in the method of accounting employed vis-a-vis the method employed in the immediately preceding previous year ? **No**

(c). If answer to (b) above is in the affirmative, give details of such change , and the effect thereof on the profit or loss ?

Sl. No.	Particulars	Increase in profit	Decrease in profit
		₹ 0	₹ 0

(d). Whether any adjustment is required to be made to the profits or loss for complying with the provisions of income computation and disclosure standards notified under section 145(2) ? **No**

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(e). If answer to (d) above is in the affirmative, give details of such adjustments:

Sl. No.	ICDS	Increase in profit	Decrease in profit	Net effect
		₹ 0	₹ 0	₹ 0
Total		₹ 0	₹ 0	₹ 0

(f). Disclosure as per ICDS:

Sl. NO.	ICDS	Disclosure
1	ICDS I-Accounting Policies	Fundamental Accounting Assumptions of Going Concern, Consistency and Accrual are followed
2	ICDS IV-Revenue Recognition	Revenue is recognized as and when sales is made and entered in the books of account. ICDS IV was complied with.
3	ICDS V-Tangible Fixed Assets	Tangible fixed assets are whom at cost of acquisition less depreciation. ICDS IV was complied with
4	ICDS II-Valuation of Inventories	Inventories are Valued at cost or market value whichever is less. ICDS II was complied with

14.(a). Method of valuation of closing stock employed in the previous year **Lower of Cost or Marker rate**

(b). In case of deviation from the method of valuation prescribed under section 145A, and the effect thereof on the profit or loss, please furnish No

Sl. NO.	Particulars	Increase in profit	Decrease in profit
No records added			

15. Give the following particulars of the capital asset converted into stock-in-trade

Sl. No.	Description of capital asset (a)	Date of acquisition (b)	Cost of acquisition (c)	Amount at which the asset is converted into stock-in trade (d)
No records added				

16. Amounts not credited to the profit and loss account, being, -

(a). The items falling within the scope of section 28:

Sl.No.	Description	Amount
		₹ 0

(b). the proforma credits, drawbacks, refunds of duty of customs or excise or service tax or refunds of sales tax or value added tax or Goods & Services Tax,where such credits, drawbacks or refunds are admitted as due by the authorities concerned;

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Sl. No.	Description	Amount
No records added		

(c) Escalation claims accepted during the previous year:

Sl. No.	Description	Amount
No records added		

(d) any other item of income:

Sl. No.	Description	Amount
No records added		

(e) Capital receipt, if any

Sl. No.	Description	Amount
No records added		

17. Where any land or building or both is transferred during the previous year for a consideration less than value adopted or assessed or assessable by any authority of a State Government referred to in section 43CA or 50C, please furnish:

Sl. No.	Details of property	Address of Property					Consideration received or accrued	Value adopted or assessed or assessable	Whether provisions of second proviso to sub-section (1) of section 43CA or fourth proviso to clause (x) of sub-section (2) of section 56 applicable ?
		Address Line 1	Address Line 2	City Or Town Or District	Zip Code / Pin Code	Country / State			
1							₹ 0	₹ 0	

18. Particulars of depreciation allowable as per the Income-tax Act, 1961 in respect of each asset or block of assets, as the case may be, in the following form:-

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Sl. No.	Description of the Block of Assets/Loss of Assets	Rate of Depreciation (%)	Opening WDV / Actual	Adjustment made to the written down value under section 115BAC/115BAD (for assessment year 2021-22 only)	Adjustment made to the written down value of intangible asset due to excluding value of goodwill of a business or profession	Adjusted written down value(A)	Purchase Value	Total Value of Purchases (B)	Deductions (C)	Other Adjustments	Depreciation Allowable (D)	Written Down Value at the end of the year(A+B-C-D)
1	Building @ 10%	10	₹ 57,55,776	₹ 0	₹ 0	₹ 57,55,776	₹ 0	₹ 0	₹ 0	₹ 0	₹ 5,75,578	₹ 51,80,198
2	Plant and Machinery @ 15%	15	₹ 12,06,443	₹ 0	₹ 0	₹ 12,06,443	₹ 0	₹ 0	₹ 0	₹ 0	₹ 1,80,966	₹ 10,25,477
3	Plant and Machinery @ 40%	40	₹ 13,166	₹ 0	₹ 0	₹ 13,166	₹ 0	₹ 0	₹ 0	₹ 0	₹ 5,266	₹ 7,900

19. Amount admissible under section-

Sl. No.	Section	Amount debited to profit and loss account	Amounts admissible as per the provisions of the Income-tax Act, 1961 and also fulfils the conditions, if any specified under the relevant provisions of Income-tax Act, 1961 or Income-tax Rules, 1962 or any other guidelines, circular, etc., issued in this behalf.

No records added

20.(a) Any sum paid to an employee as bonus or commission for services rendered, where such sum was otherwise payable to him as profits or dividend. [Section 36(1)(ii)]

Sl. No.	Description	Amount

No records added

(b). Details of contributions received from employees for various funds as referred to in section 36(1)(va):

Sl. No.	Nature of fund	Sum received from employees	Due date for payment	The actual amount paid	The actual date of payment to the concerned authorities

No records added

21.(a). Please furnish the details of amounts debited to the profit and loss account, Being in the nature of capital, personal, advertisement expenditure etc.

Capital expenditure

Sl. No.	Particulars	Amount

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₹ 0

1

Personal expenditure

Sl. No.	Particulars	Amount

No records added

Advertisement expenditure in any souvenir, brochure, tract, pamphlet or the like published by a political party

Sl. No.	Particulars	Amount

No records added

Expenditure incurred at clubs being entrance fees and subscriptions

Sl. No.	Particulars	Amount

No records added

Expenditure incurred at clubs being cost for club services and facilities used.

Sl. No.	Particulars	Amount

No records added

Expenditure by way of penalty or fine for violation of any law for the time being in force

Sl.No.	Particulars	Amount

No records added

Expenditure by way of any other penalty or fine not covered above

Sl. No.	Particulars	Amount

No records added

Expenditure incurred for any purpose which is an offence or which is prohibited by law

Sl. No.	Particulars	Amount

No records added

(b). Amounts inadmissible under section 40(a):

i. as payment to non-resident referred to in sub-clause (i)

A. Details of payment on which tax is not deducted:

Sl. No.	Date of payment	Amount	Nature of payment	Name of the payee	Permanent Account Number of the payee, if available	Aadhaar Number of the payee, if available	Address Line 1	Address Line 2	City Or Town Or District	Zip Code / Pin Code	Country	State

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1	₹ 0	

B. Details of payment on which tax has been deducted but has not been paid during the previous year or in the subsequent year before the expiry of time prescribed under section 200(1)

Sl. No.	Date of payment	Amount of payment	Nature of payment	Name of the payee	Permanent Account Number of the payee, if available	Aadhaar Number of the payee, if available	Address Line 1	Address Line 2	City Or Town Or District	Zip Code / Pin Code	Country	State	Amount of tax deducted
1		₹ 0											₹ 0

iv. as payment referred to in sub-clause (ia)

A. Details of payment on which tax is not deducted:

Sl. No.	Date of payment	Amount of payment	Nature of payment	Name of the payee	Permanent Account Number of the payee, if available	Aadhaar Number of the payee, if available	Address Line 1	Address Line 2	City Or Town Or District	Zip Code / Pin Code	Country	State
1		₹ 0										

B. Details of payment on which tax has been deducted but has not been paid on or before the due date specified in sub-section (1) of section 139.

Sl. No.	Date of payment	Amount of payment	Nature of payment	Name of the payee	Permanent Account Number of the payee, if available	Aadhaar Number of the payee, if available	Address Line 1	Address Line 2	City Or Town Or District	Zip Code / Pin Code	Country	State	Amount of tax deducted	Amount deposited out of "Amount of tax deducted"
1		₹ 0											₹ 0	₹ 0

iv. as payment referred to in sub-clause (ib)

A. Details of payment on which levy is not deducted:

Sl. No.	Date of payment	Amount of payment	Nature of payment	Name of the payee	Permanent Account Number of the payee, if available	Aadhaar Number of the payee, if available	Address Line 1	Address Line 2	City Or Town Or District	Zip Code / Pin Code	Country	State
1		₹ 0										

B. Details of payment on which levy has been deducted but has not been paid on or before the due date specified in sub-section (1) of section 139

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Sl. No.	Date of payment	Amount of payment	Nature of payment	Name of the payee	Permanent Account Number of the payee, if available	Aadhaar Number of the payee, if available	Address Line 1	Address Line 2	City Or Town Or District	Zip Code / Pin Code	Country	State	Amount of levy deducted	Amount deposited out of "Amount of Levy deducted"
1		₹ 0											₹ 0	₹ 0

iv. Fringe benefit tax under sub-clause (ic) ₹ 0

v. Wealth tax under sub-clause (iia) ₹ 0

vi. Royalty, license fee, service fee etc. under sub-clause (iib) ₹ 0

vii. Salary payable outside India/to a non resident without TDS etc. under sub-clause (iii)

Sl. No.	Date of payment	Amount of payment	Name of the payee	Permanent Account Number of the payee, if available	Aadhaar Number of the payee, if available	Address Line 1	Address Line 2	City Or Town Or District	Zip Code / Pin Code	Country	State
1		₹ 0									

viii. Payment to PF /other fund etc. under sub-clause (iv) ₹ 0

ix. Tax paid by employer for perquisites under sub-clause (v) ₹ 0

x. Amounts debited to profit and loss account being interest, salary, bonus, commission or remuneration inadmissible under section 40(b)/40(ba) and computation thereof.

Sl. No.	Particulars	Section	Amount debited to P/L A/C	Amount admissible	Amount inadmissible	Remarks

No records added

xi. Disallowance/deemed income under section 40A(3):

A. On the basis of the examination of books of account and other relevant documents/evidence, whether the expenditure covered under section 40A(3) read with rule 6DD were made by account payee cheque drawn on a bank or account payee bank draft. Please furnish the details ? Yes

Sl. No.	Date of Payment	Nature of Payment	Amount	Name of the payee	Permanent Account Number of the payee, if available	Aadhaar Number of the payee, if available

No records added

B. On the basis of the examination of books of account and other relevant documents/evidence, whether payment referred to in section 40A(3A) read with rule 6DD were made by account payee cheque drawn on a bank or account payee bank draft, please furnish the details of amount deemed to be the profits and gains of business or profession under section 40A(3A) ? Yes

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Sl. No.	Date of Payment	Nature of Payment	Amount	Name of the payee	Permanent Account Number of the payee, if available	Aadhaar Number of the payee, if available

No records added

(e). Provision for payment of gratuity not allowable under section 40A(7); ₹ 0

(f). Any sum paid by the assessee as an employer not allowable under section 40A(9); ₹ 0

(g). Particulars of any liability of a contingent nature:

Sl. No.	Nature of Liability	Amount
1		₹ 0

(h). Amount of deduction inadmissible in terms of section 14A in respect of the expenditure incurred in relation to income which does not form part of the total income:

Sl. No.	Particulars	Amount

No records added

(i). Amount inadmissible under the proviso to section 36(1)(iii). ₹ 0

(j). Amount of interest inadmissible under section 23 of the Micro, Small and Medium Enterprises Development Act, 2006. ₹ 0

(k). Particulars of any payments made to persons specified under section 40A(2)(b).

Sl. No.	Name of Related Person	PAN of Related Person	Aadhaar Number of the related person, if available	Relation	Nature of Transaction	Payment Made

No records added

(l). Amounts deemed to be profits and gains under section 32AC or 32AD or 33AB or 33AC or 33ABA.

Sl. No.	Section	Description	Amount

No records added

(m). Any amount of profit chargeable to tax under section 41 and computation thereof.

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Sl. No.	Name of person	Amount of income	Section	Description of Transaction	Computation if any

No records added

26.i. In respect of any sum referred to in clause (a),(b),(c),(d),(e),(f) or (g) of section 43B, the liability for which:-

A. pre-existed on the first day of the previous year but was not allowed in the assessment of any preceding previous year and was

a. paid during the previous year;

Sl. No.	Section	Nature of liability	Amount
			₹ 0

b. not paid during the previous year;

Sl. No.	Section	Nature of liability	Amount
			₹ 0

B. was incurred in the previous year and was

a. paid on or before the due date for furnishing the return of income of the previous year under section 139(1);

Sl. No.	Section	Nature of liability	Amount
			₹ 0

b. not paid on or before the aforesaid date

Sl. No.	Section	Nature of liability	Amount
			₹ 0

State whether sales tax,goods & services Tax, customs duty, excise duty or any other indirect tax,levy,cess,impost etc.is passed through the profit and loss account? No

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27.a. Amount of Central Value Added Tax Credits/ Input Tax Credit(ITC) availed of or utilised during the previous year and its treatment in profit and loss account and treatment of outstanding Central Value Added Tax Credits/Input Tax Credit(ITC) in accounts. No

CENVAT /ITC	Amount	Treatment in Profit & Loss/Accounts

No records added

b. Particulars of income or expenditure of prior period credited or debited to the profit and loss account.

Sl. No.	Type	Particulars	Amount	Prior period to which it relates (Year in yyyy-yy format)

No records added

28. Whether during the previous year the assessee has received any property, being share of a company not being a company in which the public are substantially interested, without consideration or for inadequate consideration as referred to in section 56(2)(viia) ?

Please furnish the details of the same

Sl. No	Name of the person from which shares received	PAN of the person, if available	Aadhaar Number of the payee, if available	Name of the company whose shares are received	CIN of the company	No. of Shares Received	Amount of consideration paid	Fair Market value of the shares

No records added

29. Whether during the previous year the assessee received any consideration for issue of shares which exceeds the fair market value of the shares as referred to in section 56(2)(viib) ?

Please furnish the details of the same

Sl. No.	Name of the person from whom consideration received for issue of shares	PAN of the person, if available	Aadhaar Number of the payee, if available	No. of shares issued	Amount of consideration received	Fair Market value of the shares

No records added

30.a. Whether any amount is to be included as income chargeable under the head 'income from other sources' as referred to in clause (ix) of sub-section (2) of section 56 ? No

b. Please furnish the following details:

Sl. No.	Nature of Income	Amount

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No records added

B.a. Whether any amount is to be included as income chargeable under the head 'income from other sources' as referred to in clause (x) of sub-section (2) of section 56 ? No

b. Please furnish the following details:

Sl. No.	Nature of income	Amount

No records added

30. Details of any amount borrowed on hundi or any amount due thereon (including interest on the amount borrowed) repaid, otherwise than through an account payee cheque. [Section 69D] No

Sl. No.	Name of the person from whom amount borrowed or repaid on hundi	PAN of the person, if available	Aadhaar Number of the person, if available	Address Line 1	Address Line 2	City Or Town Or District	Zip Code / Pin Code	Country	State	Amount borrowed	Date of borrowing	Amount due including interest	Amount repaid	Date of Repayment
1										₹ 0		₹ 0	₹ 0	

A.a. Whether Primary adjustment to transfer price as referred to in sub-section (1) of section 92CE, has been made during the previous year ? No

b. Please furnish the following details:

Sl. No.	Under which clause of sub-section (1) of section 92CE primary adjustment is made ?	Amount of primary adjustment	Whether the excess money available with the associated enterprise is required to be repatriated to India as per the provisions of sub-section (2) of section 92CE ?	Whether the excess money has been repatriated within the prescribed time ?	The amount of imputed interest income on such excess money which has not been repatriated within the prescribed time	Expected date of repatriation of money

No records added

B.a. Whether the assessee has incurred expenditure during the previous year by way of interest or of similar nature exceeding one crore rupees as referred to in sub-section (1) of section 94B ? No

b. Please furnish the following details

Sl. No.	Amount of expenditure by way of interest or of similar nature incurred (i)	Earnings before interest, tax, depreciation and amortization (EBITDA) during the previous year (ii)	Amount of expenditure by way of interest or of similar nature as per (i) above which exceeds 30% of EBITDA as per (ii) above. (iii)	Details of interest expenditure brought forward as per sub-section (4) of section 94B. (iv)		Details of interest expenditure carried forward as per sub-section (4) of section 94B. (v)	
				Amount	Assessment Year		Amount
1	₹ 0	₹ 0	₹ 0	₹ 0			₹ 0

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30. Whether the assessee has entered into an impermissible avoidance arrangement, as referred to in section 96, during the previous year (This clause is kept in abeyance till 31st March, 2022) ? No

b. Please furnish the following details

Sl. No.	Nature of the impermissible avoidance arrangement	Amount of tax benefit in the previous year arising, in aggregate, to all the parties to the arrangement

No records added

31.a. Particulars of each loan or deposit in an amount exceeding the limit specified in section 269SS taken or accepted during the previous year :-

Sl. No.	Name of the lender or depositor	Address of the lender or depositor	Permanent Account Number (if available with the assessee) of the lender or depositor	Aadhaar Number of the lender or depositor, if available	Amount of loan or deposit taken or accepted	Whether the loan/deposit was squared up during the previous year ?	Maximum amount outstanding in the account at any time during the previous year	Whether the loan or deposit was taken or accepted by cheque or bank draft or use of electronic clearing system through a bank account ?	In case the loan or deposit was taken or accepted by cheque or bank draft, whether the same was taken or accepted by an account payee cheque or an account payee bank draft.

No records added

b. Particulars of each specified sum in an amount exceeding the limit specified in section 269ST taken or accepted during the previous year -

Sl. No.	Name of the person from whom specified sum is received	Address of the person from whom specified sum is received	Permanent Account Number (if available with the assessee) of the person from whom specified sum is received	Aadhaar Number of the person from whom specified sum is received, if available	Amount of specified sum taken or accepted	Whether the specified sum was taken or accepted by cheque or bank draft or use of electronic clearing system through a bank account ?	In case the specified sum was taken or accepted by cheque or bank draft, whether the same was taken or accepted by an account payee cheque or an account payee bank draft.

No records added

Note: Particulars at (a) and (b) need not be given in the case of a Government company, a banking company or a corporation established by a Central, State or Provincial Act.

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(ba). Particulars of each receipt in an amount exceeding the limit specified in section 269ST, in aggregate from a person in a day or in respect of a single transaction or in respect of transactions relating to one event or occasion from a person, during the previous year, where such receipt is otherwise than by a cheque or bank draft or use of electronic clearing system through a bank account

Sl. No.	Name of the payer	Address of the payer	Permanent Account Number (if available with the assessee) of the payer	Aadhaar Number of the payer, if available	Nature of transaction	Amount of receipt	Date of receipt

No records added

(bb). Particulars of each receipt in an amount exceeding the limit specified in section 269ST, in aggregate from a person in a day or in respect of a single transaction or in respect of transactions relating to one event or occasion from a person, received by a cheque or bank draft, not being an account payee cheque or an account payee bank draft, during the previous year:-

Sl. No.	Name of the payer	Address of the payer	Permanent Account Number (if available with the assessee) of the payer	Aadhaar Number of the payer, if available	Amount of receipt

No records added

(bc). Particulars of each payment made in an amount exceeding the limit specified in section 269ST, in aggregate from a person in a day or in respect of a single transaction or in respect of transactions relating to one event or occasion to a person, otherwise than by a cheque or bank draft or use of electronic clearing system through a bank account during the previous year

Sl. No.	Name of the payee	Address of the payee	Permanent Account Number (if available with the assessee) of the payee	Aadhaar Number of the payee, if available	Nature of transaction	Amount of payment	Date of payment

No records added

(bd). Particulars of each payment made in an amount exceeding the limit specified in section 269ST, in aggregate from a person in a day or in respect of a single transaction or in respect of transactions relating to one event or occasion to a person, made by a cheque or bank draft, not being an account payee cheque or an account payee bank draft, during the previous year

Sl. No.	Name of the payee	Address of the payee	Permanent Account Number (if available with the assessee) of the payee	Aadhaar Number of the payee, if available	Amount of payment

No records added

Note: Particulars at (ba), (bb), (bc) and (bd) need not be given in the case of receipt by or payment to a Government company, a banking Company, a post office savings bank, a cooperative bank or in the case of transactions referred to in section 269SS or in the case of persons referred to in Notification No. S.O. 2065(E) dated 3rd July, 2017

(c) Particulars of each repayment of loan or deposit or any specified advance in an amount exceeding the limit specified in section 269T made during the previous year:-

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Sl. No.	Name of the payee	Address of the payee	Permanent Account Number (if available with the assessee) of the payee	Aadhaar Number of the payee, if available	Amount of repayment	Maximum amount outstanding in the account at any time during the previous year	Whether the repayment was made by cheque or bank draft or use of electronic clearing system through a bank account ?	In case the repayment was made by cheque or bank draft, whether the same was repaid by an account payee cheque or an account payee bank draft.

No records added

d. Particulars of repayment of loan or deposit or any specified advance in an amount exceeding the limit specified in section 269T received otherwise than by a cheque or bank draft or use of electronic clearing system through a bank account during the previous year:-

Sl. No.	Name of the payer	Address of the payer	Permanent Account Number (if available with the assessee) of the payer	Aadhaar Number of the payer, if available	Amount of repayment of loan or deposit or any specified advance received otherwise than by a cheque or bank draft or use of electronic clearing system through a bank account during the previous year

No records added

e. Particulars of repayment of loan or deposit or any specified advance in an amount exceeding the limit specified in section 269T received by a cheque or bank draft which is not an account payee cheque or account payee bank draft during the previous year:-

Sl. No.	Name of the payer	Address of the payer	Permanent Account Number (if available with the assessee) of the payer	Aadhaar Number of the payer, if available	Amount of repayment of loan or deposit or any specified advance received by a cheque or bank draft which is not an account payee cheque or account payee bank draft during the previous year

No records added

Note: Particulars at (c), (d) and (e) need not be given in the case of a repayment of any loan or deposit or specified advance taken or accepted from Government, Government company, banking company or a corporation established by a Central, State or Provincial Act

14. a. Details of brought forward loss or depreciation allowance, in the following manner, to the extent available

Sl. No.	Assessment Year	Nature of loss/allowance	Amount as returned (if the assessed loss and depreciation is less and no	All losses/allowances not allowed under section 115BAA / 115BAC / 115BAD	Amount as adjusted by withdrawal of additional depreciation on account of opting under	Amount as assessed (give reference to relevant order)	Remarks

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	then take assessed)	section 115BAC/115BAD(To be filled in for assessment year 2021-22 only)	Amount	Order U/s & Date
1	₹ 0	₹ 0	₹ 0	₹ 0

b. Whether a change in share holding of the company has taken place in the previous year due to which the losses incurred prior to the previous year cannot be allowed to be carried forward in terms of section 79 ?

c. Whether the assessee has incurred any speculation loss referred to in section 73 during the previous year ? **No**

Please furnish the details of the same. **₹ 0**

d. Whether the assessee has incurred any loss referred to in section 73A in respect of any specified business during the previous year ? **No**

Please furnish the details of the same. **₹ 0**

e. In case of a company, please state that whether the company is deemed to be carrying on a speculation business as referred in explanation to section 73.

Please furnish the details of the same. **₹ 0**

33. Section-wise details of deductions, if any, admissible under Chapter VIA or Chapter III (Section 10A, Section 10AA). **Yes**

Sl. No.	Section under which deduction is claimed	Amounts admissible as per the provision of the Income-tax Act,1961 and fulfils the conditions, if any, specified under the relevant provisions of Income-tax Act, 1961 or Income-tax Rules, 1962 or any other guidelines, circular, etc, issued in this behalf.
1	80C	₹ 1,50,000

34.(a). Whether the assessee is required to deduct or collect tax as per the provisions of Chapter XVII-B or Chapter XVII-BB, please furnish ? **No**

Sl. No.	Tax deduction and collection Account Number (TAN) (1)	Section (2)	Nature of payment (3)	Total amount of payment or receipt of the nature specified in column (3 (4	Total amount on which tax was required to be deducted or collected out of (4) (5)	Total amount on which tax was deducted or collected at specified rate out of (5) (6)	Amount of tax deducted or collected out of (6) (7)	Total amount on which tax was deducted or collected at less than specified rate out of (7) (8)	Amount of tax deducted or collected on (8) (9)	Amount of tax deducted or collected not deposited to the credit of the Central Government out of (6) and (8) (10)
				₹ 0	₹ 0	₹ 0	₹ 0	₹ 0	₹ 0	₹ 0

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(b). Whether the assessee is required to furnish the statement of tax deducted or tax collected ? No

Please furnish the details:

Sl. No.	Tax deduction and collection Account Number (TAN)	Type of Form	Due date for furnishing	Date of furnishing, if furnished	Whether the statement of tax deducted or collected contains information about all details/ transactions which are required to be reported	Please furnish list of details/transactions which are not reported.

(c). Whether the assessee is liable to pay interest under section 201(1A) or section 206C(7) ?

Please furnish:

Sl. No.	Tax deduction and collection Account Number (TAN) (1)	Amount of interest under section 201(1A)/206C(7) is payable (2)	Amount paid out of column (2) along with date of payment. (3)	
			Amount	Date of payment
		₹ 0	₹ 0	

35.(a). In the case of a trading concern, give quantitative details of principal items of goods traded;

Sl. No.	Item Name	Unit Name	Opening stock	Purchases during the pervious year	Sales during the pervious year	Closing stock	Shortage/excess, if any
1			0	0	0	0	0

(b). In the case of manufacturing concern, give quantitative details of the principal items of raw materials, finished products and by-products.

A. Raw materials:

Sl. No.	Item Name	Unit Name	Opening stock	Purchases during the pervious year	Consumption during the pervious year	Sales during the pervious year	Closing stock	Yield of finished products	Percentage of yield	Shortage/excess, if any

No records added

B. Finished products :

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Sl. No.	Item Name	Unit Name	Opening stock	Purchases during the pervious year	Quantity manufactured during the pervious year	Sales during the pervious year	Closing stock	Shortage/excess, if any

No records added

C. By-products

Sl. No.	Item Name	Unit Name	Opening stock	Purchases during the pervious year	Consumption during the pervious year	Sales during the pervious year	Closing stock	Shortage/excess, if any

No records added

36.(a). Whether the assessee has received any amount in the nature of dividend as referred to in sub-clause (e) of clause (22) of section 2 ?

Please furnish the following details:-

Sl. No.	Amount received	Date of receipt

No records added

37. Whether any cost audit was carried out ?

Give the details, if any, of disqualification or disagreement on any matter/item/value/quantity as may be reported/identified by the cost auditor

38. Whether any audit was conducted under the Central Excise Act, 1944 ?

Give the details, if any, of disqualification or disagreement on any matter/item/value/quantity as may be reported/identified by the auditor

39. Whether any audit was conducted under section 72A of the Finance Act, 1994 in relation to valuation of taxable services as may be reported/identified by the auditor. ?

give the details, if any, of disqualification or disagreement on any matter/item/value/quantity as may be reported/identified by the auditor.

40. Details regarding turnover, gross profit, etc., for the previous year and preceding previous year:

%	Previous Year	%	Preceding previous Year

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(a)	Total turnover of the assessee	49989049			41050626		
(b)	Gross profit / Turnover	10413031	49989049	20.83	20156984	41050626	49.1
(c)	Net profit / Turnover	1124618	49989049	2.25	1085421	41050626	2.64
(d)	Stock-in-Trade / Turnover	26030000	49989049	52.07	875670	41050626	2.13
(e)	Material consumed / Finished goods produced						

41. Please furnish the details of demand raised or refund issued during the previous year under any tax laws other than Income-tax Act, 1961 and Wealth-tax Act, 1957 alongwith details of relevant proceedings.

Sl. No.	Financial year to which demand/refund relates to	Name of other Tax law	Type (Demand raised/Refund received)	Date of demand raised/refund received	Amount	Remarks

No records added

42.a. Whether the assessee is required to furnish statement in Form No. 61 or Form No. 61A or Form No. 61B ? No

b. Please furnish

Sl. No.	Income tax Department Reporting Entity Identification Number	Type of Form	Due date for furnishing	Date of furnishing, if furnished	Whether the Form contains information about all details/ furnished transactions which are required to be reported ?	Please furnish list of the details/transactions which are not reported.

No records added

43.a. Whether the assessee or its parent entity or alternate reporting entity is liable to furnish the report as referred to in sub-section (2) of section 286 ? N o

b. Please furnish the following details

Date of furnishing of report

c. Please enter expected date of furnishing the report

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44. Break-up of total expenditure of entities registered or not registered under the GST (This Clause is kept in abeyance till 31st March, 2022)

Sl. No.	Total amount of Expenditure incurred during the year	Expenditure in respect of entities registered under GST				Expenditure relating to entities not registered under GST
		Relating to goods or services exempt from GST	Relating to entities falling under composition scheme	Relating to other registered entities	Total payment to registered entities	
	₹ 0	₹ 0	₹ 0	₹ 0	₹ 0	₹ 0

Accountant Details

Accountant Details

Name	P MALLIKHARJUNA SASTRY
Membership Number	215023
FRN (Firm Registration Number)	012136S
Address	Gandhinagar, , , , , 02-Andhra Pradesh, 91-India, Pincode - 533004
Place	175.101.156.30
Date	05-Feb-2022

Additions Details (From Point No.18)

Description of the Block of Assets/Class of Assets	Sl. No.	Date of Purchase	Date put to Use	Purchase Value (1)	Adjustments on Account of			Total Value of Purchases (B) (1+2+3+4)
					CENVAT (2)	Change in Rate of Exchange (3)	subsidy or grant or reimbursement, by whatever name called (4)	
Building @ 10%	No records added							

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Description of the Block of Assets/Class of Assets	Sl. No.	Date of Purchase	Date put to use	Purchase Value (1)	Adjustments on Account of			Total Value of Purchases (B) (1+2+3+4)
					CENVAT (2)	Change in Rate of Exchange (3)	subsidy or grant or reimbursement, by whatever name called (4)	
Plant and Machinery @ 15%								

No records added

Description of the Block of Assets/Class of Assets	Sl. No.	Date of Purchase	Date put to use	Purchase Value (1)	Adjustments on Account of			Total Value of Purchases (B) (1+2+3+4)
					CENVAT (2)	Change in Rate of Exchange (3)	subsidy or grant or reimbursement, by whatever name called (4)	
Plant and Machinery @ 40%								

No records added

Deductions Details (From Point No.18)

Description of the Block of Assets/Class of Assets	Sl. No.	Date of Sale	Amount	Whether deletions are out of purchases put to use for less than 180 days
Building @ 10%				

No records added

Description of the Block of Assets/Class of Assets	Sl. No.	Date of Sale	Amount	Whether deletions are out of purchases put to use for less than 180 days
Plant and Machinery @ 15%				

No records added

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Description of the Block of Assets/Class of Assets	Sl. No.	Date of Sale	Amount	Whether deletions are out of purchases put to use for less than 180 days
Plant and Machinery @ 40%				

No records added

This form has been digitally signed by MALLIKHARJUNA SASTRY PULLE having PAN ALMPP7018E from IP Address 175.101.156.30 on 05/02/2022 05:12:32 PM Dsc Sl.No and issuer 18818725CN=e-Mudhra Sub CA for Class 2 Individual 2014,C=IN,O=eMudhra Consumer Services Limited,OU=Certifying Authority

For K.P.G. & Co
Chartered Accountants
P. Mallikharjuna Sastry
(P. Mallikharjuna Sastry)
Partner M. no. 215023
Firm Reg No. 012136S

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Acknowledgement Number:583795041300922 **Date of filing:30-Sep-2022**

INDIAN INCOME TAX RETURN ACKNOWLEDGEMENT

Assessment Year 2022-23

[Where the data of the Return of Income in Form ITR-1 (SAHAJ), ITR-2, ITR-3, ITR-4(SUGAM), ITR-5, ITR-6, ITR-7 filed and verified]

(Please see Rule 12 of the Income-tax Rules, 1962)

PAN	AVSPB0729L		
Name	RAMA DEVI BOLLA		
Address	Plot No 41A , Sarpavaram , Industrial Park , KAKINADA , 02-Andhra Pradesh , 91-India , 533005		
Status	Individual	Form Number	ITR-3
Filed u/s	139(1) Return filed on or before due date	e-Filing Acknowledgement Number	583795041300922

Taxable Income and Tax details

Current Year business loss, if any	1	0
Total Income		16,47,120
Book Profit under MAT, where applicable	2	0
Adjusted Total Income under AMT, where applicable	3	0
Net tax payable	4	2,40,901
Interest and Fee Payable	5	5,548
Total tax, interest and Fee payable	6	2,46,449
Taxes Paid	7	2,50,616
(+)Tax Payable (-)Refundable (6-7)	8	(-) 4,170

Distribution Tax details

Dividend Tax Payable	9	0
Interest Payable	10	0
Total Dividend tax and interest payable	11	0
Taxes Paid	12	0
(+)Tax Payable (-)Refundable (11-12)	13	0

Accreted Income & Tax Detail

Accreted Income as per section 115TD	14	0
Additional Tax payable u/s 115TD	15	0
Interest payable u/s 115TE	16	0
Additional Tax and interest payable	17	0
Tax and interest paid	18	0
(+)Tax Payable (-)Refundable (17-18)	19	0

This return has been digitally signed by RAMA DEVI BOLLA in the capacity of Self having PAN AVSPB0729L from IP address 175.101.156.30 on 30-Sep-2022

DSC Sl. No. & Issuer 5560772 & 22093572CN=e-Mudhra Sub CA for Class 3 Individual 2014,OU=Certifying Authority,O=eMudhra Consumer Services Limited,C=IN

System Generated Barcode/QR Code

AVSPB0729L035837950413009225E4F859A8CACEA3199527B7AB4A4CE609FCBB19F

DO NOT SEND THIS ACKNOWLEDGEMENT TO CPC, BENGALURU

Ramy

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A.Y. 2022-2023

Name : BOLLA RAMA DEVI
Father's Name : Surya Satyanarayana
Address : Plot No 41A
Sarpavaram
Industrial Park KAKINADA - 533 005

Previous Year : 2021-2022
PAN : AVSPB 0729 L

Status : Individual
Date of Birth : 21-May-1981
Aadhaar No. : 3961 4545 6733
Opted Tax u/s 115BAC

Resident

Statement of Income

		Rs.	Rs.	Rs.
■ **Income from House Property**				
Self occupied properties				
Property-1: 1	1			
Income chargeable under the head "House Property"				0
■ **Profits and gains of Business or Profession**				
Business-1				
Net Profit Before Tax as per P & L a/c			15,03,681	
Add: Inadmissible expenses & Income not included				
Depreciation debited to P & L a/c			6,75,002	
Adjusted Profit of Business-1			21,78,683	
Total income of Business and Profession			21,78,683	
Less: Depreciation as per IT Act	5		6,75,002	
Income chargeable under the head "Business and Profession"				15,03,681
■ **Income from other sources**				
Interest income	2		1,43,438	
Income chargeable under the head "other sources"				1,43,438
■ **Total Income**				16,47,119
Total income rounded off u/s 288A				16,47,120
Tax on total income				2,31,636
Add: Cess				9,265
Tax with cess				2,40,901
Net Tax				2,40,901
TDS	3		1,90,616	
Total prepaid taxes				1,90,616
Balance Tax				50,285
Interest u/s 234B			3,012	
Interest u/s 234C			2,536	5,548
Net tax payable				55,833
Self-assessment tax paid	4			60,000
■ **Refund Due**				4,170

Schedule 1

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Details of the property

1 KAKINADA EAST GODAVARI 533002 Andhra pradesh

Details of Owner

Owner	Self
Assessee's share in the property (%)	100

Schedule 2

Interest income (other than NSC/KVP interest)

Name of the Bank	Interest
Interest on Time Deposits	
Canara Bank	1,43,438

Schedule 3

TDS as per Form 16A

Deductor, TAN	TDS deducted	TDS claimed in current year	Gross receipt offered
Canara Bank Ap. TAN- HYDC09674A	14,344	14,344	1,43,438
New & Renewable Energy Development Corporation Of Andhra Pradesh Limited. TAN- HYDN00008B	1,75,211	1,75,211	98,69,444
Senior Accounts Officer B And R Apspdcl Tirupati, TAN- VPNS10781B	50	50	48,820
The Kakinada Cooperative Town Bank Limited No C750 Kakinada, TAN- VPNT00321G	831	831	83,083
Total	1,90,436	1,90,436	########

Tax collected at source

Collector & TAN	TCS collected	TCS claimed in current year	Expenditure as per 26AS
Hari Narayan Gupta TAN- JBPH00970E	180	180	1,79,819
Grand Total	1,90,616	1,90,616	

Schedule 4

Self Assessment tax paid

Name of the Bank and BSR Code	Date of deposit	Challan Sl.no	Amount paid
Canara Bank - 0242465	30-Sep-22	00590	60,000

Bank A/c for Refund CANARA BANK 32501250002078 IFSC: CNRB0013258

✓ Rama

[BOLLA RAMA DEVI]

Date : 30-Sep-2022

Place : KAKINADA

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BOLLA RAMADEVI
KAKINADA

Profit & Loss A/c
1-Apr-2021 to 31-Mar-2022

Particulars	1-Apr-2021 to 31-Mar-2022		Particulars	1-Apr-2021 to 31-Mar-2022	
Opening Stock		2,60,30,000.00	**Sales Accounts**		6,80,24,753.27
Closing Stock	2,60,30,000.00		Sales	6,80,24,753.27	
Purchase Accounts		4,57,01,698.52	Closing Stock		1,21,14,000.00
Purchase	4,57,01,698.52		*Closing Stock*	1,21,14,000.00	
Gross Profit c/o		*84,07,054.75*			
		8,01,38,753.27			8,01,38,753.27
Indirect Expenses		70,75,146.32	Gross Profit b/f		*84,07,054.75*
Bank Interest & Charges	26,38,096.85		**Indirect Incomes**		1,71,773.52
Elelctricity Charges	1,71,675.78		*Interest on Fdr*	1,43,483.00	
Office Maintenance	62,841.00		*Interest on Gold Bonds*	1,875.52	
Printing & Stationery	96,676.20		*Interest on R D*	22,608.00	
Repairs & Maintenance	1,54,779.83		*Interest on Sb*	3,807.00	
Salaries & Staff Welfare	25,72,714.81				
Taxes & Liscence	88,497.00				
Travelling Expenses	87,813.50				
Vehicle Maintenance	62,694.99				
Commision Paid	63,451.52				
Consultant Fee	28,600.00				
Depriciation	6,75,002.00				
Insurance	50,950.00				
NREDCAP Tender Expenses	1,82,601.00				
Transportation Charges	1,38,751.84				
Nett Profit		*15,03,681.95*			
Total		85,78,828.27	**Total**		85,78,828.27

UDIN : 22215023AZFJWU5111

For K.P.G. & Co
Chartered Accountants
P Mallikharjuna Sastry
(P. Mallikharjuna Sastry)
Partner M. no. 215023
Firm Reg No. 012136S

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BOLLA RAMADEVI
KAKINADA

Balance Sheet
1-Apr-2021 to 31-Mar-2022

Liabilities	as at 31-Mar-2022		Assets	as at 31-Mar-2022	
Capital Account		1,90,10,843.52	**Fixed Assets**		1,74,72,244.23
			Plant & Machinary	3,43,435.00	
Loans (Liability)		3,25,36,010.82	15% Block	2,27,328.78	
Bank OD A/c	1,55,30,789.54		A/c Purchase	1,95,451.00	
Secured Loans	68,66,752.48		Aquaguard Reviva Ro	11,601.70	
Unsecured Loans	1,01,38,468.80		Bulding Constraction	35,46,455.95	
			Cc Cameras	16,500.00	
Current Liabilities		1,19,80,321.04	Cell Phones	40,893.00	
Sundry Creditors	1,19,80,321.04		Computer	4,739.15	
			Electrical Cycle	20,000.00	
Profit & Loss A/c			Ertiga Smart Hybrid Zdi Car	8,71,655.45	
Opening Balance			Factory Building	46,62,178.20	
Current Period	15,03,681.95		Furniture A/c	1,36,784.00	
Less: Transferred	15,03,681.95		Hero Hf Delux-4861	59,466.00	
			Hero Hf Delux-4910	59,467.00	
			Hero Hf Delux-4925	59,467.00	
			Inverter Maintance	11,862.00	
			Land & Buildings	70,89,262.00	
			Laptop Purchase	16,799.00	
			Microwave Generator	8,999.00	
			Waaree Batery	47,790.00	
			Water Purifier	38,110.00	
			Wifi Router	4,000.00	
			Investments		6,19,080.00
			Gold Bonds	6,19,080.00	
			Current Assets		4,54,35,851.15
			Closing Stock	1,21,14,000.00	
			Deposits (Asset)	25,21,276.00	
			Loans & Advances (Asset)	7,20,400.00	
			Sundry Debtors	2,91,38,013.34	
			Cash-in-hand	4,97,086.44	
			Bank Accounts	2,53,187.94	
			Tcs	1,501.43	
			TDS Receivable 2021-22	1,90,386.00	
Total		6,35,27,175.38	**Total**		6,35,27,175.38

UDIN: 22215023AZFJWU5111

For K.P.G. & Co
Chartered Accountants
P. Mallikharjuna Sastry
(P. Mallikharjuna Sastry)
Partner M. no. 215023
Firm Reg No. 012136S

Ravi

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Acknowledgement Number:339591221290923 **Date of filing : 29-Sep-2023**

INDIAN INCOME TAX RETURN ACKNOWLEDGEMENT

[Where the data of the Return of Income in Form ITR-1(SAHAJ), ITR-2, ITR-3, ITR-4(SUGAM), ITR-5, ITR-6, ITR-7 filed and verified]
(Please see Rule 12 of the Income-tax Rules, 1962)

Assessment Year 2023-24

PAN	AVSPB0729L		
Name	RAMA DEVI BOLLA		
Address	Plot No. 41A, Sarpavaram , Industrial Park , Kakinada , 02-Andhra Pradesh, 91-INDIA, 533005		
Status	Individual	Form Number	ITR-3
Filed u/s	139(1)- On or Before due date	e-Filing Acknowledgement Number	339591221290923

Taxable Income and Tax Details	Current Year business loss, if any	1	0
	Total Income	2	20,77,090
	Book Profit under MAT, where applicable	3	0
	Adjusted Total Income under AMT, where applicable	4	0
	Net tax payable	5	3,75,052
	Interest and Fee Payable	6	0
	Total tax, interest and Fee payable	7	3,75,052
	Taxes Paid	8	4,48,153
	(+) Tax Payable /(-) Refundable (7-8)	9	(-) 73,100
Accreted Income and Tax Detail	Accreted Income as per section 115TD	10	0
	Additional Tax payable u/s 115TD	11	0
	Interest payable u/s 115TE	12	0
	Additional Tax and interest payable	13	0
	Tax and interest paid	14	0
	(+) Tax Payable /(-) Refundable (13-14)	15	(+) 0

This return has been digitally signed by RAMA DEVI BOLLA in the capacity of Self having PAN AVSPB0729L from IP address 175.101.156.49 on 29-Sep-2023 13:28:18 DSC Sl.No & Issuer 5560772 & 541008805839096962 7CN=PantaSign Sub CA for DSC 2022,OU=Certifying Authority,O=Pantagon Sign Securities Pvt. Ltd.,C=IN

System Generated Barcode/QR Code

AVSPB0729L0333959122129092 3c0d02127b38145bd83c0d5f8d7d0a2e90a09af93

DO NOT SEND THIS ACKNOWLEDGEMENT TO CPC, BENGALURU

A.Y. 2023-2024

Name : Rama Devi Bolla
Father's Name : Surya Satyanarayana
Address : Plot No. 41A
Sarpavaram
Industrial Park, Kakinada - 533 005

P. Y. : 2022-2023
P.A.N. : AVSPB 0729 L
D.O.B. : 21-May-1981
Status : Individual

Aadhaar: 3961 4545 6733
Opted Tax u/s 115BAC

Resident

Statement of Income

	Sch.No	Rs.	Rs.	Rs.
■ Profits and gains of Business or Profession				
Business-1				
Net Profit Before Tax as per P & L a/c			20,77,088	
Less: Deductible expenditure & income to be excluded				
Incomes considered separately	1		1,48,950	
Adjusted Profit of Business-1			19,28,138	
Income chargeable under the head "Business and Profession"				19,28,138
■ Income from other sources				
Interest income	2			1,48,950
				20,77,088
■ Total Income				20,77,090
Total income rounded off u/s 288A				3,60,627
Tax on total income				14,425
Add: Cess				3,75,052
Tax with cess				4,48,153
TDS / TCS	3			73,100
■ Refund Due				

Schedule 1

	Amount
Income considered under other heads	
Interest received	1,48,950
Grand total	1,48,950

Schedule 2
Interest income (other than NSC/KVP interest)

Name of the Bank	Interest
Interest on Time Deposits	
Canara Bank	1,42,083
Interest on Savings a/c	
State Bank of India	6,867
Taxable Interest	1,48,950

D.P.R. SWAMY & ASSOCIATES CHARTERED ACCOUNTANTS KAKINADA

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Schedule 3

TDS as per Form 16A

Deductor, TAN	TDS deducted	TDS claimed in current year	Gross receipt offered
Canara Bank Ap, TAN- HYDC09674A	14,207	14,207	1,42,083
Jntu College Of Engineering, TAN- VPNJ00181G	797	797	39,864
New & Renewable Energy Development Corporation Of Andhra Pradesh Limited, TAN- HYDN00008B	3,36,850	3,36,850	1,68,42,521
Union Bank Of India Ro Vijaywada, TAN- HYDU02674A	57,147	57,147	29,29,410
Yogi Vemana University, TAN- HYDY00285F	39,152	39,152	19,57,605
Total	4,48,153	4,48,153	2,19,11,483

Bank A/c for Refund: Canara bank 32501250002078 IFSC: CNRB0013258

Date : 29-Sep-2023
Place : Kakinada

(RAMA DEVI BOLLA)

D.P.R. SWAMY & ASSOCIATES CHARTERED ACCOUNTANTS KAKINADA

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SOLAR SYSTEMS 2022-23- (From 1-Apr-2022)

Profit & Loss A/c

1-Apr-2022 to 31-Mar-2023

Particulars	1-Apr-2022 to 31-Mar-2023		Particulars	1-Apr-2022 to 31-Mar-2023	
Opening Stock		61,11,436.00	**Sales Accounts**		6,23,96,663
Closing Stock	*61,11,436.00*		Sales	*6,23,96,663.77*	
Purchase Accounts		6,11,76,359.52	Closing Stock		96,45,275
Purchase	*6,11,76,359.52*		*Closing Stock*	*96,45,275.00*	
Gross Profit c/o		***47,54,143.25***			
		7,20,41,938.77			7,20,41,938
Indirect Expenses		36,06,148.72	Gross Profit b/f		***47,54,143***
Bank Interest & Charges	*26,27,836.70*		**Indirect Incomes**		1,53,121
Salaries & Staff Welfare	*2,93,263.00*		*Income Tax Refund*	*4,170.00*	
Apiic Propriety Tax	*10,632.70*		*Interest on Fdr*	*1,42,083.41*	
Application Fee (Nredcap)	*79,500.00*		*Interest on Sb*	*6,867.76*	
Audit Fee	*20,000.00*				
Car Maintance	*10,497.00*				
Certification Charges	*61,330.00*				
Electricity Charges	*1,61,064.29*				
General Maintance	*87,955.00*				
Inspection Fee	*5,310.00*				
Internet Charges	*8,128.00*				
NSIC Registration Fee	*5,310.00*				
Office Rent	*58,800.00*				
Petrol and Disel	*16,207.07*				
Telephone Charges	*8,725.00*				
Tender Expenses	*24,700.00*				
Transportation Charges	*93,500.00*				
Traveling Charges	*33,389.96*				
Nett Profit		***13,01,115.70***			
Total		**49,07,264.42**	**Total**		**49,07,264**

D.P.R. SWAMY & ASSOCIATES CHARTERED ACCOUNTANTS KAKINADA

For M/s. D.P.R. SWAMY & ASSOCIATES
CHARTERED ACCOUNTANTS
PROPRIETOR
D.P.R. SWAMY, B.Com.,FCA
MEMBERSHIP NO. 202913

For SOLAR SYSTEMS
PROPRIETOR

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SOLAR SYSTEMS 2022-23- (From 1-Apr-2022)

KAKINADA

Balance Sheet

1-Apr-2022 to 31-Mar-2023

Liabilities	as at 31-Mar-2023		Assets	as at 31-Mar-2023	
Capital Account		**2,91,04,729.71**	**Fixed Assets**		**1,82,63,251.47**
B. RAMA DEVI (Capital)	*2,91,04,729.71*		Plant & Machinary	*10,66,942.24*	
			15% Block	*2,27,328.78*	
Loans (Liability)		**2,42,90,133.34**	*A/c Purchase*	*1,95,451.00*	
Bank OD A/c	*1,81,92,605.96*		*Aquaguard Reviva Ro*	*11,601.70*	
Secured Loans	*50,35,527.38*		*Bulding Constraction*	*35,46,455.95*	
Unsecured Loans	*10,62,000.00*		*Cc Cameras*	*16,500.00*	
			Cell Phones	*40,893.00*	
Current Liabilities		**1,19,61,291.52**	*Computer*	*4,739.15*	
Sundry Creditors	*1,19,61,291.52*		*Electrical Cycle*	*20,000.00*	
			Ertiga Smart Hybrid Zdi Car	*8,71,655.45*	
Profit & Loss A/c			*Factory Building*	*46,62,178.20*	
Opening Balance			*Furniture A/c*	*2,04,284.00*	
Current Period	*13,01,115.70*		*Hero Hf Delux-4861*	*59,466.00*	
Less: Transferred	*13,01,115.70*		*Hero Hf Delux-4910*	*59,467.00*	
			Hero Hf Delux-4925	*59,467.00*	
			Inverter Maintance	*11,862.00*	
			Land & Buildings	*70,89,262.00*	
			Laptop Purchase	*16,799.00*	
			Microwave Generator	*8,999.00*	
			Waaree Batery	*47,790.00*	
			Water Purifier	*38,110.00*	
			Wifi Router	*4,000.00*	
			Investments		**33,73,537.94**
			Gold Bonds	*6,18,142.24*	
			Rd	*80,100.00*	
			Smart Automation	*26,75,295.70*	
			Current Assets		**4,37,19,365.16**
			Closing Stock	*96,45,275.00*	
			Deposits (Asset)	*28,10,851.41*	
			Loans & Advances (Asset)	*54,39,417.97*	
			Sundry Debtors	*2,47,19,763.75*	
			Cash-in-hand	*4,44,292.90*	
			Bank Accounts	*2,12,408.13*	
			Tds Receivable 2022-23	*4,47,356.00*	
Total		**6,53,56,154.57**	**Total**		**6,53,56,154.57**

D.P.R. SWAMY & ASSOCIATES CHARTERED ACCOUNTANTS KAKINADA

For M/s. D.P.R. SWAMY & ASSOCIATES
CHARTERED ACCOUNTANTS
PROPRIETOR
D.P.R. SWAMY, B.Com.,FCA
MEMBERSHIP NO. 202913

For SOLAR SYSTEMS
PROPRIETOR

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FORM NO. 3CB

[See rule 6G(1)(b)]

Audit report under section 44AB of the Income-tax Act 1961, in the case of a person referred to in clause (b) of sub-rule (1) of rule 6G

1. We have examined the balance sheet as on, 31-Mar-2023, and the profit & loss account for the period beginning from 01-Apr-2022 to ending on 31-Mar-2023, attached herewith, of

   Rama Devi Bolla

   Plot No. 41A, Sarpavaram, Industrial Park, Apiic S.O, Kakinada, EAST GODAVARI, Andhra pradesh, 533005, India

   PAN: AVSPB0729L, Aadhaar: 396145456733

2. We certify that the balance sheet and the profit & loss account are in agreement with the books of account maintained at the head office at *Kakinada* and 1 branches.

3. (a) We report the following observations/comments/discrepancies/inconsistencies; if any: NIL

   (b) Subject to above,-

   (A) We have obtained all the information and explanations which, to the best of our knowledge and belief, were necessary for the purposes of the audit.

   (B) In our opinion, proper books of account have been kept by the head office and branches of the assessee so far as appears from our examination of the books.

   (C) In our opinion and to the best of our information and according to the explanations given to us, the said accounts, read with notes thereon, if any, give a true and fair view:-

   (i) in the case of the balance sheet, of the state of the affairs of the assessee as at 31-Mar-2023; and

   (ii) in the case of the profit & loss account of the Profit of the assessee for the year ended on that date.

4. The statement of particulars required to be furnished under section 44AB is annexed herewith in Form No. 3CD.

5. In our opinion and to the best of our information and according to explanations given to us, the particulars given in the said Form No. 3CD are true and correct subject to following observations/qualifications, if any: NIL

For Dpr Swamy & Associates

(Signature and stamp/seal of the signatory)

Place: **KAKINADA**

Date: **29-Sep-2023**

UDIN: 23202913BGXAAP5305

Name of the signatory: **DASARA PATTABHI RAMASWAMY**

Proprietor, M. No. 202913

Firm reg. No. 006485S

Full Address: 10-5-10, saty soudha aprts, ramaraopet, Kakinada (Urban), Ramaraopet S.O, KAKINADA, EAST GODAVARI, Andhra pradesh, 533004, India

D.P.R. SWAMY & ASSOCIATES CHARTERED ACCOUNTANTS KAKINADA

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FORM NO. 3CD

[See rule 6G(2)]

Statement of particulars required to be furnished under section 44AB of the Income tax Act, 1961

PART - A

1	Name of the assessee	: **Rama Devi Bolla**
2	Address	: **Plot No. 41A, Sarpavaram, Industrial Park, Apiic S.O, Kakinada, EAST GODAVARI, Andhra pradesh, 533005, India**
3	Permanent Account Number or Aadhaar Number	: **PAN: AVSPB0729L, Aadhaar: 396145456733**
4	Whether the assessee is liable to pay indirect tax like excise duty, service tax, sales tax, goods and services tax, customs duty, etc. if yes, please furnish the registration number or GST number or any other identification number allotted for the same	: **Yes, As per sch.4**
5	Status	: **INDIVIDUAL**
6	Previous year	: **01-Apr-2022** to **31-Mar-2023**
7	Assessment year	: **2023-24**
8	Indicate the relevant clause of section 44AB under which the audit has been conducted	: **44AB(a)**
8a	Whether the assessee has opted for taxation under section 115BA/115BAA/115BAB/115BAC/ 115BAD?	: **Yes - 115BAC**

PART - B

9	(a)	If firm or Association of Persons, indicate names of partners/members and their profit sharing ratios. In case of AOP, whether shares of members are indeterminate or unknown?	Not Applicable
	(b)	If there is any change in the partners or members or in their profit sharing ratio since the last date of the preceding year, the particulars of such change.	Not Applicable
10	(a)	Nature of business or profession (if more than one business or profession is carried on during the previous year, nature of every business or profession).	As per sch.10
	(b)	If there is any change in the nature of business or profession, the particulars of such change.	
11	(a)	Whether books of account are prescribed under section 44AA, if yes, list of books so prescribed.	Yes, As per sch.11a
	(b)	List of books of account maintained and the address at which the books of accounts are kept. (In case books of account are maintained in a computer system, mention the books of account generated by such computer system. If the books of accounts are not kept at one location, please furnish the addresses of locations along with the details of books of accounts maintained at each location.)	As per sch.11b
	(c)	List of books of account and nature of relevant documents examined.	As per sch.11c
12	Whether the profit and loss account includes any profits and gains assessable on presumptive basis, if yes, indicate the amount and the relevant sections (44AD, 44ADA, 44AE, 44AF, 44B, 44BB, 44BBA, 44BBB, Chapter XII-G, First Schedule or any other relevant section.)		No
13	(a)	Method of accounting employed in the previous year.	Mercantile system
	(b)	Whether there had been any change in the method of accounting employed vis-a-vis the method employed in the immediately preceding previous year.	No
	(c)	If answer to (b) above is in the affirmative, give details of such change, and	Not Applicable

D.P.R. SWAMY & ASSOCIATES CHARTERED ACCOUNTANTS

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	the effect thereof on the profit or loss.				
	Serial number	Particulars	Increase in profit (Rs.)	Decrease in profit (Rs.)	
	(d) Whether any adjustment is required to be made to the profits or loss for complying with the provisions of income computation and disclosure standards notified under section 145 (2)				No
	(e) If answer to (d) above is in the affirmative, give details of such adjustments				
			Increase in profit (Rs.)	Decrease in profit (Rs.)	Net Effect (Rs.)
	ICDS I - Accounting Policies ICDS II - Valuation of Inventories ICDS III - Construction Contracts ICDS IV - Revenue Recognition ICDS V - Tangible Fixed Assets ICDS VI - Changes in Foreign Exchange Rates ICDS VII - Governments Grants ICDS VIII – Securities ICDS IX - Borrowing Costs ICDS X - Provisions, Contingent Liabilities and Contingent Assets				Not Applicable
	(f) Disclosure as per ICDS: ICDS I - Accounting Policies ICDS II - Valuation of Inventories ICDS III - Construction Contracts ICDS IV - Revenue Recognition ICDS V - Tangible Fixed Assets ICDS VII - Governments Grants ICDS IX - Borrowing Costs ICDS X - Provisions, Contingent Liabilities and Contingent Assets				NIL
14	(a) Method of valuation of closing stock employed in the previous year.				Lower of Cost/Market rate
	(b) In case of deviation from the method of valuation prescribed under section 145A, and the effect thereof on the profit or loss, please furnish				No
	Serial number	Particulars	Increase in profit (Rs.)	Decrease in profit (Rs.)	
15	Give the following particulars of the capital asset converted into stock-in-trade: - (a) Description of capital asset; (b) Date of acquisition; (c) Cost of acquisition; (d) Amount at which the asset is converted into stock-in-trade.				NIL
16	Amounts not credited to the profit and loss account, being,-				
	(a) the items falling within the scope of section 28;				NIL
	(b) the pro forma credits, drawbacks, refund of duty of customs or excise or service tax, or refund of sales tax or value added tax, where such credits, drawbacks or refunds are admitted as due by the authorities concerned;				NIL
	(c) escalation claims accepted during the previous year;				NIL
	(d) any other item of income;				NIL
	(e) capital receipt, if any.				NIL
17	Where any land or building or both is transferred during the previous year for a consideration less than value adopted or assessed or assessable by any authority of a State Government referred to in section 43CA or 50C, please furnish				NIL
	Details of property	Consideration received or accrued	Value adopted or assessed or assessable		
18	Particulars of depreciation allowable as per the Income-tax Act, 1961 in respect of each asset or block of assets, as the case may be, in the following form :-				NIL

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	(a) Description of asset/block of assets. (b) Rate of depreciation. (c) Actual cost or written down value, as the case may be. (d) Additions/deductions during the year with dates; in the case of any addition of an asset, date put to use; including adjustments on account of— (i) Central Value Added Tax credits claimed and allowed under the Central Excise Rules,1944, in respect of assets acquired on or after 1st March, 1994, (ii) change in rate of exchange of currency, and (iii) subsidy or grant or reimbursement, by whatever name called. (e) Depreciation allowable. (f) Written down value at the end of the year.	
19	Amounts admissible under sections- a) 32AD, (b) 33AB, (c) 33ABA, (d) 35(1)(i), (e) 35(1)(ii), (f) 35(1)(iia), (g) 35(1)(iii), (h) 35(1)(iv), (i) 35(2AA), (j) 35(2AB), (k) 35ABA, (l) 35ABB, (m)35AD, (n)35CCA, (o)35CCC, (p) 35CCD, (q) 35D, (r) 35DD, (s)35DDA, (t)35E: Amount debited to profit and loss account Amounts admissible as per the provisions of the Income Tax Act, 1961 and also fulfils the conditions, if any specified under the relevant provisions of Income Tax Act, 1961 or Income Tax Rules,1962 or any other guidelines, circular, etc., issued in this behalf.	NIL
20	(a) Any sum paid to an employee as bonus or commission for services rendered, where such sum was otherwise payable to him as profits or dividend. [Section 36(1)(ii)]	NIL
	(b) Details of contributions received from employees for various funds as referred to in section 36(1)(va):	NIL

Serial number	Nature of fund	Sum received from employees	Due date for payment	The actual Amount paid	The actual date of payment to the concerned authorities

21	(a) Please furnish the details of amounts debited to the profit and loss account, being in the nature of - Capital expenditure Personal expenditure Advertisement expenditure in any souvenir, brochure, tract, pamphlet or the like, published by a political party Expenditure incurred at clubs being entrance fees and subscriptions Expenditure incurred at clubs being cost for club services and facilities used Expenditure by way of penalty or fine for violation of any law for the time being force Expenditure by way of any other penalty or fine not covered above Expenditure incurred for any purpose which is an offence or which is prohibited by law	NIL
	(b) Amounts inadmissible under section 40(a):- (i) as payment to non-resident referred to in sub-clause (i) (A) Details of payment on which tax is not deducted: (I) date of payment (II) amount of payment (III) nature of payment (IV) name and address of the payee	NIL

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(B)	Details of payment on which tax has been deducted but has not been paid during the previous year or in the subsequent year before the expiry of time prescribed under section 200(1) (I) date of payment (II) amount of payment (III) nature of payment (IV) name and address of the payee (V) amount of tax deducted	NIL
(ii)	as payment referred to in sub-clause (ia)	
(A)	Details of payment on which tax is not deducted: (I) date of payment (II) amount of payment (III) nature of payment (IV) name and address of the payee	NIL
(B)	Details of payment on which tax has been deducted but has not been paid on or before the due date specified in sub- section (1) of section 139. (I) date of payment (II) amount of payment (III) nature of payment (IV) name and address of the payee (V) amount of tax deducted (VI) amount out of (V) deposited, if any	NIL
(iii)	as payment referred to in sub-clause (ib)	
(A)	Details of payment on which levy is not deducted: (I) date of payment (II) amount of payment (III) nature of payment (IV) name and address of the payee	NIL
(B)	Details of payment on which levy has been deducted but has not been paid on or before the due date specified in sub- section (1) of section 139. (I) date of payment (II) amount of payment (III) nature of payment (IV) name and address of the payer (V) amount of levy deducted (VI) amount out of (V) deposited, if any	NIL
(iv)	under sub-clause (ic) [Wherever applicable]	NIL
(v)	under sub-clause (iia)	NIL
(vi)	under sub-clause (iib)	NIL
(vii)	under sub-clause (iii) (A) date of payment (B) amount of payment (C) name and address of the payee	NIL
(viii)	under sub-clause (iv)	NIL
(ix)	under sub-clause (v)	NIL
(c)	Amounts debited to profit and loss account being, interest, salary, bonus, commission or remuneration inadmissible under section 40(b)/40(ba) and computation thereof;	Not Applicable
(d)	Disallowance/deemed income under section 40A(3):	

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	(A)	On the basis of the examination of books of account and other relevant documents/evidence, whether the expenditure covered under section 40A(3) read with rule 6DD were made by account payee cheque drawn on a bank or account payee bank draft. If not, please furnish the details:	Yes

Serial number	Date of payment	Nature of payment	Amount	Name and Permanent Account Number or Aadhaar Number of the payee, if available

	(B)	On the basis of the examination of books of account and other relevant documents/evidence, whether the payment referred to in section 40A(3A) read with rule 6DD were made by account payee cheque drawn on a bank or account payee bank draft If not, please furnish the details of amount deemed to be the profits and gains of business or profession under section 40A(3A);	Yes

Serial number	Date of payment	Nature of payment	Amount	Name and Permanent Account Number or Aadhaar Number of the payee, if available

	(e)	provision for payment of gratuity not allowable under section 40A(7);	NIL
	(f)	any sum paid by the assessee as an employer not allowable under section 40A(9);	NIL
	(g)	particulars of any liability of a contingent nature;	NIL
	(h)	amount of deduction inadmissible in terms of section 14A in respect of the expenditure incurred in relation to income which does not form part of the total income;	NIL
	(i)	amount inadmissible under the proviso to section 36(1)(iii)	NIL
22		Amount of interest inadmissible under section 23 of the Micro, Small and Medium Enterprises Development Act, 2006.	NIL
23		Particulars of payments made to persons specified under section40A (2)(b).	NIL
24		Amounts deemed to be profits and gains under section 32AC or 32AD or 33AB or 33ABA or 33AC.	NIL
25		Any amount of profit chargeable to tax under section 41 and computation thereof.	NIL
26		In respect of any sum referred to in clauses (a), (b), (c), (d), (e), (f) or (g) of section 43B, the liability for which:-	NIL
	(A)	pre-existed on the first day of the previous year but was not allowed in the assessment of any preceding previous year and was	
		(a) paid during the previous year;	
		(b) not paid during the previous year.	
	(B)	Was incurred in the previous year and was	
		(a) paid on or before the due date for furnishing the return of income of the previous year under section 139(1);	
		(b) not paid on or before the aforesaid date.	
		(State whether sales tax, customs duty, excise duty or any other indirect tax, levy, cess, impost, etc., is passed through the profit and loss account.)	No
27	(a)	Amount of Central Value Added Tax credits/ Input Tax Credit(ITC) availed of or utilised during the previous year and its treatment in the profit and loss account and treatment of outstanding Central Value Added Tax credits/ Input Tax Credit(ITC) in the accounts.	NIL
	(b)	Particulars of income or expenditure of prior period credited or debited to the profit and loss account.	NIL
28		Whether during the previous year the assessee has received any property, being share of a company not being a company in which the public are substantially interested, without consideration or for inadequate consideration as referred to in section 56(2)(viia), if yes, please furnish the details of the same.	Not Applicable
29		Whether during the previous year the assessee received any consideration for issue of shares which exceeds the fair market value of the shares as referred to in section 56(2)(viib), if yes, please furnish the details of the same.	Not Applicable
29A	(a)	Whether any amount is to be included as income chargeable under the head 'Income from other sources' as referred to in section 56(2)(ix)?	No
	(b)	If yes, please furnish the following details:	

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		(i) Nature of income (ii) Amount thereof	
29B	(a)	Whether any amount is to be included as income chargeable under the head 'Income from other sources' as referred to in section 56(2)(x)?	No
	(b)	If yes, please furnish the following details: (i) Nature of income (ii) Amount (in Rs.) thereof	
30		Details of any amount borrowed on hundi or any amount due thereon (including interest on the amount borrowed) repaid, otherwise than through an account payee cheque [Section 69D].	NIL
30A	(a)	Whether primary adjustment to transfer price, as referred to in section 92CE(1), has been made during the previous year?	No
	(b)	If yes, please furnish the following details (i) Under which clause of section 92CE(1) primary adjustment is made? (ii) Amount (in Rs.) of primary adjustment (iii) Whether the excess money available with the associated enterprise is required to be repatriated to India as per the provisions of section 92CE(2)? (iv) If yes, whether the excess money has been repatriated within the prescribed time (v) If no, the amount (in Rs.) of imputed interest income on such excess money which has not been repatriated within the prescribed time	
30B	(a)	Whether the assessee has incurred expenditure during the previous year by way of interest or of similar nature exceeding one crore rupees as referred to in section 94B(1)?	Not Applicable
	(b)	If yes, please furnish the following details:	
		(i) Amount (in Rs.) of expenditure by way of interest or of similar nature incurred	
		(ii) Earnings before interest, tax, depreciation and amortization (EBITDA) during the previous year (in Rs.)	
		(iii) Amount (in Rs.) of expenditure by way of interest or of similar nature as per (i) above which exceeds 30% of EBITDA as per (ii) above	
		(iv) Details of interest expenditure brought forward as per sub-section (4) of section 94B	
		(v) Details of interest expenditure carried forward as per sub-section (4) of section 94B	
30C	(a)	Whether the assessee has entered into an impermissible avoidance arrangement, as referred to in section 96, during the previous year?	No
	(b)	If yes, please specify:- (i) Nature of the impermissible avoidance arrangement: (ii) Amount (in Rs.) of tax benefit in the previous year arising, in aggregate, to all the parties to the arrangement:	
31	(a)	Particulars of each loan or deposit in an amount exceeding the limit specified in section 269SS taken or accepted during the previous year: (i) name, address and Permanent Account Number or Aadhaar Number (if available with the assessee) of the lender or depositor; (ii) amount of loan or deposit taken or accepted; (iii) whether the loan or deposit was squared up during the previous year; (iv) maximum amount outstanding in the account at any time during the previous year; (v) whether the loan or deposit was taken or accepted by cheque or bank draft or use of electronic clearing system through a bank account;	NIL

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	(vi) in case the loan or deposit was taken or accepted by cheque or bank draft, whether the same was taken or accepted by an account payee cheque or an account payee bank draft.	
(b)	Particulars of each specified sum in an amount exceeding the limit specified in section 269SS taken or accepted during the previous year: (i) name, address and Permanent Account Number or Aadhaar Number (if available with the assessee) of the person from whom specified sum is received; (ii) amount of specified sum taken or accepted; (iii) whether the specified sum was taken or accepted by cheque or bank draft or use of electronic clearing system through a bank account; (iv) in case the specified sum was taken or accepted by cheque or bank draft, whether the same was taken or accepted by an account payee cheque or an account payee bank draft. (Particulars at (a) and (b) need not be given in the case of a Government company, a banking company or a corporation established by the Central, State or Provincial Act.)	NIL
(ba)	Particulars of each receipt in an amount exceeding the limit specified in section 269ST, in aggregate from a person in a day or in respect of a single transaction or in respect of transactions relating to one event or occasion from a person, during the previous year, where such receipt is otherwise than by a cheque or bank draft or use of electronic clearing system through a bank account: (i) Name, address and Permanent Account Number or Aadhaar Number (if available with the assessee) of the payer; (ii) Nature of transaction; (iii) Amount of receipt (in Rs.); (iv) Date of receipt;	NIL
(bb)	Particulars of each receipt in an amount exceeding the limit specified in section 269ST, in aggregate from a person in a day or in respect of a single transaction or in respect of transactions relating to one event or occasion from a person, received by a cheque or bank draft, not being an account payee cheque or an account payee bank draft, during the previous year: (i) Name, address and Permanent Account Number or Aadhaar Number (if available with the assessee) of the payer; (ii) Amount of receipt (in Rs.);	NIL
(bc)	Particulars of each payment made in an amount exceeding the limit specified in section 269ST, in aggregate to a person in a day or in respect of a single transaction or in respect of transactions relating to one event or occasion to a person, otherwise than by a cheque or bank draft or use of electronic clearing system through a bank account during the previous year: (i) Name, address and Permanent Account Number or Aadhaar Number (if available with the assessee) of the payee; (ii) Nature of transaction; (iii) Amount of payment (in Rs.); (iv) Date of payment;	NIL
(bd)	Particulars of each payment in an amount exceeding the limit specified in section 269ST, in aggregate to a person in a day or in respect of a single transaction or in respect of transactions relating to one event or occasion to a person, made by a cheque or bank draft, not being an account payee cheque or an account payee bank draft, during the previous year: (i) Name, address and Permanent Account Number or Aadhaar Number (if available with the assessee) of the payee; (ii) Amount of payment (in Rs.);	NIL

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		(Particulars at (ba), (bb), (bc) and (bd) need not be given in the case of receipt by or payment to a Government company, a banking Company, a post office savings bank, a cooperative bank or in the case of transactions referred to in section 269SS or in the case of persons referred to in Notification No. S.O. 2065(E) dated 3rd July, 2017)	
	(c)	Particulars of each repayment of loan or deposit or any specified advance in an amount exceeding the limit specified in section 269T made during the previous year (i) name, address and Permanent Account Number or Aadhaar Number (if available with the assessee) of the payee; (ii) amount of the repayment; (iii) maximum amount outstanding in the account at any time during the previous year; (iv) whether the repayment was made by cheque or bank draft or use of electronic clearing system through a bank account; (v) in case the repayment was made by cheque or bank draft, whether the same was repaid by an account payee cheque or an account payee bank draft.	NIL
	(d)	Particulars of repayment of loan or deposit or any specified advance in an amount exceeding the limit specified in section 269T received otherwise than by a cheque or bank draft or use of electronic clearing system through a bank account during the previous year (i) name, address and Permanent Account Number or Aadhaar Number (if available with the assessee) of the payer; (ii) repayment of loan or deposit or any specified advance received otherwise than by a cheque or bank draft or use of electronic clearing system through a bank account during the previous year.	NIL
	(e)	Particulars of repayment of loan or deposit or any specified advance in an amount exceeding the limit specified in section 269T received by a cheque or bank draft which is not an account payee cheque or account payee bank draft during the previous year:— (i) name, address and Permanent Account Number or Aadhaar Number (if available with the assessee) of the payer; (ii) repayment of loan or deposit or any specified advance received by a cheque or a bank draft which is not an account payee cheque or account payee bank draft during the previous year. (Particulars at (c), (d) and (e) need not be given in the case of a repayment of any loan or deposit or any specified advance taken or accepted from the Government, Government company, banking company or a corporation established by the Central, State or Provincial Act).	NIL
32	(a)	Details of brought forward loss or depreciation allowance, in the following manner, to the extent available:	NIL

Sl No	Assessment Year	Nature of loss/allowance (in rupees)	Amount as returned (in rupees)^	All losses/ allowances not allowed under section 115BAA/115BAC/115BAD	Amount as assessed (give reference to relevant order)	Remarks

	^If the assessed depreciation is less and no appeal pending then take assessed.	
	(b) Whether a change in shareholding of the company has taken place in the previous year due to which the losses incurred prior to the previous year cannot be allowed to be carried forward in terms of section 79	Not Applicable
	(c) Whether the assessee has incurred any speculation loss referred to in section 73 during the previous year, If yes, please furnish the details of the same.	No
	(d) Whether the assessee has incurred any loss referred to in section 73A in respect of any specified business during the previous year, if yes, please furnish details of the same.	NIL
	(e) In case of a company, please state that whether the company is deemed to be carrying on a speculation business as referred in explanation to section 73, if yes, please furnish the details of speculation loss if any incurred during the previous year.	Not Applicable

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33	Section-wise details of deductions, if any, admissible under Chapter VIA or Chapter III (Section 10A, Section 10AA).					NIL
	Section under which deduction is claimed	Amounts admissible as per the provision of the Income Tax Act, 1961 and fulfils the conditions, if any, specified under the relevant provisions of Income Tax Act, 1961 or Income Tax Rules,1962 or any other guidelines, circular, etc, issued in this behalf.				
34	(a) Whether the assessee is required to deduct or collect tax as per the provisions of Chapter XVII-B or Chapter XVII-BB, if yes please furnish: 1 Tax deduction and collection Account Number (TAN) 2 Section 3 Nature of payment 4 Total amount of payment or receipt of the nature specified in column (3) 5 Total amount on which tax was required to be deducted or collected out of (4) 6 Total amount on which tax was deducted or collected at specified rate out of (5) 7 Amount of tax deducted or collected out of (6) 8 Total amount on which tax was deducted or collected at less than specified rate out of (5) 9 Amount of tax deducted or collected on (8) 10 Amount of tax deducted or collected not deposited to the credit of the Central Government out of (7) and (9)					No
	(b) Whether the assessee is required to furnish the statement of tax deducted or tax collected. If yes, please furnish the details:					No
	Tax deduction and collection Account Number (TAN)	Type of Form	Due date for furnishing	Date of furnishing, if furnished	Whether the statement of tax deducted or collected contains information about all details/transactions which are required to be reported. If not, please furnish list of details/transactions which are not reported.	
	(c) Whether the assessee is liable to pay interest under section 201(1A) or section 206C(7). If yes, please furnish:					Not Applicable
	Tax deduction and collection Account Number (TAN)		Amount of interest under section 201(1A)/206C(7) is payable		Amount paid out of column (2) along with date of payment.	
35	(a) In the case of a trading concern, give quantitative details of principal items of goods traded: (i) opening Stock; (ii) purchases during the previous year; (iii) sales during the previous year; (iv) closing Stock; (v) shortage/excess, if any.					Not Applicable
	(b) In the case of manufacturing concern, give quantitative details of the principal items of raw materials, finished products and by-products: A Raw materials : (i) opening stock; (ii) Purchases during the previous year; (iii) consumption during the previous year; (iv) sales during the previous year; (v) closing stock; (vi) yield of finished products; (vii) percentage of yield; (viii) shortage/excess, if any.					Not Applicable
	B Finished products/By-products : (i) opening stock;					Not Applicable

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		(ii) purchases during the previous year; (iii) quantity manufactured during the previous year; (iv) sales during the previous year; (v) closing stock; (vi) shortage/excess, if any.	
36A	(a)	Whether the assessee has received any amount in the nature of dividend as referred to in section 2(22)(e)?	No
	(b)	If yes, please furnish the following details: (i) Amount received (in Rs.) (ii) Date of receipt	
37		Whether any cost audit was carried out, if yes, give the details, if any, of disqualification or disagreement on any matter/item/value/quantity as may be reported/identified by the cost auditor.	NA
38		Whether any audit was conducted under the Central Excise Act, 1944, if yes, give the details, if any, of disqualification or disagreement on any matter/item/value/quantity as may be reported/identified by the auditor.	NA
39		Whether any audit was conducted under section 72A of the Finance Act,1994 in relation to valuation of taxable services, if yes, give the details, if any, of disqualification or disagreement on any matter/item/value/quantity as may be reported/identified by the auditor.	NA
40		Details regarding turnover, gross profit, etc., for the previous year and preceding previous year: 1. Total turnover of the assessee 2. Gross profit/turnover 3. Net profit/turnover 4. Stock-in-trade/turnover 5. Material Consumed/finished goods produced (The details required to be furnished for principal items of goods traded or manufactured or services rendered)	As per sch.40
41		Please furnish the details of demand raised or refund issued during the previous year under any tax laws other than Income Tax Act, 1961 and Wealth tax Act, 1957 along with details of relevant proceedings.	NIL
42	(a)	Whether the assessee is required to furnish statement in Form No.61 or Form No. 61A or Form No. 61B?	No
	(b)	If yes, please furnish:	

Income-tax Department Reporting Entity Identification Number	Type of Form	Due date for furnishing	Date of furnishing, if furnished	Whether the Form contains information about all details/ transactions which are required to be reported. If not, please furnish list of the details/transactions which are not reported.

43	(a)	Whether the assessee or its parent entity or alternate reporting entity is liable to furnish the report as referred to in section 286(2)	No
	(b)	if yes, please furnish the following details:	
		(i) Whether report has been furnished by the assessee or its parent entity or an alternate reporting entity	
		(ii) Name of parent entity	
		(iii) Name of alternate reporting entity (if applicable)	
		(iv) Date of furnishing of report	
	(c)	if not due, Expected date of filing	
44		Break-up of total expenditure of entities registered or not registered under the GST:	

Particulars	Total amount of	Expenditure in respect of entities registered under GST	Expenditure relating to	
				Yes, As per Sch.44

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		Expenditure incurred during the year	Relating to goods or services exempt from GST	Relating to Entities falling under composition scheme	Relating to other registered entities	Total payment to registered entities	entities not registered under GST

For Dpr Swamy & Associates

(Signature and stamp/seal of the signatory)

Place: KAKINADA

Date: **29-Sep-2023**

Name of the signatory: **DASARA PATTABHI RAMASWAMY**

Proprietor, M. No. 202913

Firm reg. No. 006485S

Full Address : 10-5-10, saty soudha aprts, ramaraopet, Kakinada (Urban), Ramaraopet S.O, KAKINADA, EAST GODAVARI, Andhra pradesh, 533004, India

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4: Indirect tax Reg. Numbers

	Indirect Tax law details	Reg. No.
1	GST Act- Andhra Pradesh	37 AVSPB0729L 1Z9
2	GST Act- Andhra Pradesh	37 AVSPB0729L 2Z8

10: Details of business / profession

	Sector	Sub-Sector	Code	Particulars of change
1	Wholesale / Retail Trade	Retail sale of other products	09028	No Change
2	Manufacturing	Others	04097	No Change

11a: Books prescribed u/s 44 AA

1	Cash book
2	Journal
3	Ledger

11b: Books maintained

		Address
1	Bank book	Plot No. 41A, Sarpavaram, Industrial Park, Kakinada-533 005, Andhra pradesh, India
2	Cash book	-do-
3	Journal	-do-
4	Ledger	-do-
5	Purchase register	-do-
6	Sales register	-do-

11c: Books / documents examined

1	Bank book
2	Cash book
3	Journal
4	Ledger
5	Purchase register
6	Sales register
7	CASH BOOK
8	JOURNAL
9	LEDGER

40: Accounting Ratios

		Current year amount	Ratio to turnover(%)	Last year amount	Last year %
1	Total turnover of the assessee	10,30,20,969		6,80,24,753	
2	Gross profit/turnover	1,33,49,432	12.96	84,07,055	12.36
3	Net profit/turnover	20,77,088	2.02	15,03,681	2.21
4	Stock-in-trade/turnover	1,60,52,665	15.58	1,21,14,000	17.81
5	Material consumed to Finished goods		NIL		NIL
	Material consumed	NIL		NIL	
	Finished goods produced	NIL		NIL	

44: Break-up of total expenditure of entities registered or not registered under the GST:

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	Particulars	Total amount of Expenditure incurred during the year	Expenditure in respect of entities registered under GST				Expenditure relating to entities not registered under GST
			Relating to goods or services exempt from GST	Relating to Entities falling under composition scheme	Relating to other registered entities	Total payment to registered entities	
1	Purchases	9,30,60,301	NIL	NIL	9,30,60,301	9,30,60,301	NIL

For Dpr Swamy & Associates

Place: KAKINADA

Date: **29-Sep-2023**

DASARA PATTABHI RAMASWAMY
Proprietor, M. No. 202913
Firm reg. No. 006485S

D.P.R. SWAMY & ASSOCIATES CHARTERED ACCOUNTANTS KAKINADA

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Sicon Chat Union Electric Co., Ltd.
Add: Bldg.14 & 15, No.319 Xiangjiang Street, High-Tech Zone, Shijiazhuang, China
Email: enquiry@scupower.com
Tel:86-311-85903762 Fax:86-311-85903718 Post: 050035

To,

SCU/MAF/ANERT-2024-121

1.03.2024

The CEO
ANERT
THIRUVANATHAPURAM

Reference:- e-EoI Notification No: **ANERT-TECH/41/2024-PE1** dtd **27.02.2024** for Expression of Interest (EoI) for the Selection of Agency for Pilot Implementation of **Battery Energy Storage System** at **ANERT** HQ, Thiruvananthapuram

We, the undersigned, declare that:

We, **M/s. Sicon Chat Union Electric Co. Ltd** located at Blbg. 14&15th No.319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, China manufacturers of **Energy storage Systems.**

We authorise **M/s. Solar Systems, 41 A, Industrial Park, Sarpavaram, Kakinada 533005** to participate and quote in the Tender No. **ANERT-TECH/41/2024-PO1(RTS)**

We, confirm herewith, if **M/s. Solar Systems**, awarded the contract to install and maintain the above tendered item, we will support them, to meet and maintain all the equipment, supplied vide the above Tender number during the warranty and post warranty Annual Maintenance Period.

Authorised Signatory
Sherry Tsui
Sales Manager

Authorised Signatory
Sicon Chat Union Electric Co. Ltd

先控捷联电气股份有限公司
SICON CHAT UNION ELECTRIC CO., LTD

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Attestation of Compliance

STE Testing

Reference No.	:	STE20110101E
Applicant	:	Sicon Chat Union Electric Co., Ltd.
Address	:	Bldg.14&15, No. 319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, 050035, China.
Trade Mark	:	N/A
Product	:	Li-ion battery energy storage system
Model(s)	:	ECM-48B100N, EBC48/30-LFP-ABMS, EBC48/50-LFP-ABMS EBC48/100-LFP-ABMS, EBC51.2/100-LFP-ABMS, EBC240/10-LFP-ABMS, EBC480/10-LFP-ABMS,EBC480/20-LFP-ABMS, EBC480/30-LFP-ABMS, EBC480/50-LFP-ABMS, EBC480/100-LFP-ABMS EBC480/150-LFP-ABMS, EBC480/200-LFP-ABMS, EBC480/280-LFP-ABMS, EBC480/40-LFP-ABMS, EBC480/80-LFP-ABMS, EBC480/120-LFP-ABMS, EBC480/160-LFP-ABMS, EBC768/40-LFP-ABMS, EBC768/80-LFP-ABMS, EBC768/120-LFP-ABMS, EBC768/160-LFP-ABMS, EBC768/50-LFP-ABMS, EBC768/100-LFP-ABMS, EBC768/150-LFP-ABMS, EBC768/200-LFP-ABMS, EBC768/280-LFP-ABMS, EBC768/100-LFP-ABMS-M, EBC768/40-LFP-ABMS-F, EBC768/80-LFP-ABMS-F, EBC768/120-LFP-ABMS-F, EBC768/160-LFP-ABMS-F, EBC768/50-LFP-ABMS-F, EBC768/100-LFP-ABMS-F, EBC768/150-LFP-ABMS-F, EBC768/200-LFP-ABMS-F, EBC768/280-LFP-ABMS-F
Tested according to	:	EN IEC 61000-6-4:2019, EN IEC 61000-6-2:2019, EN IEC 61000-3-2: 2019, EN 61000-3-3:2013+A1:2019

The submitted products have been tested by us with the listed standards.

This Attestation of Compliance is issued according to the council Directive 2014/30/EU, Referred to as the Electromagnetic Compatibility. It confirms that the listed product complies with all essential requirements of the EMC directive and applies only to the sample and its technical documentation submitted to Shenzhen STE Testing Laboratory Co., Ltd for testing.

After preparation of the necessary technical documentation as well as the EC conformity declaration the required CE marking can be affixed on the product.Other relevant Directives have to be observed.

CE

STE TESTING LABORATORY * APPROVED *

Date of issue: June 20, 2019

Manager

Shenzhen STE Testing Laboratory Co., Ltd.
Room 301(left side), Building 9, Dehong Factory Building, No. 63 Yuchang Road, Niuhu Community, Guanlan Street, Longhua District, Shenzhen

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EMC TEST REPORT

For

Sicon Chat Union Electric Co., Ltd.

Li-ion battery energy storage system

Test Model: EBC480/100-LFP-ABMS

Additional Model No.: Please Refer To Page 8

Prepared for	:	Sicon Chat Union Electric Co., Ltd.
Address	:	Bldg.14&15, No. 319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, 050035, China.
Prepared by	:	Shenzhen STE Testing Laboratory Co., Ltd
Address	:	Room 301(left side), Building 9, Dehong Factory Building, No. 63 Yuchang Road, Niuhu Community, Guanlan Street, Longhua District, Shenzhen
Date of receipt of test sample	:	June 10, 2019
Number of tested samples	:	1
Serial number	:	Prototype
Date of Test	:	June 10, 2019 ~ June 20, 2019
Date of Report	:	June 20, 2019

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EMC TEST REPORT

EN IEC 61000-6-4:2019

Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments

EN IEC 61000-6-2:2019

Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity standard for industrial environments

Report Reference No.	:	**STE20110101E**
Date of Issue.....	:	June 20, 2019
Testing Laboratory Name.....	:	**Shenzhen STE Testing Laboratory Co., Ltd**
Address.....	:	Room 301(left side), Building 9, Dehong Factory Building, No. 63 Yuchang Road, Niuhu Community, Guanlan Street, Longhua District, Shenzhen.
Testing Location/ Procedure	:	Full application of Harmonised standards ■ Partial application of Harmonised standards □ Other standard testing method □
Applicant's Name	:	**Sicon Chat Union Electric Co., Ltd.**
Address.....	:	Bldg.14&15, No. 319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, 050035, China.
Test Specification		
Standard.....	:	EN IEC 61000-6-4:2019 EN IEC 61000-6-2:2019 EN IEC 61000-3-2: 2019 EN 61000-3-3:2013+A1:2019
Test Report Form No.....	:	LCSEMC-1.0
TRF Originator.....	:	Shenzhen STE Testing Laboratory Co., Ltd
Master TRF.....	:	Dated 2016-08

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Test Item Description.....	:	**Li-ion battery energy storage system**
Trade Mark.....	:	N/A
Test Model.....	:	EBC480/100-LFP-ABMS
Ratings	:	Input: DC480V,100A Output: DC480V,200A
Result	:	**PASS**

Compiled by:	Supervised by:	Approved by:
Hunter Liang	Todd Qian	Fly Li
Hunter Liang/ File administrators	Todd Qian/ Technique principal	Fly Li/Manager

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EMC -- TEST REPORT

Test Report No. : STE20110101E	June 20, 2019 Date of issue

Applicant.....	**: Sicon Chat Union Electric Co., Ltd.**
Address.....	: Bldg.14&15, No. 319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, 050035, China.
Telephone.....	: /
Fax.....	: /
Manufacturer.....	**: Sicon Chat Union Electric Co., Ltd.**
Address.....	: Bldg.14&15, No. 319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, 050035, China.
Telephone.....	: /
Fax.....	: /
Factory.....	**: Sicon Chat Union Electric Co., Ltd.**
Address.....	: Bldg.14&15, No. 319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, 050035, China.
Telephone.....	: /
Fax.....	: /

Test Result	**PASS**

The test report merely corresponds to the test sample.
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Revision History

Revision	Issue Date	Revisions	Revised By
000	May 26, 2020	Initial Issue	Cherry Chen

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1. SUMMARY OF STANDARDS AND RESULTS

1.1. Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below.

Emission (EN IEC 61000-6-4:2019)			
Description of Test Item	**Standard**	**Limits**	**Results**
Conducted disturbance at mains terminals	EN IEC 61000-6-4:2019	---------	PASS
Conducted disturbance at telecommunication port	EN IEC 61000-6-4:2019	---------	N/A
Radiated disturbance	EN IEC 61000-6-4:2019	---------	PASS
Harmonic current emissions	EN IEC 61000-3-2: 2019	Class A	N/A
Voltage fluctuations & flicker	EN 61000-3-3:2013+A1:2019	---------	N/A
Immunity (EN IEC 61000-6-2:2019)			
Description of Test Item	**Basic Standard**	**Performance Criteria**	**Results**
Electrostatic discharge (ESD)	EN 61000-4-2: 2009	B	PASS
Radio-frequency, Continuous radiated disturbance	EN 61000-4-3: 2006+A2: 2010	A	PASS
Electrical fast transient (EFT)	EN 61000-4-4: 2012	B	PASS
Surge (Input d.c. power ports)	EN 61000-4-5: 2014+A1: 2017	B	N/A
Surge (Telecommunication ports)		B	N/A
Radio-frequency, Continuous conducted disturbance	EN 61000-4-6: 2014	A	PASS
Power frequency magnetic field	EN 61000-4-8: 2010	A	PASS
Voltage dips, >95% reduction	EN 61000-4-11: 2004+A1: 2017	B	N/A
Voltage dips, 30% reduction		C	N/A
Voltage interruptions		C	N/A
Note 1: N/A is an abbreviation for not applicable. Note 2: systems with nominal voltages less than but not equal to 220 V (line-to-neutral), the harmonic and flicker limits have not yet been considered.			

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2.1. Description of Performance Criteria

A functional description and a definition of specific performance criteria, during or as a consequence of immunity testing of equipment under test (EUT), shall be provided by the manufacturer and noted in the test report. They shall be consistent with one of the following general criteria for each test as specified in Table 1 to Table 4:

1.2.1. Performance criterion A

The EUT shall continue to operate as intended during and after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the EUT is used as intended. If the performance level is not specified by the manufacturer, this may be derived from the product description and documentation and what the user may reasonably expect from the equipment if used as intended.

1.2.2. Performance criterion B

The EUT shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the EUT is used as intended. The performance level may be replaced by a permissible loss of performance. However, during the test degradation of performance is allowed but no change of actual operating state or stored data is allowed. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, either of these may be derived from the product description and documentation and what the user may reasonably expect from the equipment if used as intended.

1.2.3. Performance criterion C

Temporary loss of function is allowed during the test, provided the function is self-recoverable or can be restored by the operation of the controls.

If, as a result of the application of the tests defined in this standard, the EUT becomes dangerous or unsafe, it shall be deemed to have failed the test.

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2. GENERAL INFORMATION

2.1. Description of Device (EUT)

EUT	:	Li-ion battery energy storage system
Test Model	:	EBC480/100-LFP-ABMS
Additional Model No.	:	ECM-48B100N, EBC48/30-LFP-ABMS, EBC48/50-LFP-ABMS EBC48/100-LFP-ABMS, EBC51.2/100-LFP-ABMS, EBC240/10-LFP-ABMS, EBC480/10-LFP-ABMS, EBC480/20-LFP-ABMS, EBC480/30-LFP-ABMS, EBC480/50-LFP-ABMS, EBC480/150-LFP-ABMS, EBC480/200-LFP-ABMS, EBC480/280-LFP-ABMS, EBC480/40-LFP-ABMS, EBC480/80-LFP-ABMS, EBC480/120-LFP-ABMS, EBC480/160-LFP-ABMS, EBC768/40-LFP-ABMS, EBC768/80-LFP-ABMS, EBC768/120-LFP-ABMS, EBC768/160-LFP-ABMS, EBC768/50-LFP-ABMS, EBC768/100-LFP-ABMS, EBC768/150-LFP-ABMS, EBC768/200-LFP-ABMS, EBC768/280-LFP-ABMS, EBC768/100-LFP-ABMS-M, EBC768/40-LFP-ABMS-F, EBC768/80-LFP-ABMS-F, EBC768/120-LFP-ABMS-F, EBC768/160-LFP-ABMS-F, EBC768/50-LFP-ABMS-F, EBC768/100-LFP-ABMS-F, EBC768/150-LFP-ABMS-F, EBC768/200-LFP-ABMS-F, EBC768/280-LFP-ABMS-F
Power Supply	:	Input: DC480V,100A Output: DC480V,200A
EUT Clock Frequency	:	≤108MHz

2.2 Support equipment List

Description	Manufacturer	Model	Serial Number

2.3. Description of Test Facility

Test Facilities : Shenzhen STE Testing Laboratory Co., Ltd
309, B Tower, Huafeng Headquarters Economic Edifice, No.288 Xixiang Avenue,
Bao'an District, Shenzhen.

Note : Radiated, Radio-Frequency, Electromagnetic Field Immunity Test (Rs) Subcontract To Shenzhen Lcs Compliance Testing Laboratory Ltd for Testing.

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2.4. Statement of The Measurement Uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. To CISPR 16 – 4 “Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements” and is documented in the LCS quality system acc. To DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

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2.5. Measurement Uncertainty

Test	Parameters	Expanded uncertainty (U_{lab})	Expanded uncertainty (U_{cispr})
Conducted Emission	Level accuracy (9kHz to 150kHz) (150kHz to 30MHz)	± 2.63 dB ± 2.35 dB	± 3.8 dB ± 3.4 dB
Power disturbance	Level accuracy (30MHz to 300MHz)	± 2.90dB	± 4.5 dB
Electromagnetic Radiated Emission (3-loop)	Level accuracy (9kHz to 30MHz)	± 3.60 dB	± 3.3 dB
Radiated Emission	Level accuracy (9kHz to 30MHz)	± 3.68 dB	N/A
Radiated Emission	Level accuracy (30MHz to 1000MHz)	± 3.48 dB	± 5.3 dB
Radiated Emission	Level accuracy (above 1000MHz)	± 3.90 dB	± 5.2 dB
Harmonic	Voltage	± 0.510%	N/A
Voltage Fluctuations & Flicker	Voltage	± 0.510%	N/A
1) Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus. 2) The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor of k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.			

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3. MEASURING DEVICES AND TEST EQUIPMENT

Radiated Disturbance

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Due Date.
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal/ Due date
1	3m Semi Anechoic Chamber	Maorui	/	/	2020-02-02
2	EMI Test Receiver	ROHDE & SCHWARZ	ESR 3	102312	2020-06-11
3	Log per Antenna	ROHDE & SCHWARZ	VULP9118	873	2020-06-12
4	EMI Test Software	Farad	EMC	N/A	N/A
5	Positioning Controller	MF	MF-7082	/	N/A

Electrostatic Discharge Immunity Test (ESD)

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Due Date.
1	ESD Simulator	TESEQ	NSG437	1211	2020-06-12

Power Frequency Magnetic Field Immunity Test

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Due Date.
1	Power frequency mag-field generator System	EVERFINE	EMS61000-8K	906003	2020-06-17

Radiated, Radio-Frequency, Electromagnetic Field Immunity Test (RS)-LCS

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Due Date.
1	RS Test Software	Tonscend	/	/	N/A
2	ESG Vector Signal Generator	Agilent	E4438C	MY42081396	2020-11-14
3	3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	2020-06-11
4	RF POWER AMPLIFIER	OPHIR	5225R	1052	2020-11-21
5	RF POWER AMPLIFIER	OPHIR	5273F	1019	2020-11-21
6	Stacked Broadband Log Periodic Antenna	SCHWARZBECK	STLP 9128	9128ES-145	2020-11-21
7	Stacked Mikrowellen Log.-Per Antenna	SCHWARZBECK	STLP 9149	9149-484	2020-11-21
8	RS Test Software	Tonscend	/	/	2020-03-24

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Conducted Disturbance

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Due Date.
1	EMI Test Receiver	ROHDE & SCHWARZ	ESR 3	102312	2020-06-11
2	10dB Attenuator	SCHWARZBECK	MTS-IMP136	261115-001-0032	2020-03-02
3	Artificial Mains	ROHDE & SCHWARZ	ESH2-Z5	100030	2020-03-02
4	EMI Test Software	Farad	EMC	N/A	N/A
5	ISN	SCHWARZBECK	NTFM 8158	NTFM 8158 0120	2020-03-02

Electrical Fast Transient/Burst Immunity Test (EFT)

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Due Date.
1	Surge test system	EM test	UCS 500 M4	0101-34	2020-03-02

Immunity to Conducted Disturbances, Induced by Radio-Frequency Fields

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Due Date.
1	Simulator	FRANKONIA	CIT-10	A126A1195	2020-06-17
2	CDN	FRANKONIA	CDN-M2	5100100100	2020-06-17
3	CDN	FRANKONIA	CDN-M3	0900-11	2020-06-17
4	Attenuator	FRANKONIA	ATT6	0010222A	2020-06-17
5	Infuse tongs	EMTEST	EM-Clamp	0513A031201	2020-06-17

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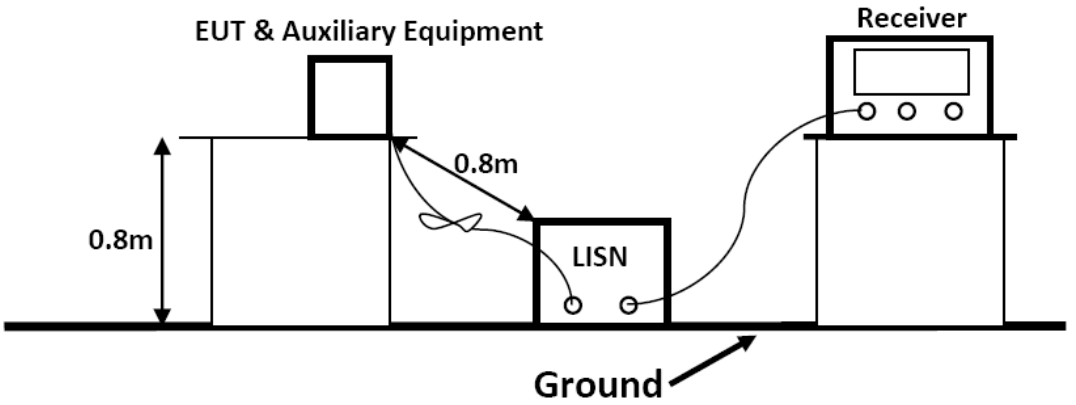
4. Power Line Conducted Emission Measurement

4.1. Block Diagram of Test Setup



4.2. Test Standard

EN IEC 61000-6-4: 2019

Power Line Conducted Emission Limits (Class A)		
Frequency (MHz)	Limit (dBμV)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	79	66
0.50 ~ 30.00	73	60
NOTE1-The lower limit shall apply at the transition frequencies. NOTE2-The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz.		

4.3. EUT Configuration on Test

The following equipments are installed on Power Line Conducted Emission Measurement to meet the EN IEC 61000-6-4 requirement and operating regulations in a manner, which tends to maximize its emission characteristics in a normal application.

4.4. Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and connected to the AC mains through Line Impedance Stability Network (L.I.S.N). This provided 50-ohm coupling impedance for the tested equipments. Both sides of AC line are investigated to find out the maximum conducted emission according to the EN 55032 regulations during conducted emission measurement.

The bandwidth of the field strength meter is set at 9kHz in 150kHz~30MHz.

The frequency range from 150kHz to 30MHz is investigated.

4.5. Test Results

PASS.

The test result please refer to the next page.

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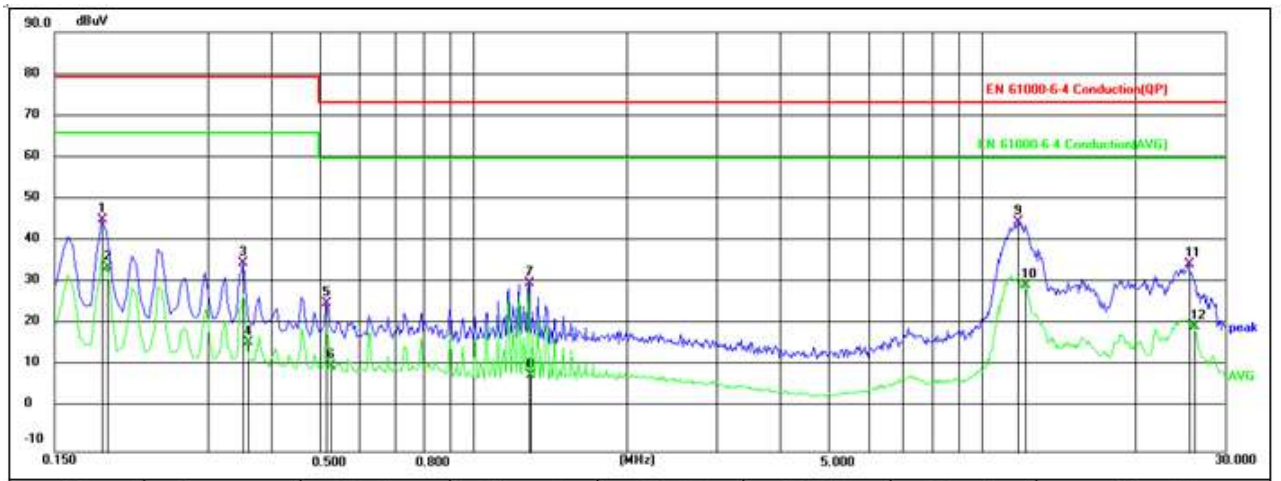
Test Model	EBC480/100-LFP-ABMS	**Test Mode**	Working
Environmental Conditions	23.3℃, 53.7% RH	**Test Engineer**	ZOM ZHANG
Pol.	Line	**Test Voltage**	DC480V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1861	28.05	17.24	45.29	79.00	-33.71	QP
2	0.1906	16.83	17.25	34.08	66.00	-31.92	AVG
3	0.3526	18.94	16.14	35.08	79.00	-43.92	QP
4	0.3596	0.02	16.08	16.10	66.00	-49.90	AVG
5	0.5146	9.87	15.61	25.48	73.00	-47.52	QP
6	0.5237	-5.01	15.59	10.58	60.00	-49.42	AVG
7	1.2841	15.05	15.12	30.17	73.00	-42.83	QP
8	1.2975	-6.75	15.12	8.37	60.00	-51.63	AVG
9	11.7781	30.30	14.39	44.69	73.00	-28.31	QP
10	12.2190	15.42	14.28	29.70	60.00	-30.30	AVG
11	25.5886	27.11	7.56	34.67	73.00	-38.33	QP
12	26.0476	12.52	7.22	19.74	60.00	-40.26	AVG

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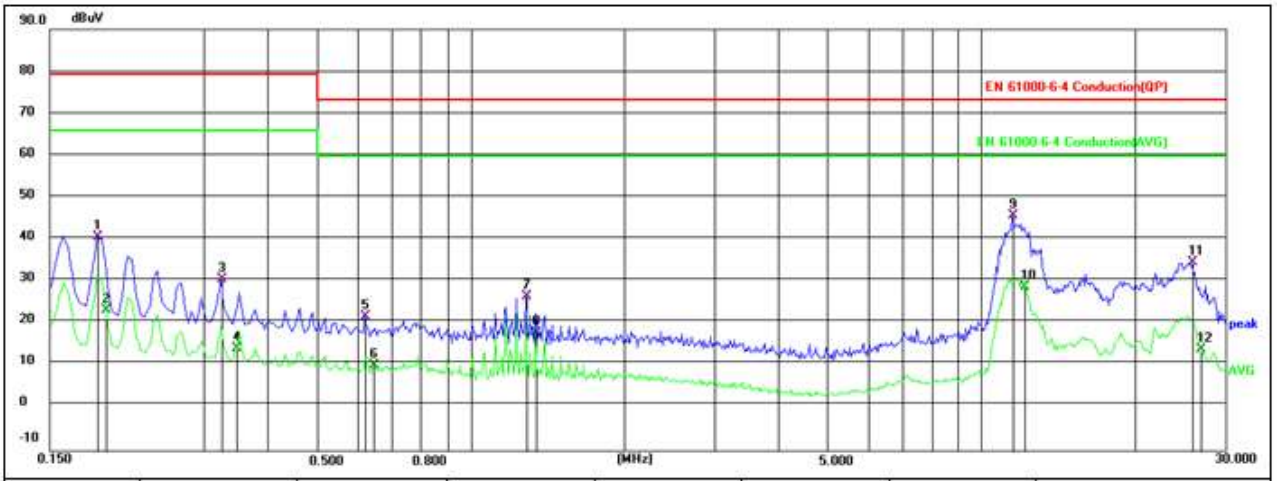
Test Model	EBC480/100-LFP-ABMS	**Test Mode**	Working
Environmental Conditions	23.3℃, 53.7% RH	**Test Engineer**	ZOM ZHANG
Pol.	Neutral	**Test Voltage**	DC480V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1861	23.62	17.24	40.86	79.00	-38.14	QP
2	0.1934	6.05	17.26	23.31	66.00	-42.69	AVG
3	0.3256	14.37	16.34	30.71	79.00	-48.29	QP
4	0.3465	-1.92	16.18	14.26	66.00	-51.74	AVG
5	0.6226	6.12	15.63	21.75	73.00	-51.25	QP
6	0.6474	-5.63	15.79	10.16	60.00	-49.84	AVG
7	1.2886	11.50	15.11	26.61	73.00	-46.39	QP
8	1.3379	2.97	15.11	18.08	60.00	-41.92	AVG
9	11.5126	31.72	14.13	45.85	73.00	-27.15	QP
10	12.1240	14.44	14.42	28.86	60.00	-31.14	AVG
11	25.7551	27.28	7.35	34.63	73.00	-38.37	QP
12	26.8411	6.95	7.22	14.17	60.00	-45.83	AVG

Note: Pre-Scan all mode, Thus record worse case mode result in this report.

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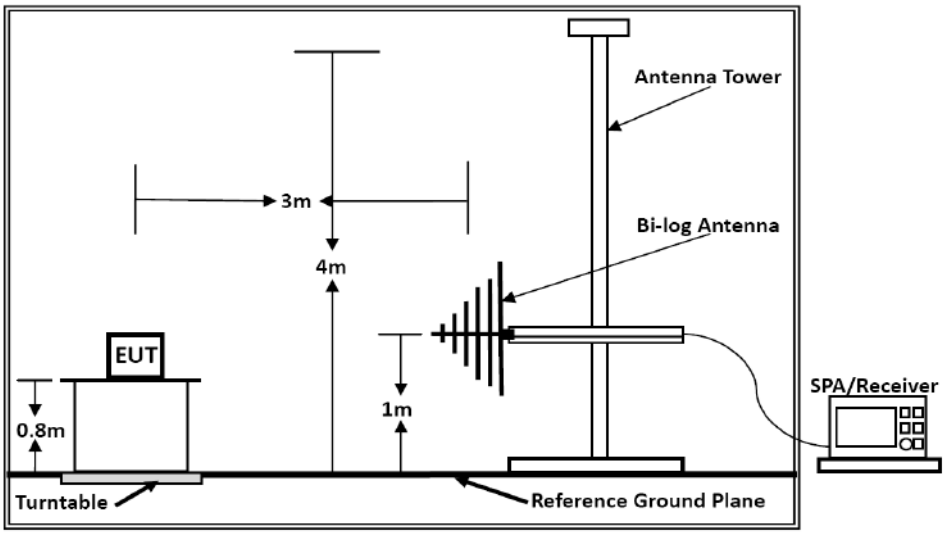
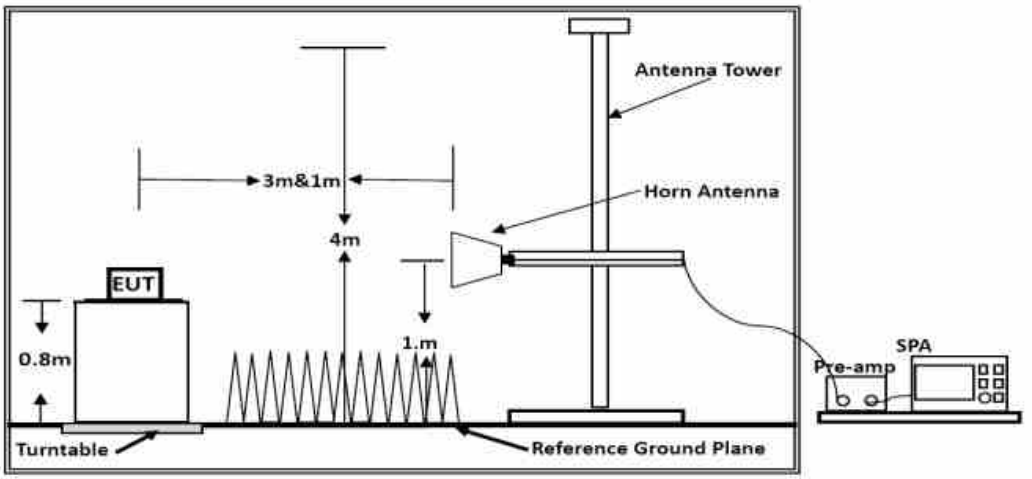
5.RADIATED EMISSION MEASUREMENT

5.1. Block Diagram of Test Setup



Below 1GHz



Above 1GHz

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5.2. Test Standard

EN IEC 61000-6-4:2019

Limits for Radiated Emission Below 1GHz		
Frequency (MHz)	Distance (Meters)	Field Strengths Limit (dBμV/m)
30 ~ 230	3	50
230 ~ 1000	3	57
Note: (1) The smaller limit shall apply at the combination point between two frequency bands. (2) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the EUT.		

Limits for Radiated Emission Above 1GHz			
Frequency (MHz)	Distance (Meters)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)
1000 ~ 3000	3	76	56
3000 ~ 6000	3	80	60
***Note: The lower limit applies at the transition frequency.			

5.3. EUT Configuration on Test

The EN 61000-6-4 regulations test method must be used to find the maximum emission during radiated emission measurement.

5.4. Operating Condition of EUT

1) Turn on the power.
2) Let the EUT work and measure it.

5.5. Test Procedure

The EUT is placed on a turntable, which is 0.8 meter high above the ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. By-log antenna is used as a receiving antenna. Both horizontal and vertical polarization of the antenna is set on test.
The bandwidth of the EMI test receiver is set at RBW/VBW=120kHz/1000kHz.
The frequency range from 30MHz to 1000MHz is checked.
The bandwidth of the Spectrum analyzer is set at RBW/VBW=1MHz/3MHz.
The frequency range from 1GHz to the frequency which about 5th carrier harmonic or 6GHz is checked.

5.6. Test Results

PASS.

The test result please refer to the next page.

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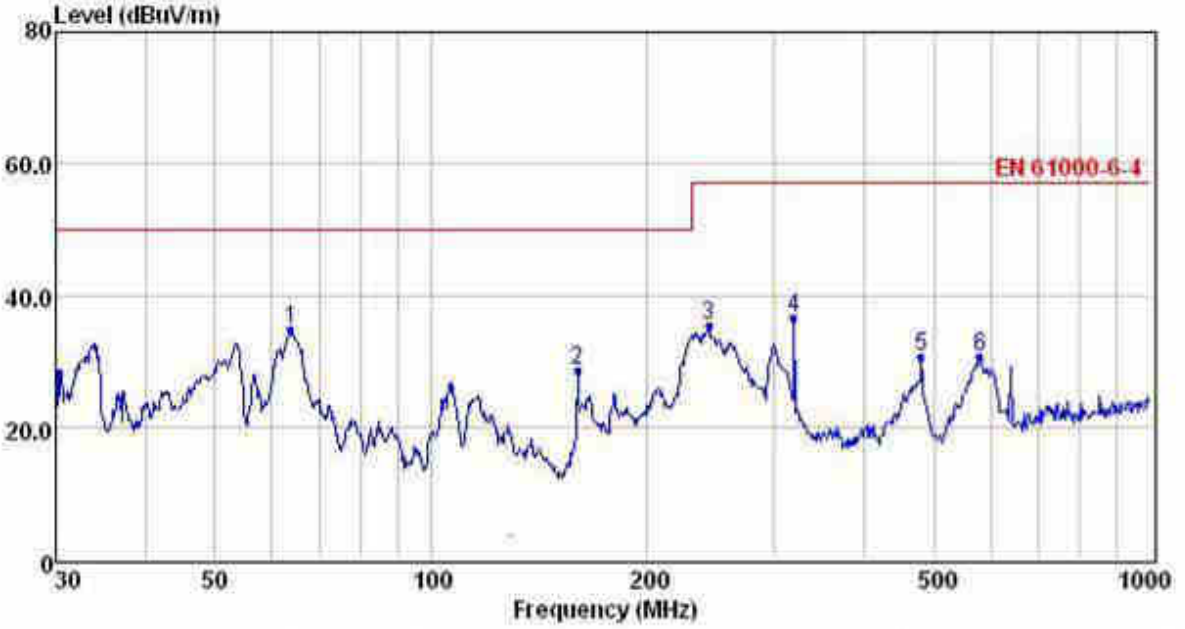
Test Model	EBC480/100-LFP-ABMS	**Test Mode**	Working
Environmental Conditions	23.8℃, 53% RH	**Detector Function**	Quasi-peak
Pol.	Vertical	**Distance**	3m
Test Engineer	ZOM ZHANG	**Test Voltage**	DC480V



	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	63.76	23.12	0.48	11.20	34.80	50.00	-15.20	QP
2	159.78	19.27	0.75	8.66	28.68	50.00	-21.32	QP
3	243.38	22.53	0.90	12.08	35.51	57.00	-21.49	QP
4	319.94	22.22	1.16	13.33	36.71	57.00	-20.29	QP
5	480.53	13.10	1.31	16.08	30.49	57.00	-26.51	QP
6	580.70	11.06	1.44	18.09	30.59	57.00	-26.41	QP

Note: 1. All readings are Quasi-peak values.
2. Measured= Reading + Antenna Factor + Cable Loss
3. The emission that are 20db below the official limit are not reported

Remark: Pre-San all mode, Thus record worse case mode result in this report

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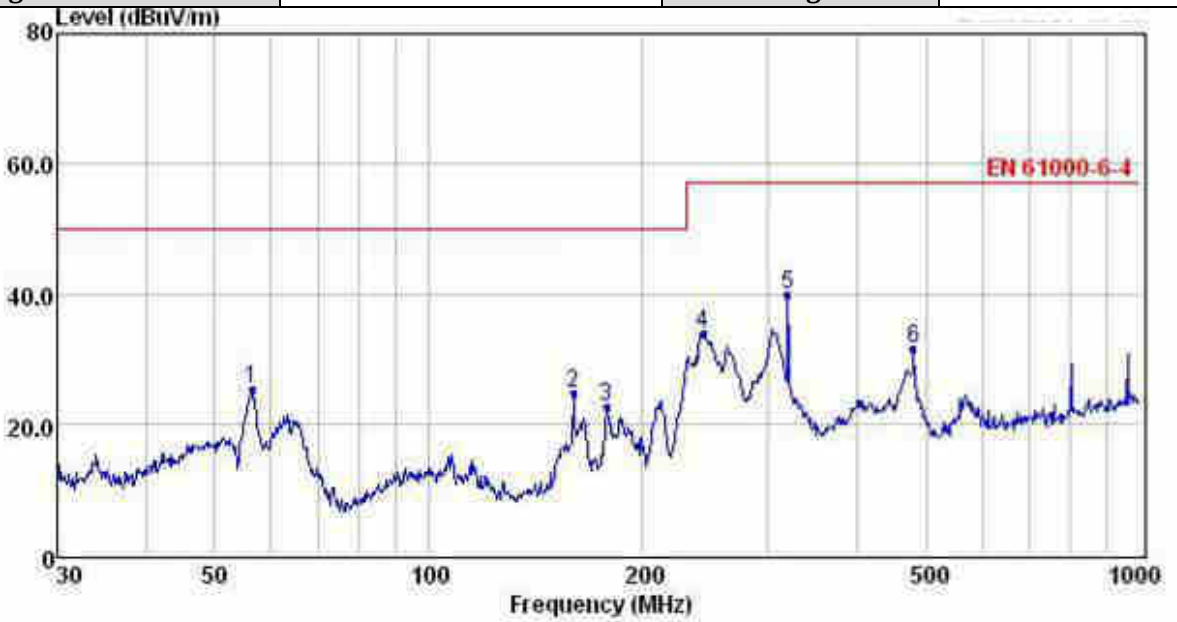
Test Model	EBC480/100-LFP-ABMS	**Test Mode**	Working
Environmental Conditions	23.8℃, 53% RH	**Detector Function**	Quasi-peak
Pol.	Horizontal	**Distance**	3m
Test Engineer	ZOM ZHANG	**Test Voltage**	DC480V



	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	56.39	11.77	0.47	12.93	25.17	50.00	-24.83	QP
2	159.78	15.28	0.75	8.66	24.69	50.00	-25.31	QP
3	178.13	12.08	0.89	9.55	22.52	50.00	-27.48	QP
4	243.38	21.02	0.90	12.08	34.00	57.00	-23.00	QP
5	319.94	25.30	1.16	13.33	39.79	57.00	-17.21	QP
6	480.53	14.07	1.31	16.08	31.46	57.00	-25.54	QP

Note: 1. All readings are Quasi-peak values.
2. Measured= Reading + Antenna Factor + Cable Loss
3. The emission that are 20db below the official limit are not reported

Remark: Pre-San all mode, Thus record worse case mode result in this report

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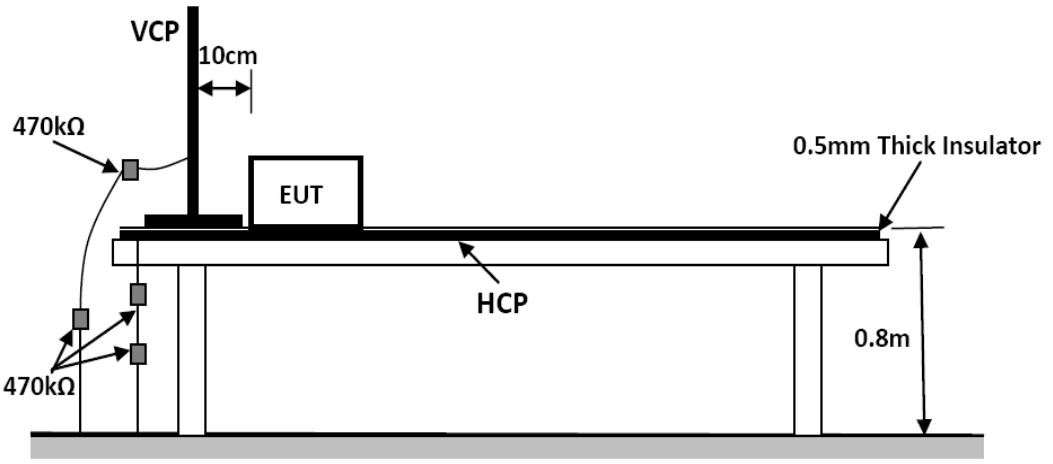
6. ELECTROSTATIC DISCHARGE IMMUNITY TEST

6.1. Block Diagram of Test Setup



6.2. Test Standard

EN IEC 61000-6-2:2019

6.3. Severity Levels and Performance Criterion

6.3.1. Severity level

Level	Test Voltage Contact Discharge (KV)	Test Voltage Air Discharge (KV)
1	±2	±2
2	±4	±4
3	±6	±8
4	±8	±15
X	Special	Special

6.3.2. Performance Criterion：B

6.4. EUT Configuration on Test

The configuration of EUT is listed in Section 6.3.

6.5. Operating Condition of EUT

Same as conducted emission measurement, which is listed in Section 3.4. Except the test set up replaced by Section 8.1.

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6.6. Test Procedure

6.6.1. Air Discharge

This test is done on a non-conductive surface. The round discharge tip of the discharge electrode shall be approached as fast as possible to touch the EUT. After each discharge, the discharge electrode shall be removed from the EUT. The generator is then re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed

6.6.2. Contact Discharge

All the procedure shall be same as Section 9.6.1. Except that the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

6.6.3. Indirect Discharge For Horizontal Coupling Plane

At least 10 single discharges (in the most sensitive polarity) shall be applied at the front edge of each HCP opposite the center point of each unit (if applicable) of the EUT and 0.1m from the front of the EUT. The long axis of the discharge electrode shall be in the plane of the HCP and perpendicular to its front edge during the discharge.

6.6.4. Indirect Discharge For Vertical Coupling Plane

At least 10 single discharge (in the most sensitive polarity) shall be applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m X 0.5m, is placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges shall be applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.

6.7. Test Results

PASS.

The test result please refer to the next page.

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Electrostatic Discharge Test Results

Standard	☐ IEC 61000-4-2 ☑ EN 61000-4-2		
Applicant	Sicon Chat Union Electric Co., Ltd.		
EUT	Li-ion battery energy storage system	**Temperature**	23.6℃
M/N	EBC480/100-LFP-ABMS	**Humidity**	53.2%
Criterion	B	**Pressure**	1021mbar
Test Mode	Working	**Test Engineer**	ZOM ZHANG
Test Voltage	DC480V		

Air Discharge

Test Points	Test Levels			Results		
	± 2kV	± 4kV	± 8kV	Passed	Fail	Performance Criterion
Front	☒	☒	☒	☒	☐	☐A ☒B
Back	☒	☒	☒	☒	☐	☐A ☒B
Left	☒	☒	☒	☒	☐	☐A ☒B
Right	☒	☒	☒	☒	☐	☐A ☒B
Top	☒	☒	☒	☒	☐	☐A ☒B
Bottom	☒	☒	☒	☒	☐	☐A ☒B

Contact Discharge

Test Points	Test Levels		Results		
	± 2 kV	±4 kV	Passed	Fail	Performance Criterion
Front	☒	☒	☒	☐	☐A ☒B
Back	☒	☒	☒	☐	☐A ☒B
Left	☒	☒	☒	☐	☐A ☒B
Right	☒	☒	☒	☐	☐A ☒B
Top	☒	☒	☒	☐	☐A ☒B
Bottom	☒	☒	☒	☐	☐A ☒B

Discharge To Horizontal Coupling Plane

Side of EUT	Test Levels		Results		
	± 2 kV	± 4 kV	Passed	Fail	Performance Criterion
Front	☒	☒	☒	☐	☐A ☒B
Back	☒	☒	☒	☐	☐A ☒B
Left	☒	☒	☒	☐	☐A ☒B
Right	☒	☒	☒	☐	☐A ☒B

Discharge To Vertical Coupling Plane

Side of EUT	Test Levels		Results		
	± 2 kV	± 4 kV	Passed	Fail	Performance Criterion
Front	☒	☒	☒	☐	☐A ☒B
Back	☒	☒	☒	☐	☐A ☒B
Left	☒	☒	☒	☐	☐A ☒B
Right	☒	☒	☒	☐	☐A ☒B

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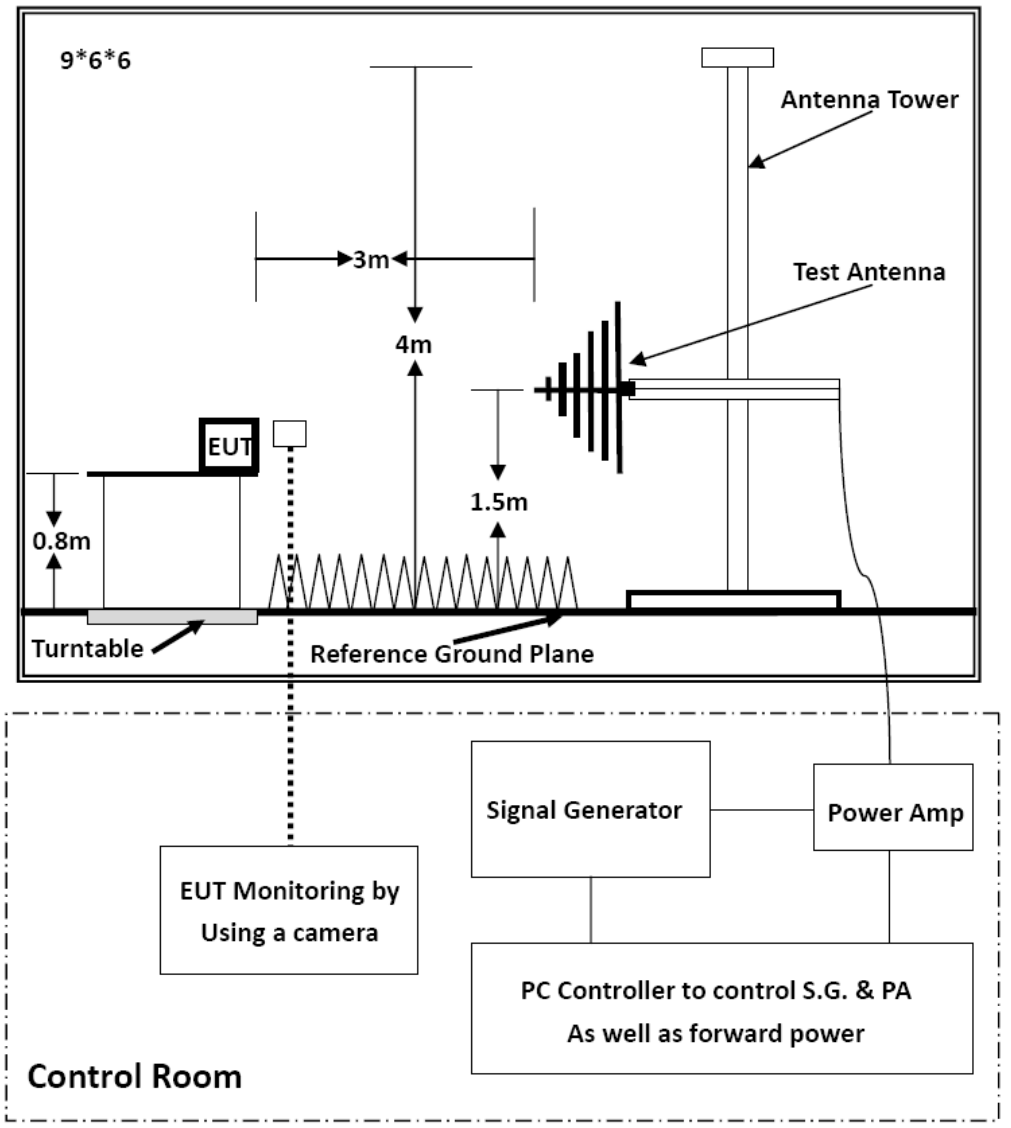
7. RF FIELD STRENGTH SUSCEPTIBILITY TEST

7.1. Block Diagram of Test Setup



7.2. Test Standard

EN IEC 61000-6-2:2019

7.3. Severity Levels and Performance Criterion

7.3.1. Severity level

Level	Field Strength (V/m)
1	1
2	3
3	10
X	1

7.3.2. Performance Criterion: A

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7.4. EUT Configuration on Test

The configuration of EUT is listed in Section 7.3.

7.5. Operating Condition of EUT

Same as radiated emission measurement, which is listed in Section 5.1, except the test setup replaced as Section 9.1.

7.6. Test Procedure

The EUT are placed on a table, which is 0.8 meter high above the ground. The EUT is set 3 meters away from the transmitting antenna, which is mounted on an antenna tower. Both horizontal and vertical polarization of the antenna is set on test. Each of the four sides of the EUT must be faced this transmitting antenna and measured individually.
In order to judge the EUT performance, a CCD Recording is used to monitor its screen.
All the scanning conditions are as following:

Condition of Test	Remark
Fielded Strength	3 V/m (Severity Level 2)
Radiated Signal	Unmodulated
Test Frequency Range (swept test)	80-1000MHz,1400-6000MHz
Dwell time of radiated	0.0015 decade/s
Waiting Time	3 Sec.

7.7. Test Results

PASS.

The test result please refer to the next page.

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RF Field Strength Susceptibility Test Results

Standard	☐ IEC 61000-4-3 ☑ EN 61000-4-3		
Applicant	Sicon Chat Union Electric Co., Ltd.		
EUT	Li-ion battery energy storage system	**Temperature**	24.1℃
M/N	EBC480/100-LFP-ABMS	**Humidity**	52.6%
Field Strength	10V/m 3V/m	**Criterion**	A
Test Mode	Working	**Test Engineer**	Baron.wen
Test Frequency	80MHz to 1000MHz (10V/m) 1400MHz to 6000MHz (3V/m)	**Test Voltage**	DC480V
Modulation	☐None ☐ Pulse ☑AM 1KHz 80%		
Steps	1%		

	Horizontal	**Vertical**
Front	PASS	PASS
Right	PASS	PASS
Rear	PASS	PASS
Left	PASS	PASS

Test Equipment:

1. Signal Generator: 2031 (MARCONI)
2. Power Amplifier: 500A100 & 100W/1000M1 (A&R)
3. Power Antenna: 3108 (EMCO) & AT1080 (A&R)
4. Field Monitor: FM2000 (A&R)

Note:

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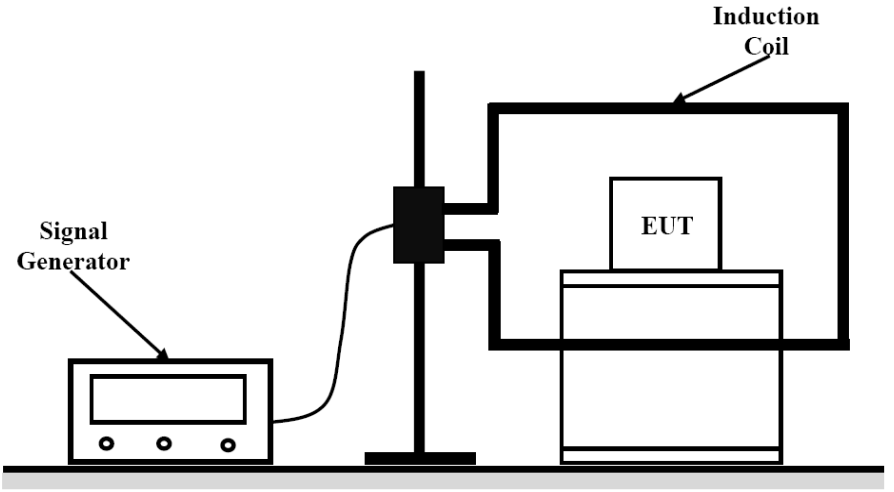
8. MAGNETIC FIELD SUSCEPTIBILITY TEST

8.1. Block Diagram of Test Setup



8.2. Test Standard

EN IEC 61000-6-2:2019

8.3. Severity Levels and Performance Criterion

8.3.1. Severity level

Level	Field Strength (A/m)
1	1
2	3
3	10
4	30
5	100
X	Special

8.3.2. Performance Criterion: A

8.4. EUT Configuration on Test

The configuration of EUT is listed in Section 3.3.

8.5. Test Procedure

The EUT is placed in the middle of a induction coil (1*1m), under which is a 1*1*0.1m (high) table, this small table is also placed on a larger table, 0.8 m above the ground. Both horizontal and vertical polarization of the induction coil is set on test, so that each side of the EUT is affected by the magnetic field. Also can reach the same aim by change the position of the EUT.

8.6. Test Results

PASS.

The test result please refer to the next page.

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Magnetic Field Immunity Test Result

Standard	☐ IEC 61000-4-8	☑ EN 61000-4-8	
Applicant	Sicon Chat Union Electric Co., Ltd.		
EUT	Li-ion battery energy storage system	**Temperature**	22.8℃
M/N	EBC480/100-LFP-ABMS	**Humidity**	53.2％
Test Mode	Working	**Criterion**	A
Test Engineer	ZOM ZHANG	**Test Voltage**	DC480V

Test Level (A/M)	Testing Duration	Coil Orientation	Criterion	Result
30	5 mins	X	A	PASS
30	5 mins	Y	A	PASS
30	5 mins	Z	A	PASS

Note:

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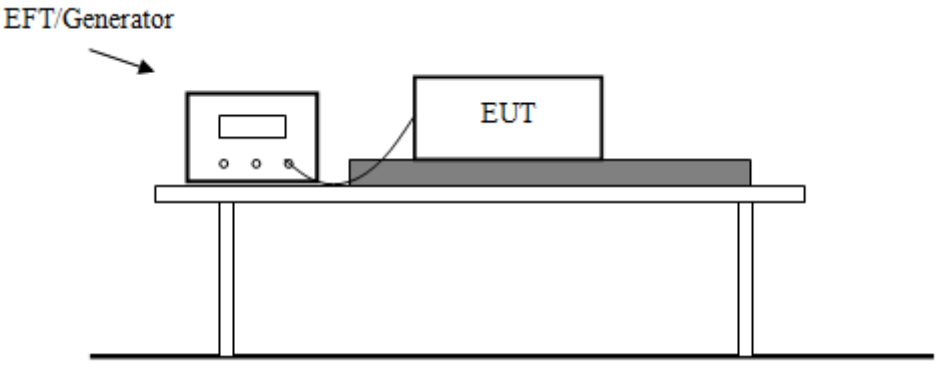
9. Electrical Fast Transient/Burst Immunity Test

9.1. Block Diagram of Test Setup



9.2. Test Standard

EN IEC 61000-6-2: 2019 (EN 61000-4-4: 2012, Level 3: 1KV)

9.3. Severity Levels and Performance Criterion

9.3.1 Severity level

Open Circuit Output Test Voltage ±10%		
Level	On Power Supply Lines	On I/O (Input/Output) Signal data and control lines
1.	0.5 KV	0.25 KV
2.	1 KV	0.5 KV
3.	2 KV	1 KV
4.	4 KV	2 KV
X	Special	Special

9.3.2 Performance Criterion: B

9.4. EUT Configuration on Test

The configuration of EUT is listed in Section 3

9.5. Test Procedure

The EUT is put on the table, which is 0.8 meter high above the ground. This reference ground plane shall project beyond the EUT by at least 0.1m on all sides and the minimum distance between EUT and all other conductive structure, except the ground plane beneath the EUT, shall be more than 0.5m.

9.5.1 For input and output DC power ports:

The EUT is connected to the power mains by using a coupling device, which couples the EFT interference signal to DC power lines. Both polarities of the test voltage should be applied during compliance test and the duration of the test is 2 mins.

9.5.2 For signal lines and control lines ports: No I/O ports. It’s unnecessary to test.

9.6. Test Results

PASS.

Please refer to the following page.

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Electrical Fast Transient/Burst Test Results

Standard	☐ IEC 61000-4-4 ☑ EN 61000-4-4		
Applicant	Sicon Chat Union Electric Co., Ltd.		
EUT	Li-ion battery energy storage system	**Temperature**	24.2℃
M/N	EBC480/100-LFP-ABMS	**Humidity**	53.6%
Test Mode	Working	**Criterion**	B
Test Engineer	ZOM ZHANG	**Test Voltage**	DC480V

Line	Test Voltage	Result (+)	Result (-)
L	1KV	PASS	PASS
N	1KV	PASS	PASS
L-N	1KV	PASS	PASS
L-PE			
N-PE			
L-N-PE			
Signal Line			
I/O Cable			

Note:

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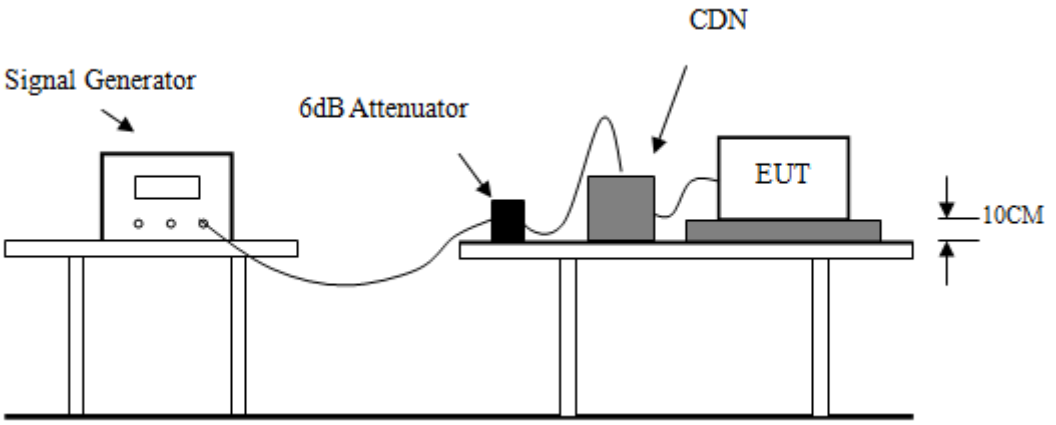
10. Injected Currents Susceptibility Test

10.1 Block Diagram of Test Setup



10.2 Test Standard

EN 61000-6-2: 2007 (EN 61000-4-6: 2014, Severity Level: Level 3, (0.15MHz ~ 80MHz)

10.3 Severity Levels and Performance Criterion

9.3.1 Severity level

Level	Field Strength (V)
1	1
2	3
3	10
X	Special

9.3.2 Performance Criterion: A

10.4 EUT Configuration on Test

The configuration of EUT is listed in Section 3

1105

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10.5 Test Procedure

10.5.1 Set up the EUT, CDN and test generators as shown on Section 9.1

10.5.2 Let the EUT work in test mode and measure it.

10.5.3 The EUT are placed on an insulating support 0.1m high above a ground reference plane. CDN (coupling and decoupling device) is placed on the ground plane about 0.3m from EUT.

Cables between CDN and EUT are as short as possible, and their height above the ground reference plane shall be between 30 and 50 mm (where possible).

10.5.4 The disturbance signal described below is injected to EUT through CDN.

10.5.5 The EUT operates within its operational mode(s) under intended climatic conditions after power on.

10.5.6 The frequency range is swept from 150kHz to80MHz using 3V signal level, and with the disturbance signal 80% amplitude modulated with a 1kHz sine wave.

10.5.7 The rate of sweep shall not exceed 1.5*10-3decades/s. where the frequency is swept incrementally; the step size shall not exceed 1% of the start and thereafter 1% of the preceding frequency value.

10.5.8 Recording the EUT operating situation during compliance testing and decide the EUT immunity criterion.

10.6 Test Results

PASS.

Please refer to the following page.

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Injected Currents Susceptibility Test Results

Standard	☐ IEC 61000-4-6 ☑ EN 61000-4-6		
Applicant	Sicon Chat Union Electric Co., Ltd.		
EUT	Li-ion battery energy storage system	**Temperature ...**	24.4℃
M/N	EBC480/100-LFP-ABMS	**Humidity .....**	52.1% .....
Test Mode	Working	**Criterion .....**	A
Test Engineer	ZOM ZHANG	**Test Voltage**	DC480V

Frequency Range (MHz)	Injected Position	Strength (Unmodulated)	Criterion	Result
0.15 ~ 80	AC Mains	10V	A	PASS

Note:

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11. PHOTOGRAPHS OF THE EUT

Fig. 1

Fig. 2

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Fig. 3

---------- THE END OF TEST REPORT ----------

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TESTING AND MEASURING EQUIPMENT/ALLOWED SUBCONTRACTING
IEC 62619:2017, Edition 1.0
Secondary cells and batteries containing alkaline or other non-acid electrolytes – Safety requirements for secondary lithium cells and batteries, for use in industrial applications

Report Number.....:	STE20110102S
Date of issue.....:	June 20, 2019
Total number of pages.....:	24 pages
Name of Testing Laboratory preparing the Report.....:	Shenzhen STE Testing Laboratory Co., Ltd
Applicant's name.....:	Sicon Chat Union Electric Co., Ltd.
Address.....:	Bldg.14&15, No. 319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, 050035, China.
Test specification:	
Standard.....:	IEC62619:2017, AMD1:2015
Test procedure.....:	CE-LVD
Non-standard test method.....:	N/A
Test Report Form No.....:	IEC62619C
Test Report Form(s) Originator.....:	DEKRA Certification B.V.
Master TRF.....:	Dated 2018-12-21

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General disclaimer:

The test results presented in this report relate only to the object tested.

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Test item description.....:	Li-ion battery energy storage system	
Trade Mark.....:	N/A	
Manufacturer.....:	Same as the applicant	
Model/Type reference.....:	EBC480/100-LFP-ABMS, details see the model list	
Ratings.....:	DC 480V, 100A, ta.25°C, IP20	
☒ **Testing Laboratory:**	Shenzhen STE Testing Laboratory Co., Ltd	
Testing location/ address.....:	Room 301(left side), Building 9, Dehong Factory Building, No. 63 Yuchang Road, Niuhu Community, Guanlan Street, Longhua District, Shenzhen, China	
Tested by.....:	Hunter Liang / Project Handler	Hunter Liang
Check by.....:	Todd Qian / Reviewer	Todd Qian
Approved by.....:	Fly Li / Technical Director	Fly Li

List of Attachments (including a total number of pages in each attachment):

Attachment No. 1: Photo documentation.

Summary of testing:

All test items are applied to the model EBC480/100-LFP-ABMS, which is considered representative and give the most unfavourable test result, the other models had been tested with construction cheek, temperature rise test and cap interchangeability on the provided samples.

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Tests performed (name of test and test clause):	Testing location:
IEC 62619:2011+A1:2015	Shenzhen STE Testing Laboratory Co., Ltd Room 301(left side), Building 9, Dehong Factory Building, No. 63 Yuchang Road, Niuhu Community, Guanlan Street, Longhua District, Shenzhen, China

Summary of compliance with National Differences:

List of countries addressed

☒ The product fulfils the requirements of Germany and European Group differences

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Copy of marking plate:

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

Li-ion battery energy storage system
Model: EBC480/100-LFP-ABMS
DC 480V, 100A

Sicon Chat Union Electric Co., Ltd.
Bldg.14&15, No. 319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, 050035, China.
Importer: xxxx
Address: xxxx
Made In China

Remarks:

1. Representative markings of EBC480/100-LFP-ABMS, markings of all models are identical except for the model name and power.

2. Height of CE mark is 5mm, height of WEEE symbol is 7mm, height of other marks is 5mm, height of letters and numerals is 2mm.

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Test item particulars..... :	
Classification of installation and use..... :	☒ Stationary application ☐ Motive application
Supply Connection..... :	☐ S (Very low rate long-time discharge type) ☐ E (Low rate long-time discharge type) ☒ M (Medium rage discharge type) ☐ H (High rate discharge type)
Possible test case verdicts:	
- test case does not apply to the test object..... :	N/A
- test object does meet the requirement..... :	P (Pass)
- test object does not meet the requirement..... :	F (Fail)
Testing..... :	
Date of receipt of test item..... :	June 20, 2019
Date (s) of performance of tests..... :	June 01, 2019 - June 20, 2019

General remarks:

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The test results presented in this report relate only to the item tested.

"(See Enclosure #)" refers to additional information appended to the report.
"(See appended table)" refers to a table appended to the report.

Throughout this report a ☒ comma / ☐ point is used as the decimal separator.

Modified Information

Version	Report No.	Revision Date	Summary
V1.0	STE20110102S	/	Original Version

Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:	
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided..... :	☐ **Yes** ☒ **Not applicable**

When differences exist; they shall be identified in the General product information section.

Name and address of factory (ies)..... : Same as manufacturer' name and address

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General product information:

1. All models have similar construction and appearance but different power, size and lamp cap.
2. Unless otherwise specified, the models EBC480/100-LFP-ABMS were chosen as representative model to perform all test

The supply connector via with power cord used for all models.

Model list:

Model	voltage	Input Current(A)	Output Current(A)
ECM-48B100N	48V	100A	100A
EBC48/30-LFP-ABMS	48V	60A	90A
EBC48/50-LFP-ABMS	48V	100A	150A
EBC48/100-LFP-ABMS	48V	100A	100A
EBC51.2/100-LFP-ABMS	51.2V	100A	100A
EBC240/10-LFP-ABMS	240V	20A	40A
EBC480/10-LFP-ABMS	480V	20A	40A
EBC480/20-LFP-ABMS	480V	40A	80A
EBC480/30-LFP-ABMS	480V	60A	120A
EBC480/50-LFP-ABMS	480V	50A	100A
EBC480/100-LFP-ABMS	480V	100A	200A
EBC480/150-LFP-ABMS	480V	150A	300A
EBC480/200-LFP-ABMS	480V	200A	400A
EBC480/280-LFP-ABMS	480V	140A	140A
EBC480/40-LFP-ABMS	480V	80A	200A
EBC480/80-LFP-ABMS	480V	160A	400A
EBC480/120-LFP-ABMS	480V	240A	480A
EBC480/160-LFP-ABMS	480V	320A	480A
EBC768/40-LFP-ABMS	768V	80A	240A
EBC768/80-LFP-ABMS	768V	160A	400A
EBC768/120-LFP-ABMS	768V	240A	480A
EBC768/160-LFP-ABMS	768V	320A	480A
EBC768/50-LFP-ABMS	768V	50A	100A
EBC768/100-LFP-ABMS	768V	100A	200A
EBC768/150-LFP-ABMS	768V	150A	300A
EBC768/200-LFP-ABMS	768V	200A	400A
EBC768/280-LFP-ABMS	768V	140A	140A
EBC768/100-LFP-ABMS-M	768V	100A	200A
EBC768/40-LFP-ABMS-F	768V	80A	240A
EBC768/80-LFP-ABMS-F	768V	160A	400A
EBC768/120-LFP-ABMS-F	768V	240A	480A
EBC768/160-LFP-ABMS-F	768V	320A	480A
EBC768/50-LFP-ABMS-F	768V	50A	100A
EBC768/100-LFP-ABMS-F	768V	100A	200A
EBC768/150-LFP-ABMS-F	768V	150A	300A
EBC768/200-LFP-ABMS-F	768V	200A	400A
EBC768/280-LFP-ABMS-F	768V	140A	140A

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IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict
4	**PARAMETER MEASUREMENT TOLERANCES**		**P**
	Parameter measurement tolerances		P
5	**GENERAL SAFETY CONSIDERATIONS**		**P**
5.1	**General**		**P**
	Cells and batteries are safe under conditions of both intended use and reasonably foreseeable misuse.. :	See also table 5.1 for Critical components information	P
5.2	**Insulation and wiring**		**P**
	Voltage, current, altitude, and humidity requirements		P
	Adequate clearances and creepage distances between connectors		P
	The mechanical integrity of internal connections		P
5.3	**Venting**		**P**
	Pressure relief function		N/A
	Encapsulation used to support cells within an outer casing		P
5.4	**Temperature/voltage/current management**		**P**
	The design prevents abnormal temperature-rise		P
	Voltage, current, and temperature limits of the cells		P
	Specifications and charging instructions for equipment manufacturers		P
5.5	**Terminal contacts of the battery pack and/or battery system**		**P**
	Polarity marking(s)		P
	Capability to carry the maximum anticipated current		P
	External terminal contact surfaces		N/A
	Terminal contacts are arranged to minimize the risk of short circuits		P
5.6	**Assembly of cells, modules, or battery packs into battery systems**		**P**
5.6.1	General		P
	Independent control and protection method(s)		P
	Recommendations of cell operating limits by the cell manufacturer		P
	Batteries designed for the selective discharge of a portion of their series connected cells		P
	Protective circuit component(s) and consideration to the end-device application		P

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict
5.6.2	Battery system design		N/A
	The voltage control function		N/A
	The voltage control for series-connected batteries		N/A
5.7	**Operating region of lithium cells and battery systems for safe use**		**P**
	The cell operating region.....:		N/A
	Designation of battery system to comply with the cell operating region		P
5.8	**Quality plan**		**N/A**
	Manufacturing quality plan (for example: ISO9001, etc.) prepared and implemented..... :	Reference:	N/A
	The process capabilities and the process controls		N/A
6	**TYPE TEST CONDITIONS**		**P**
6.1	**General**		**P**
6.2	**Test items**		**P**
	Cells or batteries that are not more than six months old (See Table 1 of IEC62619)		P
	Capacity confirmation of the cells or batteries	480V100Ah	P
	Default ambient temperature of test, 25 °C ± 5 °C		P
7	**SPECIFIC REQUIREMENTS AND TESTS**		**P**
7.1	**Charging procedure for test purposes**		**P**
	The battery discharged to a specified final voltage prior to charging		P
	The cells or batteries charged using the method specified by the manufacturer.....:		P
7.2	**Reasonably foreseeable misuse**		**P**
7.2.1	External short-circuit test (cell or cell block)		P
	Short circuit with total resistance of 30 mΩ ± 10 mΩ at 25 °C ± 5 °C		P
	Results: no fire, no explosion		P
7.2.2	Impact test (cell or cell block)		P
	Cylindrical cell, longitudinal axis impact		N/A
	Prismatic cell, longitudinal axis and lateral axis impact		P
	Results: no fire, no explosion.		P

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict
7.2.3	Drop test (cell or cell block, and battery system)		P

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict

7.2.3.1	General		P	
7.2.3.2	Whole drop test (cell or cell block, and battery system)		N/a	
	Description of the Test Unit.....:		—	
	Mass of the test unit (kg)..... :		—	
	Height of drop (m)..... :		—	
	Results: no fire, no explosion		N/A	
7.2.3.3	Edge and corner drop test (cell or cell block, and battery system)		p	
	Description of the Test Unit.....:		—	
	Mass of the test unit (kg)..... :	55KG	—	
	Height of drop (m)..... :		—	
	Results: no fire, no explosion		p	
7.2.4	Thermal abuse test (cell or cell block)		P	
	Results: no fire, no explosion		P	
7.2.5	Overcharge test (cell or cell block)		N/A	
	For those battery systems that are provided with only a single protection for the charging voltage control		—	
	Results: no fire, no explosion.....:	See Table 7.2.5.	P	
7.2.6	Forced discharge test (cell or cell block)		P	
	Upper limit charge voltage of the cell.....:		P	
	Cells connected in series in the battery system..... :		P	
	Redundant or single protection for discharge voltage control provided in battery system..... :		P	
	Target Voltage..... :		P	
	Maximum discharge current of the cell, I_m..... :		P	
	Discharge current for forced discharge, 1.0 It.....:		P	
	Discharging time, t = (1 It / I_m) x 90 (min.)..... :		P	
	Results: no fire, no explosion.....:	See Table 7.2.6.	P	
7.3	**Considerations for internal short-circuit – Design evaluation**		**P**	
7.3.1	General		P	
7.3.2	Internal short-circuit test (cell)		P	

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict
	Samples preparation procedure: a), in accordance with 8.3.9 of IEC62133:2012; or b), the nickel particle inserted before charging, or c), the nickel particle was inserted before electrolyte filling.....:		P
	Tested according to Cl. 8.3.9 of IEC 62133:2012 test method, except all tests were carried out in an ambient temperature of 25 °C ± 5 °C.		P
	The appearance of the short-circuit location recorded by photograph or other means..... :	See Attachment # __	—
	The pressing was stopped - When a voltage drop of 50 mV was detected; or		P
	- The pressing force of 800 N (cylindrical cells) or 400 N (prismatic cells) was reached		P
	Results: no fire, no explosion.....:	See Table 7.3.2.	P
7.3.3	**Propagation test (battery system)**		**N/A**
	Method to create a thermal runaway in one cell .... :	See Annex B	**N/A**
	Results: No external fire from the battery system or no battery case rupture.....:	See results in Table 7.3.3	**N/A**

8	**BATTERY SYSTEM SAFETY (CONSIDERING FUNCTIONAL SAFETY)**		**P**
8.1	**General requirements**		**P**
	Functional safety analysis for critical controls		P
	Conduct of a process hazard, risk assessment and mitigation of the battery system		P
8.2	**Battery management system (or battery management unit)**		**P**
8.2.1	Requirements for the BMS		P
	The safety integrity level (SIL) target of the BMS		P
	The charge control evaluated by tests in clauses 8.2.2 to 8.2.4		P
8.2.2	Overcharge control of voltage (battery system)		N/A
	The exceeded charging voltage applied to the whole battery system		N/A
	The exceeded charging voltage applied to only a part of the battery system, such as the cell(s)..... :		N/A
	Results: no fire, no explosion.....:	See Table 8.2.2.	N/A
	The BMS interrupted the overcharging before reaching 110% of the upper limit charging voltage		N/A

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict
8.2.3	Overcharge control of current (battery system)		P

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict
	Results: no fire, no explosion.....:	See Table 8.2.3	P
	The BMS detected the overcharging current and controlled the charging to a level below the maximum charging current		N/A
8.2.4	Overheating control (battery system)		N/A
	The cooling system, if provided, was disconnected		N/A
	Elevated temperature for charging, 5 °C above maximum operating temperature..... :		N/A
	Results: no fire, no explosion.....:	See Table 9.2.5	N/A
	The BMS detected the overheat temperature and terminated charging		N/A
	The battery system operated as designed during test		N/A
9	**INFORMATION FOR SAFETY**		P
	The cell manufacturer provides information about current, voltage and temperature limits of their products		P
	The battery system manufacturer provides information regarding how to mitigate hazards to equipment manufacturers or end-users.		P
10	**MARKING AND DESIGNATION (REFER TO CLAUSE 5 OF IEC 62620)**		P
	The marking items shown in Table 1 in IEC 62620 indicated on the cell, battery system or instruction manual.		P
	Cell or battery system has clear and durable markings		P
	Cell designation		P
	Battery designation		P
	Battery structure formulation		P

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict

ANNEX A	OPERATING REGION OF CELLS FOR SAFE USE		P
A.1	General		P
A.2	Charging conditions for safe use		P
A.3	Consideration on charging voltage		P
A.4	Consideration on temperature		P
A.5	High temperature range		P
A.6	Low temperature range		P
A.7	Discharging conditions for safe use		P
A.8	Example of operating region		P

ANNEX B	PROCEDURE OF 7.3.3 PROPAGATION TEST		N/A
B.1	General		N/A
B.2	Test conditions:		N/A
	– The battery fully charged according to the manufacturer recommended conditions.....:		—
	– Target cell forced into thermal runaway.....:		—
	– A specially prepared sample (e.g. a heater or a hole for nail penetration provided) used for ease of testing..... :		—
B.3	Method used for initiating the thermal runaway. 1) Heater (Heater, Burner, Laser, Inductive heating 2) Overcharge 3) Nail penetration of the cell 4) Combination of above methods 5) Other methods..... :		—

ANNEX C	PACKAGING		P
	The materials and pack design chosen in such a way as to prevent the development of unintentional electrical conduction, corrosion of the terminals and ingress of environmental contaminants		P

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict

5.1	TABLE: Critical components information				
Object/part no.	**Manufacturer/ trademark**	**Type/model**	**Technical data**	**Standard**	**Mark(s) of conformity [1)]**
44-pin plug	ANFEITE	DJ-44T	75A -55~125℃		
44-pin socket	ANFEITE	DJ-44Z	75A -55~125℃		
Fuse	Xi'an Sinofuse Electric Co., Ltd	HEV-H-Q 600A/500VDC	500V/600A		
current sensor	NANJING ZHONGXU ELECTRONIC TECHNOLOGY CO., LTD.	HDC600F	400/5		
rectifier diode	Macmic science & Technology Co.,Ltd	MMD200S160 DK	1600V/200A		
DC high voltage EV relay	YM	EVR10-24S-YM-xinnuo	24V control signal, 10A		
Relay	YM	EVR400A-24S	24V control signal, 1000V400A		
Fan	Shengjiu Group Co., Ltd.	121238	24VDC-2A		
Aluminum shell resistance (pre-discharge resistance)	Anhui Kebi Electronic Technology Co., Ltd.	RXFB-2-150W-300R J	300R150W		
LCD terminal	DWIN	DMT80480T070-15WT	7.0inch, 12V		
DC circuit breaker	Shanghai Liangxin Electrical Co., Ltd.	NDM3Z-630-630A	630V/630A		
SMD integrated circuit U4 U5	Toshiba Electronics	ULN2003APW-TI	VIN−0.5~30V, VCE−0.5~50V		
SMD diode D12	Texas Instruments	REF3030-TI	Vinmin=3.001V,Vinmax=5.5V,Vo=3V		
SMD integrated circuit U6	ST	STM32F107VCT6	Operating Frequency：72MHz, Flash Size(Prog)： 256kB, RAM Size： 64kB		
Isolation amplifier U11	Mornsun Guangzhou Science& Technology Co.,Ltd	TD541SCANH	Transmission rate (bps) 1M, input voltage = 5V		

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IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict

SMD integrated circuit U1	Microchip Technology Inc.	SST25VF020B-80-4I-SAE-Microchip	2 Mbit 2.7 - 3.6V		
Integrated chip U2	ROHM Semiconductor	ML5238GAZ0FL-ROHM	7 - 80V		
SMD crystal oscillator Y2	H.ELE.	HSX321S-25MHz	25MHz		
SMD crystal oscillator Y1	YXC	YSX1610SK	32.768KHZ		
SMD regulator U7	AMS	AMS1117 3.3V	3.3V		
SMD transient suppression diode D27	ST	SM6T6V8CA	6.8V		
MOS tube Q26	ON Semiconductor	FQPF4N90	900V 2.5A		
MOS tube Q3 Q7	Infineon Technologies AG	STW20N95K5-ST	950V 17.5A		
MOS tube Q4 Q18	Infineon Technologies AG	IRF530NPBF-IR	100V 17A		
MOS tube Q1 Q5	JCET Group Co.,Ltd	IRF640	50V 18A		
Transformer T8	Sicon Chat Union Electric Co., Ltd.	LC-BY-0497	---		
Transformer T4	Sicon Chat Union Electric Co., Ltd.	LC-BY-0499	---		
Transformer T2	Sicon Chat Union Electric Co., Ltd.	DLF-BY-0006	---		
Transformer T3-BMU balance board	Sicon Chat Union Electric Co., Ltd.	DLF-BY-0007	---		
Transformer T1	Sicon Chat Union Electric Co., Ltd.	DLF-BY-0003	---		
Transformer T1-BCU control board	Sicon Chat Union Electric Co., Ltd.	DLF-BY-0009	---		
Transformer T1-BCU power board	Sicon Chat Union Electric Co., Ltd.	LC-BY-0503	---		
Transformer T3	Sicon Chat Union Electric Co., Ltd.	LC-BY-0427	---		
485 transceiver module C3-U2 C4-U2	Mornsun Guangzhou Science& Technology Co.,Ltd	TD321S485	---		
Internal wire	Xinya Electronics Co., Ltd.	8AWG - BLACK/RED	---		
Internal wire	Xinya Electronics Co., Ltd.	ZB-RV-10/16/25mm2	---		

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IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict

Supplementary information:
[1] Provided evidence ensures the agreed level of compliance. See OD-CB2039.

7.2.1	TABLE: External short-circuit test (cell or cell block)				P
Sample No.	**Ambient (at 25°C ± 5°C)**	**OCV at start of test (V dc)**	**Resistance of Circuit (mΩ)**	**Maximum Case Temperature Rise ΔT (°C)**	**Results**
1	24.6	478.2	25	30.9	A
2	27.3	480.1	30	31.7	A
3	28.9	485.6	35	33.1	A

Supplementary information:
A - No fire or Explosion
B - Fire
C - Explosion
D - The test was completed after 6 h
E - The test was completed after the cell casing cooled to 20% of the maximum temperature rise
F - Other (Please explain):___

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IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict

7.2.5	TABLE: Overcharge test (cell or cell block)					N/A
Sample No.	**OCV at start of test (V dc)**	**OCV at end of test (V dc)**	**Measured Maximum Charging Current (A)**	**Measured Maximum Charging Voltage (V dc)**	**Max. Cell Case Temperature, (°C)**	**Results**

Supplementary information:

Results:
A - No fire or Explosion
B - Fire
C - Explosion
D - Test concluded when temperature reached a steady state condition
E - Test concluded when temperature returned to ambient
F - Other (Please explain): _____

7.2.6	TABLE: Forced discharge test (cell or cell block)				P
Sample No.	**OCV before applying reverse charge, (V dc)**	**Target Voltage (V dc)**	**Measured Reverse Charge Current It, (A)**	**Total Time for Reversed Charge Application (min)**	**Results**
1	547.5	480	1C	90	A
2	547.5	480	1C	90	A

Supplementary information:

Results:
A - No fire or Explosion
B - Fire
C - Explosion
D - Other (Please explain): ___

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IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict

7.3.2	TABLE: Internal short-circuit test (cell)			P
Sample No.	**OCV at start of test, (V dc)**	**Particle location [1)]**	**Maximum applied pressure, (N)**	**Results**
1	44.3	1	400	A
2	43.7	1	400	A
3	44.5	1	400	A
4	45.2	2	400	A
5	45.8	1	400	A
6	46.7	2	400	A
7	46.2	2	400	A
8	44.3	1	400	A
9	49.6	1	400	A
10	47.4	2	400	A

Supplementary information:

[1)] Identify one of the following**:**

1: Nickel particle inserted between positive and negative (active material) coated area.

2: Nickel particle inserted between positive aluminium foil and negative active material coated area.

Results:

A - No fire or explosion
B – Fire
C - Explosion
D – Test concluded when 50 mV voltage drop occurred prior to reaching force limit
E – Test concluded when 800/400 N pressure was reached and 50 mV voltage drop was not achieved
F – Test was concluded when fire or explosion occurred
G - Other (Please explain): __

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IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict

7.3.3	TABLE: Propagation test (battery system)				N/A
Sample No.	**OCV of Battery System Before Test, (V dc)**	**OCV of Target Cell Before Test, (V dc)**	**Maximum Cell Case Temperature, (°C)**	**Maximum DUT Enclosure Temperature, (°C)**	**Results**

Method of cell failure [1)]	Location of target cell	Area for fire protection (m^2)

Supplementary information:

1) Cell can be failed through applied heat, overcharge, nail penetration or combinations of these failures or other acceptable methods. See supporting documentation for details on cell failure method

2) If the battery system has no outer covering, the manufacturer is required to specify the area for fire protection.

Results:
A – No fire external to DUT enclosure or area for fire protection or no battery case rupture
B – Fire external to DUT enclosure or area for fire protection
C – Explosion
D – Battery case rupture
E - Other (Please explain): __

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IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict

8.2.2	TABLE: Overcharge control of voltage (battery system)				N/A
Sample No.	**OCV at start of test for Cell/Cell Blocks, (V dc)**	**Maximum Charging Current, (A)**	**Max. Charging Voltage, (V dc)**	**Max. Voltage of Cell/Cell Blocks, (V dc)**	**Results**
			Charge Voltage Applied Battery System: 1)		
			Whole	**Part**	

Supplementary information:

1. The exceeded voltage can be applied to only a part of the system such as the cell(s) in the battery system per Figure 6 of IEC 62619, if it is difficult to do it in using the whole battery system.

Results:
A - No Fire or Explosion
B – Fire
C - Explosion
D - The voltage of the measured cells or cell blocks did not exceed the upper limit charging voltage
E - The voltage of the measured cells or cell blocks did exceed the upper limit charging voltage
F - All function of battery system did operate as intended during the test.
G - All function of battery system did not operate as intended during the test.
H - Other (Please explain): ___

8.2.3	TABLE: Overcharge control of current (battery system)			P
Sample No.	**OCV at start of test, (V dc)**	**Max. Charging Current, (A)**	**Max. Charging Voltage, (V dc)**	**Results**
1	480	100	547.5	A

Supplementary information:

Results:
A – No fire or Explosion
B – Fire
C – Explosion
D - Overcurrent sensing function of BMU did operate and then charging stopped
E - Overcurrent sensing function of BMU did not operate and then charging stopped
F - All function of battery system did operate as intended during the test.
G - All function of battery system did not operate as intended during the test.
H - Other (Please explain): ____

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IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict

8.2.4	TABLE: Overheating control (battery system)		N/A
Model No.	**OCV at start(SOC 50%) of test, V dc**	**Maximum Charging Current, A**	**Maximum Charging Voltage, V dc**
Maximum Specified Temperature of Battery System, °C		**Maximum Measured Cell Case Temperature, °C**	**Results**

Supplementary information:

Results:
A – No fire or Explosion
B – Fire
C – Explosion
D - Temperature sensing function of BMU did operate and then charging stopped
E - Temperature sensing function of BMU did not operate and then charging stopped
F - All function of battery system did operate as intended during the test.
G - All function of battery system did not operate as intended during the test.
H - Other (Please explain): ____

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Attachment No.1 Photo Documentation

Details of: Overview of model EBC480/100-LFP-ABMS

Remark:

-------- End of Test Report --------

Attestation of Compliance

STE Testing

Reference No.	:	**STE20110102S**
Applicant	:	**Sicon Chat Union Electric Co., Ltd.**
Address	:	**Bldg.14&15, No. 319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, 050035, China.**
Product	:	**Li-ion battery energy storage system**
Trade Mark	:	**N/A**
Model(s)	:	**SEE ANNEX I**
Parameters	:	**SEE ANNEX I**
Tested according to	:	**IEC 62619:2011+A1:2015**

The submitted products have been tested by us with the listed standards.

This Attestation of Compliance is issued according to the council Directive 2014/35/EU, Referred to as the Low Voltage Directive. It confirms that the listed product complies with all essential requirements of the LVD Directive and applies only to the sample and its technical documentation submitted to Shenzhen STE Testing Laboratory Co., Ltd. for testing.

After preparation of the necessary technical documentation as well as the EC conformity declaration the required CE marking can be affixed on the product.Other relevant Directives have to be observed.

CE

Date of issue:June 20, 2019

STE TESTING LABORATORY * STE * Manager APPROVED *

Shenzhen STE Testing Laboratory Co., Ltd.
Room 301(left side), Building 9, Dehong Factory Building, No. 63 Yuchang Road, Niuhu Community, Guanlan Street, Longhua District, Shenzhen, Guangdong, China

ANNEX I:

Reference No. : STE20110102S

Model(s) :

Model	voltage	Input Current(A)	Output Current(A)
ECM-48B100N	48V	100A	100A
EBC48/30-LFP-ABMS	48V	60A	90A
EBC48/50-LFP-ABMS	48V	100A	150A
EBC48/100-LFP-ABMS	48V	100A	100A
EBC51.2/100-LFP-ABMS	51.2V	100A	100A
EBC240/10-LFP-ABMS	240V	20A	40A
EBC480/10-LFP-ABMS	480V	20A	40A
EBC480/20-LFP-ABMS	480V	40A	80A
EBC480/30-LFP-ABMS	480V	60A	120A
EBC480/50-LFP-ABMS	480V	50A	100A
EBC480/100-LFP-ABMS	480V	100A	200A
EBC480/150-LFP-ABMS	480V	150A	300A
EBC480/200-LFP-ABMS	480V	200A	400A
EBC480/280-LFP-ABMS	480V	140A	140A
EBC480/40-LFP-ABMS	480V	80A	200A
EBC480/80-LFP-ABMS	480V	160A	400A
EBC480/120-LFP-ABMS	480V	240A	480A
EBC480/160-LFP-ABMS	480V	320A	480A
EBC768/40-LFP-ABMS	768V	80A	240A
EBC768/80-LFP-ABMS	768V	160A	400A
EBC768/120-LFP-ABMS	768V	240A	480A
EBC768/160-LFP-ABMS	768V	320A	480A
EBC768/50-LFP-ABMS	768V	50A	100A
EBC768/100-LFP-ABMS	768V	100A	200A
EBC768/150-LFP-ABMS	768V	150A	300A
EBC768/200-LFP-ABMS	768V	200A	400A
EBC768/280-LFP-ABMS	768V	140A	140A
EBC768/100-LFP-ABMS-M	768V	100A	200A
EBC768/40-LFP-ABMS-F	768V	80A	240A
EBC768/80-LFP-ABMS-F	768V	160A	400A
EBC768/120-LFP-ABMS-F	768V	240A	480A
EBC768/160-LFP-ABMS-F	768V	320A	480A
EBC768/50-LFP-ABMS-F	768V	50A	100A
EBC768/100-LFP-ABMS-F	768V	100A	200A
EBC768/150-LFP-ABMS-F	768V	150A	300A
EBC768/200-LFP-ABMS-F	768V	200A	400A
EBC768/280-LFP-ABMS-F	768V	140A	140A

TESTING AND MEASURING EQUIPMENT/ALLOWED SUBCONTRACTING
IEC 62620:2014, Edition 1.0
Secondary cells and batteries containing alkaline or other non-acid electrolytes – Secondary lithium cells and batteries for use in industrial applications

Report Number.....:	STE20110103S
Date of issue.....:	June 20, 2019
Total number of pages.....:	19 pages
Name of Testing Laboratory preparing the Report.....:	Shenzhen STE Testing Laboratory Co., Ltd
Applicant's name.....:	Sicon Chat Union Electric Co., Ltd.
Address.....:	Bldg.14&15, No. 319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, 050035, China.
Test specification:	
Standard.....:	IEC62620:2014, AMD1:2015
Test procedure.....:	IEC62620
Non-standard test method.....:	N/A
Test Report Form No.....:	IEC62620C
Test Report Form(s) Originator.....:	DEKRA Certification B.V.
Master TRF.....:	Dated 2018-12-21

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General disclaimer:

The test results presented in this report relate only to the object tested.

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Test item description.....:	Li-ion battery energy storage system
Trade Mark.....:	N/A
Manufacturer.....:	Same as the applicant
Model/Type reference.....:	EBC480/100-LFP-ABMS, details see the model list
Ratings.....:	DC 480V, 100A

☒	**Testing Laboratory:**	Shenzhen STE Testing Laboratory Co., Ltd	
Testing location/ address.....:		Room 301(left side), Building 9, Dehong Factory Building, No. 63 Yuchang Road, Niuhu Community, Guanlan Street, Longhua District, Shenzhen, China	
Tested by.....:		Hunter Liang / Project Handler	
Check by.....:		Todd Qian / Reviewer	

List of Attachments (including a total number of pages in each attachment):

Attachment No. 1: Report of photobiological safety of lamps according to standard IEC TR 62778:2014.

Summary of testing:

All test items are applied to the model EBC480/100-LFP-ABMS, which is considered representative and give the most unfavourable test result, the other models had been tested with construction cheek, temperature rise test and cap interchangeability on the provided samples.

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Tests performed (name of test and test clause):	Testing location:
IEC 62620:2011+A1:2015	Shenzhen STE Testing Laboratory Co., Ltd Room 301(left side), Building 9, Dehong Factory Building, No. 63 Yuchang Road, Niuhu Community, Guanlan Street, Longhua District, Shenzhen, China
Clause: Measurement/testing	

Summary of compliance with National Differences:

List of countries addressed

☒ The product fulfils the requirements of Germany and European Group differences

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Copy of marking plate:

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

Li-ion battery energy storage system
Model: EBC480/100-LFP-ABMS
DC 480V, 100A

Sicon Chat Union Electric Co., Ltd.
Bldg.14&15, No. 319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, 050035, China.
Importer: xxxx
Address: xxxx
Made In China

Remarks:

1. Representative markings of EBC480/100-LFP-ABMS, markings of all models are identical except for the model name and power.

2. Height of CE mark is 5mm, height of WEEE symbol is 7mm, height of other marks is 5mm, height of letters and numerals is 2mm.

Test item particulars..... :	
Classification of application..... :	☒ Stationary application ☐ Motive application
Discharge rate type..... :	☐ S (Very low rate long-time discharge type) ☒ E (Low rate long-time discharge type) ☐ M (Medium rage discharge type) ☐ H (High rate discharge type)
Possible test case verdicts:	
- test case does not apply to the test object..... :	N/A
- test object does meet the requirement..... :	P (Pass)
- test object does not meet the requirement..... :	F (Fail)
Testing..... :	
Date of receipt of test item..... :	June 20, 2019
Date (s) of performance of tests..... :	June 01, 2019 - June 20, 2019

General remarks:

This report shall not be reproduced except in full without the written approval of the testing laboratory.
The test results presented in this report relate only to the item tested.
"(See Enclosure #)" refers to additional information appended to the report.
"(See appended table)" refers to a table appended to the report.

Throughout this report a ☒ comma / ☐ point is used as the decimal separator.

Modified Information

Version	Report No.	Revision Date	Summary
V1.0	STE20110103S	/	Original Version

Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:

The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided..... :	☐ **Yes** ☒ **Not applicable**

When differences exist; they shall be identified in the General product information section.

Name and address of factory (ies)..... :	Same as manufacturer' name and address

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General product information:

1. All models have similar construction and appearance but different power, size and lamp cap.
2. Unless otherwise specified, the models EBC480/100-LFP-ABMS were chosen as representative model to perform all test

The supply connector via with power cord used for all models.

Model list:

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Model	voltage	Input Current(A)	Output Current(A)
ECM-48B100N	48V	100A	100A
EBC48/30-LFP-ABMS	48V	60A	90A
EBC48/50-LFP-ABMS	48V	100A	150A
EBC48/100-LFP-ABMS	48V	100A	100A
EBC51.2/100-LFP-ABMS	51.2V	100A	100A
EBC240/10-LFP-ABMS	240V	20A	40A
EBC480/10-LFP-ABMS	480V	20A	40A
EBC480/20-LFP-ABMS	480V	40A	80A
EBC480/30-LFP-ABMS	480V	60A	120A
EBC480/50-LFP-ABMS	480V	50A	100A
EBC480/100-LFP-ABMS	480V	100A	200A
EBC480/150-LFP-ABMS	480V	150A	300A
EBC480/200-LFP-ABMS	480V	200A	400A
EBC480/280-LFP-ABMS	480V	140A	140A
EBC480/40-LFP-ABMS	480V	80A	200A
EBC480/80-LFP-ABMS	480V	160A	400A
EBC480/120-LFP-ABMS	480V	240A	480A
EBC480/160-LFP-ABMS	480V	320A	480A
EBC768/40-LFP-ABMS	768V	80A	240A
EBC768/80-LFP-ABMS	768V	160A	400A
EBC768/120-LFP-ABMS	768V	240A	480A
EBC768/160-LFP-ABMS	768V	320A	480A
EBC768/50-LFP-ABMS	768V	50A	100A
EBC768/100-LFP-ABMS	768V	100A	200A
EBC768/150-LFP-ABMS	768V	150A	300A
EBC768/200-LFP-ABMS	768V	200A	400A
EBC768/280-LFP-ABMS	768V	140A	140A
EBC768/100-LFP-ABMS-M	768V	100A	200A
EBC768/40-LFP-ABMS-F	768V	80A	240A
EBC768/80-LFP-ABMS-F	768V	160A	400A
EBC768/120-LFP-ABMS-F	768V	240A	480A
EBC768/160-LFP-ABMS-F	768V	320A	480A
EBC768/50-LFP-ABMS-F	768V	50A	100A
EBC768/100-LFP-ABMS-F	768V	100A	200A
EBC768/150-LFP-ABMS-F	768V	150A	300A
EBC768/200-LFP-ABMS-F	768V	200A	400A
EBC768/280-LFP-ABMS-F	768V	140A	140A

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4	**PARAMETER MEASUREMENT TOLERANCES**		--
	Parameter measurement tolerances		--

5	**CELL DESIGNATION AND MARKING**		P
5.1	**Marking**		P
	Marking items shown in Table 1 are indicated on the cell, battery system or instruction manual		P
	When marked on the cell or battery system, each cell or battery system that is installed or maintained carries clear and durable markings giving the information		P
	The following options are allowed: - If there are designations on a battery system, designations are not necessary on the battery pack, module or cell		P
	- If there are designations on a battery pack, designations are not necessary on the module and cell		N/A
	- If there are designations on a module, designations are not necessary on the cell		P
	However, for a transportable unit (i.e. a unit that is being shipped), it is necessary to provide the marking information on the main transportable unit or in its instruction manual		P
	Furthermore, if there is a marking matter of arrangement between the purchaser and the manufacturer, it complies with the agreement		P
	Each cell or battery that is installed or maintained carries clear and durable markings giving the following information		P
	Secondary (rechargeable) Li or Li-ion.....:		P
	Polarity (can be deleted if there is an agreement between cell and pack manufacturer) ..... :		N/A
	Date of manufacture (which may be in code).....:		--
	Name or identification of manufacturer or supplier.....:	Same as the applicant	P
	Rated capacity.....:	100Ah	P
	Nominal voltage..... :	480V	P
	Appropriate caution statement.....:		P
	Model name and manufacturing traceability marked on the cell and battery surface		--

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	The other items listed above is marked on the smallest package or supplied with the cell or the battery		P
	Following information marked on or supplied with the cell or the battery		N/A
	Disposal instructions..... :		P
	Recommended charge instructions..... :		N/A
	The following information was marked on the cell or when there was no marking place on the cell, it was marked in the manual		P
	cell designation as specified in 5.2..... :		P
5.2	**Cell designation**		--
	Cell designated in the form of A1A2A3/N2/N3/N4/A4/TLTH/NC in accordance with the conventions of this sub-clause		--
5.3	**Battery designation**		--
5.3.1	**General**		P
	Battery designated in the form of A1A2A3/N2/N3/N4/[S1]A4/TLTH/NC in accordance with the conventions of this sub-clause		P
5.3.2	**Battery structure formulation**		P
	Battery designation includes the breakdown structure of the battery and the descriptive path followed to formulate the battery is from the smallest entity to the largest one		P
	a) It describes the number of cells in the minimum constitutive entity and on the right side of the number describes their connection mode in series (S) or in parallel (P)		P
	b) In case that the minimum constitutive entities are connected in series or in parallel, it describes the number of the minimum constitutive entities, and on the right side of the number describes their connection mode in series (S) or in parallel (P)		N/A
	c) In case of the larger constitutive entities, it describes the symbols on the right side in the same way as mentioned above		P
	When some constitutive entities can be divided for ease of handling or transportation, these entities can be distinguished from other entities by bracketing		P
6	**ELECTRICAL TESTS**		P

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6.1	**General**		P
	Electrical tests are applied to cells and/or batteries		P
	If the battery is divided in smaller units, the unit can be tested as the representative of the battery and manufacturer clearly declared the tested unit		P
	Manufacturer added, to the tested unit, functions which are present in the final battery.		N/A
	Manufacturer used “cell block(s)” instead of “cell(s)” at any test that specifies “cell(s)” as the test unit in this document and the cell manufacturer clearly declared the test unit for each test.		--
	Charge and discharge currents for the tests was based on the value of the rated capacity (Cn Ah) and expressed as a multiple of It A, where: It A = Cn Ah/1 h		--
6.2	**Charging procedure for test purposes**		P
	Prior to charging, the cell or battery discharged at 25 °C ± 5 °C at a constant current of 1/n It A, down to a specified final voltage		P
	Unless otherwise stated in this standard, cells or batteries charged, in an ambient temperature of 25 °C ± 5 °C, using the method declared by the manufacturer		P
6.3	**Discharge performance**		P
6.3.1	Discharge performance at 20 °C (rated capacity)		P
	This test verifies the rated capacity of a cell or battery Step 1 – The cell or battery was fully charged in accordance with 6.2 Step 2 – The cell or battery was stored in an ambient temperature of 25 °C ± 5 °C, for not less than 1 h and not more than 4 h Step 3 – The cell or battery was then discharged in the same ambient temperature and as specified in Table 2 to the final voltage specified by the manufacturer in 6.2 Step 4 – The capacity (Ah), delivered during step 3, was not less than that specified for this characteristic in Table 2	(See Table 6.3.1)	
6.3.2	Discharge performance at low temperature		P
	This test identifies the temperature at which a capacity of not less than 70 % of the rated capacity can be achieved		P

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	This test verifies the discharge performance at low temperature of the cell or battery. It was be measured in accordance with the following steps		P
	Step 1 – The cell or battery was fully charged in accordance with 6.2 Step 2 – The cell or battery was stored for not less than 16 h and not more than 24 h at an ambient “target” test temperature which was specified by the manufacturer Step 3 – The cell or battery was then discharged at the same target test temperature and at the discharge rates specified in Table 3 to the manufacturer’s declared final voltage as defined in 6.2 Step 4 – The capacity (Ah), delivered during step 3 was not less than that specified for the cell type and discharge currents in Table 3	(See Table 6.3.2)	P
	The cell or battery’s low temperature discharge performance was declared at 10 °C intervals, such as +10 °C, 0 °C, -10 °C and -20 °C and declared temperature should be in the range of the target test temperature and target test temperature plus 10 °C		P
6.3.3	High rate permissible current		P
6.3.3.1	General		P
	Test is to evaluate the ability of an “H” or “M” type cell or battery to withstand high currents		P
6.3.3.2	Test method		P
	Step 1 – The cell or battery fully charged in accordance with 6.2 Step 2 – The cell or battery stored for not less than 1 h and not more than 4 h in an ambient temperature of 25 °C ± 5 °C Step 3 – It then be discharged for 5 ± 0,1 s at 25 °C ± 5 °C and at the currents specified in Table 4 and during the discharge the terminal voltage was recorded Step 4 – The capacity at 0,2It A of the cell or battery was measured according to 6.3.1		P
6.3.3.3	Acceptance criterion	(See Table 6.3.3)	P
	No fusing, no deformation of the cell or battery case, and no leakage was observed		P
	In addition, the cell or battery voltage during the discharge showed no discontinuity		P
	Capacity of the cell or battery was not less than 95 % of the rated capacity		P

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6.4	**Charge (capacity) retention and recovery**		N/A
6.4.1	General		N/A
	This test determines firstly the capacity which a cell retains after storage for an extended period of time, and secondly the capacity that can be recovered by a subsequent recharge		N/A
6.4.2	Test method		N/A
	Step 1 – The cell charged in accordance with 6.2. Step 2 – The cell stored in an ambient temperature of 25 °C ± 5 °C, for 28 days Step 3 – The cell discharged in an ambient temperature of 25 °C ± 5 °C, at a constant current of 0,2 It A, until its voltage is equal to the specified final voltage in accordance with 6.2. Step 4 – The cell then charged in accordance with 6.2, within 24 h following the discharge of step 3. Step 5 – The cell stored, in an ambient temperature of 25 °C ± 5 °C, for not less than 1 h and not more than 4 h. Step 6 – The cell discharged, in an ambient temperature of 25 °C ± 5 °C, at a constant current of 0,2 It A, until its voltage is equal to the specified final voltage in accordance with 6.2.		N/A
6.4.3	Acceptance criterion	(See Table 6.3.1)	N/A
	The charge retention value which is the value of the discharged capacity obtained at Step 3 was not less than 85 % of the rated capacity		N/A
	The charge recovery value which is the value of the discharged capacity obtained at Step 6 was not less than 90 % of the rated capacity		N/A
6.5	**Cell and battery internal resistance**		P
6.5.1	General		P
	Alternating current (a.c.) method is only applied for the cell. The direct current (d.c.) method is applied for the cell and for the battery		P
	It was not necessary to discharge and charge the cell for re-adjusting the charge level between conducting the a.c. and d.c. measurements		P
	Cell or battery charged in accordance with 6.2 and stored, in an ambient temperature of 25 °C ± 5 °C, for not less than 1 h and not more than 4 h		P

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	Cell or battery discharged at 25 °C ± 5 °C until the capacity discharged becomes equal to 50 % ± 10 % of the rated capacity (Ah)		P
	Measurement of internal resistance was performed in accordance with 6.5.2(cell only) and 6.5.3 in an ambient temperature of 25 °C ± 5 °C		P
6.5.2	Measurement of the internal a.c. resistance		N/A
6.5.2.1	Measurement		N/A
	Alternating r.m.s. voltage, Ua, was measured while applying an alternating r.m.s current, Ia, at the frequency of 1,0 kHz ± 0,1 kHz, to the cell, for a period of 1 s to 5 s		N/A
	The internal a.c. resistance, Rac, is given by, $R_{ac} = \frac{U_a}{I_a} (\Omega)$ .....:		N/A
6.5.2.2	Acceptance criterion		N/A
	Internal a.c. resistance of the cell was not greater than the value of Rac, declared by the manufacturer..... :		N/A
6.5.3	Measurement of the internal d.c. resistance		P
6.5.3.1	Measurement		P
	Test verifies the internal d.c. resistance of the cell or battery measured in accordance with the following steps		P
	Step 1 – The cell or battery discharged at a constant current of value I1 as specified in Table 5. At the end of a discharge period of 30 ± 0,1 s, the discharge voltage U1 under load was measured and recorded.....:		P
	Step 2 – The discharge current then be immediately increased to a value of I2 as specified in Table 5 and the corresponding discharge voltage U2 measured under load and recorded again at the end of a discharge period of 5,0 ± 0,1 s .....:		P
	Internal d.c. resistance, Rdc, of the cell or battery was calculated using the following Formula, $R_{dc} = \frac{U_1 - U_2}{I_2 - I_1}$ .....:		P
6.5.3.2	Acceptance criterion		P
	Internal d.c. resistance of the cell or battery was not greater than the value of Rdc, declared by the manufacturer.....:		

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6.6	**Endurance**		P
6.6.1	Endurance in cycles	4000	P
6.6.1.1	General		P
	This test conducted on cells or batteries which are designed for cycle applications (discharge and charge repeating them by turns)		P
	This test verifies the capacity of the cell after 500 cycles. It was measured in accordance with the following steps		N/A
6.6.1.2	Measurement	600*750*2000	P
	Step 1 – The cell or battery was discharged at 25 °C ± 5 °C at a constant current of 1/n It A, down to a specified final voltage. The final voltage was the same as that declared by the manufacturer according to 6.2 Step 2 – The cell or battery was charged, in an ambient temperature of 25 °C ± 5 °C, using the method declared by the manufacturer Step 3 – The cell or battery was discharged, in an ambient temperature of 25 °C ± 5 °C, at a constant current of 1/n It A, until its voltage was equal to the specified final voltage. The final voltage was the same as that declared by the manufacturer according to 6.2 NOTE 1 If the manufacturer would like to shorten the time to conduct step 3, the following discharge currents are declared and used: 0,5 It A * for E type cell or battery, 1,0 It A * for M and H type cell or battery Step 4 – Steps 2 and 3 were repeated for 500 cycles Step 5 – After completing 500 cycles, the capacity measured in discharge at 1/n It A was determined according to 6.3.1 Step 6 – The retention rate was calculated from the rated capacity and the capacity measured in step 5(%)		P
6.6.1.3	Acceptance criterion		--
	Capacity of the cell or battery was not less than 60 % of the rated capacity after 500 cycles	(See Table 6.6.1)	--
6.6.2	Endurance in storage at constant voltage (permanent charge life)	30days	--
6.6.2.1	General		P

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	Test conducted on cells or batteries which are designed for stand-by applications.		P
	Test verifies the upper limit of the storage temperature specified by the manufacturer in which a minimum capacity of 85 % of the rated capacity is maintained after 90 days of storage at a constant voltage corresponding to a 100 % state of charge (SOC)		P
6.6.2.2	Measurement		P
	Step 1 – Cell or battery was discharged at 25 °C ± 5 °C at a constant current of 1/n It A, down to a specified final voltage Step 2 – Cell or battery was charged at the target test temperature using the method declared by the manufacturer Step 3 – Cell or battery was kept at the target test temperature during 90 days in charge at constant voltage corresponding to 100 % state of charge Step 4 – Cell or battery was stored for not less than 8 h and not more than 16 h, in open circuit, in an ambient temperature of 25 °C ± 5 °C Step 5 – Capacity measured in discharge at 1/n It A is determined according to 6.3.1 Step 6 – Percentage of rated capacity was calculated from the rated capacity and the capacity measured in step 5(%)		P P
6.6.2.3	Acceptance criterion	(See Table 6.6.2)	--
	Capacity of the cell or battery was not less than 85 % of the rated capacity after 90days		P
	Declared temperature was in the range of the target test temperature and target test temperature minus 10 °C		--

7	**TYPE TEST CONDITIONS**		P
7.1	**General**		P
	Type test conditions and protocol were agreed between the manufacturer and the customer. When this is not the case, the following type test conditions applied		P
7.2	**Sample size**	483mm*650mm*156mm	P

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	Tests were made with the number of cells, cell blocks or batteries specified in Table 6, using cells or batteries stored under the condition specified by the manufacturer and that were not more than six months old. Unless otherwise specified, tests were carried out in an ambient temperature of 25 °C ± 5 °C		P
7.3	**Conditions for type approval**		P
7.3.1	Dimensions		P
	Dimensions of the cell, cell block or battery do not exceed the manufacturer specified values including tolerances		P
7.3.2	Electrical tests		N/A
7.3.2.1	Manufacturer declared the rated capacity (C5 Ah) of the cell, cell block or battery based on its performance under the conditions specified in 6.3.1 and Table 6	2C	--
7.3.2.2	In order to meet the requirements of this standard, all samples met all the performances specified in Table 6 and minimum levels for meeting the requirements of the electrical tests was expressed as percentages of the rated capacity		--
7.3.2.3	The test results were replaced by the results performed under the more severe condition which are specified in Table 7		N/A

6.3.1	TABLE: Discharge performance at 20 °C				
Model/Sample	**End-of-discharge voltage (V)**	**Discharge current (A)**	**Fully charged voltage (V)**	**Capacity (Ah)**	**Results**
EBC480/100-LFP-ABMS	480	200A	520	100Ah	P
Supplementary information: --					

6.3.2	TABLE: Discharge performance at low temperature				
Model/Sample	**End-of-discharge voltage (V)**	**Discharge current (A)**	**Target test temperature (°C)**	**Capacity (Ah)**	**Results**
EBC480/100-LFP-ABMS	480	200	30	100	P
Supplementary information: --					

6.3.3	TABLE: High rate permissible current			
Model/Sample	**Discharge current for 5 ± 0,1 s (A)**	**Terminal voltage during discharge (V)**	**Capacity (Ah)**	**Results**
EBC480/100-LFP-ABMS	200	480	100	P
Supplementary information: --				

6.4	TABLE: Charge (capacity) retention and recovery				
Model/Sample	**Charge retention Capacity (Ah)**	**Charge recovery Capacity (Ah)**	**Charge retention value (%)**	**Charge recovery value (%)**	**Results**
EBC480/100-LFP-ABMS	90	95	90	95	P
Supplementary information: --					

6.6.1	Endurance in cycles				
Model/Sample	**End-of-discharge voltage (V)**	**Discharge current for cycles (A)**	**Capacity after 500 cycles (Ah)**	**Retention rate (%)**	**Results**
EBC480/100-LFP-	480	200	98	98	P

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ABMS					
Supplementary information: --					

6.6.2	**Endurance in storage at constant voltage**				
Model/Sample	**Target test temperature (°C)**	**Fully charged voltage (V)**	**Capacity after 90 days (Ah)**	**Percentage of rated capacity (%)**	**Results**
EBC480/100-LFP-ABMS	30	480	90	90	P
Supplementary information: --					

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Details of: Overview of model EBC480/100-LFP-ABMS

Remark:

-------- End of Test Report --------

TÜV NORD

Certificate

of Conformity

Registered No.:

COCPVP08104/21E-02

File reference	Test report No.	Date of issue
PVP08104/21E-02	TRPVP08104/21E/02	2021-12-21

On the basis of the tests undertaken, the samples of the below product(s) have been found to comply with the essential requirements of the referenced specifications at the time the tests were carried out:

Applicant:	**Sicon Chat Union Electric Co., Ltd.** Bldg.14&15, No. 319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, Hebei, China (050035)
Manufacturer:	**Sicon Chat Union Electric Co., Ltd.** Bldg.14&15, No. 319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, Hebei, China (050035)
Factory:	**Sicon Chat Union Electric Co., Ltd.** Bldg.14&15, No. 319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, Hebei, China (050035)
Product:	EPCS-Series modular power conversion system
Type designation:	EPCS 50, EPCS 100, EPCS 150, EPCS 200, EPCS 250, EPCS 300, EPCS 400, EPCS 500, EPCS 600
Certification program:	BOS-P-01 Rev. 00
Certification fundamental(s):	EN 50549-1:2019+AC:2019-04 with national network and system protection for Norway into consideration See test report for detailed information.

This document is based on the evaluation of the samples of the above mentioned product(s). It does not imply an assessment of the mass-production of the product(s), and it does not permit the use of a TÜV NORD mark. The holder of this document may use it in connection with the related test report(s).

Renewable Energy

CNAS 中国认可 产品 PRODUCT CNAS C183-P

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Certificate

of Conformity

Registered No.:

COCPVP08104/21E-01

File reference	Test report No.	Date of issue
PVP08104/21E-01	TRPVP08104/21E/01	2021-12-21

On the basis of the tests undertaken, the samples of the below product(s) have been found to comply with the essential requirements of the referenced specifications at the time the tests were carried out:

Applicant:	**Sicon Chat Union Electric Co., Ltd.** Bldg.14&15, No. 319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, Hebei, China (050035)
Manufacturer:	**Sicon Chat Union Electric Co., Ltd.** Bldg.14&15, No. 319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, Hebei, China (050035)
Factory:	**Sicon Chat Union Electric Co., Ltd.** Bldg.14&15, No. 319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, Hebei, China (050035)
Product:	EPCS- Series modular power conversion system
Type designation:	EPCS 50, EPCS 100, EPCS 150, EPCS 200, EPCS 250, EPCS 300, EPCS 400, EPCS 500, EPCS 600
Certification program:	BOS-P-01 Rev. 00
Certification fundamental(s):	Engineering Recommendation G99 Issue 1 – Amendment 6 See test report for detailed information.

This document is based on the evaluation of the samples of the above mentioned product(s). It does not imply an assessment of the mass-production of the product(s), and it does not permit the use of a TÜV NORD mark. The holder of this document may use it in connection with the related test report(s).

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Attestation of Compliance

STE Testing

Reference No.	:	STE21092602E
Applicant	:	Sicon Chat Union Electric Co., Ltd.
Address	:	Bldg.14&15, No. 319, Xiangjiang Street, High-Tech Zone, Shijiazhuang, 050035, China
Trade Mark	:	N/A
Product	:	Energy storage Power Conversion System（PCS）
Model(s)	:	EPCS-250, EPCS50, EPCS100, EPCS150, EPCS200, EPCS250, EPCS300, EPCS400, EPCS500, EPCS600, EHPCS-250/50, EHPCS-200/50, EHPCS-150/50, EHPCS-100/50, EHPCS-50/50
Tested according to	:	EN 61000-6-4: 2007+A1: 2011 EN 61000-3-2: 2014 EN 61000-3-3: 2013 EN 61000-6-2: 2005

The submitted products have been tested by us with the listed standards.

This Attestation of Compliance is issued according to the council Directive 2014/30/EU, Referred to as the Electromagnetic Compatibility. It confirms that the listed product complies with all essential requirements of the EMC directive and applies only to the sample and its technical documentation submitted to Shenzhen STE Testing Laboratory Co., Ltd for testing.

After preparation of the necessary technical documentation as well as the EC conformity declaration the required CE marking can be affixed on the product.Other relevant Directives have to be observed.

CE

STE TESTING LABORATORY * STE * APPROVED *

Date of issue: September 28, 2021

Manager

Shenzhen STE Testing Laboratory Co., Ltd.
Room 301(left side), Building 9, Dehong Factory Building, No. 63 Yuchang Road, Niuhu Community, Guanlan Street, Longhua District, Shenzhen

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Attestation of Compliance

STE Testing

Reference No.	:	**STE21092601S**
Applicant	:	**Sicon Chat Union Electric Co., Ltd.**
Address	:	**Bldg.14&15, No. 319, Xiangjiang Street, High-Tech Zone, Shijiazhuang, 050035, China**
Product	:	**Energy storage Power Conversion System (PCS)**
Trade Mark	:	**N/A**
Model(s)	:	**EPCS50, EPCS100, EPCS150, EPCS200, EPCS250, EPCS300, EPCS400, EPCS500, EPCS600, EHPCS-250/50, EHPCS-200/50, EHPCS-150/50, EHPCS-100/50, EHPCS-50/50**
Parameters	:	**DC: 550V-850V⎓, MAX 454A AC: 380V~, 50/60Hz, MAX 362A**
Tested according to	:	**EN 62477-1: 2012+A11: 2014+A1: 2017**

The submitted products have been tested by us with the listed standards.

This Attestation of Compliance is issued according to the council Directive 2014/35/EU, Referred to as the Low Voltage Directive. It confirms that the listed product complies with all essential requirements of the LVD Directive and applies only to the sample and its technical documentation submitted to Shenzhen STE Testing Laboratory Co., Ltd. for testing.

After preparation of the necessary technical documentation as well as the EC conformity declaration the required CE marking can be affixed on the product.Other relevant Directives have to be observed.

CE

Date of issue:September 29, 2021

STE TESTING LABORATORY
STE
APPROVED
Manager

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Room 301(left side), Building 9, Dehong Factory Building, No. 63 Yuchang Road, Niuhu Community, Guanlan Street, Longhua District, Shenzhen, Guangdong, China

TEST REPORT
IEC 62477-1
Safety requirements for power electronic converter systems and equipment
Part 1: General

Report Reference No.....:	STE21092601S
Date of issue.....:	2021-09-29
Total number of pages .....:	75 pages
Name of Testing Laboratory preparing the Report.....:	Shenzhen STE Testing Laboratory Co., Ltd Room 301(left side), Building 9, Dehong Factory Building, No. 63 Yuchang Road, Niuhu Community, Guanlan Street, Longhua District, Shenzhen, China
Applicant's name.....:	Sicon Chat Union Electric Co., Ltd.
Address.....:	Bldg.14&15, No. 319, Xiangjiang Street, High-Tech Zone, Shijiazhuang, 050035, China
Test specification:	
Standard.....:	IEC 62477-1:2012+AMD1: 2016
Test procedure.....:	CE-LVD
Non-standard test method.....:	N/A
Test Report Form No.....:	IEC62477_1C
Test Report Form(s) Originator.....:	VDE Testing and Certification Institute
Master TRF.....:	Dated 2018-08-14

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Test item description.....:	Energy storage Power Conversion System (PCS)
Trade Mark.....:	N/A
Manufacturer.....:	Sicon Chat Union Electric Co., Ltd. Bldg.14&15, No. 319, Xiangjiang Street, High-Tech Zone, Shijiazhuang, 050035, China
Model/Type reference.....:	EPCS50, EPCS100, EPCS150, EPCS200, EPCS250, EPCS300, EPCS400, EPCS500, EPCS600, EHPCS-250/50, EHPCS-200/50, EHPCS-150/50, EHPCS-100/50, EHPCS-50/50
Ratings.....:	DC: 550V-850V⎓, MAX 454A AC: 380V~, 50/60Hz, MAX 362A

Testing procedure and testing location:

Testing Laboratory:	Shenzhen STE Testing Laboratory Co., Ltd
Testing location/ address.....:	Room 301(left side), Building 9, Dehong Factory Building, No. 63 Yuchang Road, Niuhu Community, Guanlan Street, Longhua District, Shenzhen, China
Tested by.....:	Hunter Liang / Project Handler
Review by.....:	Todd Qian / Reviewer
Approved by.....:	Fly Li / Technical Director

List of Attachments (including a total number of pages in each attachment):

Attachment No.1:

Photo documentation (4 pages).

Summary of testing:

Tests performed (name of test and test clause):	**Testing location:**
The submitted samples were found to comply with the requirements of: ➢ Electrical safety IEC 62477-1:2012+AMD1: 2016; EN 62477-1: 2012+A11: 2014+A1: 2017.	Shenzhen STE Testing Laboratory Co., Ltd Room 301(left side), Building 9, Dehong Factory Building, No. 63 Yuchang Road, Niuhu Community, Guanlan Street, Longhua District, Shenzhen, China

Summary of compliance with National Differences (List of countries addressed):

List of countries addressed: EU Group Differences

File No. ANERT-TECH/41/2024-PE1(RTS) (Computer No. 7540)

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Copy of marking plate

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

Energy storage Power Conversion System (PCS)

Model: EPCS250

Rating:

DC: 550V-850V⎓, MAX 454A

AC: 380V~, 50/60Hz, MAX 362A

Sicon Chat Union Electric Co., Ltd.

Made in China

Remark:

1. Representative markings of model: EPCS250, markings of all models are identical except for model name.

2. The height dimension of CE mark should not less than 5mm, the height dimension of WEEE symbol should not less than 7mm, height of other marks at least 5mm, height of letters and numerals at least 2mm.

Test item particulars..... :	
Classification of installation and use.....:	For building-in
Supply Connection.....:	Permanent connection
.....:	
Possible test case verdicts:	
- test case does not apply to the test object.....:	N/A
- test object does meet the requirement.....:	P (Pass)
- test object does not meet the requirement.....:	F (Fail)
Testing..... :	
Date of receipt of test item.....:	2021-09-26
Date (s) of performance of tests.....:	From 2021-09-26 to 2021-09-29

General remarks:

"(See Enclosure #)" refers to additional information appended to the report.
"(See appended table)" refers to a table appended to the report.

Throughout this report a ☐ comma / ☒ point is used as the decimal separator.

Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:

The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided.....:	☐ **Yes** ☒ **Not applicable**

When differences exist; they shall be identified in the General product information section.

Name and address of factory (ies).....: Same as manufacturer

General product information and other remarks:

1. The text of standard IEC 62477-1:2012+AMD1:2016 was approved as European Standard EN 62477-1: 2012+A11: 2014+A1: 2017 without any modification. The product complies with EN 62477-1: 2012+A11: 2014+A1: 2017.
2. The appliance used indoor only.
3. The maximum ambient temperature specified by manufacturer is 40°C.
4. All models are identical except for the model name and appearance, all tests were conducted on the model EPCS250.

Additional test item particulars :	
Equipment mobility:	☐ movable ☐ hand-held ☒ stationary ☐ fixed ☐ transportable ☐ for building-in
Connection to the mains :	☐ pluggable equipment ☐ direct plug-in ☒ permanent connection ☐ for building-in
Environmental category :	☐ outdoor ☒ indoor ☐ indoor unconditional conditional
Over voltage category Mains :	☐ OVC I ☐ OVC II ☒ OVC III ☐ OVC IV
Over voltage category PV :	☐ OVC I ☐ OVC II ☐ OVC III ☐ OVC IV
Mains supply tolerance (%) :	-85 / +115 %
Tested for power systems :	Non-mains supply system voltage
IT testing, phase-phase voltage (V) :	--
Class of equipment :	☒ Class I ☐ Class II ☐ Class III ☐ Not classified
Mass of equipment (kg) :	1350kg
Pollution degree :	II
IP protection class :	IP20
For more information: see table 4 :	--

IEC 62477-1			
Clause	Requirement – Test	Result – Remark	Verdict
4	**PROTECTION AGAINST HAZARDS**		
4.1	General		P
4.2	Fault and abnormal conditions	See Table 4.2 to 4.3	P
4.3	Short-circuit and overcurrent protection	See Table 4.2 to 4.3	P
4.3.1	General		P
4.3.2	Specification of prospective short-circuit current		P
4.3.2.1	General		P
	The interrupting capability of the overcurrent protective device shall be equal or greater than the prospective short circuit current of the mains supply.		P
	For pluggable equipment type A, either the PECS shall be designed so that the building installation provides short circuit backup protection, or additional short circuit backup protection shall be provided as part of the equipment.		N/A
	For permanently connected equipment or pluggable equipment type B, it is permitted for short circuit backup protection to be in the building installation.		P
4.3.2.2	Input ports short-circuit withstand strength		P
	For co-ordination and selection of internal or external protective devices, the PECS manufacturer shall specify: - a maximum allowable prospective short circuit current for each input port of the PECS; and -a minimum required prospective short circuit current in order to ensure proper operation of the protective device.		P
	If external protective devices are specified or provided the characteristics of those shall be specified by the manufacturer.		N/A
4.3.2.3	Output short circuit current ability		P
	The output short circuit current ratings apply to a.c. and d.c. power output ports and to other ports for which overcurrent protection is necessary. For all output ports, short circuit evaluation to determine the minimum and maximum output short circuit current shall be performed according to 5.2.4.4 and the output short circuit current available from the PECS shall be specified as in 5.2.4.4 and 6.2. Internal electronic output short circuit protection is considered acceptable as an output short circuit protection device of the PECS, when compliance is		

IEC 62477-1			
Clause	Requirement – Test	Result – Remark	Verdict
	shown by test in 5.2.4.4.		
4.3.2.4	Combined input and output ports		N/A
	For ports which are both input and output ports the applicable requirements of both 4.3.2.1 and 4.3.2.3 apply.		N/A
4.3.3	Short-circuit coordination (backup protection)		P
	Protective devices provided or specified shall have adequate breaking capability to interrupt the maximum prospective short circuit current specified for the port to which they are connected. If internal protection of the PECS is not rated for the prospective short circuit current, the installation instructions shall specify an upstream protective device, rated for this prospective short circuit current of that port, which shall be used to provide backup protection. Analysis shall ensure the protection coordination between the external and internal protective device.		P
	Compliance shall be checked by inspection and by the tests of 5.2.4.4 and 5.2.4.5.		P
4.3.4	Protection by several devices		N/A
	Where protective devices that require manual replacement or resetting are used in more than one pole of a supply to a given load, those devices shall be located together. It is permitted to combine two or more protective devices in one component. Compliance shall be checked by inspection.		N/A
4.4	Protection against electric shock		P
4.4.1	General		P
4.4.2	Decisive voltage classification		P
4.4.2.1	General	Considered	P
4.4.2.2	Determination of decisive voltage class		P
4.4.2.2.1	General		P
	For protection against the ventricular fibrillation body reaction, DVC can be selected from Table 2.		P
4.4.2.2.2	Selection tables for contact area and skin humidity condition		P
	In order to protect against ventricular fibrillation, the appropriate conditions from Table 3 and Table 4 shall be selected.		P
4.4.2.2.3	Limits of the working voltage for the DVC		P
4.4.2.3	Requirements for protection against electric shock		P

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Clause	Requirement – Test	Result – Remark	Verdict
4.4.3	Provision for basic protection		P
4.4.3.1	General	Considered	P
4.4.3.2	Protection by means of insulation of live parts	Considered	P
	Live parts shall be completely surrounded with insulation if their working voltage is greater than DVC As or if they do not have protective separation from adjacent circuits of DVC C.		P
	Basic insulation may be provided by solid insulation or air clearance.		P
	The insulation shall be rated according to the impulse voltage, temporary overvoltage or working voltage (see 4.4.7.2.1), whichever gives the most severe requirement. It shall not be possible to remove the insulation without the use of a tool or key.		P
4.4.3.3	Protection by means of enclosures or barriers	Considered	P
	Live parts with voltage higher than DVC As shall be: - arranged in enclosures or located behind enclosures or barriers, which meet at least the requirements of the Protective Type IPXXB according to Clause 7 of IEC 60529:1989; - located at the top surfaces of enclosures or barriers which are accessible when the equipment is energized shall meet at least the requirements of the protective type IP3X with regard to vertical access only.		P
	For moveable equipment with no defined top and bottom this requirement of protective Type IP3X applies to all sides.		N/A
	If the PECS is installed in a restricted access area, IPXXB instead of IP3X applies.		N/A
	Product committees using this document as reference document might consider less requirement for equipment having openings in the top of an enclosure with a height exceeding 1,8 m.		N/A
	Compliance is shown by test of 5.2.2.2.		N/A
	It shall only be possible to open enclosures or remove barriers: • with the use of a tool or key; or • after de-energization of these live parts.		N/A
	Where the enclosure is required to be opened and the PECS energized during installation or maintenance: a) accessible live parts of voltage higher than		N/A

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Clause	Requirement – Test	Result – Remark	Verdict
	DVC As shall be protected by at least IPXXA; b) live parts of voltage higher than DVC As that are likely to be touched when making adjustments shall be protected by at least IPXXB; c) it shall be ensured that persons are aware that live parts with voltage higher than DVC As are accessible.		
4.4.3.4	Protection by means of limitation of touch current and charge		P
	The limitation of touch current and discharge energy shall not exceed: - a value of 3,5 mA a.c. or 10 mA d.c. for the limitation of touch current; and - a value of 50 µC for the limitation of discharge energy.		P
4.4.3.5	Protection by means of limited voltages		P
	The voltage between simultaneously accessible parts shall not be greater than DVC As as determined in 4.4.2.2.		P
4.4.4	Provision for fault protection		P
4.4.4.1	General		P
	Fault protection shall be provided by one or more of the following measures: • Protective equipotential bonding in 4.4.4.2 in combinations with the PE conductor in 4.4.4.3; • Automatic disconnection of supply in 4.4.4.4; • Supplementary insulation in 4.4.4.5; • Simple separation between circuits in 4.4.4.6; • Electrically protective screening in 4.4.4.7. Fault protection shall be independent and additional to those for basic protection.		P
4.4.4.2	Protective equipotential bonding		P
4.4.4.2.1	General		P
	Protective equipotential bonding shall be provided between accessible conductive parts of the equipment and the means of connection for the PC conductor, except: a) accessible conductive parts that are protected by one of the measures in 4.4.6.4; or b) when accessible conductive parts are separated from *live parts* using *double* or		P

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Clause	Requirement – Test	Result – Remark	Verdict
	reinforced insulation.		
	Electrical contact to the means of connection of the PE conductor shall be achieved by one or more of the following means: • through direct metallic contact; • through other accessible conductive parts or other metallic components which are not removed when the PECS is used as intended; • through a dedicated protective equipotential bonding conductor.		N/A
4.4.4.2.2	Rating of protective equipotential bonding		P
	Protective equipotential bonding shall either be: a) sized in accordance with the requirements for the PE conductor in 4.4.4.3 and the means of connection for the PE conductor in 4.4.4.3.2 to ensure no voltage drop exceeding the values from 4.4.2.2.3 during a fault; or b) sized • to withstand the highest stresses that can occur to the PECS item(s) concerned when they are subjected to a fault connecting to accessible conductive parts; and • to remain effective for as long as a fault to the accessible conductive parts persists or until an upstream protective device removes power from the part; and • to ensure no voltage drop exceeding the values from 4.4.2.2.3 during normal operation and during a fault. Compliance shall be checked with the type tests in 5.2.3.11		P
4.4.4.3	PE conductor		N/A
4.4.4.3.1	General		N/A
	A PE conductor shall be connected at all times when power is supplied to the PECS, unless the PECS complies with the requirements of protective class II (see 4.4.6.3) or protective class III. Unless local wiring regulations state otherwise, the PE conductor cross-sectional area shall be determined from Table 7 or by calculation according to 543.1 of IEC 60364-5-54:2011.		N/A
	If the PE conductor is routed through a plug and socket, or similar means of disconnection, it shall not be possible to disconnect it unless power is simultaneously removed from the part to be protected.		N/A
	The cross-sectional area of every PE conductor		N/A

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Clause	Requirement – Test	Result – Remark	Verdict
	that does not form part of the supply cable or cable enclosure shall, in any case, be not less than: • 2,5 mm2 if mechanical protection is provided; or • 4 mm2 if mechanical protection is not provided.		
	Provisions within cord-connected equipment shall be made so that the PE conductor in the cord shall, in the case of failure of the strain-relief mechanism, be the last conductor to be interrupted. For special system topologies, the PECS designer shall verify the PE conductor cross-section required.		N/A
4.4.4.3.2	Means of connection for the PE conductor		N/A
	PECS shall have a means of connection for the PE conductor, located near the terminals for the respective live conductors. The means of connection shall be corrosion-resistant and shall be suitable for the connection of conductors according to Table 7 and of cables in accordance with the wiring rules applicable at the installation. The means of connection for the PE conductor shall not be used as a part of the mechanical assembly of the equipment or for other connections. Connection and bonding points shall be designed so that their current-carrying capacity is not impaired by mechanical, chemical, or electrochemical influences. Where enclosures and/or conductors of aluminium or aluminium alloys are used, particular attention should be given to the problems of electrolytic corrosion. Compliance shall be checked by inspection.		N/A
4.4.4.3.3	Touch current in case of failure of PE conductor		N/A
	For all other PECS, one or more of the following measures shall be applied, unless the touch current can be shown to be less than the limits specified in 4.4.3.4: a) Use of a fixed connection and • a cross-section of the PE conductor of at least 10 mm^2 Cu or 16 mm^2 Al; or • automatic disconnection of the supply in case of discontinuity of the PE conductor; or • provision of an additional terminal for a second PE conductor of the same cross-sectional area as the original PE conductor; or b) Use of a pluggable type B connection with a		N/A

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Clause	Requirement – Test	Result – Remark	Verdict
	minimum PE conductor cross-section of 2,5 mm^2 as part of a multi-conductor power cable. Adequate strain relief shall be provided.		
	Compliance is checked by inspection and by test of 5.2.3.7.		N/A
4.4.4.4	Automatic disconnection of supply		N/A
	For automatic disconnection of supply: • a protective equipotential bonding system shall be provided; and • a protective device operated by the fault current shall disconnect one or more of the line conductors supplying the equipment, system or installation, in case of a failure of basic insulation. The protective device shall interrupt the fault current within a time as specified in Figure 1, Figure 2 or Figure 3 in 4.4.2.2.3.		N/A
4.4.4.5	Supplementary insulation	Considered	P
4.4.4.6	Simple separation between circuits		P
	If any component is connected between the separated circuits, that component shall withstand the electric stresses specified for the insulation which it bridges. If any component is connected between a circuit and a circuit connected to earth, its impedance shall limit the current flow through the component to the steady-state touch current values indicated in 4.4.3.4.		P
4.4.4.7	Electrically protective screening		P
	Electrically protective screening interposed between hazardous live parts of a PECS, shall consist of a conductive screen connected to the protective equipotential bonding of the PECS whereby the screen is separated from live parts by at least simple separation. The protective screen and the connection to the protective equipotential bonding system of the PECS and that interconnection shall comply with the requirements of 4.4.4.2.		P
4.4.5	Enhanced protection		P
4.4.5.1	General		P
	Enhanced protection shall provide both basic and fault protection and can be achieved by means of: • Reinforced insulation in 4.4.5.2; • Protective separation between circuits in 4.4.5.3; • Protection by means of in 4.4.5.4.		P

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Clause	Requirement – Test	Result – Remark	Verdict
4.4.5.2	Reinforced insulation		P
	Reinforced insulation shall be so designed as to be able to withstand electric, thermal, mechanical and environmental stresses with the same reliability of protection as provided by double insulation. (basic insulation and supplementary insulation, see 4.4.3.2 and 4.4.4.5)		P
4.4.5.3	Protective separation between circuits		P
	Protective separation between a circuit and other circuits shall be achieved by one of the following means: • double insulation (basic insulation and supplementary insulation in 4.4.3.2 and 4.4.4.5); • reinforced insulation in 4.4.5.2; • electrically protective screening in 4.4.4.7; • a combination of these provisions.		P
	If conductors of the separated circuit are contained together with conductors of other circuits in a multi-conductor cable or in another grouping of conductors, they shall be insulated, individually or collectively, for the highest voltage present, so that double insulation is achieved. If any component is connected between the separated circuits, that component shall comply with the requirements for protective impedance devices (see 4.4.5.4)		P
4.4.5.4	Protection by means of protective impedance		P
	Protective impedance shall be arranged so that under both normal and single fault conditions the current and discharge energy available shall be limited according to 4.4.3.4.		P
	The protective impedances shall be designed and tested to withstand the impulse voltages and temporary overvoltages for the circuits to which they are connected. See 5.2.3.2 and 5.2.3.4 for tests.		P
	Compliance with the requirement for the limitation of touch current is checked by test of 5.2.3.6.		P
	Compliance with the requirement for the discharge energy shall be checked by performing calculations and/or measurements to determine the voltage and capacitance. NOTE A protective impedance designed according to this subclause is not considered to be a galvanic connection.		P

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Clause	Requirement – Test	Result – Remark	Verdict
4.4.6	Protective measures		P
4.4.6.1	General		P
4.4.6.2	Protective measures for protective class I equipment		N/A
	Protective class I equipment shall meet the requirements for: • basic protection in 4.4.3; and • fault protection in 4.4.4.2 and 4.4.4.3 with respect to equipotential bonding and PE conductor.		N/A
4.4.6.3	Protective measures for protective class II equipment		P
	Protective class II equipment shall meet the requirements for enhanced protection according to 4.4.5 and the enclosure shall meet the requirement for basic protection in 4.4.3 with respect to accessibility to hazardous live parts. Protective class II equipment shall not have means of connection for the PE conductor. This does not apply if a PE conductor is passed through the equipment to equipment series-connected beyond it. In the latter case the PE conductor and its means for connection shall be separated from: • accessible surface of the equipment; and • circuits which employ protective separation with at least simple separation according to the requirement in 4.4.4.6. The simple separation shall be designed according to the rated voltage of the series-connected equipment. Equipment of protective class II may have provision for the connection of an earthing conductor for functional reasons or for the damping of overvoltages. In this case, the functional earthing conductor shall be separated from: • accessible surface of the equipment; and • circuits which employ protective separation according to 4.4.5.3 with at least protective separation according to the requirement in 4.4.5.3. Equipment of protective class II shall be marked according to 6.3.7.3.3. Compliance is checked by inspection.		P
4.4.6.4	Protective measures for protective class III equipment		N/A

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Clause	Requirement – Test	Result – Remark	Verdict
4.4.6.4.1	General		N/A
	Protective measures shall be achieved by protective separation by one of the following means: • basic insulation and supplementary insulation (double insulation) according to 4.4.3.2 and 4.4.4.5; • reinforced insulation according to 4.4.5.2; • electrically protective screening and simple separation according to 4.4.4.7; or • a combination of these provisions; used in combination with one of the following means: • protective impedance according to 4.4.5.4 comprising limitation of discharge energy and of current; or • limitation of voltage according to 4.4.3.5.		N/A
	The protective separation shall be fully and effectively maintained under all conditions of intended use of the PECS.		N/A
4.4.6.4.2	Connection to PELV and SELV circuits		P
	If a port is intended for connection of an external PELV or SELV circuit with a higher voltage than DVC As: • measures to limit the voltage to that of DVC As shall be taken (see Annex A); or • basic protection shall be provided. For connectors containing pins with very small contact area (< 1 mm²), the next higher voltage level for DVC As, of Table 5, is permitted. Example: if DVC A1 is DVC As, then DVC A2 is permitted at pins of signal connectors. The connection of external PELV or SELV circuits to an internal circuit is permitted with the following consideration: • without measures: only if the DVC of the PELV and SELV voltage are lower than or equal to the DVC selected from Table 5 for the internal circuit under consideration; and • with measures: if the DVC of the PELV and SELV voltage are higher than the DVC selected from Table 5 for the internal circuit under consideration. The possibility of an addition of the voltages of the circuits under consideration to a higher level under fault conditions shall be considered. For marking, see 6.3.7.1. Consideration needs to be given to factors such as whether the circuits involved are earthed or not,		P

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Clause	Requirement – Test	Result – Remark	Verdict
	what the voltages involved are, whether or not direct contact with live parts is possible, single faults in either equipment or the interconnections, etc.		
4.4.7	Insulation		P
4.4.7.1	General		P
4.4.7.1.1	Influencing factors		P
	This subclause gives minimum requirements for insulation, based on the principles of IEC 60664.		P
	Insulation shall be selected after consideration of the following influences: - pollution degree; - overvoltage category; - supply system earthing; - impulse withstand voltage, temporary overvoltage and working voltage; - location of insulation; - type of insulation.		P
	Verification of insulation shall be made according to 5.2.2.1, 5.2.3.2, 5.2.3.4 and 5.2.3.5.		P
4.4.7.1.2	Pollution degree		P
	Insulation, especially when provided by clearances and creepage distances, is affected by pollution which occurs during the expected lifetime of the PECS. The micro-environmental conditions for insulation shall be applied according to Table 8.		P
	The pollution degree shall be determined according to the environmental condition for which the product is specified. See Table 18 for selection of pollution degree according to environmental classification of the installation.		P
	The insulation may be determined according to pollution degree 2 if one of the following applies: a) instructions are provided with the PECS indicating that it shall be installed in a pollution degree 2 environment; or b) the specific installation application of the PECS is known to be a pollution degree 2 environment; or c) the PECS enclosure or coatings applied within the PECS according to 4.4.7.8.4.2 or 4.4.7.8.6 provide adequate protection against what is expected in pollution degree 3 and 4 (conductive pollution and condensation).	Instructions are provided with the PECS indicating that it shall be installed in a pollution degree 2 environment	P
	The PECS manufacturer shall state in the documentation the pollution degree for which the	Pollution degree II	P

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Clause	Requirement – Test	Result – Remark	Verdict
	PECS has been designed.		
	If operation in a pollution degree 4 environment is required, protection against conductive pollution shall be provided by means of a suitable enclosure.		N/A
4.4.7.1.3	Overvoltage category (OVC)		P
	The measures for reduction of the impulse voltage shall ensure that the temporary overvoltages that could occur are sufficiently limited so that their peak value does not exceed the relevant rated impulse voltage of Table 9 and shall meet the requirement of 4.4.7.2.2, 4.4.7.2.3 and 4.4.7.3 as applicable.		P
	Four categories are considered. • Equipment of overvoltage category IV (OVC IV) is for use at the origin of the installation. • Equipment of overvoltage category III (OVC III) is equipment in fixed installations and for cases where the reliability and the availability of the equipment are subject to special requirements. • Equipment of overvoltage category II (OVC II) is energy-consuming equipment to be supplied from the fixed installation. • Equipment of overvoltage category I (OVC I) is equipment for connection to circuits in which measures are taken to limit transient overvoltages to an appropriately low level.	OVC III	P
4.4.7.1.4	Supply earthing systems		N/A
	The following three basic types of system earthing are described in IEC 60364-1. • TN system: has one point directly earthed, the accessible conductive parts of the installation being connected to that point by protective conductors. Three types of TN system, TN-C, TN-S and TN-C-S, are defined according to the arrangement of the neutral and protective conductors. • TT system: has one point directly earthed, the accessible conductive parts of the installation being connected to earth electrodes electrically independent of the earth electrodes of the power system. • IT system: has all live parts isolated from earth or one point connected to earth through an impedance, the accessible conductive parts of the installation being earthed independently or collectively to the system earthing.		N/A
4.4.7.1.5	Determination of impulse withstand voltage and temporary overvoltage		P
	Table 9 uses the system voltage (see 4.4.7.1.6)		P

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Clause	Requirement – Test	Result – Remark	Verdict
	and overvoltage category of the circuit under consideration to determine the impulse withstand voltage. The system voltage is also used to determine the temporary overvoltage. A PECS having more than one input or output shall be evaluated according to the input or output which gives the most severe requirements.		
4.4.7.1.6	Determination of the system voltage		P
4.4.7.1.6.1	For mains supply		N/A
4.4.7.1.6.2	For non-main supply		P
	For PSCS supplied by non-mains a.c. or d.c., the system voltage is the r.m.s. value of the supply voltage between phases.		P
4.4.7.1.7	Components bridging insulation		N/A
	Components bridging insulation shall comply with the requirements of the level of insulation (e.g. basic, reinforced, double) they are bridging.		N/A
4.4.7.2	Insulation to the surroundings		P
4.4.7.2.1	General		P
4.4.7.2.2	Circuits connected to mains supply		N/A
	Insulation between the surroundings and circuits which are connected directly to the mains supply shall be designed according to the impulse withstand voltage, temporary overvoltage, or working voltage, whichever gives the most severe requirement.		N/A
4.4.7.2.3	Circuits connected to Non-mains supply		P
	Insulation between the surroundings and circuits supplied from a non-mains supply shall be designed according to: • the impulse withstand voltage determined from Table 9 using the system voltage; • the working voltage; • the temporary overvoltage if known to exist due to the nature of the supply; whichever gives the more severe requirement.		P
	Temporary overvoltage on a non-mains supply shall be determined as follows: • Without detailed knowledge of the temporary overvoltage, it shall be according to Table 9. • If the temporary overvoltage is known this value shall be used.		N/A
	By the determination of temporary overvoltages on non-mains supply, following situations should be		N/A

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Clause	Requirement – Test	Result – Remark	Verdict
	considered: • loss of the neutral in a non-mains low-voltage system; • accidental earthing of a non-mains low voltage IT system; and • short circuit in the non-mains low voltage installation.		
4.4.7.2.4	Insulation between circuits		P
	Insulation between two circuits shall be designed according to the circuit having the more severe requirement. For the design of simple and protective separation between circuits the insulation shall be designed according to: • the circuit having the more severe requirement; or • the working voltage between the circuits; whichever gives the most severe requirement.		P
4.4.7.3	Functional insulation		P
	If the failure of functional insulation does not produce a hazard (electrical, thermal, fire), no specific requirements apply for the dimensioning of functional insulation. In other cases the following requirements apply. Testing is not required, except where the circuit analysis required by 4.2 shows that failure of the insulation could result in a hazard. For parts or circuits that are significantly affected by external transients, functional insulation shall be designed according to the impulse withstand voltage of overvoltage category II, except that overvoltage category III shall be used when the PECS is connected at the origin of the installation. Where measures are provided that reduce transient overvoltages within the circuit from category III to values of category II, or values of category II to values of category I, functional insulation may be designed for the reduced values. Where the circuit characteristics can be shown by testing (see 5.2.3.2) to reduce impulse voltages, functional insulation may be designed for the highest impulse voltage occurring in the circuit during the tests. For parts or circuits that are not significantly affected by external transients, functional insulation shall be designed according to the working voltage across the insulation.		P
4.4.7.4	Clearance distance		P

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Clause	Requirement – Test	Result – Remark	Verdict
4.4.7.4.1	Determination	See Table 4.4.7.4	P
	Clearances for functional, basic and supplementary insulation shall be dimensioned according to Table 10 (see Annex D for examples of the evaluation of clearance distances). Interpolation is permitted, when clearance is determined from temporary overvoltage or working voltage. Clearances for reinforced insulation shall be dimensioned to withstand an impulse voltage one step higher than the impulse withstand voltage, or 1,6 times the peak temporary overvoltage or peak working voltage, required for basic insulation. Clearance distances for use in altitudes between 2 000 m and 20 000 m shall be calculated using a correction factor according to Table A.2 of IEC 60664-1:2007, which is reproduced as Table E.1. A correction factor selected from Table F.2 is also used for determination of clearance distances for approximately homogenous fields when frequencies are greater than 30 kHz, as given in Annex F.		P
	Compliance shall be checked by visual inspection (see 5.2.2.1) or by performing the impulse voltage test of 5.2.3.2 and the a.c. or d.c. voltage test of 5.2.3.4.		P
4.4.7.4.2	Electric field homogeneity		P
	The dimensions in Table 10 correspond to the requirements of an inhomogeneous electric field distribution across the clearance, which are the conditions normally experienced in practice. If a homogeneous electric field distribution is known to exist, the clearance distance for basic or supplementary insulation may be reduced to not less than that required by Table F.2 (Case B) of IEC 60664-1:2007. In this case, however, the impulse voltage test of 5.2.3.2 shall be performed across the considered clearance. If the withstand against steady state voltages, recurring peak or temporary overvoltages according to Table 10 is decisive for the dimensioning of clearance and if these clearances are smaller than the values of Table 10 then an a.c. or d.c. voltage test according to 5.2.3.4 is required. Clearance distances for reinforced insulation shall not be reduced for homogeneous fields.		P
4.4.7.4.3	Clearance to conductive enclosures		P
	The clearance between any non-insulated live part and the walls of a metal enclosure shall be in accordance with 4.4.7.4.1 during and following the		P

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Clause	Requirement – Test	Result – Remark	Verdict
	deflection tests of 5.2.2.4.2.		
	Compliance is checked by inspection and by test of 5.2.2.4.2.		P
	If the design clearance distance is at least 12,7 mm and the clearance distance required by 4.4.7.4.1 does not exceed 8 mm, the deflection tests may be omitted.		P
4.4.7.5	Creepage distance		P
4.4.7.5.1	Insulating material groups		P
	Creepage distance requirements for PWBs exposed to pollution degree 3 environmental conditions shall be determined based on Table 11 pollution degree 3 under “Other insulators”.		P
	For inorganic insulating materials, for example glass or ceramic, which do not track, the creepage distance may equal the associated clearance distance, as determined from Table 10.		P
4.4.7.5.2	Determination	See Table 4.4.7.5	P
	Creepage distances for functional, basic and supplementary insulation shall be dimensioned according to Table 11. Interpolation is permitted. Creepage distances for reinforced insulation shall be twice the distances required for basic insulation.		P
	When the creepage distance requirement determined from Table 11 is less than the clearance distance required by 4.4.7.4.1 or the clearance distance determined by impulse testing (see 5.2.3.2), then the creepage distance shall be increased to the clearance distance.		P
	Compliance of creepage distances shall be checked by measurement or inspection (see 5.2.2.1) (see Annex D for examples of the evaluation of creepage distances).		P
4.4.7.6	Coating		N/A
	A coating may be used to provide insulation, to protect a surface against pollution, and to allow a reduction in creepage and clearance distances (see 4.4.7.8.4.2 and 4.4.7.8.6)		N/A
4.4.7.7	PWB spacings for functional insulation		P
	Spacings for functional insulation shall comply with the requirement of 4.4.7.4 and 4.4.7.5.		P

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Clause	Requirement – Test	Result – Remark	Verdict
	Decreased spacings on PWB are permitted when all the following are satisfied: • the PWB has flammability rating of V-0 (see IEC 60695-11-10); • the PWB base material has a minimum CTI of 100; • the equipment complies with the PWB short circuit test (see 5.2.4.7). Decreased spacings for components assembled on PWB are permitted when used in: • pollution degree 1 or 2 environment; and • not more than overvoltage category I. In this case the manufacture specification may be used. Compliance is checked by inspection and by test of 5.2.4.7 if applicable.		P
4.4.7.8	Solid insulation		P
4.4.7.8.1	General		P
	Materials selected for solid insulation shall be able to withstand the stresses occurring. These include mechanical, electrical, thermal, climatic and chemical stresses which are to be expected in normal use. Insulation materials shall also be resistant to ageing during the expected lifetime of the PECS. Tests shall be performed on components and sub-assemblies using solid insulation, in order to ensure that the insulation performance has not been compromised by the design or manufacturing process.		P
4.4.7.8.2	Material requirements		P
	The insulating material shall have a CTI of 100 or greater. The insulating material shall be suitable for the maximum temperature it attains as determined by the temperature rise test of 5.2.3.10. Consideration shall be given as to whether or not the insulating material additionally provides mechanical strength and whether or not the part can be subject to impact during use.		P
	The insulating material in contact with live parts higher than DVC As shall comply with: • the glow-wire test described in 5.2.5.3 at a test temperature of 850 °C; or • the glow-wire test described in 5.2.5.3, at a lower test temperature, but not less than 550 °C, depending on the classification of the use of the		P

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Clause	Requirement – Test	Result – Remark	Verdict
	PECS, according to Table A.1 of IEC 60695-2-11:2011; or • the alternative hot wire ignition test of 5.2.5.4.		
	Thermoplastic insulating materials used in contact with live parts higher than DVC As or used as part of the enclosure shall comply with the ball pressure test as abnormal heat test according to IEC 60695-10-2.		P
	Where an insulating material is used in a PECS that incorporates switching contacts, and is within 12,7 mm of the contacts, it shall comply with the high current arcing ignition test of 5.2.5.2.		P
	In case the manufacturer of the insulating material provides data to demonstrate compliance with the above requirements no further testing is required. No further evaluation is required when generic materials are used according to Table 12.		N/A
	Compliance is checked by inspection and by test of 5.2.3.10 and 5.2.5.3 or 5.2.5.2.		P
4.4.7.8.3	Thin sheet or tape material		P
4.4.7.8.3.1	General	See Table 4.4.7.8.3.2	P
	4.4.7.8.3 applies to the use of thin sheet or tape materials in assemblies such as wound components and bus-bars. Insulation consisting of thin (less than 0,75 mm) sheet or tape materials is permitted, provided that it is protected from damage and is not subject to mechanical stress under normal use. Where more than one layer of insulation is used, there is no requirement for all layers to be of the same material. NOTE 1 One layer of insulation tape wound with more than 50 % overlap is considered to constitute two layers. NOTE 2 Basic, supplementary and double insulation can be applied as a pre-assembled system of thin materials.		P
4.4.7.8.3.2	Material thickness ≥ 0,2 mm		P
	Basic or supplementary insulation shall consist of at least one layer of material, which will meet the requirements of 4.4.7.8.1 and 4.4.7.10.1.		P
	Double insulation shall consist of at least two layers of material, each of which will meet the requirements of 4.4.7.8.1, 4.4.7.10.1, and the partial discharge requirements of 4.4.7.10.2, and both layers together will meet the impulse and a.c.		P

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Clause	Requirement – Test	Result – Remark	Verdict
	or d.c. voltage requirements of 4.4.7.10.2.		
	Reinforced insulation shall consist of a single layer of material, which will meet the requirements of 4.4.7.8.1 and 4.4.7.10.2.		P
	NOTE The requirements of this subclause indicate that double insulation can be at least 0,4 mm thick, while reinforced insulation is permitted to be 0,2 mm thick.		P
4.4.7.8.3.3	Material thickness less than 0,2 mm		P
	Basic or supplementary insulation shall consist of at least two layers of material, which will meet the requirements of 4.4.7.8.1 and 4.4.7.10.1.		P
	Double insulation shall consist of at least three layers of material. Each layer shall meet the requirements of 4.4.7.8.1 and 4.4.7.10.1, and any two layers together shall meet the requirements of 4.4.7.10.2.		P
	Reinforced insulation consisting of a single layer of material is not permitted.		P
4.4.7.8.3.4	Compliance		P
	Compliance shall be checked by the tests described in 5.2.3.1 to 5.2.3.5. When a component or sub-assembly makes use of thin sheet insulating materials, it is permitted to perform the tests on the component rather than on the material.		P
4.4.7.8.4	Printed wiring boards (PWBs)		P
4.4.7.8.4.1	General		P
	Insulation between conductor layers in double-sided single-layer PWBs, multi-layer PWBs and metal core PWBs, shall meet the requirements of 4.4.7.8.1. Basic, supplementary, double and reinforced insulation shall meet the appropriate requirements of 4.4.7.10.1 or 4.4.7.10.2. Functional insulation in PWBs shall meet the requirements of 4.4.7.7. For the inner layers of multi-layer PWBs, the insulation between adjacent tracks on the same layer shall be treated as either: • a creepage distance for pollution degree 1 and a clearance as in air (see Example D.14); or • solid insulation, in which case it shall meet the requirements of 4.4.7.8.1 and 4.4.7.10.		P
4.4.7.8.4.2	Use of coating materials		N/A
	A coating material used to provide functional, basic,		N/A

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Clause	Requirement – Test	Result – Remark	Verdict
	supplementary and reinforced insulation shall meet the requirement as specified below.		
	Type 1 protection (as defined in IEC 60664-3) improves the microenvironment of the parts under protection. The clearance and creepage distance of Table 10 and Table 11 for pollution degree 1 apply under the protection. Between two conductive parts, it is a requirement that one or both conductive parts, together with all the spacing between them, are covered by the protection.		N/A
	Type 2 protection is considered to be similar to solid insulation. Under the protection, the requirements for solid insulation specified in 4.4.7.8 are applicable, including the coating material itself, and spacings shall not be less than those specified in Table 1 of IEC 60664-3:2003. The requirements for clearance and creepage in Table 10 and Table 11 do not apply. Between two conductive parts, it is a requirement that both conductive parts, together with the spacing between them, are covered by the protection so that no air gap exists between the protective material, the conductive parts and the printed boards.		N/A
	The coating material used to provide Type 1 and Type 2 protection shall be designed to withstand the stresses anticipated to occur during the expected lifetime of the PECS. A type test on representative PWBs shall be conducted according to Clause 5 of IEC 60664-3:2003. For the cold test (5.7.1 of IEC 60664-3:2003), a temperature of -25 °C shall be used, and for the rapid change of temperature test (5.7.3 of IEC 60664-3:2003): -25 °C to +125 °C. No routine test is required.		N/A
4.4.7.8.5	Wound components		N/A
	Varnish or enamel insulation of wires shall not be used for basic, supplementary, double or reinforced insulation. Wound components shall meet the requirements of 4.4.7.8.1 and 4.4.7.10. The component itself shall pass the requirements given in 4.4.7.8.1 and 4.4.7.10.2. If the component has reinforced or double insulation, the a.c. or d.c. voltage test of 5.2.3.4 shall be performed as a routine test.		N/A
4.4.7.8.6	Potting materials		P
	A potting material may be used to provide solid insulation or to act as a coating to protect against pollution.		P

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Clause	Requirement – Test	Result – Remark	Verdict
	If used as solid insulation, it shall comply with the requirements of 4.4.7.8.1 and 4.4.7.10.		P
	If used to protect against pollution, the requirements for Type 1 protection in 4.4.7.8.4.2 apply.		P
4.4.7.9	Connection of parts of solid insulation (Cemented joints)		N/A
	The creepage and clearance path in the presence of a cemented joint between two insulating parts, are determined as follows. • Type 1 or type 2 protection as described in 4.4.7.8.4.2 apply. • A cemented joint that is not evaluated as providing protection of type 1 or type 2, is neither considered solid insulation nor to reduce pollution degree. The clearance and creepage distances of Table 10 and Table 11 apply for the pollution degree of the environment around the joint. See 5.2.5.7 for test.		N/A
4.4.7.10	Requirements for electrical withstand capability		P
4.4.7.10.1	Basic or supplementary insulation	See Table 4.4.7.10	P
	Test with impulse withstand voltage according to 5.2.3.1		P
	Test with a.c. or d.c. voltage according to 5.2.3.4		P
4.4.7.10.2	Double and reinforced insulation	See Table 4.4.7.10	P
	Double or reinforced insulation shall be tested as follows: • Test with impulse withstand voltage according to 5.2.3.2; and • Test with a.c. or d.c. voltage according to 5.2.3.4.		P
	For solid insulation, the partial discharge test according to 5.2.3.5 shall be performed in addition to the above tests, if the recurring peak working voltage across the insulation is greater than 750 V and the voltage stress on the insulation is greater than 1 kV/mm. The partial discharge test shall be performed as a type test on all components, sub-assemblies and PWB. In addition, a sample test shall be performed if the insulation consists of a single layer of material.		P
	Double insulation shall be designed so that failure of the basic insulation or of the supplementary insulation will not result in reduction of the insulation capability of the remaining part of the insulation.		P

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Clause	Requirement – Test	Result – Remark	Verdict
4.4.7.11	Insulation requirements above 30 kHz		P
4.4.8	Compatibility with residual current-operated protective devices		P
	To ensure the intended work of an RCD provided by the installation PECS shall satisfy one of the following conditions. a) A Pluggable Type A single-phase PECS, shall be designed so that, under normal and fault conditions any resulting d.c. component of the current in the PE conductor does not exceed the d.c. current withstand requirements in IEC 60755 for RCD of type A. b) For PECS that are Pluggable Type B or intended for permanent connection, d.c. current in the PE conductor is not limited if the information and marking requirements of 6.3.7.4 are complied with.		P
	Compliance with RCD provided by the installation shall be checked by simulation or calculation of current in the PE conductor under normal and single fault conditions according to the guideline provided in Annex H.		P
4.4.9	Capacitor discharge		P
	For protection against shock hazard, capacitors within a PECS shall be discharged to a voltage less than DVC As, or to a residual charge less than 50 µC, after the removal of power from the PECS: • For pluggable PECS type A and B the discharge time shall not exceed 1 s or the hazardous live parts shall be protected against direct contact by at least IPXXB (see 4.4.3.3). • For permanently connected PECS the discharge time shall not exceed 5 s. For pluggable PECS type A and B and permanently connected PECS, which do not meet the above requirements, access shall only be possible by means of a tool or key and the information and marking requirements of 6.5.2 apply. Compliance is checked by test of 5.2.3.8.		P
4.5	Protection against electrical energy hazards		P
4.5.1	Operator Access Areas		P
4.5.1.1	General		P
	Equipment shall be so designed that there is no risk of electrical energy hazard in operator access areas from accessible circuits by fulfilling requirement of 4.2. A risk of injury due to an electrical energy hazard exists if it is likely that two or more bare parts (one		P

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	of which may be earthed) between which a hazardous energy level exists, will be bridged by a metallic object. The likelihood of bridging the parts under consideration is determined by means of the test finger of Figure 1 of IEC 60529:1989, in a straight position. If it is possible to bridge the parts with this test finger, a hazardous energy level shall not exist. Barriers, guards, and similar means preventing unintentional contact may be provided as an alternative to limiting the energy.		
	Compliance is checked by inspection or test of 5.2.2.2.		P
4.5.1.2	Determination of hazardous energy level		P
	A hazardous electrical energy level is considered to exist if: • the voltage is 2 V or more; and • power available exceeds 240 VA after 60 s; or • the energy exceeds 20 J. Compliance shall be checked with the test in 5.2.3.9 or by calculation.		P
4.5.2	Service Access Areas		P
	Capacitors within a PECS shall be discharged to an energy level less than 20 J, as in 4.5.1.2, within 5 s after the removal of power from the PECS. If this requirement is not achievable for functional or other reasons, the information and marking requirements of 6.5.2 apply.		P
	If the capacitor discharge time cannot be accurately calculated, the discharge time shall be measured.		N/A
4.6	Protection against fire and thermal hazards		P
4.6.1	Circuits representing a fire hazard		N/A
	The following types of circuits are considered a fire hazard: - circuits directly connected to the mains - circuits that are not directly connected to the mains but exceed the limits for limited power sources in 4.6.5 - components having unenclosed arcing parts		N/A
4.6.2	Components representing a fire hazard		P
4.6.2.1	General		P
	Compliance with 4.6.2 and 4.6.3 shall be confirmed by inspection of component and material data sheets and, where necessary, by test.		P

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4.6.2.2	Components within a circuit representing a fire hazard		P
	Inside fire enclosures, materials for components and other parts and all materials in contact with such parts shall comply with flammability class V-2 as classified in IEC 60695-11-10 or flammability class HF-2 as classified in ISO 9772 or better.		P
	The above requirement does not apply to any of the following: • electrical components which do not present a fire hazard under abnormal operating conditions when tested according to 5.2.4.6; • materials and components within an enclosure of 0,06 m^3 or less, consisting totally of metal and having no ventilation openings, or within a sealed unit containing an inert gas; • electronic components, such as integrated circuit packages, opto-coupler packages, capacitors and other small parts that are mounted on material of flammability class V-1 or better; • wiring, cables and connectors insulated with PVC, TFE, PTFE, FEP, neoprene or polyimide; • the following parts, provided that they are separated from electrical parts (other than insulated wires and cables) which under fault conditions are likely to produce a temperature that could cause ignition, by at least 13 mm of air or by a solid barrier of material of flammability class V-1 or better: – other small parts which would contribute negligible fuel to a fire, including, labels, mounting feet, key caps, knobs and the like; – tubing for air or any fluid systems, containers for powders or liquids and foamed plastic parts, provided that they are of flammability class HB.		P
4.6.2.3	Components within a circuit not representing a fire hazard		P
	For components within a circuit not representing a fire hazard 4.6.2 does not apply.		P
4.6.3	Fire enclosures		N/A
4.6.3.1	General		N/A
	Fire enclosures are used to reduce the risk of fire to the environment, independent of the location where they are installed. A fire enclosure shall be provided for all PECS unless: • the product committee specifies that a fire		N/A

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Clause	Requirement – Test	Result – Remark	Verdict
	enclosure is not required; or • there is an agreement between the user and the manufacturer; or • the PECS is intended to be used only in areas without combustible materials and is marked according to 6.3.5.		
4.6.3.2	Flammability of enclosure materials		P
	Materials used for fire enclosures of PECS shall meet the flammability test requirements of 5.2.5.5, except for those portions of the enclosure that enclose only circuits not representing a fire hazard.		P
	Materials are considered to comply without test if, in the minimum thickness used, the material is of flammability class 5VA or better, according to IEC 60695-11-20.		N/A
	Metals, ceramic materials, and glass which is heat-resistant tempered, wired or laminated, are considered to comply without test.		N/A
	Materials for components that fill an opening in a fire enclosure shall: • be of at least V-1 class material and no larger than 100 mm in any dimension; or • be of at least V-2 class material and either – not larger than 25 mm in any dimension; or – not larger than 100 mm in any dimension and located at least 100mm from any part that is a source of fire hazard; or • be of at least V-2 class material and there is a barrier or device(s) that forms a barrier made of a V-0 class material between the part and a source of fire hazard; or • comply with a relevant IEC component standard that includes flammability requirements for components that are intended to form part of, or fill openings in, a fire enclosure.		N/A
	Polymeric materials that serve as the outer enclosure and have surface area greater than 1 m^2 or a single dimension larger than 2 m, shall have a maximum flame spread index of 100 as determined by ASTM E162 or ANSI/ASTM E84.		N/A
	The manufacturer may provide data from the fire enclosure material supplier to demonstrate compliance with the above requirements. In this case, no further testing is required.		N/A
	Compliance shall be checked by visual inspection and, where necessary, by test.		N/A
4.6.3.3	Openings in fire enclosures		N/A

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4.6.3.3.1	General		N/A
4.6.3.3.2	Openings in the top and the side of fire enclosures		N/A
	Openings in the top surfaces of fire enclosures shall be designed to prevent an external object falling vertically or at up to 5° from vertically from entering the enclosure in an area that could lead to a fire hazard. This requirement applies to all sides of moveable equipment with no defined top and bottom, unless top and bottom surfaces can be suitably demonstrated in the installation instructions. Compliance shall be checked by test of 5.2.2.2.		N/A
	Openings in the top surfaces of fire enclosures not located vertically above or within 5° from vertical of a circuit representing a fire hazard as defined in 4.6.1 are not subject to the test of 5.2.2.2 and can be of any construction if the construction prevents access to parts greater than DVC As with the IP3X probe as detailed in 4.4.3.3. Where a portion of the side of a fire enclosure falls within the area traced out by the 5° angle in Figure 6, the limitations in 4.6.3.3.3 regarding openings in bottoms of fire enclosures also apply to this portion of the side. Compliance shall be checked by visual inspection.		N/A
4.6.3.3.3	Openings in the bottom of fire enclosures		N/A
	Compliance is checked by inspection or with the hot flaming oil test in 5.2.5.6, in case the fire enclosure is designed differently than as described in this subclause.		N/A
4.6.3.3.4	Doors of covers in fire enclosures		N/A
	If part of a fire enclosure consists of a door or a cover leading to an operator access area, it shall comply with one of the following requirements: • the door or cover shall be provided with a safety interlock; or • a door or cover, intended to be routinely opened by the user, shall comply with both of the following conditions: – it shall not be removable from other parts of the fire enclosure by the user; and – it shall be provided with a means to keep it closed during normal operation. A door or cover intended only for occasional use by an installer, such as for the installation of accessories, is permitted to be removable provided that the equipment instructions include directions		N/A

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Clause	Requirement – Test	Result – Remark	Verdict
	for correct removal and reinstallation of the door or cover. Compliance is checked by inspection.		
4.6.4	Temperature limits		P
4.6.4.1	Internal parts	See table 4.6.4	P
	Equipment and its component parts shall not attain temperatures in excess of those in Table 14 when tested in accordance with the ratings of the equipment. Compliance is checked by test of 5.2.3.10.		P
4.6.4.2	Accessible parts		P
	When surface temperatures of the PECS, close to mounting surfaces, exceed the limit of Table 15, a warning according to 6.3.5 shall be provided.		N/A
4.6.5	Limited power sources		N/A
	Where a limited power source is required, the source shall comply with Table 16 or Table 17 as applicable.		N/A
	A limited power source shall comply with one of the following requirements: a) the output is inherently limited in compliance with Table 16; or b) a linear or non-linear impedance limits the output in compliance with Table 16. If a positive temperature coefficient device (e.g. PTC) is used, it shall pass the applicable tests specified in IEC 60730-1; or c) a regulating network limits the output in compliance with Table 16, both with and without a single fault in the regulating network; or d) an overcurrent protective device is used and the output is limited in compliance with Table 17.		N/A
	Compliance to determine the maximum available power is checked by test of 5.2.3.9.		N/A
4.7	Protection against mechanical hazards		P
4.7.1	General		P
	Failure of any component within the PECS shall not release sufficient energy to lead to a hazard, for example, expulsion of material into an area occupied by personnel.		P
4.7.2	Specific requirements for liquid cooled PSCS		N/A
4.7.2.1	General		N/A
4.7.2.2	Coolant		N/A

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	Coolant temperature in operation shall not exceed the limit specified in Table 14.		N/A
	Compliance is checked by inspection and test of 5.2.3.10.		N/A
4.7.2.3	Design requirements		N/A
4.7.2.3.1	General		N/A
	The liquid containment system components shall be compatible with the liquid to be used. Equipment using liquids shall be so constructed that it is unlikely that either a dangerous concentration of these materials or a hazard in the meaning of this standard will be created by condensation, vaporization, leakage, spillage or corrosion during normal operation, storage, filling or emptying. Compliance is checked by inspection. The flexible hoses should be made of material free of conductive contaminants such as carbon.		N/A
4.7.2.3.2	Corrosion requirements		N/A
	All cooling system components shall be suitable for use with the specified coolant. They shall be corrosion resistant and shall not corrode as a result of prolonged exposure to the coolant and/or air. Compliance is checked by inspection.		N/A
4.7.2.3.3	Tubing, joints and seals		N/A
	Cooling *system* tubing, joints and seals shall be designed to prevent leakage during excursions of pressure over the life of the equipment. The entire cooling *system* including tubing shall satisfy the requirements of the hydrostatic pressure test of 5.2.7.		N/A
4.7.2.3.4	Provision for condensation		N/A
	Where internal condensation occurs during normal operation or maintenance, measures shall be taken to prevent degradation of insulation. In those areas where such condensation is expected, clearance and creepage distances of Table 10 and Table 11 shall be evaluated at least for a pollution degree 3 environment (see Table 8), and provision shall be made to prevent accumulation of water (for example by providing a drain). Compliance is checked by inspection.		N/A
4.7.2.3.5	Leakage of coolant		N/A
	During a leakage measures has to ensure that coolant will not result in wetting of live parts or electrical insulation.		N/A

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Clause	Requirement – Test	Result – Remark	Verdict
4.7.2.3.6	Loss of coolant		N/A
	Loss of coolant form the cooling system shall not result in thermal hazards, explosion, or shock hazard. The requirements of the Loss of coolant test of 5.4.3.9.4 shall be satisfied.		N/A
4.7.2.3.7	Conductivity of coolant		N/A
	When the coolant is intentionally in contact with live parts (for example non-earthed heatsinks), the conductivity of the coolant shall be continuously monitored and controlled, in order to avoid hazardous current flow through the coolant.		N/A
4.7.2.3.8	Insulation requirements for coolant hoses		N/A
	When the coolant is intentionally in contact with live parts (for example non-earthed heatsinks), the coolant hoses form a part of the insulation system. Depending on the location of the hoses, the requirements of 4.4.7 for functional or simple or protective separation shall be applied where relevant.		N/A
4.8	Equipment with multiple sources of supply		N/A
	Equipment with more than one supply; design shall be: - separate means of connection are provided for different circuits; and - supply plug connections, if any, are not interchangeable if a hazard could be created by incorrect plugging; and - hazards, within the meaning of this standard, shall not be present under normal or single fault conditions due to the presence of multiple sources of supply. Actions such as disconnection or de-energizing of a supply are considered a normal condition. Compliance is checked by the evaluation of 4.2		N/A
	Examples of the types of hazards that should be considered are: a) Backfeed prevention – preventing voltage or energy available within the PECS or one of its sources from being fed back to any of the input terminals for another source, either directly or by a leakage path. b) Protection against unintentional islanding. c) Touch current levels may be higher with multiple sources connected simultaneously. d) Hazard resulting from damage to one or more connected sources due to energy		N/A

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Clause	Requirement – Test	Result – Remark	Verdict
	from another source, for example the mains. e) Damage to wiring due to currents higher than the wiring is designed for flowing from another source.		
4.9	Protection against environmental stresses		N/A
	The manufacturer has to specify the following conditions for operation, storage and transportation according to IEC 60721: - Coolant temperature (min/max); - Ambient temperature (min/max); - Humidity (min/max) - Pollution degree; - Vibration; - U.V. resistance; - Over voltage category (OVC); - Altitude for thermal consideration, if rated for operation above 1000 m; - Altitude for insulation coordination considerations, if rated for operation above 2000 m.		N/A
	The manufacturer shall state the environmental service condition for the PECS according to Table 18.		N/A
4.10	Protection against Sonic Pressure Hazards		P
4.10.1	General		P
4.10.2	Sonic pressure and sound level		P
	If the measured sound pressure exceeds 70 dBA (except that sounds from alarms are not included) the documentation shall provide information regarding the sound level of the equipment.		P
4.11	Wiring and connections		P
4.11.1	General		P
	The wiring and connections between parts of the equipment and within each part shall be protected from mechanical damage during installation. The insulation, conductors and routing of all wires of the equipment shall be suitable for the electrical, mechanical, thermal and environmental conditions of use. Conductors which are able to contact each other shall be provided with insulation rated for the DVC requirements of the relevant circuits. The compliance with 4.11.2 to 4.11.8 shall be checked by inspection (see 5.2.1) of the overall construction and datasheets if applicable.		P

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Clause	Requirement – Test	Result – Remark	Verdict
4.11.2	Routing		N/A
	A hole through which insulated wires pass in a sheet metal wall within the enclosure of the equipment shall be provided with a smooth, well-rounded bushing or grommet or shall have smooth, well-rounded surfaces upon which the wires bear to reduce the risk of abrasion of the insulation.		N/A
	Wires shall be routed away from sharp edges, screw threads, burrs, fins, moving parts, drawers, and similar parts, which abrade the wire insulation. The minimum bend radius specified by the wire manufacturer shall not be violated.		N/A
	Clamps and guides, either metallic or non-metallic, used for routing stationary internal wiring shall be provided with smooth, well-rounded edges. The camping action and bearing surface shall be such that abrasion or deformation of the insulation does not occur. If a metal clamp is used for conductors having thermoplastic insulation less than 0,8 mm thick, non-conduction mechanical protection shall be provided.		N/A
4.11.3	Colour coding		P
	Insulated conductors, other than those which are integral of ribbon cable or multi-cord signal cable, identified by the colour green with or without one or more yellow stripes shall only be used for protective bonding.		P
4.11.4	Splices and connections		P
	All splices and connections shall be mechanically secured and shall provide electrical continuity. Electrical connections shall be soldered, welded, crimped, or otherwise securely connected. A soldered joint, other than a component on a PWB, shall additionally be mechanically secured. *NOTE Stranded wire should not be consolidated with solder where secured in a terminal that relies on pressure for contact or equivalent* When stranded internal wiring is connected to a wire-binding screw, the construction shall be such that loose strands of wire do not contact: • other uninsulated live parts not always of the same potential as the wire; • de-energized metal parts. When screw terminal connections are used, the resulting connections may require routine maintenance (tightening). Appropriate reference shall be made in the maintenance manual (see 6.5.1).		P

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Clause	Requirement – Test	Result – Remark	Verdict
4.11.5	Accessible connections		P
	In addition to measures given in 4.4.6.4 it shall be ensured that neither insertion error nor polarity reversal of connectors can lead to a voltage on an accessible connection higher than the maximum of DVC As. This applies for example to plug-in sub-assemblies or other plug-in devices which can be plugged in without the use of a tool or key or which are accessible without the use of a tool or key. This does not apply to equipment intended to be installed in restricted access areas. If relevant, non-interchangeability and protection against polarity reversal of connectors, plugs and socket outlets shall be confirmed by inspection and trial insertion.		P
4.11.6	Interconnections between parts of the PSCS		P
	In addition to complying with the requirements given in 4.11.1 to 4.11.5, the means provided for the interconnection between parts of the PECS shall comply with the following requirements or those of 4.11.7. Cable assemblies and flexible cords provided for interconnection between sections of equipment or between units of a system shall be suitable for the service or use involved. Cables shall be protected from physical damage as they leave the enclosure and shall be provided with mechanical strain relief. Misalignment of male and female connectors, insertion of a multipin male connector in a female connector other than the one intended to receive it, and other manipulations of parts which are accessible to the operator shall not result in mechanical damage or a risk of thermal hazards, electric shock, or injury to persons. When external interconnecting cables terminate in a plug which mates with a receptacle on the external surface of an enclosure, no risk of electric shock shall exist at accessible contacts of either the plug or receptacle when disconnected. *NOTE An interlock circuit in the cable to de-energize the accessible contacts whenever an end of the cable is disconnected meets the intent of these requirements.*		P
4.11.7	Supply connections		P
	The connection points provided shall be of appropriate construction to preclude the possibility of loose strands reducing the spacing between conductors when careful attention is paid to installation.		P

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Clause	Requirement – Test	Result – Remark	Verdict
4.11.8	Terminals		P
4.11.8.1	Construction requirements		P
	All parts of terminals which maintain contact and carry current shall be of metal having adequate mechanical strength. Terminal connections shall be such that the conductors can be connected by means of screws, springs or other equivalent means so as to ensure that the necessary contact pressure is maintained. Terminals shall be so constructed that the conductors can be clamped between suitable surfaces without any significant damage either to conductors or terminals. Terminals shall not allow the conductors to be displaced or be displaced themselves in a manner detrimental to the operation of equipment and the insulation shall not be reduced below the rated values. The requirements of this subclause are met by using terminals complying with IEC 60947-7-1 or IEC 60947-7-2, as appropriate.		P
4.11.8.2	Connecting capacity		P
	Terminals shall be provided which accommodate the conductors specified in the installation and maintenance manuals (see 6.3.6.4) and cables in accordance with the wiring rules applicable at the installation. The terminals shall meet the temperature rise test of 5.2.3.10.		P
	Information regarding the permitted wire sizes shall be given in the installation manual.		P
4.11.8.3	Connection		P
	Terminals for connection to external conductors shall be readily accessible during installation. Sets of terminals for connection to the same input or output shall be grouped together and shall be located in proximity to each other and to the main protective earthing terminal, if any. If the installation instructions provide detail on the proper earthing of the system, the protective earthing terminal need not be placed in proximity to the terminals. Clamping screws and nuts shall not serve to fix any other component although they may hold the terminals in place or prevent them from turning.		P
4.11.8.4	Wire bending space for wires 10 mm² and greater		N/A
	The distance between a terminal for connection to the main supply, or between major parts of the PECS (for example a transformer), and an		N/A

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Clause	Requirement – Test	Result – Remark	Verdict
	obstruction toward which the wire is directed upon leaving the terminal shall be at least that specified in Table 19.		
4.12	Enclosures		P
4.12.1	General		P
4.12.2	Handles and manual controls		N/A
	Handles, knobs, grips, levers and the like shall be reliably fixed so that they will not work loose in normal use, if this could result in a hazard. Sealing compounds and the like, other than self-hardening resins, shall not be used to prevent loosening. If handles, knobs and the like are used to indicate the position of switches or similar components, it shall not be possible to fix them in a wrong position if this could result in a hazard.		N/A
4.12.3	Cast metal		N/A
	Die-cast metal, except at threaded holes for conduit, where a minimum of 6,4 mm thickness is required, shall be: • not less than 2,0 mm thick for an area larger than 155 cm2 or having any dimension larger than 150 mm; • not less than 1,2 mm thick for an area of 155 cm2 or less and having no dimension larger than 150 mm. The area under evaluation may be bounded by reinforcing ribs subdividing a larger area. Malleable iron or permanent-mould cast aluminium, brass, bronze, or zinc, except at threaded holes for conduit, where a minimum of 6,4 mm thickness is required, shall be: • at least 2,4 mm thick for an area greater than 155 cm2 or having any dimension more than 150 mm; • at least 1,5 mm thick for an area of 155 cm2 or less having no dimension more than 150 mm. A sand-cast metal enclosure shall be a minimum of 3,0 mm thick except at locations for threaded holes for conduit, where a minimum of 6,4 mm is required.		N/A
4.12.4	Sheet metal		N/A
4.12.5	Stability		P
	Under conditions of normal use, units and equipment shall not become physically unstable to the degree that they could become a hazard to an operator or to a service person. If units are designed to be fixed together on site and not used individually, the stability of each		P

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Clause	Requirement – Test	Result – Remark	Verdict
	individual unit is exempt from the requirements of 4.12.5. The requirements of 4.12.5 are not applicable if the installation instructions for a unit specify that the equipment is to be secured to the building structure before operation. Under conditions of operator use, a stabilizing means, if needed, shall be automatic in operation when drawers, doors, etc., are opened. During operations performed by a service person, the stabilizing means, if needed, shall either be automatic in operation, or a marking shall be provided to instruct the service person to deploy the stabilizing means. Compliance is checked by test of 5.2.2.5.		
5	**TEST REQUIRMENTS**		P
5.1	General		P
5.1.1	Test objectives and classification		P
5.1.2	Selection of test samples		P
5.1.3	Sequence of tests		P
5.1.4	Earthing conditions		P
5.1.5	General conditions for tests		P
5.1.5.1	Application of tests		P
	Unless otherwise stated, upon conclusion of the tests, the equipment need not be operational.		P
5.1.5.2	Test samples		P
5.1.5.3	Operating parameters for tests		P
5.1.6	Compliance		P
5.1.7	Test overview		P
5.2	Test specifications		P
5.2.1	Visual inspections (type test, sample test and routine test)		P
	Before type testing, a check shall be made that the PECS delivered for the test is as expected with respect to supply voltage, input and output ranges, etc.		P
5.2.2	Mechanical tests		P
5.2.2.1	Clearances and creepage distance (type test)		P
	It shall be verified by measurement or visual inspection that the clearance and creepage distances comply with 4.4.7.4 and 4.4.7.5.		P

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Clause	Requirement – Test	Result – Remark	Verdict
	Where this verification is impossible to perform, an impulse voltage test (see 5.2.3.2) shall be performed between the considered circuits.		P
5.2.2.2	Non-accessibility test (type test)		P
	This test is intended to show that live parts, protected by means of enclosures and barriers in compliance with 4.4.3.3, are not accessible.		P
	This test shall be performed as a type test of the enclosure of a PSCS as specified in IEC 60529 for the enclosure classification for protection against access to hazardous parts.		P
	Except as noted below: •The test probe for IP3X shall not penetrate the top surface of the enclosure when probed from the vertical direction ± 5° only.		P
5.2.2.3	Ingress protection test (IP rating) (type test)		P
	The claimed IP rating of the enclosure shall be verified. This test shall be performed as a type test of the enclosure of a PSCS as specified in IEC 60529 for the enclosure classification.		P
5.2.2.4	Enclosure integrity test (type test)		P
5.2.2.4.1	General		P
	The integrity tests apply to PSCS, and also where PSCS are intended for operation without a further enclosure in restricted access areas. After completion of the integrity test, the PSCS shall pass the tests of 5.2.3.2 and 5.2.3.4 and shall be inspected to confirm that:		P
	- no degradation of any safety-relevant component of the PSCS has occurred.		P
	- live parts have not become accessible (see 4.4.3.3).		P
	- enclosures show no cracks or openings which could cause a hazard.		P
	- clearances are not less than their minimum permitted values and other insulation is undamaged.		P
	- barriers have not been damaged or loosened.		P
	- no moving parts which could cause a hazard are exposed.		P
	The integrity tests shall be performed at the worst case point on representative accessible face(s) of the enclosure.		P

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Clause	Requirement – Test	Result – Remark	Verdict
	The PSCS is not required to be operational after testing and the enclosure may be deformed to such an extent that its original IP rating is not maintained.		P
5.2.2.4.2	Deflection test (type test)		P
5.2.2.4.2.1	General		P
	If requested by 4.12.1 the test in 5.2.2.4.2.2 and 5.2.2.4.2.3 applies, for metallic enclosure, as applicable.		N/A
5.2.2.4.2.2	Steady force test, 30 N		P
5.2.2.4.2.3	Steady force test, 250 N		P
5.2.2.4.3	Impact test (type test)		P
5.2.2.4.4	Drop		P
	Transportable equipment ≤ 18 kg Drop three times from 1000 mm on a horizontal surface at locations where they provide the most adverse results.		P
5.2.2.4.5	Stress relief		N/A
5.2.2.5	Stability test		P
5.2.2.6	Wall or ceiling mounted equipment		N/A
5.2.2.7	Handles and manual controls securement		N/A
5.2.3	Electrical tests		P
5.2.3.1	General		P
	The electrical tests described in 5.2.3.2 to 5.2.3.5 are applicable to basic, supplementary and reinforced insulation. Before performing these tests, preconditioning according to 5.2.6.3.1 and 5.2.6.3.2 is required.		P
	When performing electrical and preconditioning tests, the preferred procedure is to test the entire equipment; however it is acceptable to test the components or sub-assemblies providing the basic and reinforced insulation. When components or sub-assemblies are tested, test conditions shall simulate the least favourable conditions occurring inside the equipment at the place of installation.		P
5.2.3.2	Impulse voltage test (type test and sample test)	See Table 4.4.7.10	P
5.2.3.3	Alternative to Impulse voltage test (type test and sample test)		P
	An a.c. or d.c. voltage test according to 5.2.3.4 may be used as an alternative method to the impulse voltage test of 5.2.3.2.		P

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Clause	Requirement – Test	Result – Remark	Verdict
	For an a.c. voltage test the peak value of the a.c. test voltage shall be equal to the impulse test of Table 25 and applied for three cycles of the a.c. test voltage.		P
	For a d.c. voltage test the average value of the d.c. test voltage shall be equal to the impulse test voltage of Table 25 and applied three times for 10 ms in each polarity.		N/A
	See IEC60664-1 clause 6.1.2.2.2 for further information.		P
5.2.3.4	A.C. or d.c. voltage test (type test and routine test)		P
5.2.3.4.1	Purpose of test		P
	The test is used to verify that the clearances and solid insulation of components and of assembled PSCS has adequate dielectric strength to resist temporary overvoltage conditions.		P
5.2.3.4.2	Value and type of test voltage		P
	The values of the test voltage for circuits connected to mains supply are determined from column 2 or 3 of Table 26. The voltage test shall be performed with a sinusoidal voltage at 50 Hz or 60 Hz. If the circuit contains capacitors the test may be performed with a d.c. voltage of a value equal to the peak value of the specified a.c. voltage.		P
5.2.3.4.3	Performing the voltage test	See table 4.4.7.10	P
	a) Test (1) between accessible conductive part 8connected to earth) and each circuit sequentially (except DVC As circuits). Test voltage according to Table 26, or Table 27, column 2, corresponding to voltage of considered circuit under test. Test (2) between accessible surface (nonconductive or conductive but not connected to earth9 and each circuit sequentially (except DVC As circuits). Test voltage according to Table 26 or Table 27, column 3 (for type test) or column 2 (for routine test), corresponding to voltage of considered circuit under test.		P
	b) Test between each considered circuit sequentially and the other adjacent circuits connected together. Test voltage according to Table 26 or Table 27, column 2, corresponding to voltage of considered circuit under test.		P

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Clause	Requirement – Test	Result – Remark	Verdict
	c) Test between DVC As circuit and each adjacent circuit sequentially. Test voltage according to Table 26 or Table 27, column 3 (for type test) or column 2 (for routine test), corresponding to the circuit with the higher voltage. Either the adjacent circuit or the DVC As circuit may be earthed for this test. It is necessary to test functional insulation between PELV and SELV circuits, but it is not necessary to test functional insulation between adjacent PELV or adjacent SELV circuits.		P
5.2.3.4.4	Duration of the a.c. or d.c. voltage test		P
	The duration of the test shall be at least 60 s for the type test and 1 s for the routine test. The test voltage may be applied with increasing and/or decreasing ramp voltage but the full voltage shall be maintained for 60 s and 1 s respectively for type and routine tests.		P
5.2.3.4.5	Verification of the a.c. or d.c. voltage test		P
	The test is successfully passed if no electrical breakdown occurs during the test.		P
5.2.3.5	Partial discharge test (type test, sample test)		N/A
	The partial discharge test shall confirm that the solid insulation (see 4.4.7.8) used in components and subassemblies for protective separation of electrical circuits remains partial-discharge-free within the specified voltage range (see Table 28).		N/A
	This test shall be performed as a type test and a sample test. It may be omitted for insulating materials which are not degraded by partial discharge, for example ceramics. The partial discharge inception and extinction voltage are influenced by climatic factors (e.g. temperature and moisture), equipment self-heating, and manufacturing tolerance. These influencing variables can be significant under certain conditions and shall therefore be taken into account during type testing.		N/A
5.2.3.6	Protective impedance (type test and routine test)		P
	A type test shall be performed to verify that the current through a protective impedance under normal operating or single-fault conditions does not exceed the values given in 4.4.3.4. The test shall be performed using the circuit of IEC 60990:1999, Figure 4. NOTE IEC 60990 states that the use of a single network for the measurement of a.c. combined with		

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Clause	Requirement – Test	Result – Remark	Verdict
	d.c. has not been investigated, but no suggestion is made for measurement in such cases. The value of the protective impedance shall be verified as a routine test.		
5.2.3.7	Touch current measurement (type test)		P
	The touch current shall be measured to determine if the measures of protection need not be taken (see 4.4.4.3.3). The PECS shall be set up in an insulated state without any connection to the earth and shall be operated at rated voltage. Under these conditions, the touch current shall be measured between the means of connection for the PE conductor and the PE conductor itself with the test circuit of Figure 4 of IEC 60990:1999.		P
	• For a PSCS to be connected to an earthed neutral system, the neutral of the mains of the test site shall be directly connected to the protective earthing conductor.		N/A
	• For a PSCS to be connected to an earthed neutral system, the neutral shall be connected through a resistance of 1 kΩ to the protective earthing conductor which shall be connected to each input phase in turn. The highest value will be taken as the definitive result.		N/A
	• For a PSCS to be connected to a corner earthed system, the protective earthing conductor shall be connected to each input phase in turn. The highest value will be taken as the definitive result.		N/A
	• For a PSCS with a particular earthing system, this system shall operate as intended during the test.		N/A
	• If a PSCS is intended to be connected to more than one system network, each of these different system networks (or the worst-case, if that can be determined) shall be used to make the touch current measurement.		N/A
5.2.3.8	Capacitor discharge (type test)		P
	The capacitor discharge time as required by 4.4.3.4 may be verified by a type test and/or by calculation taking into account the relevant tolerances.		P
5.2.3.9	Limited power source test (type test)		N/A
	When required by 4.6.5 a limited power circuit shall be tested as below, with the equipment operating under normal operating conditions. In case the limited power source requirement depends on overcurrent protective device(s), the device(s) shall be short-circuited. With the equipment operating under normal		N/A

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Clause	Requirement – Test	Result – Remark	Verdict
	operating conditions, a variable resistive load is connected to the parts under consideration and adjusted to obtain a level required limited VA power. Further adjustment is made, if necessary, to maintain the limited VA power for a period specified by 4.6.5. A variable resistive load is connected to the circuit under consideration and adjusted to obtain the limit of apparent power as indicated in Table 16 or Table 17, as applicable. Further adjustment is made, if necessary, to maintain the limit of apparent power for the time period indicated in Table 16 or Table 17, as applicable. The test is passed, if after the test period the available apparent power does not exceed the limits indicated in Table 16 or Table 17, as applicable. In case the limited power source requirement depends on overcurrent protective device(s), the current rating of at least one of the protective device(s) in the current path shall not exceed the limit in Table 17.		
5.2.3.10	Temperature rise test (type test)		P
	If possible the PECS must operate in the worst conditions of the rated power and the output current.		P
	Equipment, in which the heating or cooling quantity depends on the temperature, the temperature measurement must be carried out under the most unfavourable conditions of ambient temperature within the range specified by the manufacturer.		P
	The PECS shall be tested with at least 1,2 m of wire attached to each field wiring terminal. The wire shall be of the smallest size intended to be connected to the PECS as specified by the manufacturer for installation. When there is only provision for the connection of bus-bars to the PECS, they shall be of the minimum size intended to be connected to the PECS as specified by the manufacturer, and they shall be at least 1,2 m in length.		P
	The test shall be maintained until thermal stabilization has been reached. That is, when three successive readings, taken at intervals of 10 % of the previously elapsed duration of the test and not less than 10 min. intervals, indicate no change in temperature, defined as ± 1 °C between any of the three successive readings, with respect to the ambient temperature.		P

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Clause	Requirement – Test	Result – Remark	Verdict
	The temperature of an electrical insulation (other than that of windings) is measured on the surface of the insulation at a point close to the heat source, if a failure of this insulation could cause a hazard. If temperatures of windings are measured by the thermocouple method, the thermocouple shall be located on the surface of the winding assuming the hottest part due to surrounding heat emitting components. See also notes in Table 14.		P
	The maximum temperature attained shall be corrected to the rated ambient temperature of the PSCS by adding the difference between the ambient temperature during the test and the maximum rated ambient temperature.		P
	No corrected temperature shall exceed the rated temperature of the material or component measured.		P
	During the test, thermal cut-out, overload detection functions and devices shall not operate.		P
5.2.3.11	Protective bonding tests (type tests and routine test)		P
5.2.3.11.1	General		P
	Each conductive accessible part under consideration shall be tested separately, to determine if the protective equipotential bonding path for that part is adequate to withstand the test current that the bonding path may be subjected to under fault conditions. The circuit under consideration shall be selected from amongst those circuits adjacent to the accessible part under consideration and separated from it by only basic or functional insulation. All of these selected circuits have to be analysed regarding prospective short circuit current and the associated protective element(s): - If the circuit under consideration exceeds the 5 s disconnection time requirement of IEC 60364-4-41, the protective equipotential bonding impedance test of 5.2.3.11.2 and the protective equipotential bonding short circuit test of 5.2.3.11.3 have to be performed. - If the circuit under consideration meets the 5 s disconnection time requirement of IEC 60364-4-41, the protective equipotential bonding short circuit test of 5.2.3.11.3 has to be performed. - If the circuit under consideration meets the disconnection time requirement of IEC 60364-4-41:2005, Table 41.1, as		P

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Clause	Requirement – Test	Result – Remark	Verdict
	applicable, depending on the earthing system of the installation, no type test is required.		
	For pluggable equipment type A only the protective equipotential bonding impedance test of 5.2.3.11.2 have to be performed.		P
5.2.3.11.2	Protective bonding impedance test (type test)		N/A
5.2.3.11.2.1	Test Conditions		N/A
	Where required by 4.4.4.2.2 and 5.2.3.11.2.1, the impedance of protective equipotential bonding means shall be checked by passing a test current through the bond for a period of time. The test current is based on the rating of the overcurrent protection for the equipment or part of the equipment under consideration, as follows: • for pluggable equipment type A, the overcurrent protective device is that provided external to the equipment (for example, in the building wiring, in the mains plug or in an equipment rack); • for pluggable equipment type B and permanently connected equipment, the maximum rating of the overcurrent protective device specified in the equipment installation instructions to be provided external to the equipment; • the rating of the provided overcurrent device for a circuit or part of the equipment for which an overcurrent protective device is provided as part of the equipment.		N/A
5.2.3.11.2.2	Test current, duration, and acceptance criteria:		P
	a) For PECS with an overcurrent protective device rating of 16 A or less, this test may be omitted, if an impedance not exceeding 0,1 Ω can be demonstrated.		P
	b) As an alternative to Table 29, where the time-current characteristic of the overcurrent protective device that limits the fault current in the protective equipotential bonding means is known because the device is either provided in the equipment or fully specified in the installation instructions, the test duration may be based on that specific device's time-current characteristic. The tests are conducted for a duration corresponding to the 200 % current value on the time-current characteristic.		N/A
	c) For PECS with an overcurrent protective device rating of more than 460 A, calculations or simulations according to IEC 60949 shall be used		P

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Clause	Requirement – Test	Result – Remark	Verdict
	to show the ability of the prospective short circuit current to fulfil the requirements. The protective equipotential bonding continuity routine test of 5.2.3.11.4 shall be performed to show that the impedance of the protective equipotential bonding means during and at the end of the test shall not exceed the expected value.		
	Acceptance criteria: The test current is 200 % of the overcurrent protective device rating and the duration of the test is as shown in Table 29. The voltage drop in the protective equipotential bonding means, during and at the end of the test, shall not exceed DVC As, as determined from Table 2 and Table 5 with respect to the accessible surface of the enclosure.		P
	After the tests, visual inspection shall show no damage to the *protective equipotential bonding* means.		P
5.2.3.11.3	Protective bonding short circuit withstand test (type test)		N/A
	As required by 5.2.3.11.2.1, the short circuit test in 5.2.4.3 shall be performed to ensure that protective bonding has the ability to withstand the prospective short circuit current that it may be subjected to under fault conditions.		N/A
	The testing shall include an individual test of the protective bonding path for each conductive accessible part unless analysis shows that the short circuit withstand capability of the path is adequate, or that the results of one combination are representative of the anticipated results of another combination.		N/A
5.2.3.11.4	Protective bonding continuity test (routine test)		P
5.2.4	Abnormal operation and simulated faults tests		P
5.2.4.1	General	See table 4.2 and 4.3	P
5.2.4.2	Pass criteria		P
	As a result of the abnormal operation tests, the PSCS shall comply with the following: • there shall be no emission of flame, burning particles or molten metal; • the surgical cotton indicator shall not have ignited; • the earth connection and protective bonding of the PSCS shall not have opened; • doors and cover shall remain in place; • during and after the test, accessible DVC As, SELV and PELV circuits and		P

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Clause	Requirement – Test	Result – Remark	Verdict
	accessible conductive parts shall not exhibit voltages greater than the time dependent voltages of Figure 1, Figure 2 or Figure 3, as appropriate and shall be separated from live parts at voltages greater than DVC As with at least basic insulation. Compliance shall be checked by the a.c./d.c. insulation test of 5.2.3.4 for basic insulation; • during and after the test, live parts at voltages greater than DVC As shall not become accessible.		
	The PSCS is not required to be operational after testing and it is possible that the enclosure can become deformed. Overcurrent protection integral to the PECS, or required to be used with the PECS, is allowed to open.		P
5.2.4.3	Protective bonding short circuit withstand test (type test)		P
5.2.4.3.1	General		P
	When required by 5.2.3.11.2.1, a protective bonding path shall be subjected to the following short-circuit withstand test.		P
5.2.4.3.2	Test conditions		P
	The equipment under test shall be supplied with power and the output port shall be operating as intended in 5.2.4.1 prior to closing the switching means that applied will be more severe.		P
	The protective bonding short circuit test shall be performed with the PSCS working with light load, unless analysis shows that higher short circuit currents are available under higher loading conditions.		P
	A new sample may be used for each short-circuit test.		P
5.2.4.3.3	Protective equipotential bonding short-circuit test method	Considered	P
5.2.4.3.4	Pass criteria	Considered	P
5.2.4.4	Output Short-circuit test (type test)		P
5.2.4.4.1	Load conditions		P
	The short circuit test shall be performed with the PSCS at full load or light load whichever creates the more severe condition.		P
5.2.4.4.2	Short-circuit test method		P
	In addition to determining compliance with the criteria of 5.2.4.2, this test is used to determine the		P

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Clause	Requirement – Test	Result – Remark	Verdict
	output short circuit current rating of the port under consideration, in accordance with 4.3.2.3. An oscilloscope or other suitable instrument shall be used to measure the peak current during the test, and to measure or calculate the r.m.s. value of the current.		
	The value(s) to be recorded and to be provided with the PECS instructions, in accordance with 6.2, are the peak current, and the highest of the r.m.s. current values measured or calculated over a time period as follows: a) for a.c. signals, three cycles of the nominal a.c. frequency for the port under consideration, in which case the value is to be stated as the 3-cycle r.m.s. value; b) for all signals, the duration of the short circuit from the time the short circuit is applied, until the time the short circuit current is interrupted by a protective device or other mechanism, in which case the value stated is to include the r.m.s. value and the time period in seconds; c) for short circuit tests that result in a continuous non-zero value, the steady-state r.m.s. value, in which case the value is to be stated as a continuous r.m.s value. For PECS with internal short circuit protection according to 4.3.2.3, which protects the output port within some few µs, the requirements in a), b) and c) are not applicable.		P
5.2.4.5	Output Overload test (type test)	Considered	P
5.2.4.6	Breakdown of components test (type test)		P
5.2.4.6.1	Load conditions	See table 4.2 and 4.3	P
	The breakdown of a component, identified as a result of the circuit analysis of 4.2, shall be tested with the PSCS at full load or light load whichever creates the more severe condition.		P
5.2.4.6.2	Application of short-circuit or open-circuit		P
	The short circuit shall be applied with cable of a cross-section appropriate for the current that normally flows through the component, but no less than 2.5 mm². The length of the loop shall be as short as practical to perform the test. Short circuits and open circuits are applied using an appropriate switching device.		P
	Each identified component shall be subjected to only one breakdown of components test unless both open- and short-circuit failure modes are likely in that component.		P

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Clause	Requirement – Test	Result – Remark	Verdict
5.2.4.6.3	Test sequence		P
	For the Breakdown of components test, identified components shall be short-circuited or open-circuited, whichever creates the worst hazard, one at a time.		P
5.2.4.7	PWB short-circuit test (type test)		P
	On PWBs, functional insulation provided by spacings which are less than those specified in Table 10 and Table 11 (see 4.4.7.7) shall be type tested as described below.		P
	The decreased spacings shall be short-circuited one at a time, on representative samples, and the short-circuit shall be maintained until no further damage occurs.		P
5.2.4.8	Loss of phase (type test)		N/A
	A multi-phase PSCS shall be operated with each line (including neutral, if used) disconnected in turn at the input. The test shall be performed by disconnecting one line with the power conversion equipment operating at its maximum normal load and shall be repeated by initially energizing the device with on lead disconnected.		N/A
	The test shall continue until terminated by a protective mechanism, a component failure occurs, or the temperature stabilizes.		N/A
	This particular requirement may be simulated for PSCS with rated input current greater than 500 A.		N/A
5.2.4.9	Cooling failure tests (type test)		N/A
5.2.4.9.1	General and pass criteria		N/A
	For PSCS having a combination of cooling mechanisms, all relevant tests shall be performed. It is not necessary to perform the tests simultaneously. The test shall continue, - until the temperature stabilizes, in which case the temperature limits of 4.6.4.2 apply; or - until terminated by a protective mechanism or a component failure occurs, in which case the temperature limits of 4.6.4.2 may be exceeded by not more than 5°C. If this is not possible a warning statement shall be provided in the user documentation.		N/A
	NOTE The temperature increase of 5 °C with regard to the steady state limits reflect the spread of the burn threshold given in IEC Guide 117.		N/A

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Clause	Requirement – Test	Result – Remark	Verdict
5.2.4.9.2	Inoperative blower motor		N/A
	A PSCS having forced ventilation shall be operated at rated load with fan or blower motor or motors made inoperative, singly or in combination from a single fault, by physically preventing their rotation.		N/A
5.2.4.9.3	Clogged filter		N/A
	Enclosed PSCS having filtered ventilation openings shall be operated with the openings blocked to represent clogged filters. The test shall be performed initially with the ventilation openings blocked 50 %. The test shall be repeated under full blocked condition.		N/A
5.2.4.9.4	Loss of coolant		N/A
	A liquid cooled PSCS shall be operated at rated load. Loss of coolant shall be simulated by draining the coolant, blocking the flow or disabling the system coolant pump.		N/A
	If the PSCS is shut down due to the operation of a thermal device located inside the coolant, then the test shall be repeated with the coolant drained out of the system.		N/A
	NOTE: It is presumed that the thermal device will be inoperative if not surrounded by coolant liquid.		N/A
5.2.5	Material tests		P
5.2.5.1	General		P
	When requested by 4.4.7.8.2, the manufacturer shall test the flammability properties of the materials used for insulating purposes, as defined in 5.2.5.2, 5.2.5.3 and 5.2.5.4. When requested by 4.6.3.2 the manufacturer shall test the flammability properties of the materials used for fire enclosure, as defined in 5.2.5.5.		P
5.2.5.2	High current arcing ignition test (type test)		N/A
5.2.5.3	Glow-wire test (type test)		P
	The glow-wire test shall be made under the conditions specified in 4.4.7.8.2 according to IEC 60695-2-10 and IEC 60695-2-13.		P
5.2.5.4	Hot wire ignition test (type test – alternative to Glow-wire test)		N/A
5.2.5.5	Flammability test (type test)		N/A
5.2.5.6	Flaming oil test (type test)		N/A
5.2.5.7	Test of cemented joints (type test)		P
	When required by 4.4.7.9 representative samples		P

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Clause	Requirement – Test	Result – Remark	Verdict
	of cemented joints providing protection of type 1 or type 2 as defined in IEC 60664-3:2003 shall be tested as a type test as follows. The samples shall be subjected to the conditioning procedure specified in 5.7 of IEC 60664-3:2003, using the following parameters: for the cold test (5.7.1), a temperature of -25 °C shall be used, and for the rapid change of temperature test (5.7.3): – 25 °C to +125 °C. After the conditioning the samples shall pass the following tests in the prescribed order: a) The mechanical strength of the joint shall be evaluated by loading the joint using the forces anticipated to be present under normal conditions. There shall be no separation of the parts. b) The insulation resistance between the conductive parts separated by the joint shall be measured according to 5.8.3 of IEC 60664-3:2003. c) Cemented joints shall be treated as to be thin sheet material and shall be tested according 4.4.7.8.3. d) The sectioning of the joint shall not show any cracks, voids or separation.		
5.2.6	Environmental tests (type test)		P
5.2.6.1	General		P
	Compliance is shown by conducting test of 5.2.6.3, 5.2.6.4, 5.2.6.5 and 5.2.6.6 according to Table 30 as applicable for the environmental conditions specified by the manufacture.		P
5.2.6.2	Acceptance criteria		P
	The following acceptance criteria shall be satisfied: - no degradation of any safety-relevant component of the PSCS; - no potentially hazardous behaviour of the PSCS during the test; - no sign of component overheating; - no live part shall become accessible; - no cracks in the enclosure and no damaged or loose insulators; - pass routine a.c. or d.c. voltage test 5.2.3.4; - pass protective bonding test 5.2.3.11.2; - no potentially hazardous behaviour when the PSCS is operated following the test.		P
5.2.6.3	Climatic tests		P

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Clause	Requirement – Test	Result – Remark	Verdict
5.2.6.3.1	Dry heat test (steady state)		P
	To prove the ability of components and equipment to be operated, transported or stored at high temperatures the dry heat (steady state) test shall be performed according to the conditions specified in Table 31.		P
5.2.6.3.2	Damp heat test (steady state)		P
	To prove the resistance to humidity, the PSCS shall be subjected to a Damp heat test (steady state) according to Table 32.		P
5.2.6.4	Vibration test (type test)		P
	To verify the mechanical vibration strength the PECS in combination with its installation shall be evaluated by: a) tests defined in this section according to the conditions specified in Table 33; or b) calculation or simulation based on tests, as defined in this section, on a representative model of PECS. For PSCS with a mass more than 100 kg, this test may be performed on sub-assemblies. NOTE For large equipment, the possibility of using a shock test as an alternative to a vibration test is under consideration.		P
5.2.6.5	Salt mist (type test)		N/A
	To verify the resistance against salt mist, the PECS in combination with its installation shall be evaluated by tests defined in this section according to the conditions specified in Table 34. For PSCS with a mass more than 100 kg, this test may be performed on sub-assemblies.		N/A
5.2.6.6	Dust and sand (type test)		N/A
	To verify the mechanical strength against dust and sand the PECS in combination with its installation shall be evaluated by tests defined in this section under the conditions specified in Table 35. For PSCS with a mass more than 100 kg, this test may be performed on sub-assemblies.		N/A
5.2.7	Hydrostatic pressure (type test and routine test)		N/A
	For type tests, the pressure inside the cooling system of a liquid cooled PSCS (see 4.7.2.3.3) shall be increased at a gradual rate until a pressure relief mechanism (if provided) operates, or until a pressure of twice the operating value or 1,5 times		N/A

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Clause	Requirement – Test	Result – Remark	Verdict
	the maximum pressure rating of the system is achieved, whichever is the greater. *NOTE: for the purpose of this test the coolant pump may be disabled.* For routine tests, the pressure shall be increased to the maximum pressure rating of the system. The pressure shall be maintained for at least one minute. There shall be no thermal, shock, or other hazard resulting from the test. There shall be no significant leakage of coolant or loss of pressure during the test, other than from a pressure relief mechanism during a type test. After the hydrostatic pressure type test the PSCS shall pass the a.c. or d.c. voltage test 5.2.3.4.		
6	**INFORMATION AND MARKING REQUIREMENTS**		P
6.1	General		P
6.2	Information for selection		P
	Each part of a PSCS hat is supplied as a separate product shall be provided with information relating to its function, electrical characteristics, and intended environment, so that its fitness for purpose and compatibility with other parts of the PSCS can be determined. This information includes, but is not limited to:		P
	The name or trademark of the manufacturer, supplier or importer		P
	Catalogue number or equivalent		P
	Electrical ratings for each power port: • maximum nominal input voltage; • maximum nominal output voltage; • maximum nominal output current or nominal output power rating; • maximum nominal input current rms for dimensioning overload protective elements and wiring; • Number of phases; • Frequency range , protective class (I,II,III)		P
	The type of electrical supply system to which the PSCS may be connected		P
	prospective short circuit current rating(s) in accordance with 4.3.2.2 and 5.2.4.4;		P
	output short circuit current accordance with 4.3.2.3		P
	Prospective short-circuit current rating(s) and		P

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Clause	Requirement – Test	Result – Remark	Verdict
	protective device characteristics, in accordance with 4.3.2 and 5.2.4.4		
	Field supply requirements (if any)		P
	Coolant type and design pressure for liquid cooled product		N/A
	IP rating		P
	Operating and storage environment		P
	Reference(s) to relevant international Standard(s) for manufacture, test, or use		P
	Reference to instructions for installation, use and maintenance		P
6.3	Information for installation and commissioning		P
6.3.1	General		P
6.3.2	Mechanical considerations		P
	The following drawings shall be prepared by the manufacturer: - Dimensional drawing, including mass information - Mounting drawing		P
6.3.3	Environment		P
	In accordance with 4.9 the following environmental conditions shall be specified, for operation, transportation and storage:		P
	Climatic (temperature, humidity, altitude, pollution, ultra-violet light, etc.)		P
	Mechanical (vibration, shock, drop, topple, etc.)		P
	Electrical (overvoltage category)		P
6.3.4	Handling and mounting		P
	In order to prevent injury or damage, the installation documents shall include warnings of any hazards which can be experienced during installation. Where necessary, instructions shall be provided for: - packing and unpacking; - moving; - lifting; - strength and rigidity of mounting surface; - fastening; - provision of adequate access for operation, adjustment and maintenance.		P
6.3.5	Enclosure temperature		P

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Clause	Requirement – Test	Result – Remark	Verdict
	When surface temperatures of the PECS, close to mounting surfaces, exceed the limit of 4.6.4.2, the installation manual shall contain a warning to consider the combustibility of the mounting surface.		P
	Where required by 4.6.3.1, the following marking shall appear on the PECS and in the installation instructions: “suitable for mounting on concrete or other non-combustible surfaces only”.		P
6.3.6	Connections		P
6.3.6.1	General		P
	Information shall be provided to enable the installer to make safe electrical connection to the PSCS. This shall include information for protection against hazards (for example, electric shock or availability of energy) that may be encountered during installation, operation or maintenance.		P
6.3.6.2	Interconnection and wiring diagrams		P
	The installation and maintenance manuals shall include details of all necessary connections, together with a suggested interconnection diagram.		P
6.3.6.3	Conductor (cable) selection		P
	The Installation manual shall define the voltage and current levels for all connections to the PSCS, together with cable insulation requirements. These shall be worst-case values, taking into account overcurrent and overload conditions and the possible effects of non-sinusoidal currents.		P
6.3.6.4	Terminal capacity and identification		P
	The installation and maintenance manuals shall indicate the range of acceptable conductor sizes and types (solid or stranded) for all terminals, and also the maximum number of conductors which can simultaneously be connected.		P
	For field wiring terminals, the manuals shall specify the requirements for tightening torque values and also the insulation temperature rating requirements for the conductor or cable.		P
	The identification of all field wiring terminals shall be marked on the PSCS, either directly or by label attached close to the terminals.		P
	The installation and maintenance manuals shall identify all external terminals relating to circuits protected by one of the methods of 4.4.6.4.		P
6.3.7	Protection requirements		P
6.3.7.1	Accessible parts circuits		P

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Clause	Requirement – Test	Result – Remark	Verdict
	The installation, users and maintenance manuals shall identify any accessible parts at voltages greater than DVC As, and shall describe the insulation and separation provisions required for protection.		P
	The manuals shall also indicate the precautions to be taken to ensure that the safety of DVC As connections maintained during installation.		P
	Where a hazard is present after the removal of a cover, a warning label shall be placed on the equipment. The label shall be visible before the cover is removed.		P
	The manual of a PSCS shall state the maximum voltage allowed to be connected to each port.		P
	The manuals shall provide instructions for the use of PELF circuits within a zone of equipotential bonding.		P
6.3.7.2	Type of electrical supply system		P
	The installation manual or the PECS shall specify requirements for safe earthing including the permitted earthing system of the installation (see 4.4.7.1.4)		P
	The unacceptable earthing systems shall be indicated as: - not permitted; or - with modification of values and/or safety levels which shall be quantified through type test.		N/A
6.3.7.3	Protective class		P
6.3.7.3.1	General		P
	The installation manual of the PECS shall declare the protective class specified for the PECS and the product shall be marked according to the requirement of 6.3.7.3.2, 6.3.7.3.3, and 6.3.7.3.4.		P
6.3.7.3.2	Protective class I equipment		N/A
	Terminals for connection of the PE conductor shall be clearly and indelibly marked with one or more of the following:		N/A
	The symbol IEC 60417-5019 (2011-01)		N/A
	With the letters PE		N/A
	The colour coding green or green-yellow		N/A
6.3.7.3.3	Protective class Íl equipment		P
	Equipment of protective class II shall be marked with symbol IEC 60417-5172 (2011-01) (see Annex C). Where such equipment has provision for the connection of an earthing conductor for functional		P

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	reasons (see 4.4.6.3) it shall be marked with symbol IEC 60417-5018 (2011-01) (see Annex C).		
6.3.7.3.4	Protective class III equipment		N/A
	No marking is required on the product.		N/A
6.3.7.4	Touch current marking		P
	Where the touch current in the PE conductor exceeds the limits given in 4.4.4.3.3., this shall be stated in the installation and maintenance manuals. In addition, a warning symbol ISO 7010- W001 (2011-06) (see Annex C) shall be placed on the product, and a notice shall be provided in the installation manual to instruct the user that the minimum size of the PE conductor shall comply with the local safety regulations for high PE conductor current equipment.		P
6.3.7.5	Compatibility with RCD marking		P
	The installation and maintenance manuals shall indicate compatibility with RCDs (see 4.4.8). When 4.4.8 b) applies, a caution notice and the symbol ISO 7010-W001 (2011-06) (see Annex C) shall be provided in the user manual, and the symbol shall be placed on the product. The caution notice shall be the following or equivalent: “This product can cause a d.c. current in the PE conductor. Where a residual current-operated protective device (RCD) is used for protection against electrical shock, only an RCD of Type B is allowed on the supply side of this product.” (See 6.4.3 for general requirements for labels, signs and signals.)		P
6.3.7.6	Cable and connection		N/A
	Any particular cable and connection requirements shall be identified in the installation and maintenance manuals.		N/A
6.3.7.7	External protection devices		P
	Where external devices are necessary to protect against hazards, the installation manual shall specify the required characteristics (see also 5.2.4 and 4.3.2.1)		P
6.3.8	Commissioning		N/A
	If commissioning tests are necessary to ensure the electrical and thermal safety of a PSCS, information to support these tests shall be provided for each part of the PSCS. This information can depend on the specific installation, and close cooperation between manufacturer, installer, and user can be required. Commissioning information shall include references to hazards that might be encountered during		N/A

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Clause	Requirement – Test	Result – Remark	Verdict
	commissioning, for example those mentioned in 6.4. and 6.5.		
6.4	Information for use		P
6.4.1	General		P
	The user's manual shall include all information regarding the safe operation of the PSCS. In particular, it shall identify any hazardous materials and risks of electrical shock, overheating, misuse of the PSCS.		P
	The manual should also indicate any hazards which can result from reasonably foreseeable misuse of the PSCS.		P
6.4.2	Adjustment		P
	The user's manual shall give details of all safety-relevant adjustments intended for the user. The identification or function of each control or indicating device and fuse shall be marked adjacent to the item. Where it is not possible to do this on the product, the information shall be provided pictorially in the manual.		P
	Maintenance adjustments may also be described in this manual, but shall be made clear that they should only be made by qualified personnel.		P
	Clear warnings shall be provided where excessive adjustment could lead to a hazardous state of the PSCS.		P
	Any special equipment necessary for making adjustments shall be specified and described.		P
6.4.3	Labels, signs and signals		P
6.4.3.1	General		P
	Labelling shall be in accordance with good ergonomic principles so that notices, controls, indications, test facilities, fuses, etc., are sensibly placed and logically grouped to facilitate correct and unambiguous identification. All safety related equipment labels shall be located so as to be visible after installation or readily visible by opening a door or removing a cover. Where a symbol is used, the information provided with the PSCS shall contain an explanation of the symbol and its meaning.		P
	Labels shall: • wherever possible, use international symbols as given by ISO 3864-1, ISO 7000 or IEC 60417; • if no international symbol is available, be worded in		P

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	an appropriate language or in a language associated with a particular technical field; • be concise and unambiguous; • be conspicuous, legible and durable; • state the hazards involved and give ways in which risks can be reduced.		
	When instructing the person(s) concerned as to • what to avoid: the wording should include “no”, “do not”, or “prohibited”; • what to do: the wording should include “shall”, or “must”; • the nature of the hazard: the wording should include “caution”, “warning”, or “danger”, as appropriate; • the nature of safe conditions: the wording should include the noun appropriate to the safety device.		P
	Safety signs shall comply with ISO 3864-1.		P
	The signal words indicated hereinafter shall be used and the following hierarchy respected: • DANGER to call attention to a high risk, for example: “High voltage”. • WARNING to call attention to a medium risk, for example: “This surface can be hot.” • CAUTION to call attention to a low risk, for example: “Some of the tests specified in this standard involve the use of processes imposing risks on persons concerned.” Danger, warning and caution markings on the PECS shall be prefixed with the word “DANGER”, “WARNING”, or “CAUTION” as appropriate in letters not less than 3,2 mm high. The remaining letters of such markings shall be not less than 1,6 mm high.		P
6.4.3.2	Isolators		P
	Where an isolating device is not intended to interrupt load current, a warning shall state: DO NOT OPEN UNDER LOAD.		P
	The following requirements apply to any supply isolating device which does not disconnect all sources of power to the PSCS.		P
	If the isolating device is mounted in an equipment enclosure with the operating handle externally operable, a warning label shall be provided adjacent to the operating handle starting that it does not disconnect all power to the PSCS.		P
	Where a control circuit disconnector can be		P

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Clause	Requirement – Test	Result – Remark	Verdict
	confused with power circuit disconnectors due to size or location, a warning label shall be provided adjacent to the operating handle of the control disconnector stating that it does not disconnect all power to the PSCS.		
6.4.3.3	Visual and audible signals		N/A
	Visual signals such as flashing lights, and addible signals such as sirens, may be used to warn of an impending hazardous event such as the driven equipment start-up and shall be identified. It is essential that these signals: - are unambiguous; - can be clearly perceived and differentiated from all other signals used; - can be clearly recognized by the user; - are emitted before the occurrence of the hazardous event. It is recommended that higher frequency flashing lights be used for information. Note: IEC 60073 provides guidance on recommended flashing rates and on/off ratios.		N/A
6.4.3.4	Hot surfaces		N/A
	Where required by 4.6.4.2 the warning symbol W017 of ISO 7010 shall be marked on or adjacent to parts exceeding the touch temperature limits of Table 15.		N/A
6.4.3.5	Equipment marking		P
	The Identification of each control or indicating device and fuse shall be marked adjacent to the item. Replaceable fuses shall be marked with their rating and time characteristics. Where it is not possible to do this on the product, the information shall be provided pictorially in the manual. Appropriate identification shall be marked on or adjacent to each movable connector. Test points shall be individually marked with the circuit diagram reference. The polarity of any polarized devices shall be marked adjacent to the device. The diagram reference and if possible the function shall be marked adjacent to each pre-set control in a position where it is clearly visible while the adjustment is being made.		P
6.5	Information for maintenance		P
6.5.1	General		P
	The PECS shall be marked with the date code, or serial number from which the date of manufacture		P

IEC 62477-1			
Clause	Requirement – Test	Result – Remark	Verdict
	can be determined.		
	Safety information shall be provided in the installation and maintenance manuals including appropriate, the following:		P
	• Preventive maintenance procedures and schedules		P
	• Safety precautions during maintenance		P
	• Location of live parts that can be accessible during maintenance (for example, when covers are removed9		P
	• Adjustment procedures		P
	• Subassembly and component repair and replacement procedures		P
	• Any other relevant information		P
6.5.2	Capacitor discharge		P
	When the requirements 4.4.9 are not met, the warning symbol W012 of ISO 7010 and an indication of the discharge time (for example, 45 s, 5 min) shall be placed in a clearly visible position on the enclosure, the capacitor protective barrier, or at a point close to the capacitor(s) concerned (depending on the construction). The symbol shall be explained and the time required for the capacitors to discharge after the removal or the power from the PSCS shall be stated in the installation and maintenance manuals.		P
6.5.3	Auto restart/bypass connection		N/A
	If a PSCS can be configured to provide automatic restart or bypass connection, the installation, user and maintenance manuals shall contain appropriate warning statements.		N/A
	A PSCS which is set to provide automatic restart or bypass connection, after the removal of power, shall be clearly identified at the installation.		N/A
6.5.4	Other hazards		P
	The manufacturer shall identify any components and materials of a PSCS which require special procedures to prevent hazards.		P
6.5.5	Equipment with multiple sources of supply		P
	In accordance with 4.8, where there is more than one source of supply energizing the PSCS, information shall be provided to indicate which disconnect device or devices are required to be operated in order to completely isolate the equipment.		P

IEC 62477-1			
Clause	Requirement – Test	Result – Remark	Verdict

IEC 62477-1			
Clause	Requirement – Test	Result – Remark	Verdict

4	TABLE: mains supply electrical data in normal condition					P
Type	U (V) DC	I (A) DC	P (kW) DC	U (V) grid	I (A) AC	P (kW) AC
EPCS250	550	454.2	249.9	--	--	--
EPCS250	850	295.1	250.8	--	--	--

4.2 to 4.3	TABLE: fault condition tests		P
	ambient temperature (°C) .....:	25	—

No.	component No.	fault	test voltage (V)	test time	fuse No.	fuse current (A)	result
1	E1	SC	850V	10S	F1	0A	F1 opened immediately after short circuit. No hazard.
2	E2	SC	850V	10S	F1	0A	F1 opened immediately after short circuit. No hazard.
3	DC1	SC	850V	10S	F1	0A	F1 opened immediately after short circuit. No hazard.
4	DC2	SC	850V	10S	F1	0A	F1 opened immediately after short circuit. No hazard.
5	Output	SC	850V	10mins	F1	0.02A	Unit shut down immediately, No damaged, No hazard.
supplementary information							
See technical documentation.							

IEC 62477-1			
Clause	Requirement – Test	Result – Remark	Verdict

4.6.4	**TABLE: heating temperature rise measurements**		P
	test voltage (V) ..... :	See below	—
	t1 (°C)..... :	See below	—
	t2 (°C) ..... :	See below	—

temperature rise dT of part/at:	dT (K)		permitted dT (K)
	550V	850V	
PCB near DC1	22.7	16.5	T130-40=90
PCB near DC2	27.2	24.0	T130-40=90
Capacitor, E1	26.8	24.4	T105-40=65
Capacitor, E2	26.4	23.0	T105-40=65
Relay, K7	30.9	25.9	T85-40=45
Relay, K8	31.9	24.3	T85-40=45
PCB near Q3	39.6	37.3	T130-40=90
Winding of transformer T3	32.0	29.3	110-40=70
Core of transformer T3	35.6	29.8	110-40=70
Capacitor, C8	32.8	29.7	T105-40=65
Enclosure inside near T3	28.6	23.3	Ref.
Ambient	40.2	40.0	--
supplementary information			

IEC 62477-1			
Clause	Requirement – Test	Result – Remark	Verdict

4.4.7.4 to 4.4.7.5	TABLE: clearance and creepage distance measurements					P
clearance cl and creepage distance dcr at / of:	Up (V)	U r.m.s. (V)	required cl (mm)	cl (mm)	required dcr (mm)	dcr (mm)
L to N	850	850	1.5	>3.0	2.77	>3.0
Two terminals between Fuse	850	850	1.5	>3.0	2.77	>3.0
Live part to outside enclosure	850	850	3.0	>7.0	6.3	>7.0
T1 primary winding to secondary pin	850	850	3.0	>7.0	6.3	>7.0
T1 core to secondary pin	850	850	3.0	>7.0	6.3	>7.0

4.4.7.8.3.2 to 4.4.7.9	TABLE: distance through insulation measurement			P
distance through insulation di at/of:	U r.m.s. (V)	test voltage (V)	required di (mm)	di (mm)
Enclosure	850	4700	0.7	0.92

4.4.7.10	TABLE: electric strength measurements, impulse voltage test and partial discharge test (for OVC II)				P
test voltage applied between:	test voltage (V)	impulse withstand voltage (V)	partial discharge extinction voltage (V)	result	
Between live parts and output circuit	3000	4000	850	Pass	
Between live parts and external enclosure	3000	4000	850	Pass	
Between primary winding of transformer and secondary winding of transformer (T1)	3000	4000	850	Pass	
Between core of transformer and secondary winding of transformer (T1)	3000	4000	850	Pass	
Live parts of different polarity	3000	2500	850	Pass	

14	TABLE: list of critical components				P
object/part No.	manufacturer/ trademark	type/model	technical data	standard	mark(s) of conformity[1])
DC breaker DC1~DC4	Shanghai Liangxin Electrical Co.,Ltd	NDM3Z-125	1000VDC 125A	IEC 62477-1	Test with appliance

IEC 62477-1			
Clause	Requirement – Test	Result – Remark	Verdict

14	TABLE: list of critical components				P
object/part No.	manufacturer/ trademark	type/model	technical data	standard	mark(s) of conformity[1])
AC breaker AC1~AC4,SPS	Shanghai Liangxin Electrical Co.,Ltd	NDM3-125L	450VAC 125A	IEC 62477-1	Test with appliance
AC breaker Load,Grid	Shanghai Liangxin Electrical Co.,Ltd	NDM3-630L	450VAC 630A	--	VDE
Isolation transformer	Shijiazhuang Xiangyang Group Co.,Ltd	LC-BY-0461	250KVA 380/400VAC	IEC 62477-1	Test with appliance
Internal wire	Jiangsu Shangshang Cable Group Co.,Ltd	ZB-RV-70mm2	450V 105°C	--	UL
terminal	Shenzhen Anfeite Technology Development Co.,Ltd	DJ-36T	75A -55~125°C 108*44mm°C	--	VDE
Power module: PCM50					
terminal	Shenzhen Anfeite Technology Development Co.,Ltd	DJ-36Z	75A -55~125°C 108*44mm	--	VDE
DC contactor	LS	GPR-M150	1000V 150A DC24V	IEC 62477-1	Test with appliance
Internal wire	Shanghai Shenyuan High Temperature Cable Co.,Ltd	8AWG-BLACK	600V -55~200°C	--	UL
fan	NINGBO SHENGJIU THERMAL TECH CO.,LTD	SB240838BSC RR002-A	24VDC, 1.4A	IEC 62477-1	Test with appliance
IC	TI	TME320F28335 ZJZA	--	IEC 62477-1	Test with appliance
U1 board(SM011911009)					

IEC 62477-1			
Clause	Requirement – Test	Result – Remark	Verdict

14	TABLE: list of critical components				P
object/part No.	manufacturer/ trademark	type/model	technical data	standard	mark(s) of conformity[1])
15V transformer, T3	Shenzhen Gaochengjie Electrical Co.,Ltd	LC-BY-0369	--	IEC 62477-1	Test with appliance
24V transformer, T1	Shenzhen Gaochengjie Electrical Co.,Ltd	LC-BY-0319	--	IEC 62477-1	Test with appliance
Heat sink SRQ1	Changzhou xinyan machinery co.,ltd	PCM50-YF-SRQ-06-V1.00	--	IEC 62477-1	Test with appliance
IGBT Q62~Q65	infineon	IKW40N120H3	1200V, 40A	IEC 62477-1	Test with appliance
inductance L1	Shenzhen Gaochengjie Electrical Co.,Ltd	LC-DG-0177	--	IEC 62477-1	Test with appliance
hall HA1，HA2	LEM Electrical Co.,Ltd	HX50-P	50A 1:400	IEC 62477-1	Test with appliance
relay K8	Xiamen Hong fa Group Co.,Ltd	HF116F-80/24-1HTF	80A 24VDC	IEC 61810-1	VDE/TUV
relay K2,K7	OMRON	G5Q-1A4	277VAC 3A 24V DC	IEC 61810-1	VDE/TUV
U2board(SM011903007)					
IGBT Q1，Q3，Q5	infineon	F3L150R07W2E3_B11	1200V 150A	IEC 62477-1	Test with appliance
capacitance E1~E22	Nantong Jianghai Capacitor Co.,Ltd	CD294	500V 680u	IEC 62477-1	Test with appliance
capacitance C5~C8，C11~C14，	Xiamen Faratronic Co.,Ltd	C37	630VDC 3.3u	IEC 62477-1	Test with appliance
U3board(SM011904008)					
capacitance C1~C9	SHENZHENG CRC NEW ENERGY CO.,LTD	MKP-300VAC/6.6uF	300VAC 6.6uF	IEC 62477-1	Test with appliance

IEC 62477-1			
Clause	Requirement – Test	Result – Remark	Verdict

14	TABLE: list of critical components				P
object/part No.	manufacturer/ trademark	type/model	technical data	standard	mark(s) of conformity[1])
fuse F1~F6	XI'an Sinofuse Electric Co.,Ltd	RS308-HB-4G	690VAC/550VDC, 80A	IEC 60127-1	VDE
inductance L1~L3	Huizhou MP Newenergy Technology Co.,Ltd	LC-DG-0221	--	IEC 62477-1	Test with appliance
SCR Q1~Q6	WeEn Semiconductors	BT155W-1200T-ween	1200V, 50A	IEC 62477-1	Test with appliance
relay K1~K3	Xiamen Hong fa Group Co.,Ltd	HF116F-80/24-1HTF-HF	690VAC/550VDC, 80A	IEC 61810-1	VDE/TUV
relay K4~K6	OMRON	G5Q-1A4-DC24V-OMRON	277VAC 3A 24V DC	IEC 61810-1	VDE/TUV
Mutual inductor CT4~CT6	Shenzhen Gaochengjie Electrical Co.,Ltd	LC-BY-0318	--	IEC 62477-1	Test with appliance
hall CT1~CT3	LEM Electrical Co.,Ltd	HX50-P	50A 1:400	IEC 62477-1	Test with appliance
[1]) an asterisk indicates a mark which assures the agreed level of surveillance					

Attachment No.1 Photo Documentation

Figure 1 External View

Attachment No.1 Photo Documentation

Figure 2 External View

Figure 3 External View

Attachment No.1 Photo Documentation

Figure 4 External View

Figure 5 Power unit View

Attachment No.1 Photo Documentation

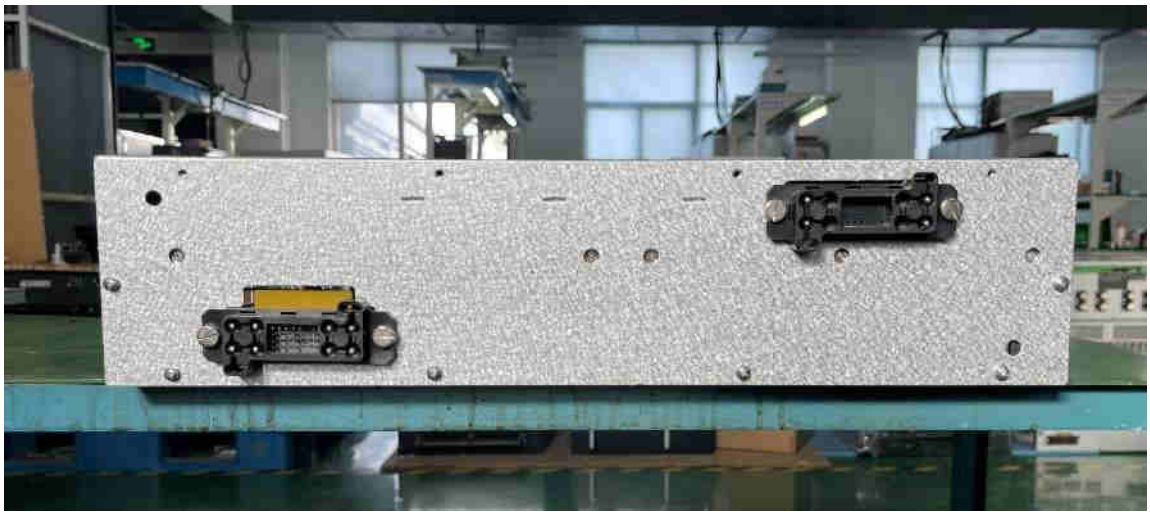

Figure 6 Power unit View

--- END OF TEST REPORT ---

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EMC TEST REPORT

For

Sicon Chat Union Electric Co., Ltd.

Energy storage Power Conversion System（PCS）

Model No.: EPCS-250

Additional Model No.: EPCS50, EPCS100, EPCS150, EPCS200, EPCS250, EPCS300, EPCS400, EPCS500, EPCS600, EHPCS-250/50, EHPCS-200/50, EHPCS-150/50, EHPCS-100/50, EHPCS-50/50

Prepared for	:	Sicon Chat Union Electric Co., Ltd.
Address	:	Bldg.14&15, No. 319, Xiangjiang Street, High-Tech Zone, Shijiazhuang, 050035, China
Prepared by	:	Shenzhen STE Testing Laboratory Co., Ltd
Address	:	Room 301(left side), Building 9, Dehong Factory Building, No. 63 Yuchang Road, Niuhu Community, Guanlan Street, Longhua District, Shenzhen
Date of receipt of test sample	:	September 26, 2021
Number of tested samples	:	1
Serial number	:	Prototype
Date of Test	:	September 26, 2021 ~ September 28, 2021
Date of Report	:	September 28, 2021

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EMC TEST REPORT
EN 61000-6-4: 2007+A1: 2011
Electromagnetic compatibility (EMC) -- Part 6-4: Generic standards - Emission standard for industrial environments
EN 61000-6-2: 2005
Electromagnetic compatibility (EMC)-- Part 6-2: Generic standards - Immunity for industrial environments

Report Reference No. .....:	**STE21092602E**
Date Of Issue.....:	September 28, 2021
Testing Laboratory Name.....:	**Shenzhen STE Testing Laboratory Co., Ltd**
Address.....:	Room 301(left side), Building 9, Dehong Factory Building, No. 63 Yuchang Road, Niuhu Community, Guanlan Street, Longhua District, Shenzhen
Testing Location/ Procedure.....:	Full application of Harmonised standards ■ Partial application of Harmonised standards ☐ Other standard testing method ☐
Applicant's Name.....:	**Sicon Chat Union Electric Co., Ltd.**
Address.....:	Bldg.14&15, No. 319, Xiangjiang Street, High-Tech Zone, Shijiazhuang, 050035, China
Test specification:	
Standard.....:	EN 61000-6-4: 2007+A1: 2011, EN 61000-3-2: 2014 EN 61000-3-3: 2013, EN 61000-6-2: 2005
Test Report Form No.....:	EMC-1.0
TRF Originator.....:	Shenzhen STE Testing Laboratory Co., Ltd
Master TRF.....:	Dated 2017-08

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Test Item Description.....:	**Energy storage Power Conversion System（PCS）**
Trade Mark.....:	N/A
Model/ Type Reference.....:	EPCS-250
Ratings.....:	Input: AC 380V, 50/60Hz, MAX:362A Output: DC 550/850V, MAX:454A
Result .....:	**Positive**

Compiled by:	Supervised by:	Approved by:
Hunter Liang	Todd Qian	Fly Li
Hunter Liang/ File administrators	Todd Qian/ Technique principal	Fly Li/Manager

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EMC -- TEST REPORT

Test Report No. : STE21092602E	September 28, 2021 Date of issue

Type / Model.....	:	EPCS-250
EUT.....	:	Energy storage Power Conversion System（PCS）
Applicant.....	:	**Sicon Chat Union Electric Co., Ltd.**
Address.....	:	Bldg.14&15, No. 319, Xiangjiang Street, High-Tech Zone, Shijiazhuang, 050035, China
Telephone.....	:	/
Fax.....	:	/
Manufacturer.....	:	**Sicon Chat Union Electric Co., Ltd.**
Address.....	:	Bldg.14&15, No. 319, Xiangjiang Street, High-Tech Zone, Shijiazhuang, 050035, China
Telephone.....	:	/
Fax.....	:	/
Factory.....	:	**Sicon Chat Union Electric Co., Ltd.**
Address.....	:	Bldg.14&15, No. 319, Xiangjiang Street, High-Tech Zone, Shijiazhuang, 050035, China
Telephone.....	:	/
Fax.....	:	/

Test Result according to the standards on page 8: **Positive**

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

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Revision History

Revision	Issue Date	Revisions	Revised By
000	September 28, 2021	Initial Issue	Fly Li

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1. SUMMARY OF STANDARDS AND RESULTS

1.1.Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below.

EMISSION (EN 61000-6-4: 2007+A1: 2011)			
Description of Test Item	**Standard**	**Limits**	**Results**
Conducted disturbance at mains terminals	EN 61000-6-4: 2007+A1: 2011	Class A	PASS
Conducted disturbance at telecommunication port	EN 61000-6-4: 2007+A1: 2011	Class A	N/A
Radiated disturbance	EN 61000-6-4: 2007+A1: 2011	Class A	PASS
Harmonic current emissions	EN 61000-3-2: 2014	Class A	PASS
Voltage fluctuations & flicker	EN 61000-3-3: 2013	--------	PASS

IMMUNITY (EN 61000-6-2: 2005)			
Description of Test Item	**Basic Standard**	**Performance Criteria**	**Results**
Electrostatic discharge (ESD)	EN 61000-4-2: 2009	B	PASS
Radio-frequency, Continuous radiated disturbance	EN 61000-4-3: 2006+A1: 2010	A	PASS
Electrical fast transient (EFT)	EN 61000-4-4: 2012	B	PASS
Surge (Input a.c. power ports)	EN 61000-4-5: 2014	B	PASS
Surge (Telecommunication ports)		B	N/A
Radio-frequency, Continuous conducted disturbance	EN 61000-4-6: 2014	A	PASS
Power frequency magnetic field	EN 61000-4-8: 2010	A	PASS
Voltage dips, >95% reduction	EN 61000-4-11: 2004	B	PASS
Voltage dips, 30% reduction		C	PASS
Voltage interruptions		C	PASS
N/A is an abbreviation for Not Applicable.			

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1.2.Description of Performance Criteria

General Performance Criteria

Examples of functions defined by the manufacturer to be evaluated during testing include, but are not limited to, the following:

— essential operational modes and states;
— tests of all peripheral access (hard disks, floppy disks, printers, keyboard, mouse, etc.);
— quality of software execution;
— quality of data display and transmission;
— quality of speech transmission.

1.2.1.Performance criterion A

The equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed below a performance level specified by the manufacture when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be driver from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.

1.2.2.Performance criterion B

After the test, the equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed, after the application of the phenomena below a performance level specified by the manufacture, when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance.

During the test, degradation of performance is allowed. However, no change of operation state or stored data is allowed to persist after the test.

If the minimum performance level (or the permissible performance loss) is not specified by the manufacturer, then either of these may be driver from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.

1.2.3.Performance criterion C

Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacture’s instructions.

Functions, and/or information stored in non-volatile memory, or protected by a battery backup, shall not be loss.

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2. GENERAL INFORMATION

2.1.Description of Device (EUT)

EUT : Energy storage Power Conversion System（PCS）

Trade Mark : N/A

Model Number : EPCS-250

Power Supply : Input: AC 380/400V, 50/60Hz, 32.4KW
Output: AC 220/230V, 50/60Hz

EUT Clock Frequency : ≤108MHz

2.2.Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. To CISPR 16 – 4 "Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements" and is documented in the STE quality system acc. To DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

2.3.Measurement Uncertainty

Test Item	Frequency Range	Expanded uncertainty (Ulab)	Expanded uncertainty (Ucispr)
Conducted Emission	(9kHz to 150kHz)	2.63 dB	4.0 dB
	(150kHz to 30MHz)	2.35 dB	3.6 dB
Radiated Emission	(9kHz to 30MHz)	3.68 dB	N/A
Radiated Emission	(30MHz to 1000MHz)	3.48 dB	5.2 dB
Radiated Emission	(above 1000MHz)	3.90 dB	N/A
Mains Harmonic	Voltage	0.510%	N/A
Voltage Fluctuations & Flicker	Voltage	0.510%	N/A

(1) Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus.

(2) The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor of k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

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3. MEASURING DEVICES AND TEST EQUIPMENT

3.1.Conducted Disturbance

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal/ Due date
1	EMI Test Receiver	ROHDE & SCHWARZ	ESR 3	102312	2020-06-11
2	10dB Attenuator	SCHWARZBECK	MTS-IMP136	261115-001-0032	2021-03-02
3	Artificial Mains	ROHDE & SCHWARZ	ESH2-Z5	100030	2021-03-02
4	EMI Test Software	Farad	EMC	N/A	N/A
5	ISN	SCHWARZBECK	NTFM 8158	NTFM 8158 0120	2021-03-02

3.2.Radiated Disturbance (Electric Field)

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal/ Due date
1	3m Semi Anechoic Chamber	Maorui	/	/	2021-02-02
2	EMI Test Receiver	ROHDE & SCHWARZ	ESR 3	102312	2020-06-11
3	Log per Antenna	ROHDE & SCHWARZ	VULP9118	873	2020-06-12
4	EMI Test Software	Farad	EMC	N/A	N/A
5	Positioning Controller	MF	MF-7082	/	N/A

3.3.Harmonic Current

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal/ Due date
1	Power Analyzer Test System	Voltech	PM6000	20000670053	2020-06-17

3.4.Voltage fluctuation and Flicker

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal/ Due date
1	Power Analyzer Test System	Voltech	PM6000	20000670053	2020-06-17

3.5.Electrostatic Discharge

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal/ Due date
1	ESD Simulator	TESEQ	NSG437	1211	2020-06-12

3.6.RF Field Strength Susceptibility

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal/ Due date
1	SIGNAL GENERATOR	R&S	SMB100A	105942	2020-06-12
2	RF Power Amplifier	BONN Elektronik	BLWA0830-160/100/40D	128740	2020-06-12
3	Log-periodic Antenna	SCHWARZBECK	STLP9128D	043	2020-06-12
4	Power Meter	R&S	102031	16829	2020-06-12

3.7.Electrical Fast Transient/Burst

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal/ Due date
1	Surge test system	EM test	UCS 500 M4	0101-34	2021-03-02

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3.8.Surge

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal/ Due date
1	Surge test system	EM test	UCS 500 M4	0101-34	2021-03-02

3.9.Conducted Susceptibility

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal/ Due date
1	Simulator	FRANKONIA	CIT-10	A126A1195	2020-06-17
2	CDN	FRANKONIA	CDN-M2	5100100100	2020-06-17
3	CDN	FRANKONIA	CDN-M3	0900-11	2020-06-17
4	Attenuator	FRANKONIA	ATT6	0010222A	2020-06-17
5	Infuse tongs	EMTEST	EM-Clamp	0513A031201	2020-06-17

3.10.Power Frequency Magnetic Field Susceptibility

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal/ Due date
1	Power frequency mag-field generator System	EVERFINE	EMS61000-8K	906003	2020-06-17

3.11.Voltage Dips

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal/ Due date
1	Voltage dips and up generator	3CTEST	VDG-1105G	EC0171014	2020-06-17

3.12.Voltage Short Interruptions

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal/ Due date
1	Voltage dips and up generator	3CTEST	VDG-1105G	EC0171014	2020-06-17

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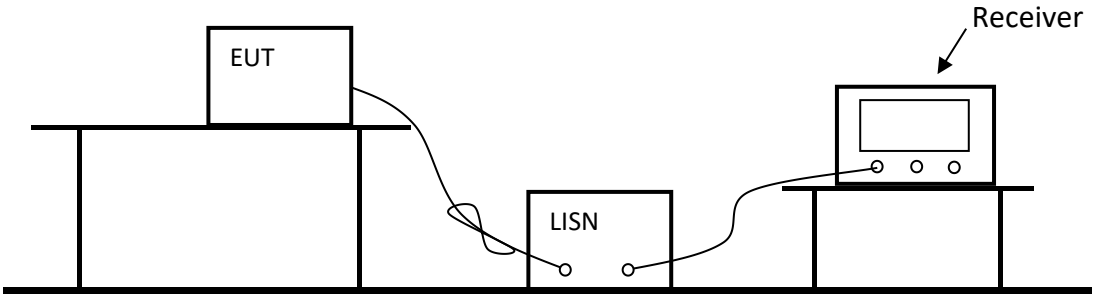
4. POWER LINE CONDUCTED EMISSION MEASUREMENT

4.1. Block Diagram of Test Setup



Ground

4.2. Measuring Standard

EN 61000-6-4: 2007+A1: 2011 (EN 55011: 2010)
Power Line Conducted Emission Limits (Class A)

Frequency (MHz)	Limit (dBμV)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	79	66*
0.50 ~ 5.00	73	60
5.00 ~ 30.00	73	60
NOTE1-The lower limit shall apply at the transition frequencies. NOTE2-The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz.		

4.3. EUT Configuration on Test

The following equipments are installed on Conducted Emission Measurement to see EN 55011 requirements and operating in a manner which tends to maximize its emission characteristics in normal application.

4.4.Operating Condition of EUT

4.4.1.Setup the EUT as shown on Section 4.1.

4.4.2.Turn on the power of all equipments.

4.4.3.Let the EUT work in measuring mode (work) and measure it.

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4.5. Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and connected to the AC mains through Line Impedance Stability Network (L.I.S.N). This provided 50-ohm coupling impedance for the tested equipments. Both sides of AC line are investigated to find out the maximum conducted emission according to the EN 55011 regulations during conducted emission measurement.

The bandwidth of the field strength meter is set at 9kHz in 150kHz~30MHz and 200Hz in 9kHz~150kHz.

The frequency range from 150kHz to 30MHz is investigated

4.6. Test Results

PASS.

The scanning waveforms is in the next page.

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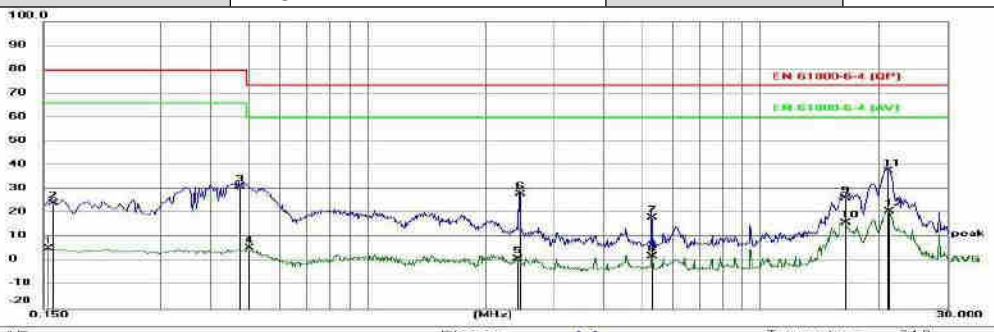
Model No.	EPCS-250	**Test Mode**	work
Environmental Conditions	24.0℃, 69.1% RH	**Test Engineer**	Feng Zhang
Pol	Line 1		



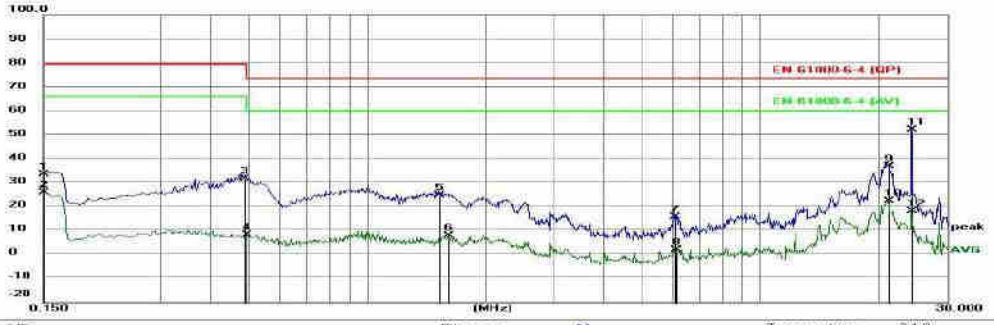
Site: LAB
Limit: EN 61000-6-4 (QP)
EUT:
M/N: EPCS-250/50
Mode: WORK
Note: Energy storage Power Conversion System

Phase: L1
Power: AC380V/50Hz

Temperature: 24.0
Humidity: 69.1 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz		dB	dBuV	dBuV	dB	Detector	Comment
1		0.1544	-4.71	10.00	5.29	66.00	-60.71	AVG	
2		0.1580	14.25	10.00	24.25	79.00	-54.75	QP	
3		0.4740	20.98	10.18	31.16	79.00	-47.84	QP	
4		0.5010	-4.67	10.19	5.52	60.00	-54.48	AVG	
5		2.4269	-8.90	10.16	1.26	60.00	-58.74	AVG	
6		2.4539	17.93	10.15	28.08	73.00	-44.92	QP	
7		5.3295	7.24	10.97	18.21	73.00	-54.79	QP	
8		5.3295	-8.84	10.97	2.13	60.00	-57.87	AVG	
9		16.6290	16.14	10.35	26.49	73.00	-46.51	QP	
10		16.6290	5.67	10.35	16.02	60.00	-43.98	AVG	
11	*	21.1650	27.51	10.25	37.76	73.00	-35.24	QP	
12		21.4080	10.80	10.23	21.03	60.00	-38.97	AVG	

Model No.	EPCS-250	**Test Mode**	work
Environmental Conditions	24.0℃, 69.1% RH	**Test Engineer**	Feng Zhang
Pol	Neutral		



Site: LAB
Limit: EN 61000-6-4 (QP)
EUT:
M/N: EPCS-250/50
Mode: WORK
Note: Energy storage Power Conversion System

Phase: N
Power: AC380V/50Hz

Temperature: 24.0
Humidity: 69.1 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz		dB	dBuV	dBuV	dB	Detector	Comment
1		0.1500	23.44	9.99	33.43	79.00	-45.57	QP	
2		0.1500	16.05	9.99	26.04	66.00	-39.96	AVG	
3		0.4875	21.44	10.18	31.62	79.00	-47.38	QP	
4		0.4965	-1.71	10.18	8.47	66.00	-57.53	AVG	
5		1.6270	14.61	10.28	24.89	73.00	-48.11	QP	
6		1.6169	-2.33	10.28	7.95	60.00	-52.05	AVG	
7		6.0720	5.71	10.03	15.74	73.00	-57.26	QP	
8		6.1360	-7.83	10.02	2.19	60.00	-57.81	AVG	
9		21.3225	25.87	10.84	36.71	73.00	-36.29	QP	
10		21.3225	11.50	10.84	22.34	60.00	-37.66	AVG	
11	*	24.4140	41.81	10.34	52.15	73.00	-20.85	QP	
12		24.4140	7.87	10.34	18.21	60.00	-41.79	AVG	

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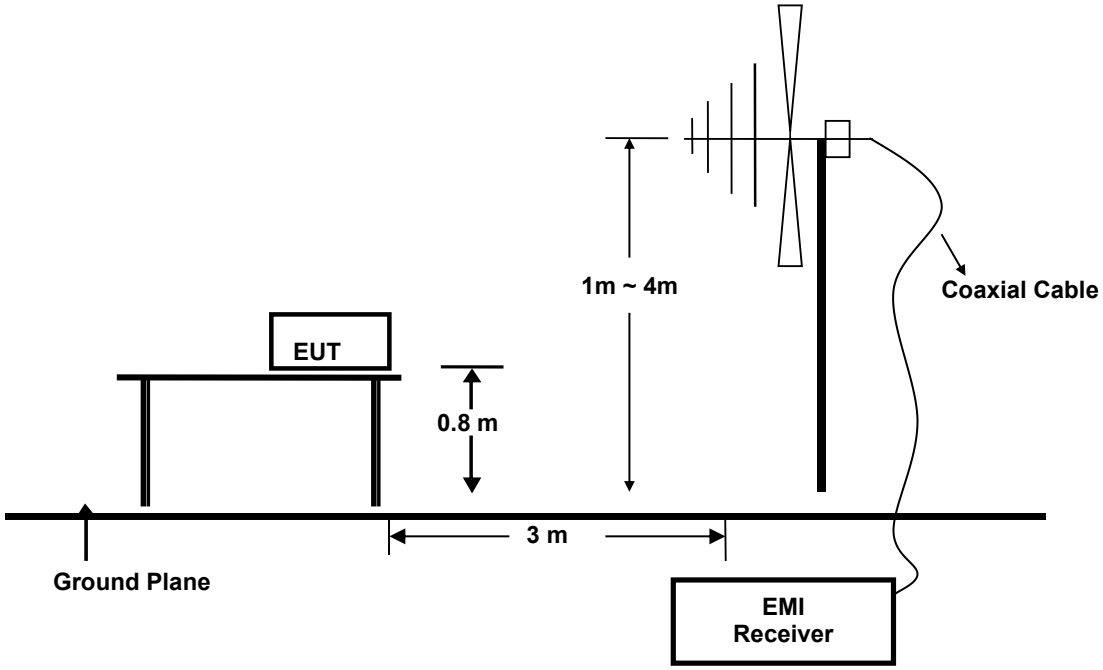
5. RADIATED EMISSION MEASUREMENT

5.1.Block Diagram of Test Setup



5.2.Measuring Standard

EN 61000-6-4: 2007+A1: 2011 (EN 55011: 2010)

5.3.Radiated Emission Limits

All emanations from a class device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified below:

FREQUENCY (MHz)	DISTANCE (Meters)	FIELD STRENGTHS LIMIT (dBμV/m)
30 ~ 230	3	50
230 ~ 1000	3	57

Note: (1) The smaller limit shall apply at the combination point between two frequency bands.

(2) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the EUT.

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5.4.EUT Configuration on Test

The EN 55011 regulations test method must be used to find the maximum emission during radiated emission measurement.

5.5.Operating Condition of EUT

5.5.1.Turn on the power.

5.5.2.Let the EUT work in test mode and measure it.

5.6.Test Procedure

The EUT is placed on a turntable, which is 0.8 meter high above the ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. By-log antenna (calibrated by Dipole Antenna) is used as a receiving antenna. Both horizontal and vertical polarization of the antenna is set on test.

The bandwidth of the Receiver is set at 120kHz.

All the scanning waveform is in next page.

5.7.Test Results

PASS.

The frequency range from 30MHz to 1000MHz is investigated.

The scanning waveforms is in the next page.

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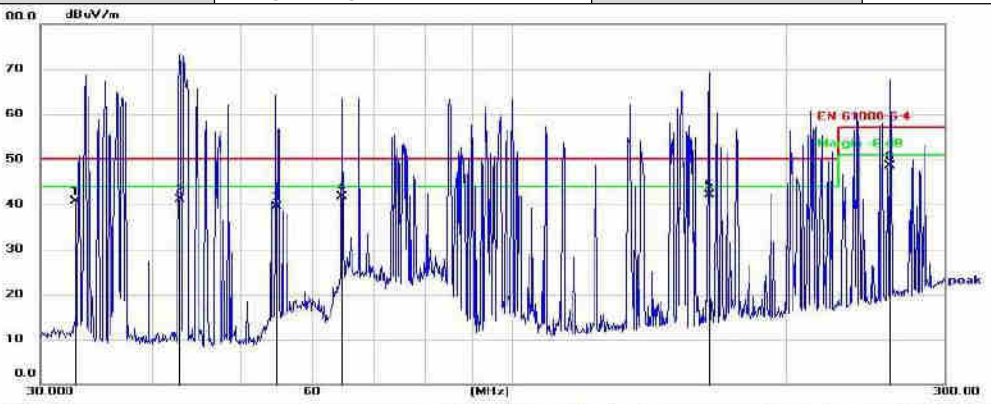
Model No.	EPCS-250	**Test Mode**	work
Environmental Conditions	23.0℃, 65.1% RH	**Detector Function**	Quasi-peak
Pol	Vertical	**Distance**	3m
Test Engineer	Feng Zhang		

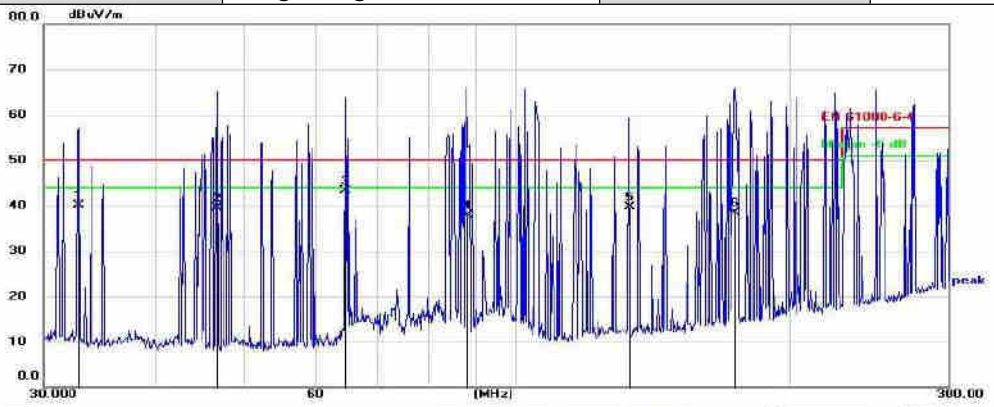


Site: LAB
Limit: EN 61000-6-4
EUT:
M/N: EPCS-250/50
Mode: WORK
Note: Energy storage Power Conversion System

Polarization: *Vertical*
Power: AC380V/50Hz
Temperature: 23.0(C)
Humidity: 65.1 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector	Comment
1		32.8186	28.05	12.75	40.80	50.00	-9.20	QP	
2		42.6668	28.52	12.68	41.20	50.00	-8.80	QP	
3		54.7169	27.64	11.96	39.60	50.00	-10.40	QP	
4		64.7321	29.91	11.79	41.70	50.00	-8.30	QP	
5	*	164.8623	26.23	15.97	42.20	50.00	-7.80	QP	
6		261.8914	26.95	21.55	48.50	57.00	-8.50	QP	

Model No.	EPCS-250	**Test Mode**	work
Environmental Conditions	23.0℃, 65.1% RH	**Detector Function**	Quasi-peak
Pol	Horizontal	**Distance**	3m
Test Engineer	Feng Zhang		



Site: LAB
Limit: EN 61000-6-4
EUT:
M/N: EPCS-250/50
Mode: WORK
Note: Energy storage Power Conversion System

Polarization: *Horizontal*
Power: AC380V/50Hz
Temperature: 23.0(C)
Humidity: 65.1 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector	Comment
1		32.8186	27.49	12.61	40.10	50.00	-9.90	QP	
2		46.6790	27.15	12.45	39.60	50.00	-10.40	QP	
3	*	64.7321	31.70	11.60	43.30	50.00	-6.70	QP	
4		87.9268	25.54	12.36	37.90	50.00	-12.10	QP	
5		133.0828	25.05	14.65	39.70	50.00	-10.30	QP	
6		174.2293	22.06	16.54	38.60	50.00	-11.40	QP	

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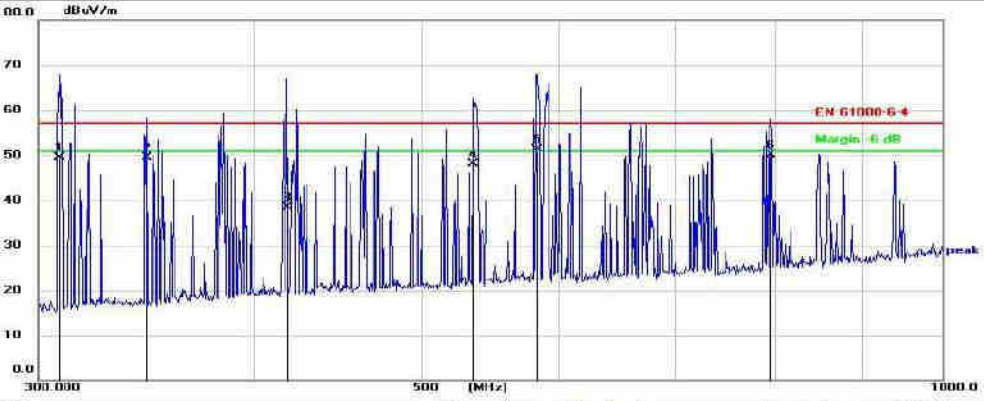
Model No.	EPCS-250	**Test Mode**	work
Environmental Conditions	23.0℃, 65.1% RH	**Detector Function**	Quasi-peak
Pol	Vertical	**Distance**	3m
Test Engineer	Feng Zhang		

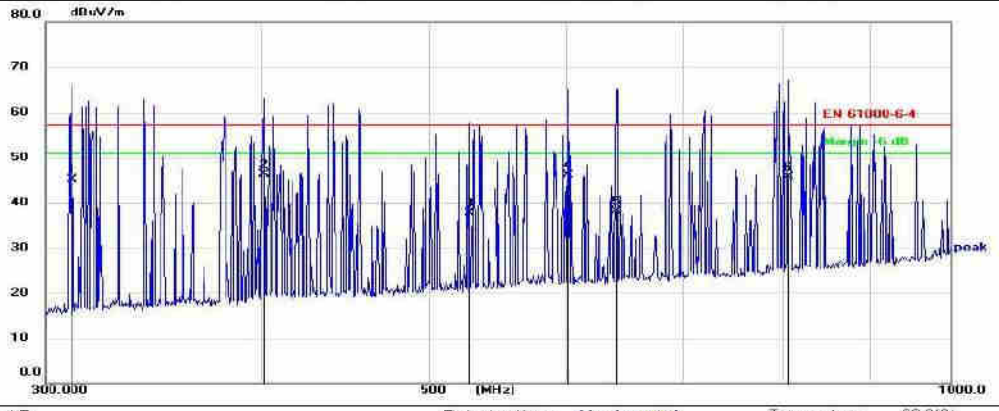


Site: LAB
Limit: EN 61000-6-4
EUT:
M/N: EPCS-250/50
Mode: WORK
Note: Energy storage Power Conversion System

Polarization: *Vertical*
Power: AC380V/50Hz
Temperature: 23.0(C)
Humidity: 65.1 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector	Comment
1		308.4234	31.21	18.29	49.50	57.00	-7.50	QP	
2		347.0479	30.41	19.19	49.60	57.00	-7.40	QP	
3		417.7466	17.32	21.18	38.50	57.00	-18.50	QP	
4		535.3353	25.23	22.97	48.20	57.00	-8.80	QP	
5	*	583.1098	27.69	23.61	51.30	57.00	-5.70	QP	
6		795.5235	23.32	26.78	50.10	57.00	-6.90	QP	

Model No.	EPCS-250	**Test Mode**	work
Environmental Conditions	23.0℃, 65.1% RH	**Detector Function**	Quasi-peak
Pol	Horizontal	**Distance**	3m
Test Engineer	Feng Zhang		



Site: LAB
Limit: EN 61000-6-4
EUT:
M/N: EPCS-250/50
Mode: WORK
Note: Energy storage Power Conversion System

Polarization: *Horizontal*
Power: AC380V/50Hz
Temperature: 23.0(C)
Humidity: 65.1 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector	Comment
1		311.0328	26.60	18.50	45.10	57.00	-11.90	QP	
2	*	401.4743	25.20	21.03	46.23	57.00	-10.77	QP	
3		527.0217	15.05	22.75	37.80	57.00	-19.20	QP	
4		601.6517	22.20	23.90	46.10	57.00	-10.90	QP	
5		641.2948	13.68	24.52	38.20	57.00	-18.80	QP	
6		805.1593	18.98	26.82	45.80	57.00	-11.20	QP	

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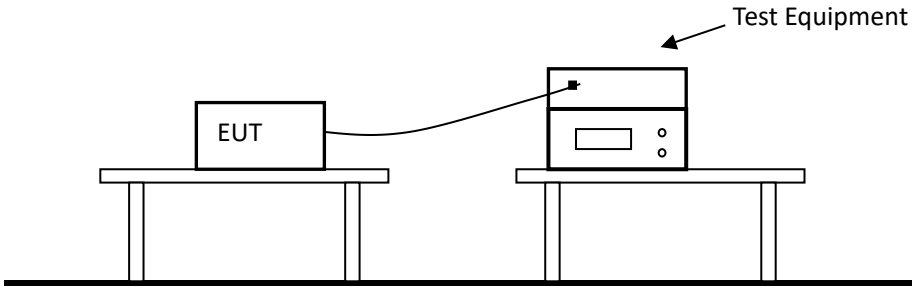
6. HARMONIC CURRENT EMISSION MEASUREMENT

6.1.Block Diagram of Test Setup



6.2.Test Standard

EN 61000-3-2: 2014

6.3.Operation Condition of EUT

Same as Section 4.4, except the test setup replaced as Section 6.1.

6.4.Test Results

PASS.

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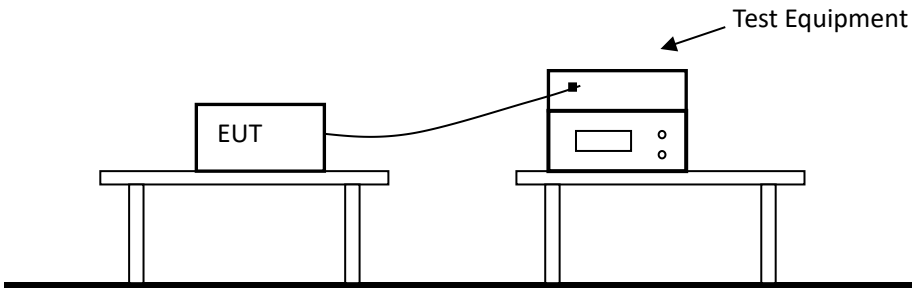
7. VOLTAGE FLUCTUATION AND FLICKER MEASUREMENT

7.1.Block Diagram of Test Setup



7.2.Measuring Standard

EN 61000-3-3: 2013

7.3.Operation Condition of EUT

Same as Section 4.4, except the test setup replaced as Section 7.1.

7.4.Test Results

PASS.

Test Model	**EPCS-250**	**Test Engineer**	**Feng Zhang**
Test Voltage	**AC 230V/50Hz**		

Overall Result:

PASS

Notes:
Measurement method - Voltage

	Pst	dc (%)	dmax (%)	d(t) > 3.3%(ms)
Limit	1.000	3.300	4.000	500
Reading 1	0.101	0.061	0.238	0

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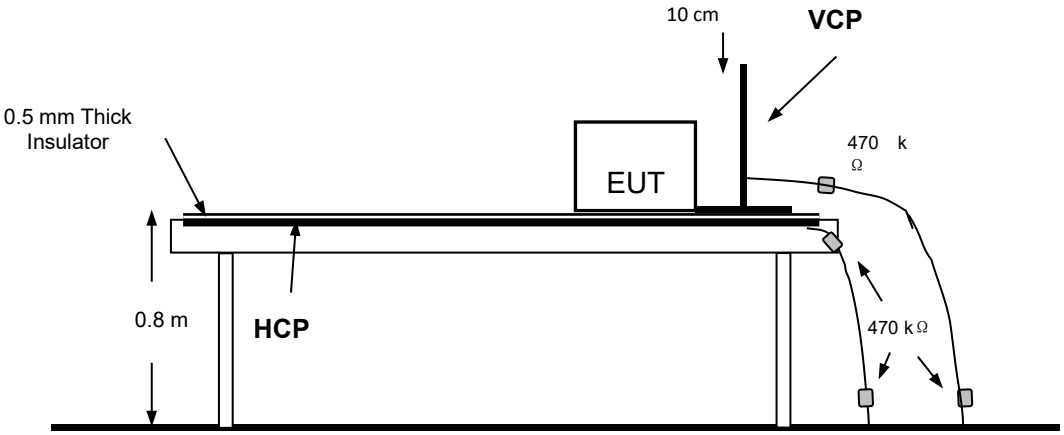
8. ELECTROSTATIC DISCHARGE IMMUNITY TEST

8.1.Block Diagram of Test Setup



8.2.Test Standard

EN 61000-6-2: 2005 (EN 61000-4-2: 2009,
Severity Level: 3 / Air Discharge: ±8KV, Level: 3 / Contact Discharge: ±6KV)

8.3.Severity Levels and Performance Criterion

8.3.1.Severity level

Level	Test Voltage Contact Discharge (KV)	Test Voltage Air Discharge (KV)
1.	±2	±2
2.	±4	±4
3.	±6	±8
4.	±8	±15
X	Special	Special

8.3.2.Performance Criterion: **B**

8.4.EUT Configuration on Test

The configuration of EUT is listed in Section 3.7.

8.5.Operating Condition of EUT

Same as conducted emission measurement, which is listed in Section 4.4. Except the test set up replaced by Section 8.1.

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8.6.Test Procedure

8.6.1.Air Discharge

This test is done on a non-conductive surface. The round discharge tip of the discharge electrode shall be approached as fast as possible to touch the EUT.
After each discharge, the discharge electrode shall be removed from the EUT. The generator is then re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed

8.6.2.Contact Discharge

All the procedure shall be same as Section 8.6.1. Except that the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

8.6.3.Indirect Discharge For Horizontal Coupling Plane

At least 10 single discharges (in the most sensitive polarity) shall be applied at the front edge of each HCP opposite the center point of each unit (if applicable) of the EUT and 0.1m from the front of the EUT. The long axis of the discharge electrode shall be in the plane of the HCP and perpendicular to its front edge during the discharge.

8.6.4.Indirect Discharge For Vertical Coupling Plane

At least 10 single discharge (in the most sensitive polarity) shall be applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m X 0.5m, is placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges shall be applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.

8.7.Test Results

PASS.

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Electrostatic Discharge Test Results

Standard	☐ IEC 61000-4-2 ☑ EN 61000-4-2		
Applicant	Sicon Chat Union Electric Co., Ltd.		
EUT	Energy storage Power Conversion System （PCS）	**Temperature**	22.5℃
M/N	EPCS-250	**Humidity**	51.9%
Criterion	B	**Pressure**	1021mbar
Test Mode	work	**Test Engineer**	Feng Zhang

Air Discharge

Test Points	Test Levels			Results		
	± 2KV	± 4KV	±8K	Passd	FAIL	Performance Citerio
Front	☒	☒	☒	☒	☐	☐ A ☒ B
Back	☒	☒	☒	☒	☐	☐ A ☒ B
Left	☒	☒	☒	☒	☐	☐ A ☒ B
Right	☒	☒	☒	☒	☐	☐ A ☒ B
Top	☒	☒	☒	☒	☐	☐ A ☒ B
Bottom	☒	☒	☒	☒	☐	☐ A ☒ B

Contact Discharge

Test Points	Test Levels		Results		
	± 2 KV	±4 KV	Passed	Fail	Performance Criterion
Front	☒	☒	☒	☐	☐ A ☒ B
Back	☒	☒	☒	☐	☐ A ☒ B
Left	☒	☒	☒	☐	☐ A ☒ B
Right	☒	☒	☒	☐	☐ A ☒ B
Top	☒	☒	☒	☐	☐ A ☒ B
Bottom	☒	☒	☒	☐	☐ A ☒ B

Discharge To Horizontal Coupling Plane

Side of EUT	Test Levels		Results		
	± 2 KV	± 6 KV	Passed	Fail	Performance Criterion
Front	☒	☒	☒	☐	☐ A ☒ B
Back	☒	☒	☒	☐	☐ A ☒ B
Left	☒	☒	☒	☐	☐ A ☒ B
Right	☒	☒	☒	☐	☐ A ☒ B

Discharge To Vertical Coupling Plane

Side of EUT	Test Levels		Results		
	± 2 KV	± 6 kV	Passed	Fail	Performance Criterion
Front	☒	☒	☒	☐	☐ A ☒ B
Back	☒	☒	☒	☐	☐ A ☒ B
Left	☒	☒	☒	☐	☐ A ☒ B
Right	☒	☒	☒	☐	☐ A ☒ B

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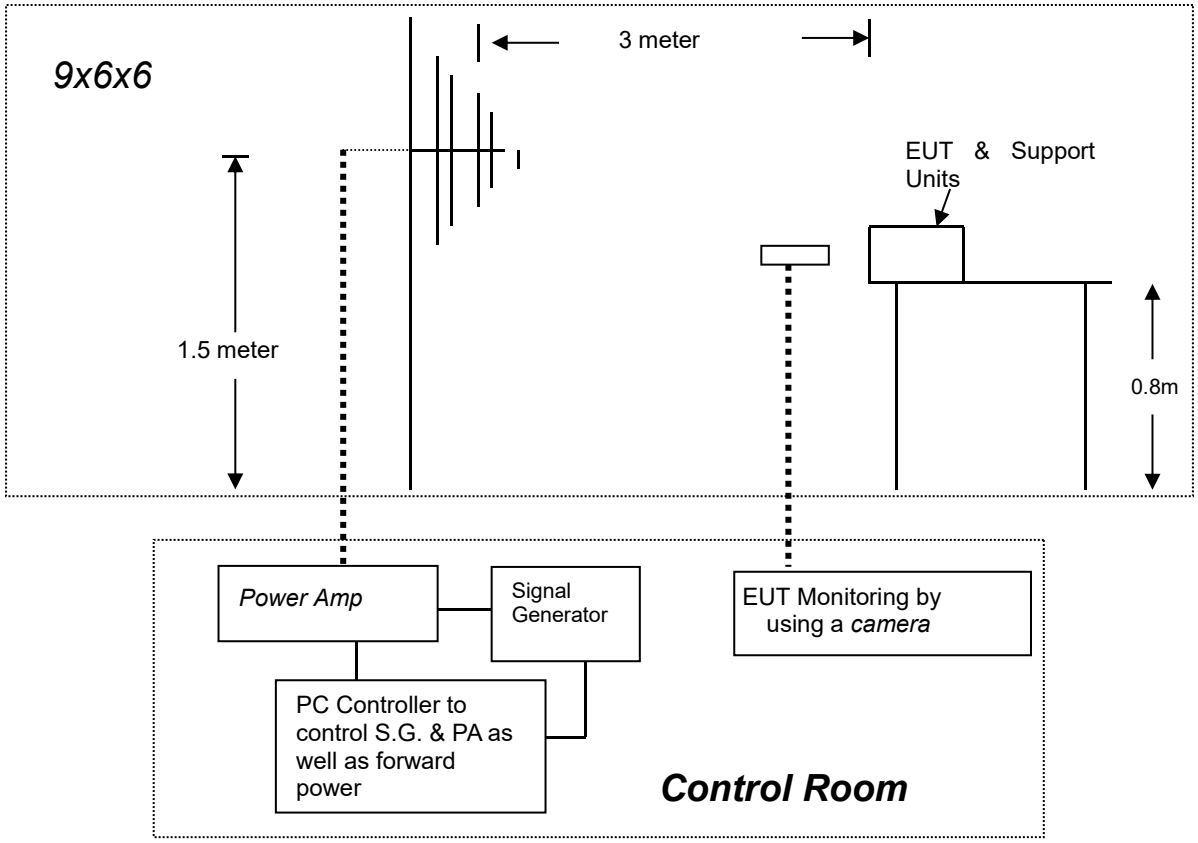
9. RF FIELD STRENGTH SUSCEPTIBILITY TEST

9.1.Block Diagram of Test



9.2.Test Standard

EN 61000-6-2: 2005
((EN 61000-4-3: 2006+A1: 2008 Severity Level: 3, 2, 1; 10V / m, 3V / m, 1V / m)

9.3.Severity Levels and Performance Criterion

9.3.1.Severity Levels

Level	Field Strength V/m
1.	1
2.	3
3.	10
X.	Special

9.3.2.Performance Criterion: **A**

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9.4.EUT Configuration on Test

The configuration of the EUT is same as Section 3.8.

9.5.Operating Condition of EUT

Same as radiated emission measurement, which is listed in Section 5.5, except the test setup replaced as Section 9.1.

9.6.Test Procedure

The EUT are placed on a table, which is 0.8 meter high above the ground. The EUT is set 3 meters away from the transmitting antenna, which is mounted on an antenna tower. Both horizontal and vertical polarization of the antenna is set on test. Each of the four sides of the EUT must be faced this transmitting antenna and measured individually.
In order to judge the EUT performance, a CCD Recording is used to monitor its screen.
All the scanning conditions are as following:

Condition of Test	Remark
1. Fielded Strength	10V/m (Severity Level 2)
2. Radiated Signal	Unmodulated
3. Scanning Frequency	80-1000MHz
4. Sweep time of radiated	0.0015 Decade/s
5. Dwell Time	3 Sec.
6. Fielded Strength	3V/m (Severity Level 2)
7. Radiated Signal	Unmodulated
8. Scanning Frequency	1.4-2.0GHz
9. Sweep time of radiated	0.0015 Decade/s
10. Dwell Time	3 Sec.
11. Fielded Strength	1V/m (Severity Level 1)
12. Radiated Signal	Unmodulated
13. Scanning Frequency	2.0-2.7GHz
14. Sweep time of radiated	0.0015 Decade/s
15. Dwell Time	3 Sec.

9.7.Test Results

PASS.

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RF Field Strength Susceptibility Test Results

Standard	☐ IEC 61000-4-3 ☑ EN 61000-4-3		
Applicant	Sicon Chat Union Electric Co., Ltd.		
EUT	Energy storage Power Conversion System （PCS）	**Temperature**	22.0℃
M/N	EPCS-250	**Humidity**	54.1％
Test Mode	work	**Test Engineer**	Feng Zhang
Frequency Range	80 MHz to 1000 MHz	**Field Strength**	10 V/m
	1400 MHz to 2000 MHz		3 V/m
	2000 MHz to 2700 MHz		1 V/m
Criterion	A		
Modulation	☐None ☐ Pulse ☑AM 1KHz 80%		
Steps	1%		

	Horizontal	**Vertical**
Front	PASS	PASS
Right	PASS	PASS
Rear	PASS	PASS
Left	PASS	PASS

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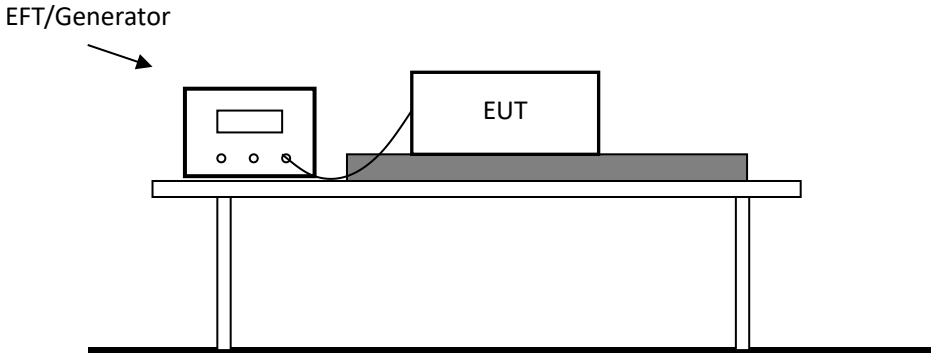
10. ELECTRICAL FAST TRANSIENT/BURST IMMUNITY TEST

10.1.Block Diagram of Test Setup



10.2.Test Standard

EN 61000-6-2: 2005
(EN 61000-4-4: 2012, Severity Level, Level 3: 2KV)

10.3.Severity Levels and Performance Criterion

10.3.1.Severity level

Open Circuit Output Test Voltage ±10%		
Level	On Power Supply Lines	On I/O (Input/Output) Signal data and control lines
1.	0.5 KV	0.25 KV
2.	1 KV	0.5 KV
3.	2 KV	1 KV
4.	4 KV	2 KV
X	Special	Special

10.3.2.Performance Criterion: **B**

10.4.EUT Configuration on Test

The configuration of EUT is listed in Section 3.9.

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10.5.Operating Condition of EUT

10.5.1.Setup the EUT as shown in Section 10.1.

10.5.2.Turn on the power of all equipments.

10.5.3.Let the EUT work in test mode (work) and measure it.

10.6.Test Procedure

The EUT is put on the table, which is 0.8 meter high above the ground. This reference ground plane shall project beyond the EUT by at least 0.1m on all sides and the minimum distance between EUT and all other conductive structure, except the ground plane beneath the EUT, shall be more than 0.5m.

10.6.1.For input and output AC power ports:

The EUT is connected to the power mains by using a coupling device, which couples the EFT interference signal to AC power lines. Both polarities of the test voltage should be applied during compliance test and the duration of the test is 2 mins.

10.6.2.For signal lines and control lines ports: No I/O ports. It's unnecessary to test.

10.6.3.For DC output line ports: It's unnecessary to test.

10.7.Test Result

PASS.

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Electrical Fast Transient/Burst Test Results

Standard	☐ IEC 61000-4-4 ☑ EN 61000-4-4		
Applicant	Sicon Chat Union Electric Co., Ltd.		
EUT	Energy storage Power Conversion System （PCS）	**Temperature**	23.2℃
M/N	EPCS-250	**Humidity**	55.8%
Test Mode	work	**Criterion**	B
Test Engineer	Feng Zhang		

Line	Test Voltage	Result (+)	Result (-)
L	2KV	PASS	PASS
N	2KV	PASS	PASS
PE	2KV	PASS	PASS
L-N	2KV	PASS	PASS
L-PE	2KV	PASS	PASS
N-PE	2KV	PASS	PASS
L-N-PE	2KV	PASS	PASS

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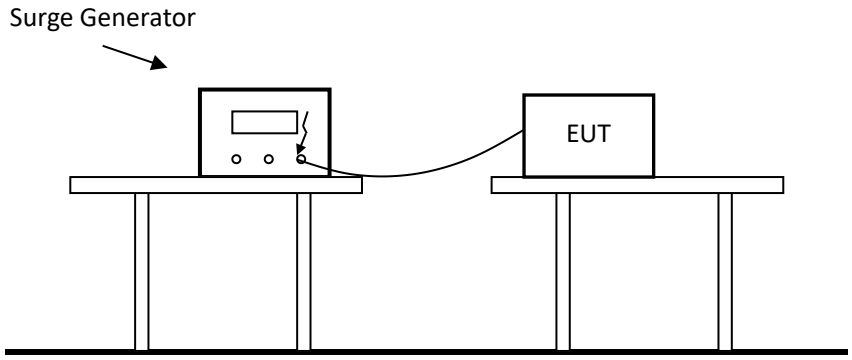
11. SURGE IMMUNITY TEST

11.1.Block Diagram of Test Setup



11.2.Test Standard

EN 61000-6-2: 2005
(EN 61000-4-5: 2014, Severity Level: Line to Line: Level 2, 1.0KV, Line to Earth: Level 3, 2.0KV)

11.3.Severity Levels and Performance Criterion

11.3.1.Severity level

Severity Level	Open-Circuit Test Voltage KV
1	0.5
2	1.0
3	2.0
4	4.0
*	Special

11.3.2.Performance Criterion: **B**

11.4.EUT Configuration on Test

The configuration of EUT is listed in Section 3.10.

11.5.Operating Condition of EUT

11.5.1.Setup the EUT as shown in Section 11.1.

11.5.2.Turn on the power of all equipments.

11.5.3.Let the EUT work in test mode (work) and measure it.

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11.6.Test Procedure

11.6.1.Set up the EUT and test generator as shown on Section 11.1.
11.6.2.For line to line coupling mode, provide a 1.0 KV 1.2/50us voltage surge (at open-circuit condition) and 8/20us current surge to EUT selected points.
11.6.3.At least 5 positive and 5 negative (polarity) tests with a maximum 1/min repetition rate are conducted during test.
11.6.4.Different phase angles are done individually.
11.6.5.Record the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.

11.7.Test Result

PASS.

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Surge Immunity Test Result

Standard	☐ IEC 61000-4-5 ☑ EN 61000-4-5		
Applicant	Sicon Chat Union Electric Co., Ltd.		
EUT	Energy storage Power Conversion System （PCS）	**Temperature**	23.2℃
M/N	EPCS-250	**Humidity**	55.8％
Test Mode	work	**Criterion**	B
Test Engineer	Feng Zhang		

Location	Polarity	Phase Angle	Number of Pulse	Pulse Voltage (KV)	Result
L-N	+	0°	5	1.0	PASS
	+	90°	5	1.0	PASS
	+	180°	5	1.0	PASS
	+	270°	5	1.0	PASS
	-	0°	5	1.0	PASS
	-	90°	5	1.0	PASS
	-	180°	5	1.0	PASS
	-	270°	5	1.0	PASS
L-PE	+	0°	5	2.0	PASS
	+	90°	5	2.0	PASS
	+	180°	5	2.0	PASS
	+	270°	5	2.0	PASS
	-	0°	5	2.0	PASS
	-	90°	5	2.0	PASS
	-	180°	5	2.0	PASS
	-	270°	5	2.0	PASS
N-PE	+	0°	5	2.0	PASS
	+	90°	5	2.0	PASS
	+	180°	5	2.0	PASS
	+	270°	5	2.0	PASS
	-	0°	5	2.0	PASS
	-	90°	5	2.0	PASS
	-	180°	5	2.0	PASS
	-	270°	5	2.0	PASS
Note					

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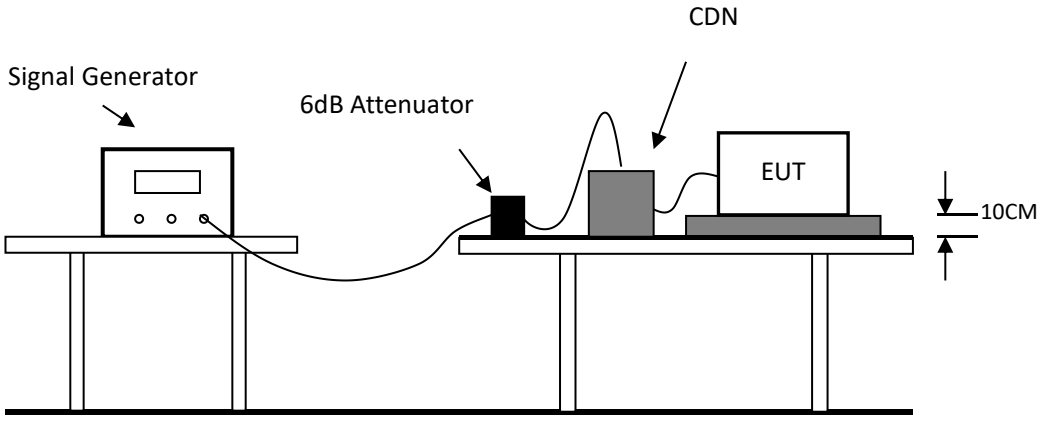
12. INJECTED CURRENTS SUSCEPTIBILITY TEST

12.1.Block Diagram of Test Setup



12.2.Test Standard

EN 61000-6-2: 2005
(EN 61000-4-6: 2014, Severity Level: Level 3, 10V (rms), (0.15MHz ~ 80MHz))

12.3.Severity Levels and Performance Criterion

12.3.1.Severity level

Level	Field Strength V
1	1
2	3
3	10
X	Special

12.3.2.Performance Criterion: **A**

12.4.EUT Configuration on Test

The configuration of EUT is listed in Section 3.11.

12.5.Operating Condition of EUT

12.5.1.Setup the EUT as shown in Section 12.1.

12.5.2.Turn on the power of all equipments.

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12.5.3.Let the EUT work in test mode (work) and measure it.

12.6.Test Procedure

12.6.1.Set up the EUT, CDN and test generators as shown on Section 12.1.
12.6.2.Let the EUT work in test mode and measure it.
12.6.3.The EUT are placed on an insulating support 0.1m high above a ground reference plane. CDN (coupling and decoupling device) is placed on the ground plane about 0.3m from EUT. Cables between CDN and EUT are as short as possible, and their height above the ground reference plane shall be between 30 and 50 mm (where possible).
12.6.4.The disturbance signal described below is injected to EUT through CDN.
12.6.5.The EUT operates within its operational mode(s) under intended climatic conditions after power on.
12.6.6.The frequency range is swept from 150kHz to80MHz using 3V signal level, and with the disturbance signal 80% amplitude modulated with a 1kHz sine wave.
12.6.7.The rate of sweep shall not exceed $1.5*10^{-3}$decades/s. where the frequency is swept incrementally; the step size shall not exceed 1% of the start and thereafter 1% of the preceding frequency value.
12.6.8.Recording the EUT operating situation during compliance testing and decide the EUT immunity criterion.

12.7.Test Results

PASS.

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Injected Currents Susceptibility Test Results

Standard	☐ IEC 61000-4-6 ☑ EN 61000-4-6		
Applicant	Sicon Chat Union Electric Co., Ltd.		
EUT	Energy storage Power Conversion System （PCS）	**Temperature**	24.1℃
M/N	EPCS-250	**Humidity**	52.3％
Test Mode	work	**Criterion**	A
Test Engineer	Feng Zhang		

Frequency Range (MHz)	Injected Position	Strength (Unmodulated)	Criterion	Result
0.15 ~ 80	AC Mains	10V	A	PASS

Remark:
1. Modulation Signal:1kHz 80% AM
2. Measurement Equipment :
Simulator: CIT-10 (FRANKONIA)
CDN : ☐CDN-M2 (FRANKONIA)
☑CDN-M3 (FRANKONIA)

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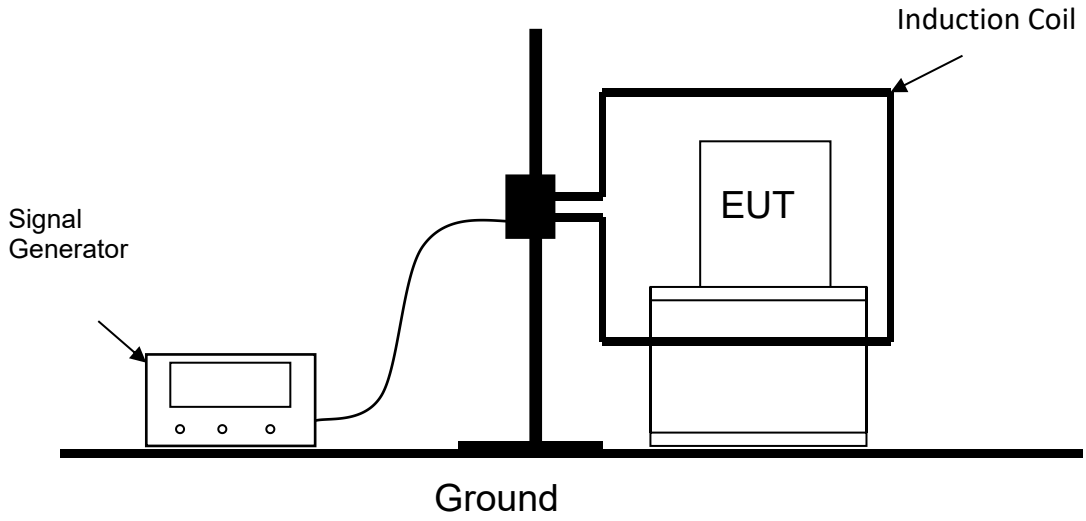
Note:

13. MAGNETIC FIELD SUSCEPTIBILITY TEST

13.1.Block Diagram of Test Setup



13.2.Test Standard

EN 61000-6-2: 2005

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(EN 61000-4-8: 2010, Severity Level: Level 4, 30A / m)

13.3.Severity Levels and Performance Criterion

13.3.1.Severity Levels

Level	Field Strength A/m
1	1
2	3
3	10
4	30
5	100
X	Special

13.3.2.Performance Criterion: **A**

13.4.EUT Configuration on Test

The configuration of the EUT is same as Section 3.12.

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13.5.Test Procedure

The EUT is placed in the middle of a induction coil (1*1m), under which is a 1*1*0.1m (high) table, this small table is also placed on a larger table, 0.8 m above the ground. Both horizontal and vertical polarization of the induction coil is set on test, so that each side of the EUT is affected by the magnetic field. Also can reach the same aim by change the position of the EUT.

13.6.Test Results

PASS.

Please refer to the following page.

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Magnetic Field Immunity Test Result

Standard	☐ IEC 61000-4-8 ☑ EN 61000-4-8		
Applicant	Sicon Chat Union Electric Co., Ltd.		
EUT	Energy storage Power Conversion System （PCS）	**Temperature**	23.5℃
M/N	EPCS-250	**Humidity**	49.8%
Test Mode	work	**Criterion**	A
Test Engineer	Feng Zhang		

Test Level (A/M)	Testing Duration	Coil Orientation	Criterion	Result
30	5 mins	X	A	PASS
30	5 mins	Y	A	PASS
30	5 mins	Z	A	PASS

Note:

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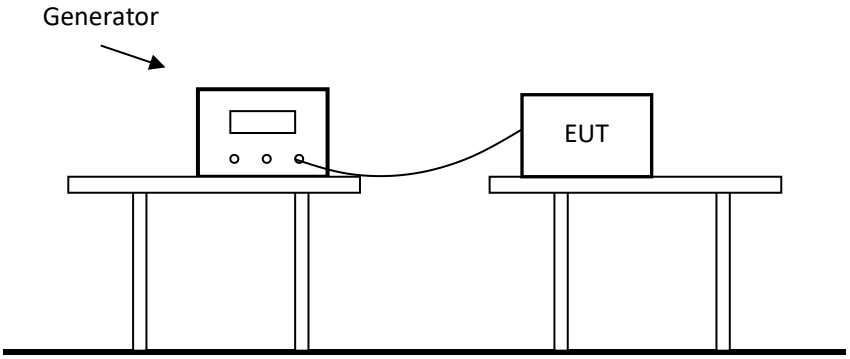
14. VOLTAGE DIPS AND INTERRUPTIONS TEST

14.1.Block Diagram of Test Setup



14.2.Test Standard

EN 61000-6-2: 2005 (EN 61000-4-11: 2004)

14.3.Severity Levels and Performance Criterion

14.3.1.Severity level

Test Level %UT	Voltage dip and short interruptions %UT	Duration (in period)
0	100	0.5
40	60	1.0
70	30	25
0	100	250

14.3.2.Performance Criterion: **B&C**

14.4.EUT Configuration on Test

The configuration of EUT is listed in Section 3.13&3.14.

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14.5.Operating Condition of EUT

14.5.1.Setup the EUT as shown in Section 14.1.

14.5.2.Turn on the power of all equipments.

14.5.3.Let the EUT work in test mode (work) and measure it.

14.6.Test Procedure

14.6.1.Set up the EUT and test generator as shown on Section 14.1.
14.6.2.The interruptions are introduced at selected phase angles with specified duration.
14.6.3.Record any degradation of performance.

14.7.Test Result

PASS.

Please refer to the following page.

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Voltage Dips And Interruptions Test Results

Standard	☐ IEC 61000-4-11 ☑ EN 61000-4-11		
Applicant	Sicon Chat Union Electric Co., Ltd.		
EUT	Energy storage Power Conversion System （PCS）	**Temperature**	23.5℃
M/N	EPCS-250	**Humidity**	49.8%
Test Mode	work	**Criterion**	B&C
Test Engineer	Feng Zhang		

Test Level % U_T	Voltage Dips & Short Interruptions % U_T	Duration (in periods)	Criterion	Result
0	100	1.0P	B	PASS
40	60	10P	C	PASS
70	30	25P	C	PASS
0	100	250P	C	PASS

Note:

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15. PHOTOS OF EUT

Fig.1

Fig.2

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Fig.3

Fig.4

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Fig.5

Fig.6

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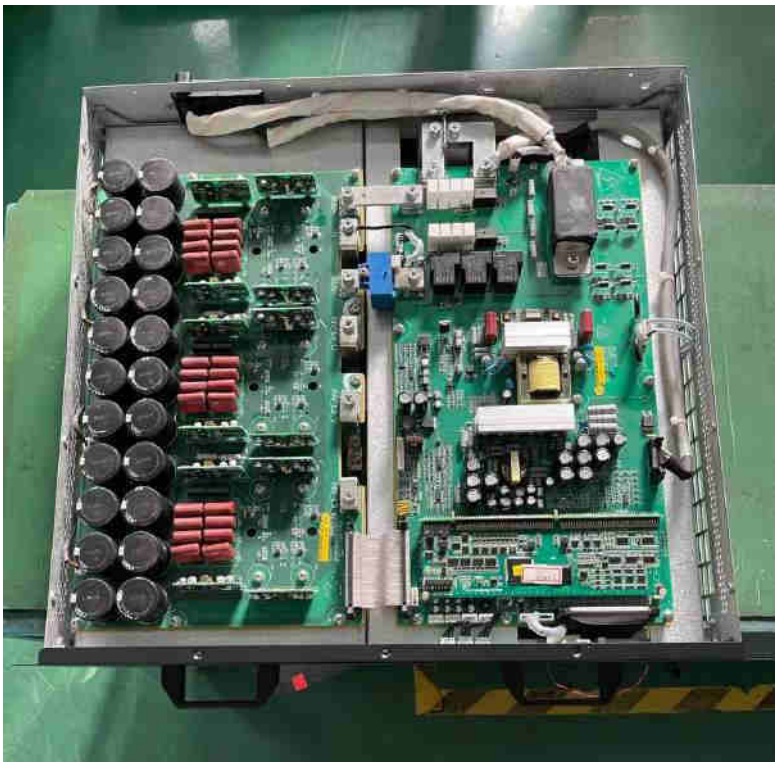

Fig.7

----------THE END OF TEST REPORT----------

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4th March 2024

To,
The CEO,
ANERT,
Trivandrum

Ref. No. ANERT-TECH/41/2024-PE-1 (RTS)

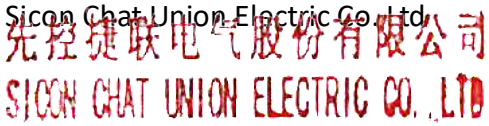
We refer your tender and confirm here with, that we have installed Battery Energy Storage System, as per your specifications in a factory environment at Bangalore, and it's running successfully for the last two months. The details will be disclosed, confidentially, as per our NDA terms.

You may requested to visit the premises and inspect all parameters with immediate effect. We will provide the Trained Engineer's Details, once we are awarded the project.

Best regards,

Sherry Tsui
Sales Manager

Authorised Signatory
Sicon Chat Union Electric Co., Ltd.



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Solgen Energy Pvt. Ltd.
22/314-B, Kuttanallur P.O, Thrissur - 680014, Kerala, India.

COVERING LETTER

Sir,

I/We hereby e-tender to supply, under annexed terms and conditions of contract, the whole of the articles referred to and described in the attached specification and quantity decided by the Agency for New & Renewable Energy Research and Technology (ANERT), at the rates quoted against each item.

I am/We are remitting herewith the required amount of Rs. NIL (Exemption Allowed, MSME Certificate Attached) towards the cost of e-tender and Earnest Money Deposit by electronic payment vide transactionNo ..... dtd.....

Yours faithfully,

SOLGEN ENERGY PRIVATE LIMITED THRISSUR

Thrissur

Abhilash M.G
Manager Installations

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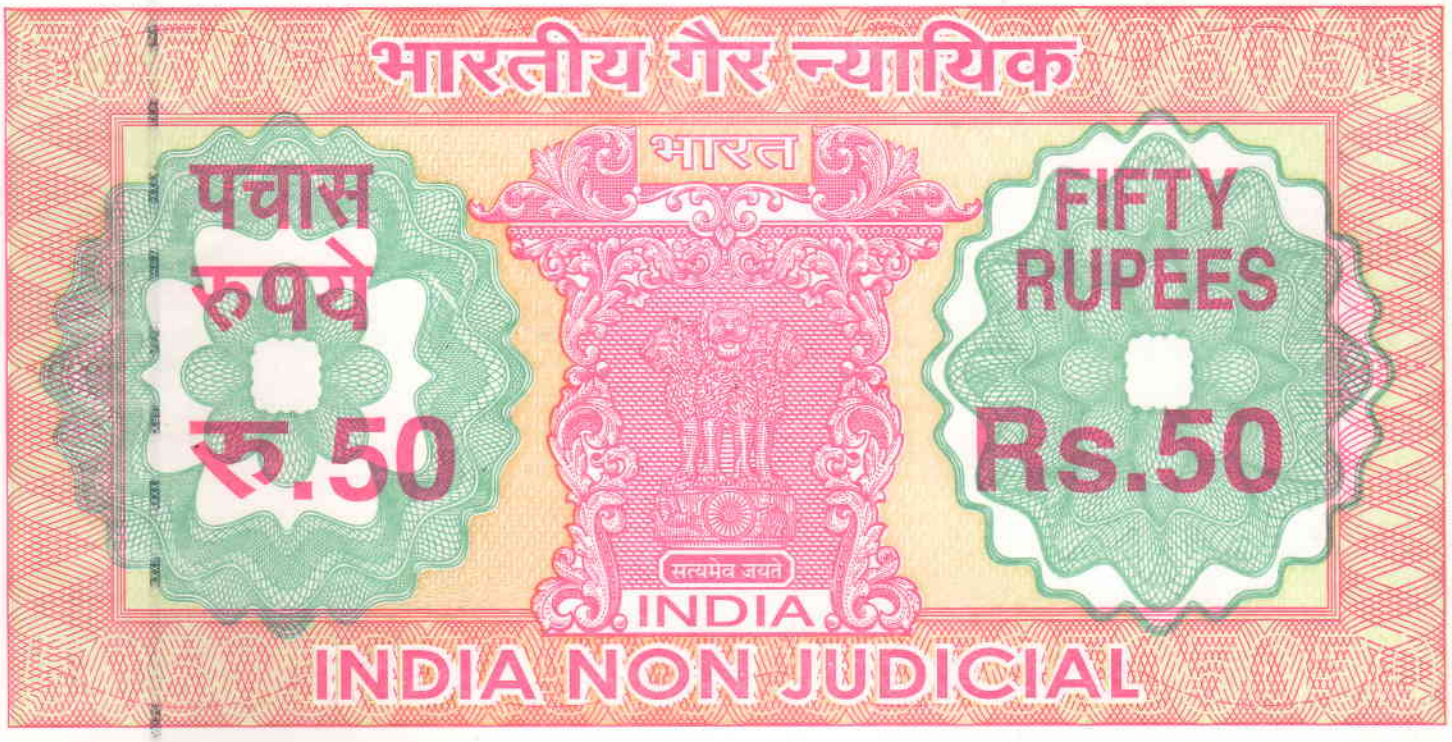

കേരളം केरल KERALA

DA 688345

Consortium Agreement

THIS Consortium Agreement ("Agreement") executed on this 9th day of March 2024 between M/s Solgen Energy Pvt Ltd of the bidder and having its Registered Office at 14/19, SIDCO Industrial Estate, P.O Peringadoor, Thrissur-680581, Kerala (hereinafter called the "Lead Bidder", which expression shall include its successors, executors and permitted assigns)

And M/s Deye Inverter Technology Pvt Ltd, having registered office at 4th Floor, Urban Bliss, Pancard Club Road, Baner, Pune 411 045, Maharashtra (hereinafter called the "OEM", and Festa Solar Private Limited, Ground, 1st & 2nd Floor, 97/80, Vanagaram, Ambattur Road, Multi info Teach, Chennai 600 058 super stockist of DEYE in India which expression shall include its successors, executors and permitted assigns), which expression shall include its successors, executors and permitted assigns)

Solgen Energy Pvt Ltd

DEYE Inverter Technology Private Limited

Festa Solar Private Limited

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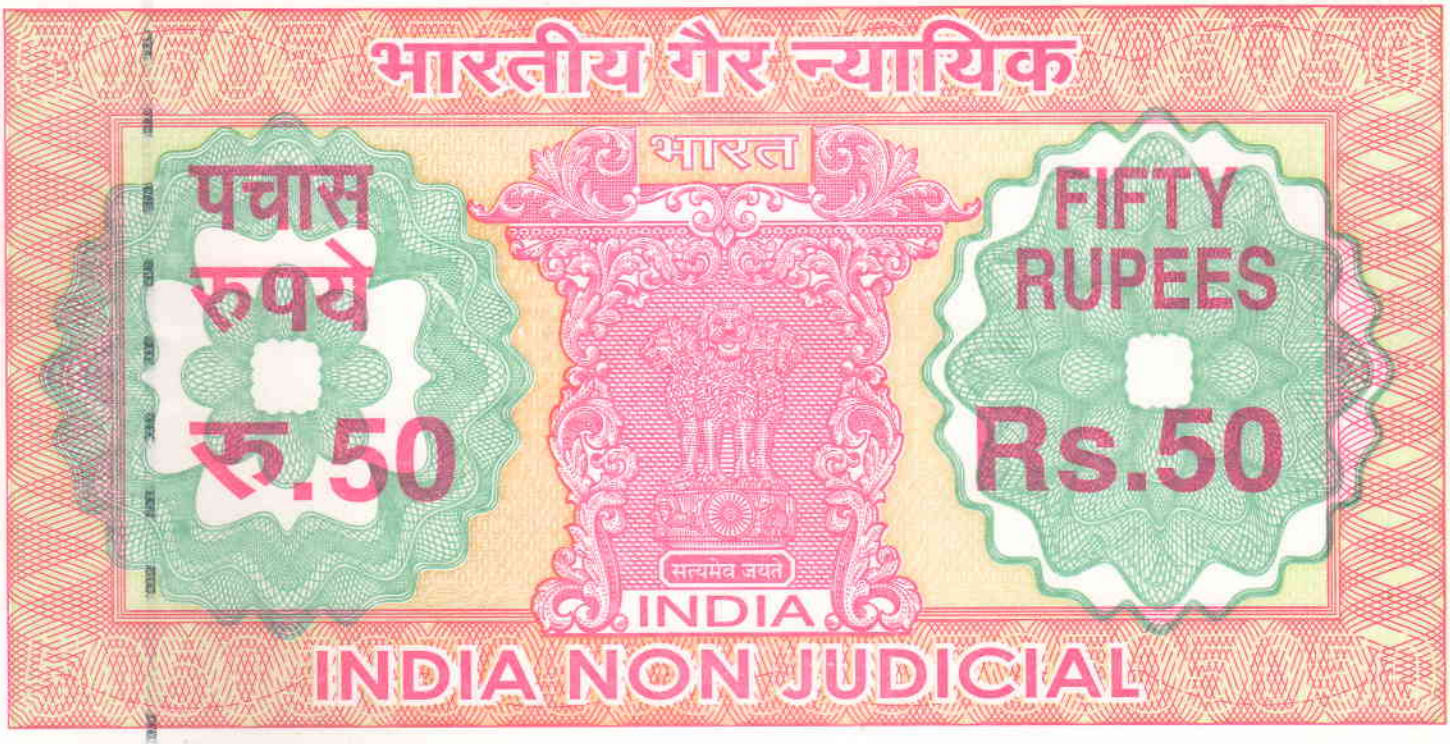

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DA 688346

WHEREAS, each Member individually shall be referred to as the "Member" and both the Members shall be collectively referred to as the "Members" in this Agreement.

WHEREAS the Solgen Energy Pvt Ltd a Company incorporated under the Company's Act, 2013 has invited response to tender No. ANERT-TECH/41/2014-PE1(RTS) Dated 27.02.2024.

WHEREAS the tender documents stipulate that the Lead Member may enter into a Technical Consortium Agreement with another Company / corporate entity to fulfil the Technical Eligibility Criteria as stipulated in the tender document. The Members of the Bidding Consortium will have to submit a legally enforceable Consortium Agreement in a format enclosed with the tender document.

Solgen Energy Pvt Ltd

DEYE Inverter Technology Private Limited

Festa Solar Private Limited

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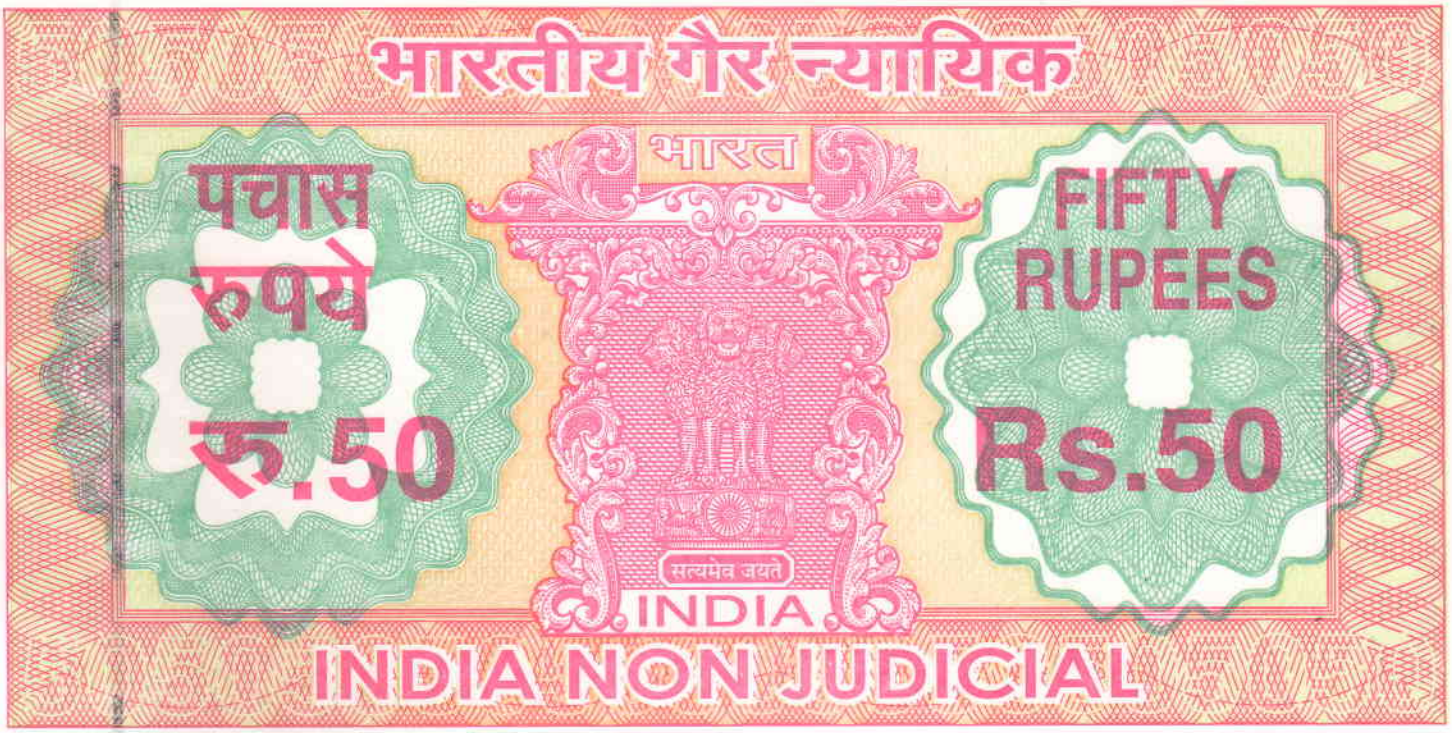

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DA 688347

NOW THEREFORE, THIS AGREEMENT WITNESSTH AS UNDER:

In consideration of the above premises and agreements all the Members in this Consortium do hereby mutually agree as follows:

We, the Members of the Consortium and Members to the Agreement do hereby unequivocally agree that M/s Solgen Energy Pvt Ltd), shall act as the Lead Bidder as defined in the tender for self and agent for and on behalf of Technical Member M/s DEYE Inverter Technology Private Limited and Festa Solar Private Limited

1. The Lead Member is hereby authorized by the Technical Member of the Consortium to bind the Consortium and receive instructions for and on their behalf.

Solgen Energy Pvt Ltd

DEYE Inverter Technology Private Limited

Festa Solar Private Limited

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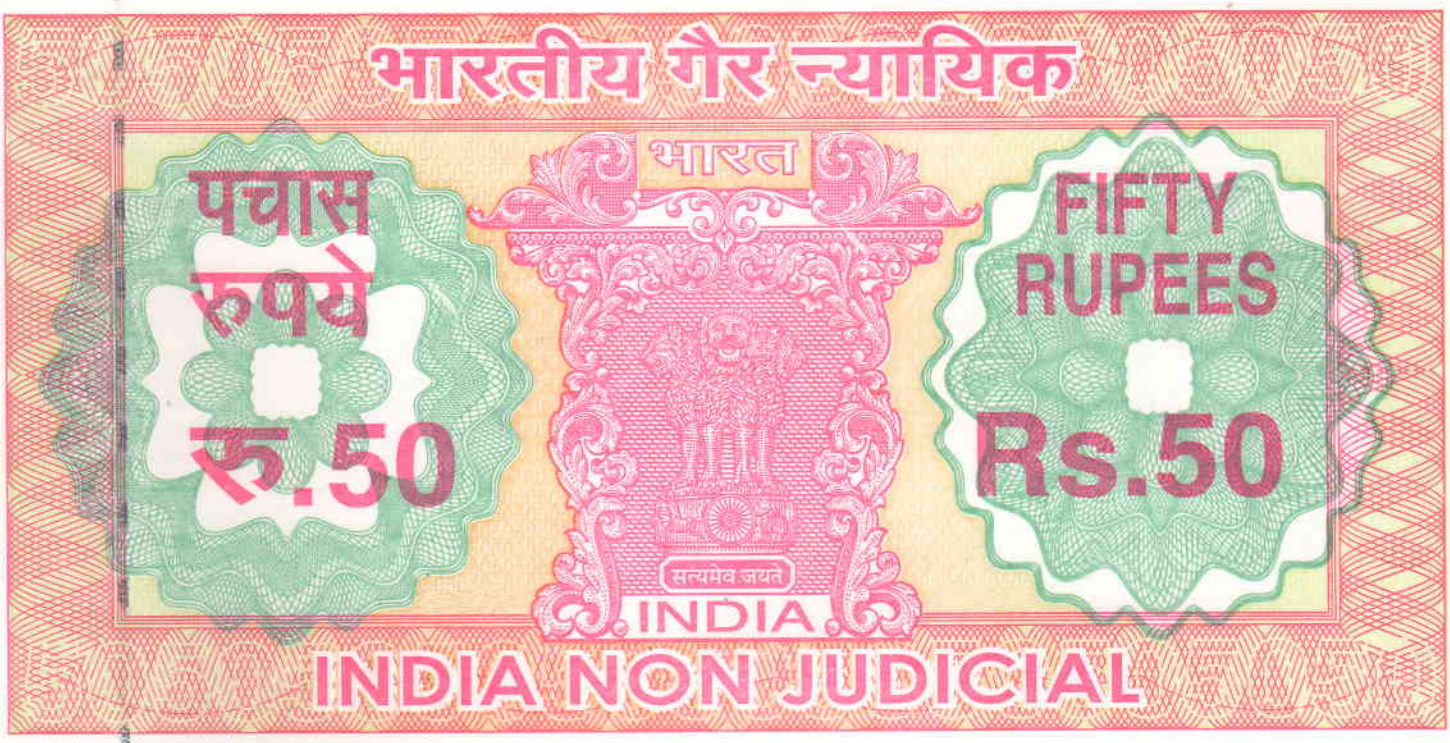

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2. The Lead Member shall be liable and responsible for ensuring the individual and collective commitment of each of the Members of the Consortium in discharging all of their respective obligations. Each Member further undertakes to be individually liable for the performance of its part of the obligations without in any way limiting the scope of collective liability envisaged in this Agreement.
3. Subject to the terms of this Agreement, the Technical member shall be responsible for providing End to End technical knowledge and product supply for "Expression of Interest (EoI) for the selection of Agency for Pilot Implementation of Battery Energy Storage at ANERT HQ, Thiruvananthapuram" as per tender No. ANERT-TECH/41/2014-PE1 (RTS) Dated 27.02.2024 to the lead member.
4. In case of any breach of any commitment by any of the Consortium Members, the Lead Member shall be liable for the consequences thereof.

Solgen Energy Pvt Ltd

DEYE Inverter Technology Private Limited

Festa Solar Private Limited

1286

5. This Agreement shall be construed and interpreted in accordance with the Laws of India and courts at Thrissur alone shall have the exclusive jurisdiction in all matters relating thereto and arising there under.
6. It is hereby further agreed that in case of being shortlisted, the Members do hereby agree that they shall abide by the terms & conditions of the tender document.
7. It is further expressly agreed that this Agreement shall be irrevocable and shall form an integral part of the tender submitted to ANERT and shall remain valid till completion of the job assigned to the Contractor.
8. The Lead Member is authorized and shall be fully responsible for the accuracy and veracity of the representations and information submitted by the Members respectively from time to time in the response to tender.
9. It is hereby expressly understood between the Members that no Member at any given point of time, may assign or delegate its rights, duties or obligations under this agreement without the explicit permission of Agency for New & Renewable Energy Research and Technology (ANERT).
10. This Agreement
    a. has been duly executed and delivered on behalf of each Member here to and constitutes the legal, valid, binding and enforceable obligation of each such Member;
    b. Sets forth the entire understanding of the Members hereto with respect to the subject matter hereof; and
    c. May not be amended or modified except in writing signed by each of the Members and with prior written consent of Agency for New & Renewable Energy Research and Technology (ANERT).

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DEYE Inverter Technology Private Limited

Festa Solar Private Limited

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IN WITNESS WHEREOF, the Members have, through their authorised representatives, executed these present on the Day, Month and Year first mentioned above.

For M/s SOLGEN ENERGY PVT LTD [Lead Member]	**For DEYE Inverter Technology Private Limited (Technical Members)**	**Festa Solar Private Limited (Technical Member)**
Name: Abhilash M.G Designation: Authorized Person	Name: Bharath Singh Designation: Head Sales India	Name: S Sampath Kumar Designation: CEO
Witnesses: Name: PRIMA JOHNY ANUP Signature	Witnesses: Name: Signature	Witnesses: Name: Signature

(Official Seal) (Official Seal) (Official Seal)

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Solgen Energy Pvt. Ltd.
22/314-B, Kuttanallur P.O, Thrissur - 680014, Kerala, India.

ANNEXURE A – SUMMARY OF BID QUALIFICATION REQUIREMENTS

1.	Name of the applicant and address with email, phone etc.	SOLGEN ENERGY PVT LTD 22/314-B, Kuttanellur P.O, Thrissur – 680014 Ph: 7025076662 Email: tenderdiv@solgenindia.com
2.	Main area of Business	Solar power plants
3.	Registered Office in Kerala	14/19, Sidco Industrial Estate, P.O Peringadoor, Thrissur-680581
4.	Details of Power of Attorney	Mr. Abhilash M.G Manager Installations
5.	Proof for Experience	Attached

Documentary evidence for the bid qualification requirements are submitted along with this document and the details furnished above are true and correct.

SOLGEN ENERGY PRIVATE LIMITED THRISSUR

Thrissur

09.03.2024

Abhilash M.G

Manager Installations

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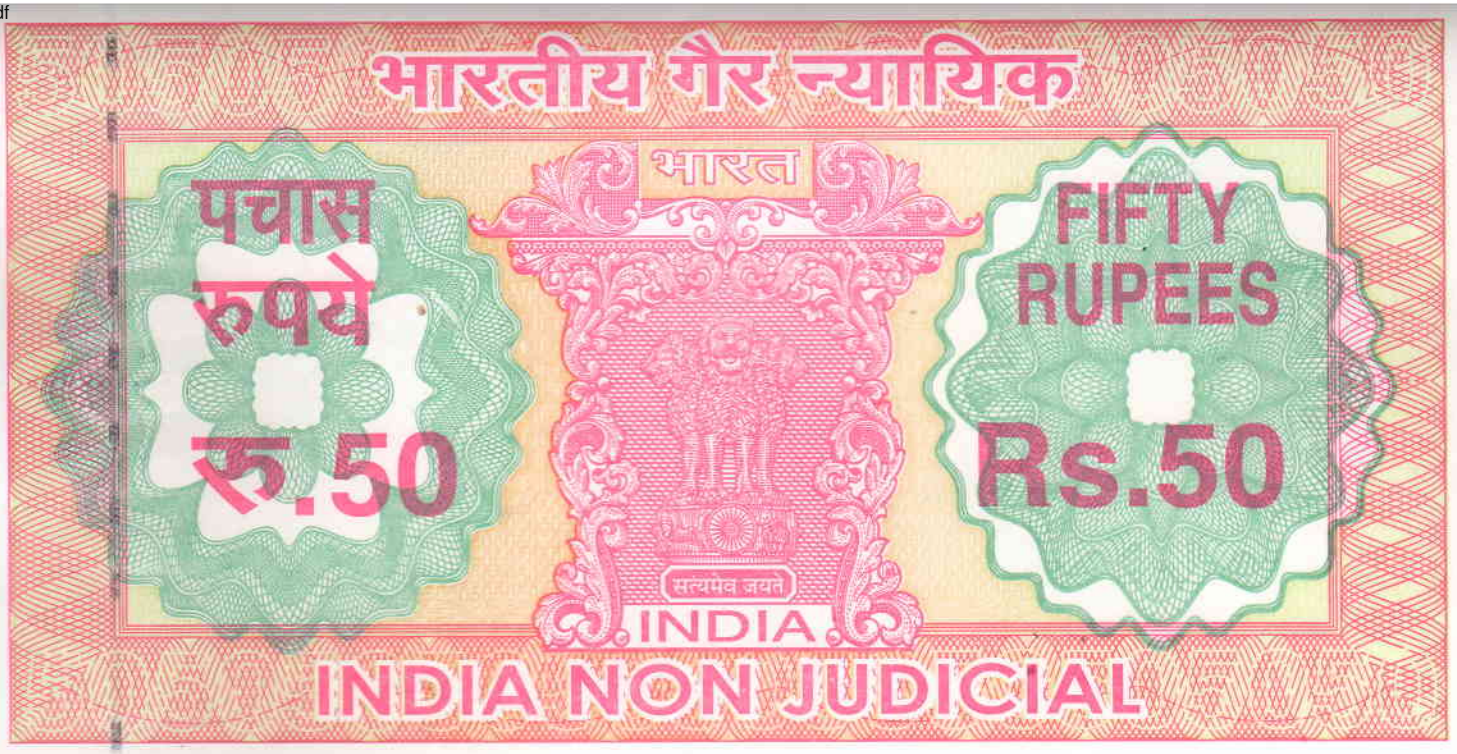

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DA 688341

ANNEXURE B – Undertaking

Subject: Expression of Interest (EoI) for the Selection of Agency for Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram

With reference to the RFP Document for the captioned Project, I/we, I, Abhilash M.G, Manager Installations (Name, Designation) authorised signatory of M/s Solgen Energy Pvt Ltd,14/19, Sidco Industrial Estate, P.O Peringadoor, Thrissur - 680581 (Name and full address of the bidder) having examined all relevant documents and understood their contents hereby undertake that the Proposal is unconditional and unqualified.

1. I/We confirm that I/we have examined the terms and conditions published in the EOI and accordingly submitting the Application. The proposal is unconditional and unqualified.
2. All information provided in the Proposal is true and correct and all documents accompanying such Proposal are true copies of their respective originals.

SOLGEN ENERGY PRIVATE LIMITED THRISSUR

SUB TREASURY - 4 MAR 2024 THRISSUR

39249

1290

Solgen Energy Pvt Ltd

VENDOR No : 42

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भारतीय गैर न्यायिक

भारत

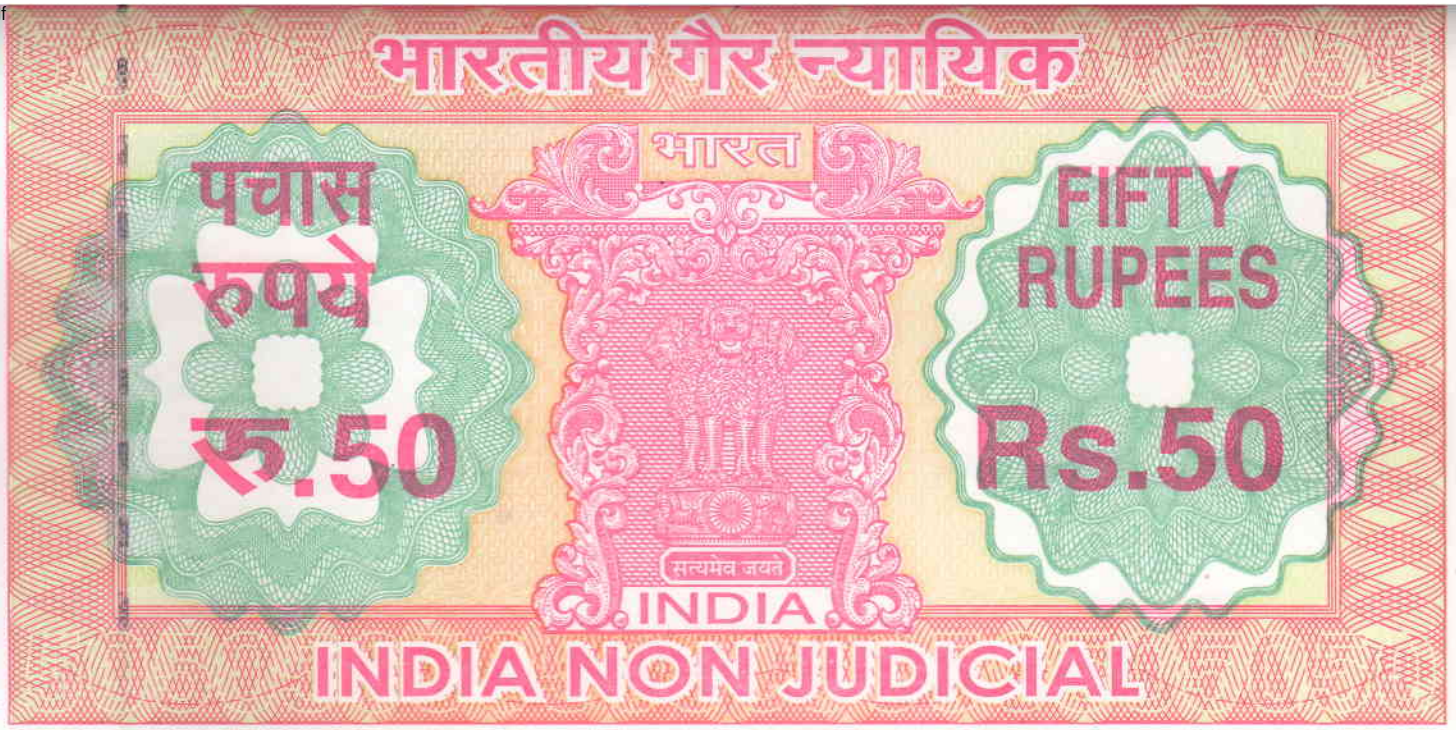
पचास रुपये रु.50

FIFTY RUPEES Rs.50

सत्यमेव जयते

INDIA

INDIA NON JUDICIAL



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DA 688342

3. This statement is made for the express purpose of appointment Providing PMU services in terms of providing Consultancy and Technical Services
4. I/We shall make available to ANERT any additional information it may deem necessary or require for supplementing or authenticating the Proposal.
5. I/We acknowledge the right of the ANERT to reject our application without assigning any reason or otherwise and hereby waive our right to challenge the same on any account whatsoever.
6. I/We certify that in the last three years, I/we have neither failed to perform on any contract, as evidenced by imposition of a penalty by an arbitral or judicial Court or a judicial pronouncement or arbitration award against us, nor have been expelled from any project or contract nor have had any contract terminated for breach on our part.

SOLGEN ENERGY PRIVATE LIMITED THRISSUR

No 39258 value Rs 50

Sold to

Solgen Energy Pvt Ltd

Kuttanellur

SUB TREASURY - 4 MAR 2024 THRISSUR

P. RESHRABHI
VENDOR No : 42
KUTTANELLUR
(P.S. ASWATHY)

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भारत

पचास रुपये रु.50

FIFTY RUPEES Rs.50

सत्यमेव जयते

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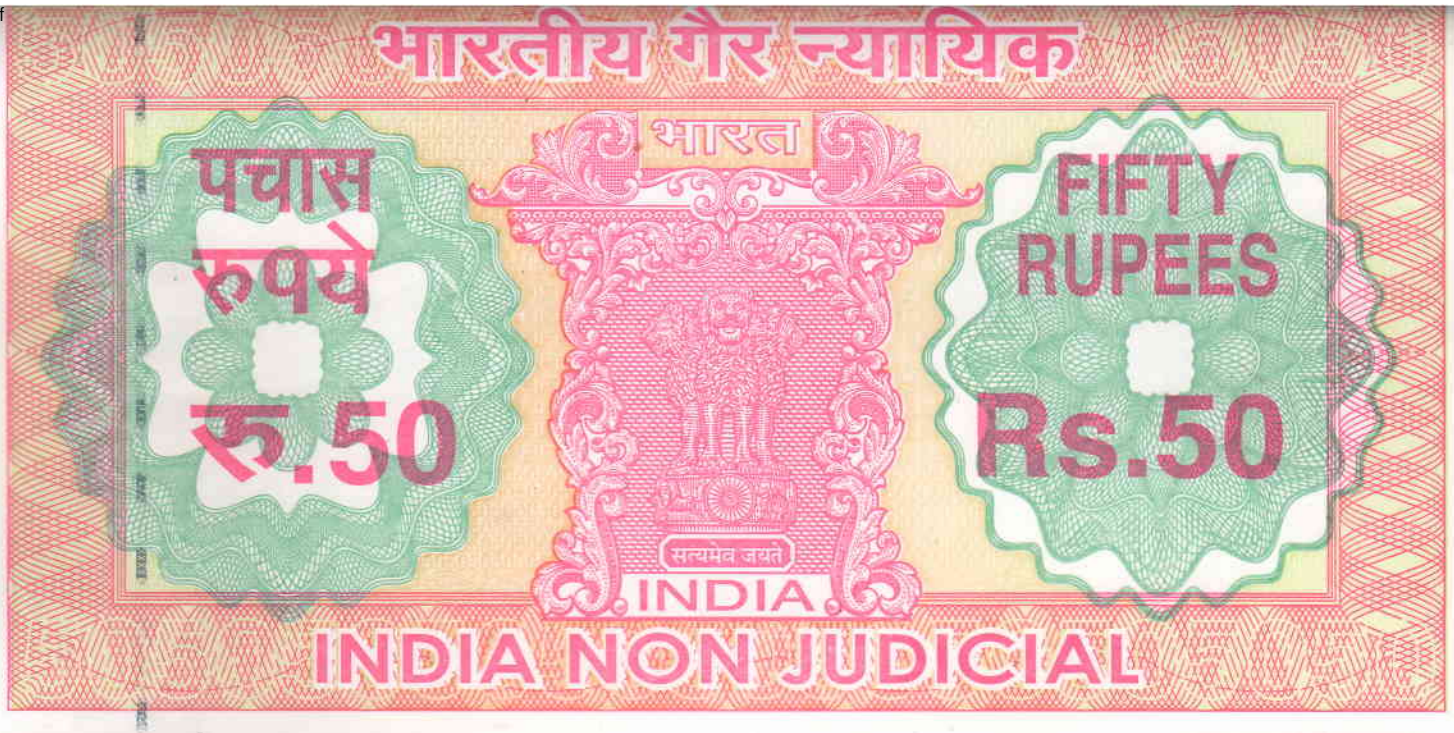

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DA 688343

7. I/We declare that:

1. I/We have examined and have no reservations to the EOI Documents, including any Addendum thereto, issued by the ANERT;
2. I/We do not have any conflict of interest in accordance with provisions of the EOI Document;
3. I/We have not directly or indirectly or through an agent engaged or indulged in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice, as defined in the EOI document, in respect of any tender or request for proposal issued by or any agreement entered into with the ANERT or any other public sector enterprise or any Government, Central or State; and
4. I/We hereby certify that we have taken steps to ensure that in conformity with the provisions of this EOI, no person acting for us or on our behalf will engage in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice.

SOLGEN ENERGY PRIVATE LIMITED THRISSUR

SUB TREASURY - 4 MAR 2024 THRISSUR

39259 value Rs.50

Solgen Energy Pvt Ltd
Kuttanellur

7 MAR 2024

P. SURABHI
VENDOR No : 42
KUTTANELLUR
(P.S. ASWATHY)

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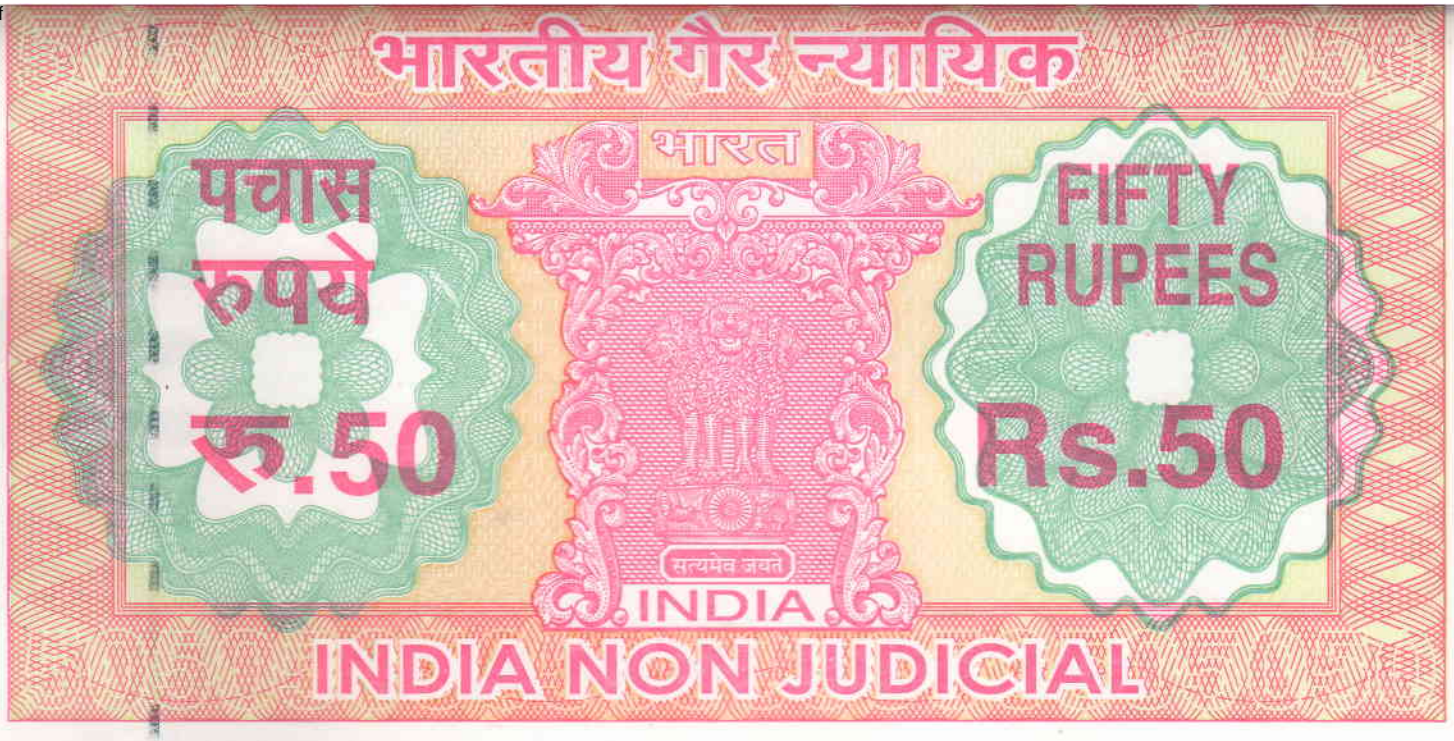

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DA 688344

8. I / We understand that you may cancel the Selection Process at any time and that ANERT is neither bound to accept any Proposal that you may receive nor to select the Consultant, without incurring any liability to the Applicants in accordance with the EOI document.

9. I / We certify that in regard to matters other than security and integrity of the country, we or any of our Associates have not been convicted by a Court of Law or indicted or adverse orders passed by a regulatory authority which would cast a doubt on our ability to undertake the Consultancy for the Project or which relates to a grave offence that outrages the moral sense of the community.

10. I / We further certify that in regard to matters relating to security and integrity of the country, we have not been charge-sheeted by any agency of the Government or convicted by a Court of Law for any offence committed by us or by any of our Associates.

SOLGEN ENERGY PRIVATE LIMITED THRISSUR

Value Rs.50

39352

Solgen Energy Pvt Ltd

P.R.SURABHI
VENDOR No: 42
KUTTANELLUR

SUB TREASURY
- 4 MAR 2024

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11. I / We hereby irrevocably waive any right or remedy which we may have at any stage at law or howsoever otherwise arising to challenge or question any decision taken by the ANERT (and/ or the Government of Kerala / India) in connection with the selection of Consultant or in connection with the Selection Process itself in respect of the above mentioned Project.
12. I / We agree and understand that the proposal is subject to the provisions of the EOI document. In no case, shall I/we have any claim or right of whatsoever nature if the Consultancy for the Project is not awarded to me/us or our proposal is not opened or rejected.
13. I / We agree to keep this offer valid for (120) days from the date of opening of technical bid.
14. I/We have studied EOI and all other documents carefully. We understand that we shall have no claim, right or title arising out of any documents or information provided to us by the ANERT or in respect of any matter arising out of or concerning or relating to the Selection Process including the award of Consultancy.
15. The Technical Proposals and Financial Proposals are being submitted in separate Covers available in the etenders portal.
16. I/We agree and undertake to abide by all the terms and conditions of the EOI Document. In witness thereof, I/we submit this Proposal under and in accordance with the terms of the EOI Document.

Signed by Sri Abhilash M.G,
Manager Installations

SOLGEN ENERGY PRIVATE LIMITED THRISSUR

(Date) 09.03.2024

In the presence of witnesses

1. Jini Devassy
   Tender executive
2. Ragesh A
   Senior Executive

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भारतीय गैर न्यायिक

भारत

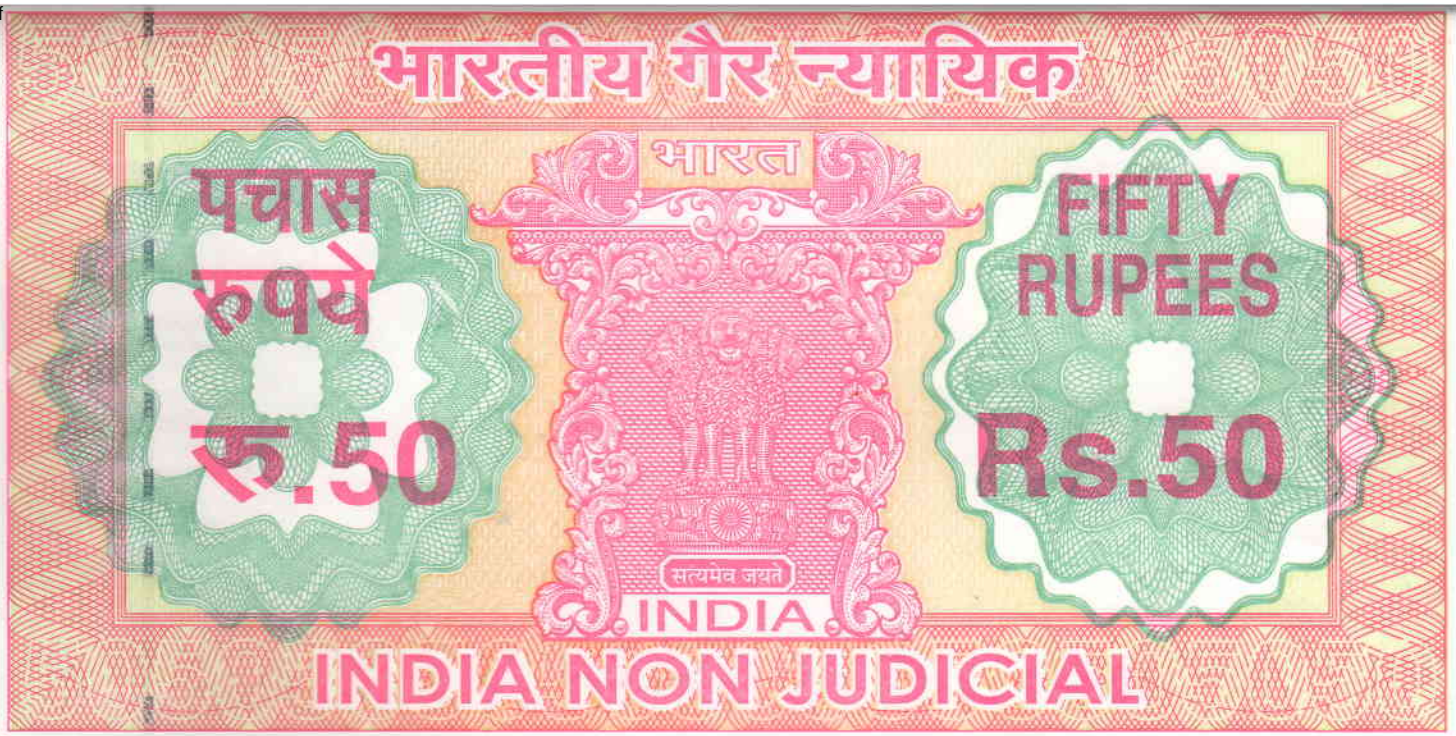
पचास रुपये रु.50

FIFTY RUPEES Rs.50

सत्यमेव जयते

INDIA

INDIA NON JUDICIAL



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DA 688337

ANNEXURE C – POWER OF ATTORNEY

Know all men by these presents, we, Solgen Energy Pvt Ltd, (name of Firm and address of the registered office) do hereby constitute, nominate, appoint and authorise Mr. Abhilash M.G son of Girijan and presently residing at Meledath Thekkethil House, Kottappuram P.O, Erumapetty, Thrissur-680584, who is presently employed with us and holding the position of Manager Installations as our true and lawful attorney (Hereinafter referred to as the —Authorized Representative) to do in our name and on our behalf, all such acts, deeds and things as are necessary or required in connection with or incidental to submission of our Proposal for and selection as the Consultant for Expression of interest (EOI) for the selection of Agency for Pilot Implementation of Battery Energy Storage System at ANERT HQ,

NOTARY 5149/2024 STEPHY JOHN THRISSUR DISTRICT REG. No. 6520 GOVT. OF INDIA

SOLGEN ENERGY PRIVATE LIMITED THRISSUR

9/03/2024

39343 Rs.50

Solgen Energy Pvt Ltd

SUB TREASURY - 4 MAR 2024

P.R. PURABHI VENDOR No : 42 KUTTANELLUR

भारतीय गैर न्यायिक

भारत

पचास रुपये रु.50

FIFTY RUPEES Rs.50

सत्यमेव जयते

INDIA

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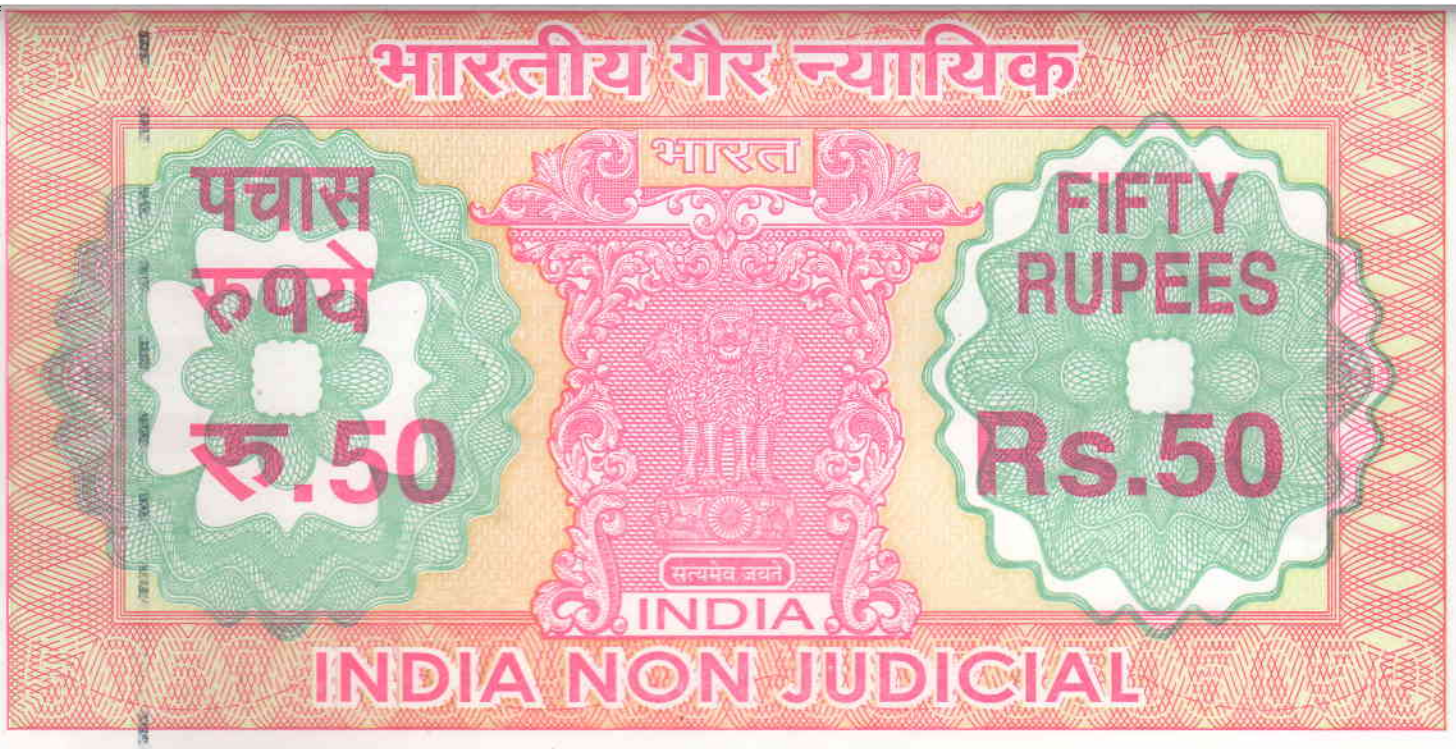

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DA 688338

Thiruvananthapuram including but not limited to signing and submission of all applications, proposals and other documents and writings, participating in pre-bid and other conferences and providing information/ responses to the ANERT, representing us in all matters before theANERT, signing and execution of all contracts and undertakings consequent to acceptanceof our proposal and generally dealing with the Authority in all matters in connection with or relating to or arising out of our Proposal for the said Project and/or upon award thereofto us till the entering into of the Agreement with the ANERT.

SOLGEN ENERGY PRIVATE LIMITED THRISSUR

NOTARY 5149/2024 STEPHY JOHN THRISSUR DISTRICT REG. No. 6529 GOVT. OF INDIA

9/03/2024

SUB TREASURY - 4 MAR 2024

No 39346 Value Rs 50

Sold to Solgen Energy Pvt Ltd Kuttanellur

P. RAJABHI Notary No: 42 KUTTANELLUR

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भारत

पचास रुपये रु.50

FIFTY RUPEES Rs.50

सत्यमेव जयते

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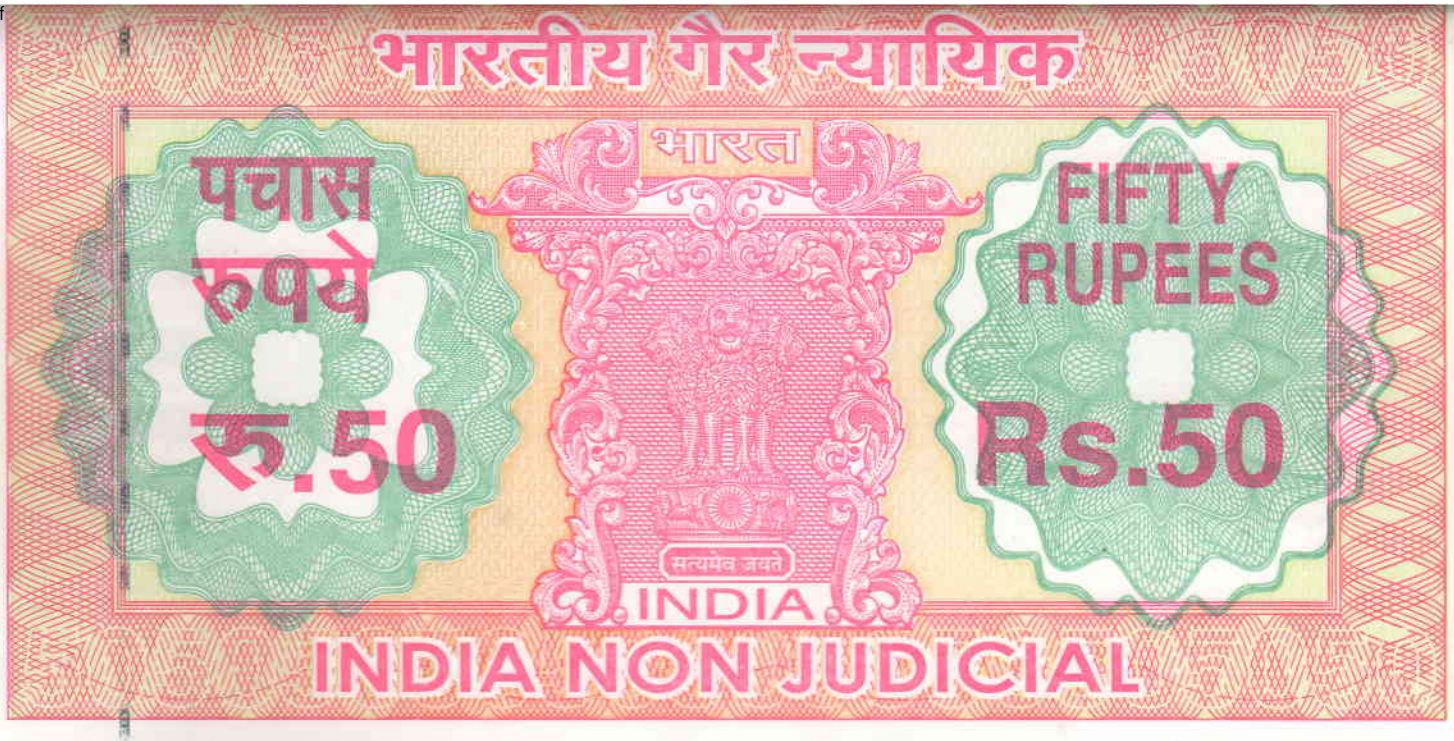

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DA 688339

IN WITNESS WHEREOF WE, SOLGEN ENERGY PVT LTD THE ABOVE - NAMED AUTHORISED REPRESENTATIVE HAVE EXECUTED THIS POWER OF ATTORNEY ON THIS DAY OF MARCH, 2024

For Solgen Energy Pvt Ltd

SOLGEN ENERGY PRIVATE LIMITED THRISSUR

Christo George,
Director

NOTARY
S149/2024
STEPHY JOHN
THRISSUR DISTRICT
REG. No. 6529
GOVT. OF INDIA

9/03/2024

SUB TREASURY
- 4 MAR 2024

No 3.9345 Value Rs.50
Sold to
Solgen Energy Pvt Ltd
Kuttanellur

E. SURABHI
VENDOR No : 42
KUTTANELLUR
(P.S. ASWATHY)

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Solgen.pdf

भारतीय गैर न्यायिक

भारत

पचास रुपये रु.50

FIFTY RUPEES Rs.50

सत्यमेव जयते

INDIA

INDIA NON JUDICIAL

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DA 688340

Witnesses:

1. Jini Devassy , Tender Executive
2. Aparna K, CRM

SOLGEN ENERGY PRIVATE LIMITED THRISSUR

EXECUTED & SIGNED IN MY PRESENCE ON 9/03/2024 AT Thrissur 680006

ATTESTED

Notarized

Accepted (Signature, name, designation and address of the Attorney)

5149/2024

9/03/2024

NOTARIAL REGISTER
Sl. No. 5149 Vol. VI Page No. 206
Receipt No. 5149

STEPHY JOHN
ADVOCATE & NOTARY
PATTOKKARAN, ANCHERY
KURIACHIRA, P.O., THRISSUR
KERALA, S. INDIA

SPECIAL ADHESIVE

9/03/2024

No 39346 Value Rs.50

Sold to Solgen Energy Pvt Ltd Kuttanellur

SUB TREASURY - 4 MAR 2024 THRISSUR

P.R. SURABHI
VENDOR No. 42
KUTTANELLUR
(P.S. ASWATHY)

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ANNEXURE D – DECLARATION BY THE BIDDER

e-EoI Notification No: ANERT-TECH/41/2024-PE1(RTS) , dtd 27.02.2024 for Expression of Interest (EoI) for the Selection of Agency for Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram

To

The CEO

ANERT

We, the undersigned, declare that:

1. We have examined and have no reservations to the Bidding Document, including Addenda No. (if any)
2. We offer to supply in conformity with the Bidding Document and in accordance with the delivery schedule
3. Our Bid shall be valid for a period of 4 months from the date fixed as deadline for the submission of EoIs in accordance with the Bidding Document, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;
4. If our Bid is accepted, we commit to submit a Security Deposit in the amount of 3 percent of the Contract Price for the due performance of the Contract;
5. We are not participating, as Bidders, in more than one Bid in this bidding process;
6. Our firm, its affiliates or subsidiaries, including any subcontractors or suppliers for any part of the Contract, has not been declared ineligible by the ANERT or Government of Kerala;
7. We understand that this Bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal Contract is prepared and executed.
8. Our firm has obtained the certifications from MNRE or NABL approved Test laboratories that the goods and services are satisfying the technical criteria specified in the bid.

SOLGEN ENERGY PRIVATE LIMITED THRISSUR

Thrissur

Abhilash M.G
Manager Installations

File No. ANERT-TECH/41/2024-PE1(RTS) (Computer No. 7540)

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ANNEXURE E – DECLARATION OF RELATIONSHIP WITH ANERT EMPLOYEE

EoI Notification No.: ANERT-TECH/41/2024-PE1(RTS)

Expression of Interest (EoI) for the Selection of Agency for Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram

To

The CEO

ANERT

Name of the ANERT employee with Designation: Nil

Name of the bidder related to the employee: Nil

This is to put on record that Shri/Smt ……Nil…. currently working as ……NIl…….. in ANERT is related to M/s Solgen Energy Pvt Ltd, who is the bidder in the bid. We are aware of the Anti-corruption policy of ANERT and will observe the highest standards during the execution of contract and shall retain from corrupt, fraudulent, collusive or coercive practices on competing for the contract.

Thrissur

Abhilash M.G
Manager Installations
Solgen Energy Pvt Ltd

File No. ANERT-TECH/41/2024-PE1(RTS) (Computer No. 7540)

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Solgen Energy Pvt. Ltd.
22/314-B, Kuttanallur P.O, Thrissur - 680014, Kerala, India.

ANNEXURE F – UNDERTAKING FOR NO BLACKLISTING & NO BANNING

Undertaking for No Blacklisting & No Banning

To

The CEO
ANERT

Sub: Expression of Interest (EoI) for the Selection of Agency for Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram

I / We hereby declare that presently our Company/Limited Liability Partnership/ Partnership Firm/ Sole Proprietorship is having unblemished record and is not declared ineligible for corrupt/fraudulent practices by any State/Central Government/PSU on the date of Bid Submission.

I / We further declare that presently our Company/Limited Liability Partnership/ Partnership Firm/ Sole Proprietorship is not blacklisted and not declared ineligible for reasons other than corrupt/fraudulent practices by any State/Central Government/PSU on the date of Bid Submission.

If this declaration is found to be incorrect then without prejudice to any other action that may be taken, our security may be forfeited in full and the EoI if any to the extent accepted may be cancelled.

SOLGEN ENERGY PRIVATE LIMITED THRISSUR

Abhilash M.G
Manager - Installations

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MAHADEVAN & HARI
Chartered Accountants

Ref.

Date. 31.10.2023

TURNOVER & NETWORTH CERTIFICATE

We hereby certify that **SOLGEN ENERGY PRIVATE LTD** residing at DOOR NO.14/19 , SIDCO INDUSTRIAL ESTATE P.O.PERINGANDOOR , THRISSUR - 680581 , KERALA CIN : U40300KL2014PTCO37446 has Turnover and Net worth for the Financial Years as under:

Financial Statement (in Indian Rupees)					
a. Information as per audited Balance Sheet					
Year	**2022-23**	**2021-22**	**2020-21**	**2019-20**	**2018-19**
Total Assets	14,44,51,062	11,44,64,400	95,884,097	77,097,953	103,991,207
Total Liabilities	14,26,73,860	11,30,18,062	9,55,11,032	8,46,92,967	10,18,74,556
Net Worth (Capital+Reserve)	17,77,201	14,46,339	3,73,065	(75,95,014)	21,16,651
Current Assets	14,19,85,555	11,15,83,971	9,26,06,891	7,55,73,102	10,20,23,645
Current Liabilities	10,91,05,860	9,05,18,062	7,54,11,032	6,45,92,967	8,67,74,556

MAHADEVAN & HARI ★ CA ★ THRISSUR ★ Chartered Accountants

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MAHADEVAN & HARI
Chartered Accountants

Ref.

Date. 31.10.2023

b. Information as per audited profit & loss statement					
Year	2022-23	2021-22	2020-21	2019-20	2018-19
Total Revenue	10,10,03,208	9,45,38,499	112,368,006	47,291,589	107,621,762
Profit before Tax	4,59,995	12,71,653	9,408,146	(9,726,814)	636,154
Profit after Tax	3,30,862	10,73,275	7,968,079	(9,711,666)	577,267
Turnover	9,83,83,400	9,13,12,984	111,626,521	47,058,934	107,104,441

The above certificate is issued exclusively for participating Government & Semi Government tenders.

For MAHADEVAN & HARI
Chartered Accountants
Reg. No: 025348S

Place: Thrissur

Date : 31-10-2023

HARI GOPINATH, A.C.A
Partner (M.No: 259381)
UDIN: 23259381BGYULW3971

First Floor, Kaizen Ashtapathi Apartments, Thiruvambady Road, Thrissur- 680 022.
Tel. :Off. 2330 237, 2330 575, 2330 266

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Solgen Energy Pvt. Ltd.
22/314-B, Kuttanallur P.O, Thrissur - 680014, Kerala, India.

DECLARATION

We hereby declare that Mr. Abhilash M.G holding the position of Manager-Installations, Solgen Energy Pvt Ltd is a Graduate Engineering degree holder with prior experience in Solar / BESS / UPS to attend any complaints. The details of Office at Thiruvananthapuram is as follows:

Solgen Energy Pvt Ltd, TC 4/432(9)1st Floor,
CP Towers, Amabalam Junction, Kawadiyar
Thiruvananthapuram, Kerala, India 695003,

For Solgen Energy Pvt Ltd

SOLGEN ENERGY PRIVATE LIMITED THRISSUR

Authorised Signatory

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Deye 德業

TO WHOM SO IT MAY CONCERN

This is to certify Mr. Aswin B.S holding position of Service Engineer at Solgen Energy Pvt Ltd has successfully completed training in Battery Energy Storage System(BESS)

ESIC NO : 5404062914

EPFO NO: 101865713006

For Deye Inverter Technology Private Limited

Authorised Signatory

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GOVERNMENT OF INDIA

MINISTRY OF CORPORATE AFFAIRS

Registrar of Companies, Ernakulam
1st Floor , Company Law Bhawan , BMC Road , Thrikkakara (PO)

Certificate of Incorporation

[Pursuant to sub-section (2) of section 7 of the Companies Act, 2013 and rule 8 of the Companies (Incorporation) Rules, 2014]

I hereby certify that SOLGEN ENERGY PRIVATE LIMITED is incorporated on this Fourth day of November Two Thousand Fourteen under the Companies Act, 2013 and that the company is limited by shares.

The CIN of the company is U40300KL2014PTC037446.

Given under my hand at Ernakulam this Fourth day of November Two Thousand Fourteen.

Signature Not Verified
Digitally signed by Josekutty V F
Date: 2014.11.04 12:14:16 GMT+05:30

A SEHAR PONRAJ
Registrar of Companies
Kerala

Mailing Address as per record available in Registrar of Companies office:

SOLGEN ENERGY PRIVATE LIMITED
DOOR NO. 14/19, SIDCO INDUSTRIAL ESTATE, P O PERINGADOOR,
THRISSUR - 680581,
Kerala, INDIA

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Government of India

Form GST REG-06

[See Rule 10(1)]

Registration Certificate

Registration Number :32AAVCS0866L1ZR

1.	**Legal Name**	SOLGEN ENERGY PRIVATE LIMITED			
2.	**Trade Name, if any**	SOLGEN ENERGY PVT.LTD.			
3.	**Constitution of Business**	Private Limited Company			
4.	**Address of Principal Place of Business**	DOOR NO 14/19, SIDCO INDUSTRIAL ESTATE, P O PERINGANDOOR, ATHANI, Thrissur, Kerala, 680581			
5.	**Date of Liability**	01/07/2017			
6.	**Period of Validity**	From	01/07/2017	To	NA
7.	**Type of Registration**	Regular			
8.	**Particulars of Approving Authority**				
Signature					

Name	
Designation	
Jurisdictional Office	
9. Date of issue of Certificate	21/09/2017
Note: The registration certificate is required to be prominently displayed at all places of business in the State.	

This is a system generated digitally signed Registration Certificate issued based on the deemed approval of the application for registration

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Annexure A

GSTIN	32AAVCS0866L1ZR
Legal Name	SOLGEN ENERGY PRIVATE LIMITED
Trade Name, if any	SOLGEN ENERGY PVT.LTD.

Details of Additional Places of Business

Total Number of Additional Places of Business in the State 1

Sr. No.	Address
1	22/314-B, PUTHUR GRAMA PANCHAYAT, 22, KUTTANELLUR, Thrissur, Kerala, 680014

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Annexure B

GSTIN	32AAVCS0866L1ZR
Legal Name	SOLGEN ENERGY PRIVATE LIMITED
Trade Name, if any	SOLGEN ENERGY PVT.LTD.

Details of Managing / Whole-time Directors and Key Managerial Persons

1		Name	CHRISTO GEORGE
		Designation/Status	MANAGING DIRECTOR
		Resident of State	Kerala
2		Name	THANDASSERY RAGHAVAN RAGHULAL
		Designation/Status	CHAIRMAN
		Resident of State	Kerala

इस कार्ड के खोने/पाने पर कृपया सूचित करें/लौटाएं:
आयकर पैन सेवा इकाई, एन एस डी एल
5 वीं मंजिल, मंत्री स्टर्लिंग,
प्लॉट न. 341, सर्वे नं. 997/8,
मॉडल कालोनी, दीप बंगला चौक के पास,
पुणे - 411 016.

If this card is lost / someone's lost card is found, please inform / return to :

Income Tax PAN Services Unit, NSDL
5th Floor, Mantri Sterling,
Plot No. 341, Survey No. 997/8,
Model Colony, Near Deep Bungalow Chowk,
Pune - 411 016.

Tel: 91-20-2721 8080, Fax: 91-20-2721 8081
e-mail: tininfo@nsdl.co.in

आयकर विभाग
INCOME TAX DEPARTMENT
भारत सरकार
GOVT. OF INDIA

SOLGEN ENERGY PRIVATE LIMITED

04/11/2014
Permanent Account Number
AAVCS0866L

18112014

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EMPLOYEES' PROVIDENT FUND ORGANISATION
(A statutory Body under the Ministry of Labour and Employment, Government of India)
www.epfindia.gov.in

PROVIDENT FUND CODE NUMBER INTIMATION LETTER

Validity of this letter is of three wage months from date of issue. Based on remittance, inspection and submission of all documents, certificate of coverage will be made available in ECR Login.

No: 7417259802KLKCH

Date: 12-07-2015

To,

Mr. CHRISTO GEROGE
MANAGING DIRECTOR
SOLGEN ENERGY PRIVATE LIMITED
SOLGEN ENERGY PRIVATE LIMITED, DOOR NO. 14/19, SIDCO INDUSTRIAL
THRISSUR,
KERALA - 680581

Sub: Allotment of Code Number to establishment M/s SOLGEN ENERGY PRIVATE LIMITED under Employees' Provident Fund and Miscellaneous Provisions Act, 1952-regarding.

Sir,

Based on the information submitted online by you, your establishment is registered with Employees' Provident Fund Organisation with the following code number :

Code Number : KRKCH1342281

This code number is allotted based on the following declarations by you:

1. Name of Establishment : SOLGEN ENERGY PRIVATE LIMITED
2. PAN of establishment : AAVCS0866L
3. Date on which employment strength crossed 19 : 28-03-2015
4. Section under which covered : 0001(3)(b)
5. Primary Activity : TRADING - COMMERCIAL ESTABLISHMENTS
6. Ownership Type : PRIVATE LIMITED COMPANIES
7. The address proof of the establishment is **1. copy of bank passbook/statement 2. any license/certificate/number issued by any Govt. authority**
8. The proof of date of set up 04-11-2014 is **Incorporation Certificate issued by the Registrar of the Companies.**
9. As at the time of application, your establishment is having the following licenses and registrations:

S.No.	TYPE	NUMBER	DATE	ISSUED BY	ISSUED AT PLACE
a	Registrar of Companies	U40300KL2014PTC037446	04-11-2014	REGISTRAR OF COMPANIES	ERNAKULAM

10. As on date of your application, your establishment is registered with ESIC with code number 54000228350000699

Please take a print-out of this Intimation letter and Form 5A generated along with and submit a copy of the same together with the application form generated with the acknowledgement at the time of online submission, copies of all documents declared in the application form and attested specimen signature of the employer/authorized officer of your establishment, to the following Office of EPFO where all services related to your establishment shall ordinarily be attended to

SUB REGIONAL OFFICE
KOCHI
Bhavishya Nidhi Bhawan 36/685A,PB.No. 1895, KALOOR 682017
sro.kochi@epfindia.gov.in

Please note that This intimation letter is generated with the Owners' Details in Form 5A and the intimated letter will be valid only if the Form 5A is enclosed.

Important information:

1. By virtue of the sections 1(3)(a) and 1(3)(b) of the Act, it applies on an establishment on its own volition and you as an employer, are required to comply with the provisions of the Act accordingly. The obligations/duties/responsibilities cast upon you as an employer of this establishment and penalties, on account of non-compliance with the same, are explained on our website **www.epfindia.gov.in** and there is a link on ECR (Electronic Challan cum Return) portal also for the same. You are required to go through them carefully.

A Starter's Kit for compliance under the Act is available for download from the ECR portal a link to which is provided from the epfindia.gov.in home page.

2. Remittance of dues under the provisions of the Act is to be made only through a Challan generated through the ECR (Electronic Challan cum Return) portal. (The process for registration on the portal, preparation of the ECR txt file and related information is available on the website and the portal).

3. In case this letter is produced as a proof of the code number of the establishment, before any person including any Inspector from EPFO, the Form 5A generated through the portal at the time of registration should be a part of this letter. The remittance details of the establishment will be available on the EPFO website through the link "Establishment Search" where from March 2012 wages onwards, all payments with the names of employees are available on the link in cases of remittances made after uploading the ECR.

4. Please quote the Code Number for all the future correspondence with EPFO.

This is a system generated letter and needs no signature.

Employees' Provident Fund Organisation

Encl: Form 5A Dated: 12-07-2015

File No. ANERT-TECH/41/2024-PE1(RTS) (Computer No. 7540)
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Regional Office
EMPLOYEES' STATE INSURANCE CORPORATION
ESI Corporation, Panchdeep Bhawan, North Swaraj Round,
Thrissur

C-11 Regd. with a.d.

To
M/s.SOLGEN ENERGY PVT LTD

Dated : 7/8/2015

22/314 B,
Kuttanellur.P.O
,680014

Sub : Implementation of the E.S.I. act, 1948 and Registration of Employees of the Factories and Establishments under Section 1(3)/1(5) of the ESI Act, as amended.

Dear Sir(s),

1. It is informed that under section 1(3) of the ESI Act, 1948 is applicable to all factories covered under the Act within the area where your factory is situated.

2. It is further informed that the appropriate Government has extended the provisions of the Act to other establishments Under Section 1(5) of the Act in this area

3. Under Section 2 A of the Act such a factory/establishment is required to register itself under the Act and Chapter IV thereof casts a responsibility on the principal employer thereof to get his employees registered and pay contributions in respect of these employees covered under the Act.

4. On the basis of the particulars in respect of your factory/establishment submitted by you/ on the basis of the report of the inspection conducted by the Social Security Officer, who inspected your factory on -NA-, your factory falls within the purview of Section 2(12) of the Act with effect from 20/03/2015. In case, however, subsequent facts reveal that your factory was coverable from a date prior to the date mentioned above, you shall make yourself liable to comply with the provisions of the Act from such earlier date.

5. It is requested to take immediate steps for registration of your employees by submitting declaration forms online, payment of contribution, maintenance of records etc. from the date of coverage of your factory/establishment under the act.

6. You are also requested to submit employer's registration form (form 01) on line, as required under the provisions of sec.2-A of the ESI Act , 1948 read with regulation 10-B of the ESI(General), Regulations, 1950(only in case your Code No. is alloted as a result of Survey by a Social Security Officer of ESI Corporation).

7. For the sake of convenience your factory/establishment has been allotted code No **54000228350000699** which may kindly be used in all communications sent to this office and on all forms at the place indicated for the purpose. The Branch Office of the Corporation situated at **ESI Corporation,ESI Dispensary Compound,Near Industrial Estate,Ollur-680 306, Thrissur** has been instructed to render necessary assistance to you in connection with registration of your employees. In case you find any difficulty or for any other purpose which may be necessary in connection with the Scheme you are requested to contact the Manager of the above Branch Office who will render necessary help in the matter.

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8. A State wise list of ESI Dispensaries is available on our website www.esic.nic.in under the link Directories which can be downloaded. It is requested that publicity may be given about the Employees' State Insurance Dispensaries to enable your employees to choose their E.S.I. Dispensaries

9. The Corporation officials would be pleased to give all necessary and possible guidance to you in discharging your duties and obligations under the ESI Act, 1948 and I am confident of prompt and timely compliance under the provisions of the ESI Act and Regulations on your part.

10. All the Branches of State Bank of India are authorized to accept the ESI Contribution.

11. The brochures/leaflets containing benefits available under the scheme and obligation of the employer etc are available on our website www.esic.nic.in under the link Publications which may be downloaded for wide publicity for the smooth functioning of the Scheme

12. Please indicate your Code No. on all correspondences to avoid delay

13. **This is a computer generated letter and does not require any signature.**

Yours faithfully,

Asstt./Dy. Director

Encl. : As state above

Copy for information and necessary action to:

Name of the principal employer : CHRISTO GEORGE

No. of employees : 20

ENSURE - TO INSURE ALL ELIGIBLE WORKERS WITH ESI FOR TOTAL SOCIAL SECURITY

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PURCHASE ORDER

Invoice To	Voucher No.	Dated
Batliboi Renewable Energy Solutions Pvt Ltd No.73, 8th Street, 2nd Sector, K.K.Nagar, Chennai - 600078 GSTIN/UIN: 33AAACB6055H1ZZ State Name : Tamil Nadu, Code : 33 CIN: L52320MH1941PLC003494 E-Mail : support@brensol.in	**PO/SPARES/SOLAR170/23-24**	**8-Jan-24**
		Mode/Terms of Payment
Supplier (Bill from)	Reference No. & Date. **PO/SPARES/SOLAR170/23-24**	Other References
Festa Solar Private Limited N0:50, Vanagaram-Ambattur Road, Ayanambakkam, Chennai-600095 GSTIN/UIN : 33AADCF5628D1ZZ State Name : Tamil Nadu, Code : 33	Dispatched through	Destination **Tirupur**
	Terms of Delivery **2 to 3 Days**	

Sl No.	Description of Goods	Part No.	Due on	Quantity	Rate	per	Disc. %	Amount
1	**Battery -DeyeHVBatteries51.2V, 100Ah**	SLR 6241	*8-Jan-24*	**24 Nos**		Nos		
2	**Battery Rack-13 Rack Unit(12+1)**	SLR 6242	*8-Jan-24*	**4 Nos**		Nos		
3	**Cluster Control Box-120 -750Vdc,100A**	SLR 6244	*8-Jan-24*	**2 Nos**		Nos		
4	**EP Cable 5.0-1000V/ 4 AWG - 5 Meter Power Cable Positive**	SLR 6245	*8-Jan-24*	**3 Nos**		Nos		
5	**EN Cable 5.0-1000V / 4 AWG - 5 Meter Power Cable Negative**	SLR 6246	*8-Jan-24*	**3 Nos**		Nos		
6	**EPWR Cable 5.0-5 Meter Power Cable to External Supply**	SLR 6247	*8-Jan-24*	**3 Nos**		Nos		

continued ...

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PURCHASE ORDER(Page 2)

Invoice To **Batliboi Renewable Energy Solutions Pvt Ltd** No.73, 8th Street, 2nd Sector, K.K.Nagar, Chennai - 600078 GSTIN/UIN: 33AAACB6055H1ZZ State Name : Tamil Nadu, Code : 33 CIN: L52320MH1941PLC003494 E-Mail : support@brensol.in	Voucher No. PO/SPARES/SOLAR170/23-24	Dated 8-Jan-24
		Mode/Terms of Payment
	Reference No. & Date. PO/SPARES/SOLAR170/23-24	Other References
	Dispatched through	Destination Tirupur
Supplier (Bill from) **Festa Solar Private Limited** N0:50, Vanagaram-Ambattur Road, Ayanambakkam, Chennai-600095 GSTIN/UIN : 33AADCF5628D1ZZ State Name : Tamil Nadu, Code : 33	Terms of Delivery **2 to 3 Days**	

Sl No.	Description of Goods	Part No.	Due on	Quantity	Rate	per	Disc. %	Amount
7	**ECOM Cable 5.0-5 Meter Communication Cable**	SLR 6248	*8-Jan-24*	**3 Nos**		Nos		
	SGST INPUT 9%				*9*	*%*		
	CGST INPUT 9%				*9*	*%*		
	Less : ***Paise Rounded Off***							
	Total			**42 Nos**				

Amount Chargeable (in words) *E. & O.E*

Company's PAN : **AAACB6055H**

for Batliboi Renewable Energy Solutions Pvt Ltd

Authorised Signatory

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Development Alternatives

B-32, Tara Crescent
Qutub Institutional Area
New Delhi- 110016, INDIA
Tel: +91 (11) 2654-4100 / 2654-4200
Fax: +91 (11) 2685-1158
Email: mail@devalt.org
Website: www.devalt.org

PO No.: PO(23-24)072
Date : 09-10-23

To
M/s. Festa Solar Private Limited
Multi Infotech, Ground, 1st Floor and 2nd Floor,
97/80, Vanagaram Ambattur Road, Chennai - 600058

Sub: Supply of Deye HV Battery Bank

Dear Sir,

With reference to your quotation No.HV Batteries - 40.96 KWhr LiFePo4, Dt.5-10-2023, supply of Deye HV Batteries 51.2V, 100Ah (6000 Cycles) including rack and accessories. We are pleased to place our work order for the same as per the details mentioned below:

S.No.	Item/s Description	Qty.	Unit	Cost	Amount
1	Deye HV Batteries 51.2V, 100Ah (6000 Cycles) including rack and accessories as per your quotation no.:HV Batteries - 40.96 KWhr LiFePo4, Dt.5-10-2023	1	Nos		
				Freight	As per Actual
				GST@ 18%	
				Net Payment (Round Off.)	

Amount in Words :

Terms and Condition :

1. Price Basis: The prices agreed are on Ex-Works basis.

2. Kindly raise Invoice in the name of :
Society for Development Alternatives
B-32, Tara Crescent, Qutub Institutional Area,
New Delhi-110016.

Delivery Address
Nav Chetna Centre
Mangraha Sikhar Marg,
Block - Sikhar, Tehsil - Chunar, District - Mirzapur,
Post Office - Sikhar, PIN - 231306, Uttar Pradesh

Attn. : Saurabh Mishra
Contact No.:- 070071-65469

3. Freight : As per Actual

4. Payment Terms : 50% in advance alongwith the Purchase Order balance 50% before dispatch

5. Delivery Period : Within 10 Days from the date of placement of P.O

6. Transit Insurance : To be provided by supplier.

7. Warranty : 10 years.

8. Documents Required : Original Copy of Invoices, Freight bill and warranty card

9. Installation and Commission : In supplier's scope.

Yours faithfully

For Society for Development Alternatives

Col. Rajeev Kumar (Retd.)
Head Administration

Society for Development Alternatives

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BOS-G & BOS-G PRO

File No. ANERT-TECH/41/2024-PE1(RTS) (Computer No. 7540)

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Document Name	BOS-G & BOS-G Pro connections
Prepared By	Mrs. Shivani Borthakur
Prepared On	16th Feb 2024
Version No	01

Ningbo Deye ESS International Trade Co., Ltd

No. 18th Zhenlong Road Longshan Cixi Ningbo Zhejiang-315311 P.R. China

File No. ANERT-TECH/41/2024-PE1(RTS) (Computer No. 7540)

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INTRODUCTION:

BOS-G and BOS-G Pro are high voltage (HV) lithium-based prismatic battery rack which makes it ideal for solar energy applications. The battery racks have a lifespan of more than 10years with integrated battery management system which manages and protects the racks if it goes beyond the permissible limits.

The architecture is modular and scalable which offers a flexible capacity range by connecting multiple racks in parallel to power the load during power outages and hence provide flicker free solution.

The system consists of rack mounted battery modules of 51.2V-100Ah (5.12kWh).

The standardized 3U enclosure design makes it convenient for installation and maintenance.

The intrinsically safe $LiFePO_4$ chemistry makes the system reliable and eco-friendly.

The advanced monitoring, control capabilities and thermal management optimises system performance and lifespan.

Technical comparison of BOS-G and BOS-G Pro:

1. BOS-G allows series connection of minimum 3 modules to maximum 12 modules of 5.12kWh whereas BOS-G Pro allows series connection of minimum 5 modules to maximum 17 modules of 5.12kWh.
2. The maximum BMS voltage in BOS-G is 800V while BOS-G Pro has maximum voltage of 1000V.

Ningbo Deye ESS International Trade Co., Ltd

No. 18th Zhenlong Road Longshan Cixi Ningbo Zhejiang-315311 P.R. China

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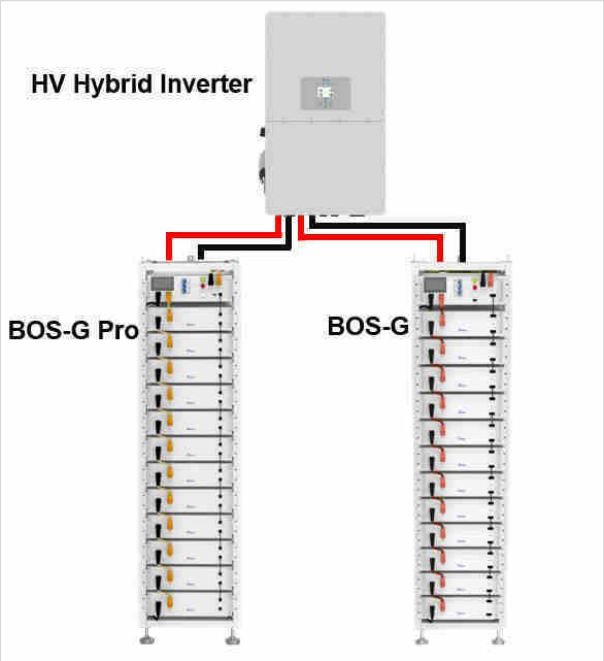
BOS-G and BOS-G Pro connection	Description

BOS-G and BOS-G Pro connected to single hybrid inverter.

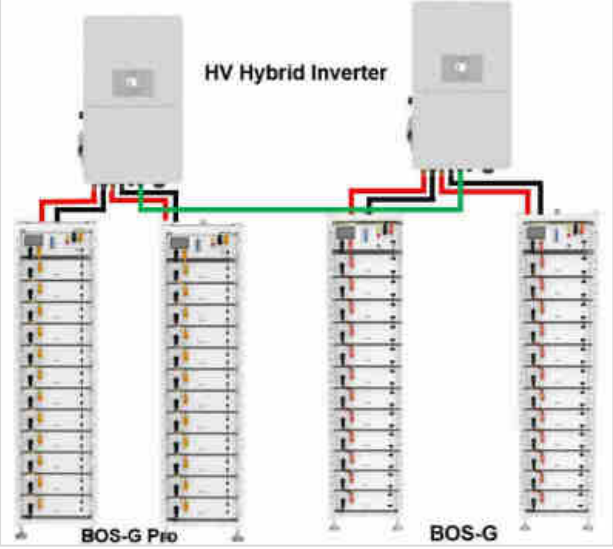


BOS-G 614.4V-100Ah connected to first port of high voltage hybrid inverter.

BOS-G Pro 614.4V-100Ah connected to second port of high voltage hybrid inverter.

Remarks: Accepted

BOS-G and BOS-G Pro connected to multiple hybrid inverters in same plant.



2 racks of 614.4V-100Ah BOS-G connected to first high voltage hybrid inverter and 2 racks of 614.4V-100Ah BOS-G Pro connected to second high voltage hybrid inverter.

Remarks: Accepted

Ningbo Deye ESS International Trade Co., Ltd

No. 18th Zhenlong Road Longshan Cixi Ningbo Zhejiang-315311 P.R. China

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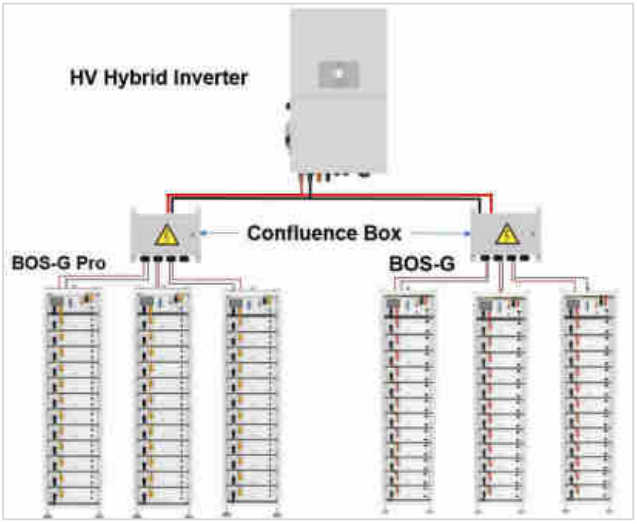
BOS-G and BOS-G Pro connection	Description

BOS-G and BOS-G Pro connected to hybrid inverter through confluence box

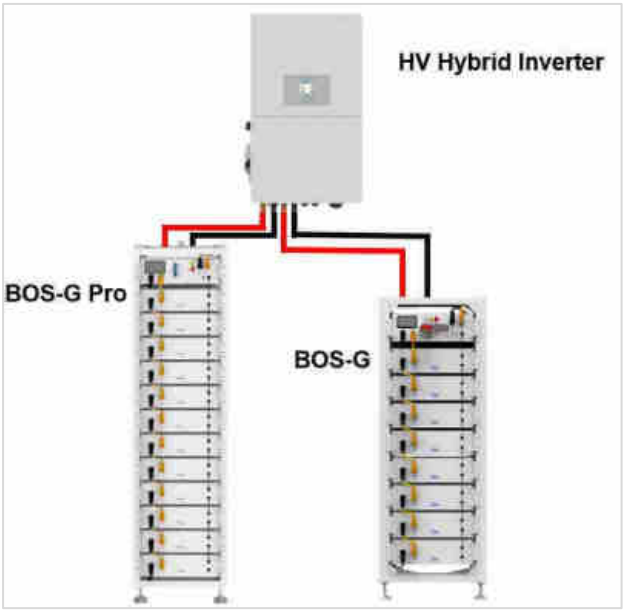


3 racks of 614.4V-100Ah BOS-G connected to 1st confluence box & 3 racks of 614.4V-100Ah BOS-G Pro connected to another confluence box.

The 2-confluence box are paralleled and connected to 1 port of high voltage hybrid inverter or can be connected to 2 ports of high voltage hybrid inverter using Y connector.

Remarks: Accepted

Different voltage rack connected to single hybrid inverter.



614.4V-100Ah BOS-G Pro connected to first port of high voltage hybrid inverter.

409.6V-100Ah BOS-G connected to second port of high voltage hybrid inverter.

Remarks: Not Accepted

Ningbo Deye ESS International Trade Co., Ltd
No. 18th Zhenlong Road Longshan Cixi Ningbo Zhejiang-315311 P.R. China

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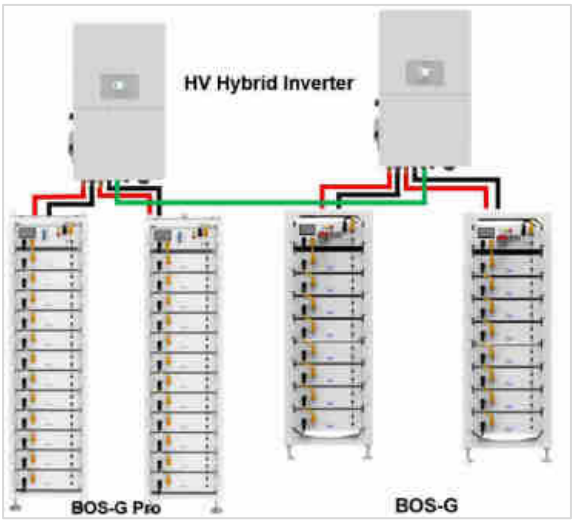
BOS-G and BOS-G Pro connection	Description

BOS-G and BOS-G Pro connected to multiple hybrid inverters in same plant.

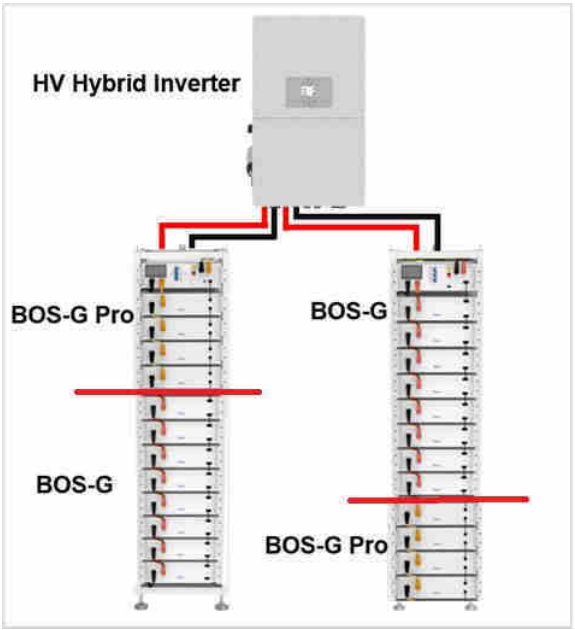


2 racks of 614.4V-100Ah BOS-G Pro connected to one high voltage hybrid inverter.

2 racks of 409.6V-100Ah BOS-G connected to another high voltage hybrid inverter.

Remarks: Not Accepted

BOS-G and BOS-G Pro connected to single hybrid inverter.



Racks having 8 modules of 51.2V-100Ah of BOS-G Pro / BOS-G connected in series with 4 modules of 51.2V-100Ah of BOS-G / BOS-G Pro To obtain 614.4V-100Ah in total.

Remarks: Not Accepted

Ningbo Deye ESS International Trade Co., Ltd
No. 18th Zhenlong Road Longshan Cixi Ningbo Zhejiang-315311 P.R. China

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GE-F60

High Voltage

All-In-One Hybrid ESS

GE-F60 (50KW/60KWh)

Rated power operation the maximum temperature of the battery is less than 40℃

EMS,hybrid inverter and BMS integrated technology, power supply redundancy design, support black start function,Off grid operation,etc

Suitable for high rate cyclic charging and discharging scenarios

Lithium Iron Phosphate (LFP) Battery, The battery pack and system adopt an aerosol fire extinguishing solution

Combustible gas, smoke and temperature detection, system active exhaust, and fire alarm

Supports battery expansion, with a maximum capacity of 360KWh

Deye

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Technical Data

Model	GE-F60
System Specification	
Nominal Output Power/UPS Power (W)	50000
AC Output Frequency and Voltage	50/60Hz; 3L/N/PE 220/380, 230/400Vac
Grid Type	Three phase
Energy Configuration (kWh)	61.4
Dimension (W x D x H,mm)	735x1045x2235（no contain inverter）
Weight Appr. (kg)	1015（battery）+80（inverter）
AC Output Rated Current (A)	75.8
Battery Operating Voltage (V)	500 ~ 700
Max. charging/discharging efficiency	91%
Battery Chemistry	LiFePO4
IP Rating of Enclosure	IP55
Installation Style	Floor-Mounted
Warranty	10 years
Inverter Technical Specification	
Max. PV Input Power (W)	65000
Max. PV Input Current (A)	36+36+36+36
Rated PV Input Voltage (Vdc)	600
Start Up DC Voltage (Vdc)	180
MPPT Voltage Range (Vdc)	150-850
Max. PV Short-circuit Current (A)	55+55+55+55
Number of MPPT	4
Peak Power (off grid)	1.5 time of rated power, 10s
Power Factor	0.8 leading to 0.8 lagging
THD	<3%
DC injection current (mA)	<0.5%In
Display	LCD
Operating Temperature Range (℃)	-40~60(>45℃ derating)
Relative Humidity	15% ~ 85% (No Condensing)
Dimension (W x D x H,mm)	527x294x894
Inverter Communication	CAN,RS485,WIFI,ETH
Safety EMC / Standard	IEC/EN 62109-1,IEC/EN 62109-2，IEC/EN 61000-6-1, IEC/EN 61000-6-2,IEC/EN 61000-6-3,IEC/EN 61000-6-4
Grid Regulation	VDE4105,IEC61727/62116,VDE0126,AS4777.2,CEI 0 21,EN50549-1, G98,G99,C10-11,UNE217002,NBR16149/NBR16150
Max. Efficiency	97.6%
MPPT Efficiency	99.9%
Battery Technical Specification	
Battery Module Nominal Voltage (V)	51.2
Battery Module Energy (kWh)	5.12
BMS Communication	CAN
Battery Module Dimension(W*D*H mm)	440x570x133
Battery Module Weight (kg)	45
Operating Temperature Range	Charge: 0～55℃ / Discharge: -20℃～55℃
Cycle Life	≥6000(@25℃±2℃,0.5C/0.5C,70%EOL)
Battery Module Certification	CE, IEC62619, IEC62040, UN38.3

NINGBO DEYE ESS TECHNOLOGY CO., LTD
Add: NO.18 N. ZHENLONG ROAD LONGSHAN CIXI NINGBO ZHEJIANG 315311 P.R. CHINA
Tel: 0086-0574-8622 9263 | E-mail: sales@deye.com.cn

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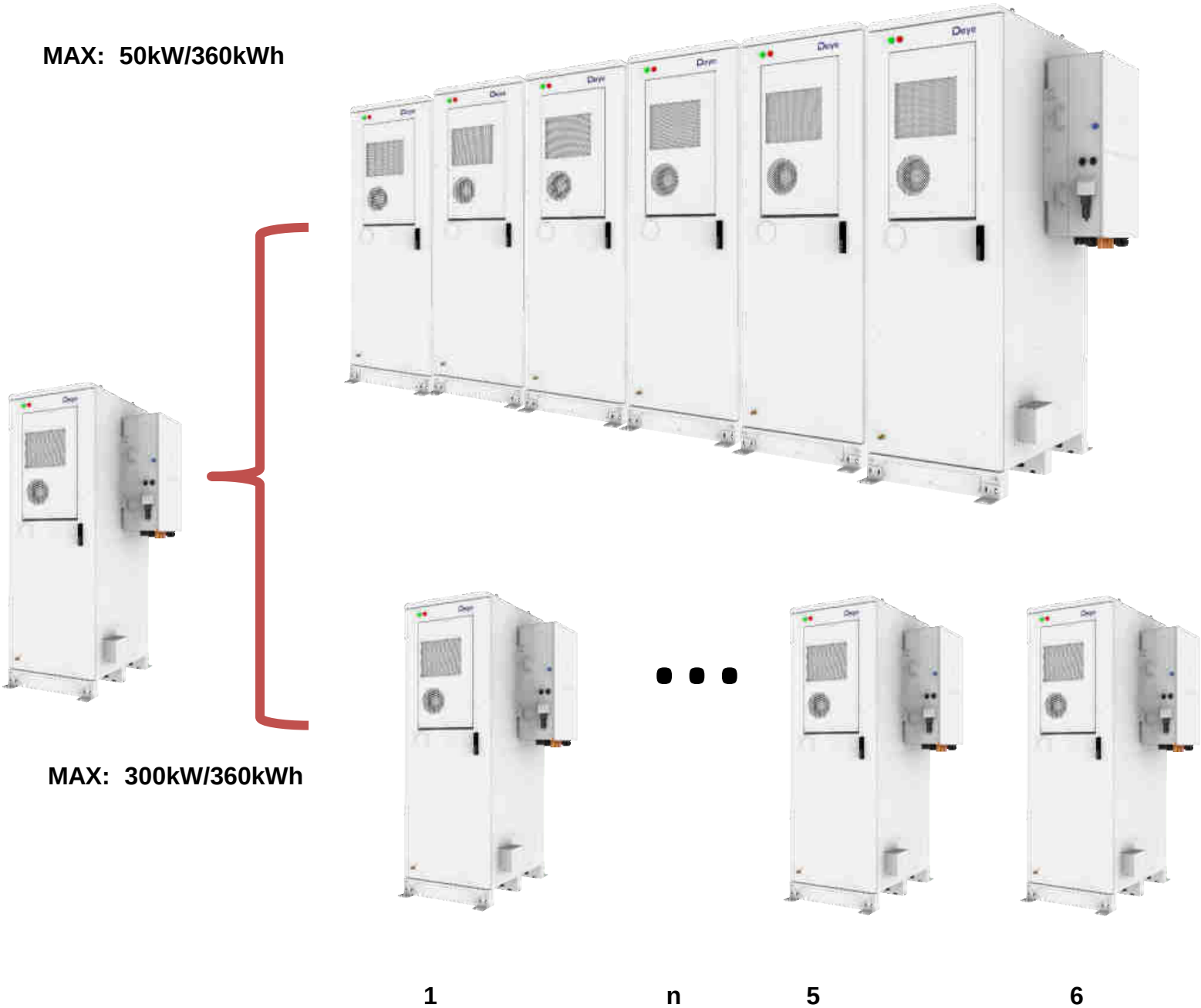
Product expansion



NINGBO DEYE ESS TECHNOLOGY CO., LTD
Add: NO.18TH ZHENLONG ROAD LONGSHAN CIXI NINGBO ZHEJIANG 315311 P.R. CHINA
Tel: 0086-0574-8622-9263 | E-mail: sales@deye.com.cn

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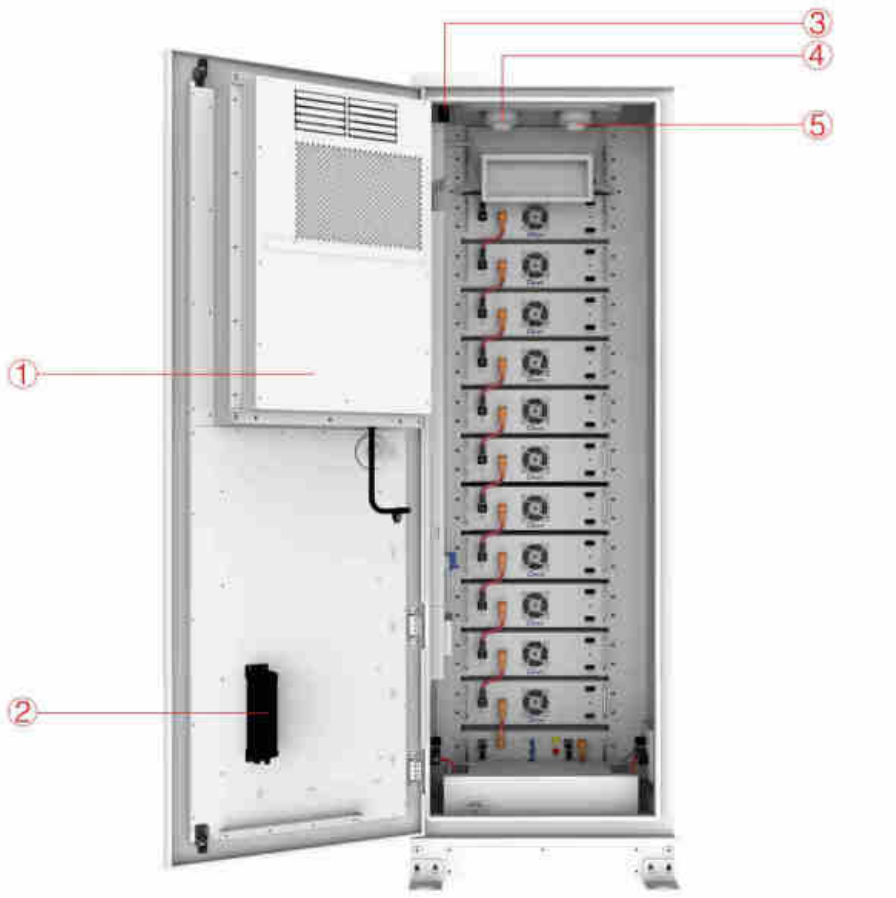
Product introduce



①Air conditioner	Cooling the BESS.
②Aerosol Fire Suppression Device	When the BESS is detected to be on fire, aerosol is emitted to extinguish the fire.
③Travel switch	Check whether the BESS's door is closed.
④Smoke detector	A device used to detect smoke in a fire and sound an alarm when smoke is detected.
⑤Heat detector	A device used to measure temperature and sound an alarm if it detects excessive temperature.

NINGBO DEYE ESS TECHNOLOGY CO., LTD
Add: NO.18TH ZHENLONG ROAD LONGSHAN CIXI NINGBO ZHEJIANG 315311 P.R. CHINA
Tel: 0086-0574-8622-9263 | E-mail: sales@deye.com.cn

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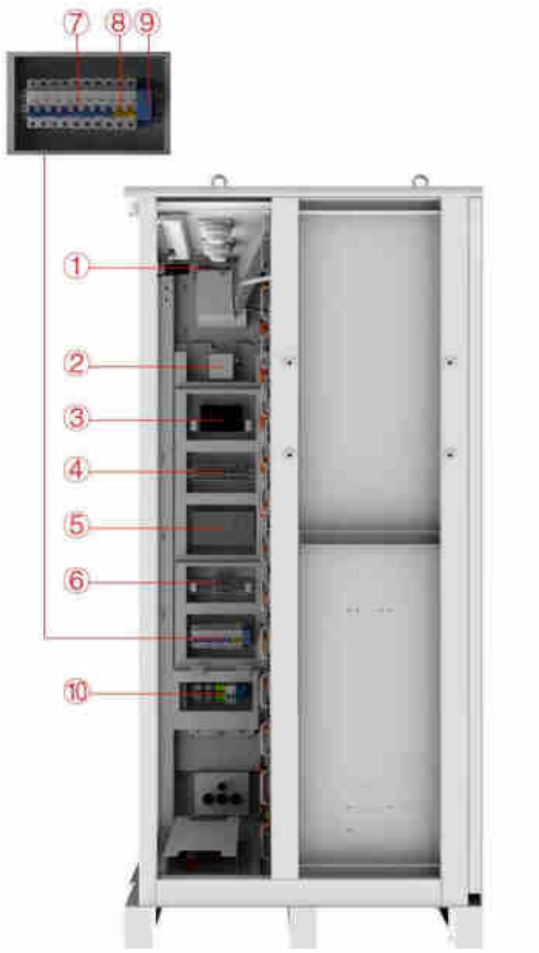
Product introduce



①Fan	Emission of combustible gas
②Combustible gas sensor	Detect combustible gases
③Serial relay	Control system
④Terminal line	For connecting cables
⑤Switching Mode Power Supply	Power source
⑥Terminal line	For connecting cables
⑦Miniature circuit breaker	Controlled power-on and power-off
⑧Relay	Automatic regulation, safety protection, conversion circuit
⑨Water immersion sensor	Check the ESS for water leakage
⑩Terminal line	Connect external cables

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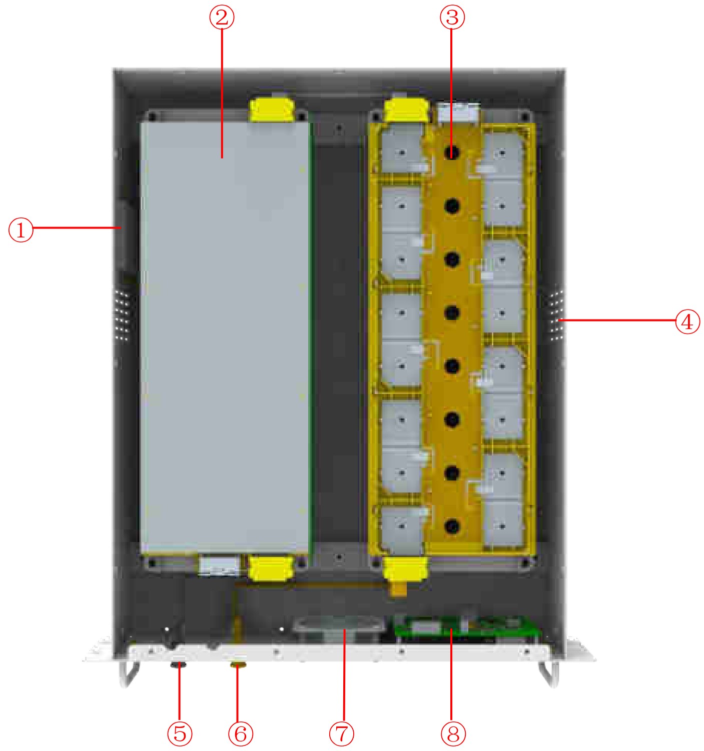

①Aerosol fire extinguishing device	When the pack is detected to be on fire, aerosol is emitted to extinguish the fire.
②Battery module	Provides electrical energy storage and output
③CCS	Cells Contact System
④Air inlet	Cold air inlet
⑤Battery negative-	/
⑥Battery positive+	/
⑦Fan	Promote internal and external air flow
⑧BMU	Battery monitoring

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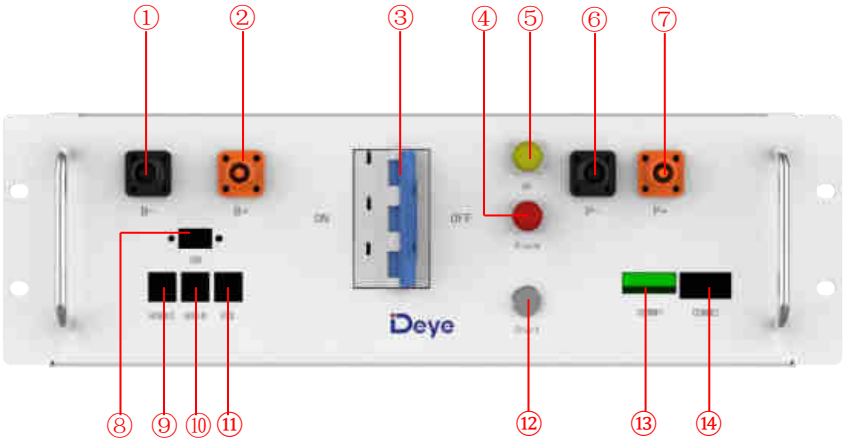
Product introduce



①B-	Connection position of the common negative pole of the battery
②B+	Connection position of the common positive pole of the battery
③Air switch	Used to manually control the connection between the battery rack and external devices
④ALRM light indicator	Battery system fault alarm indicator
⑤HV light indicator	High-voltage hazard indicator
⑥PCS-	Connection position of PCS negative pole
⑦PCS+	Connection position of PCS positive pole
⑧USB	BMS upgrade interface and storage expansion interface
⑨OUT COM	Connection position with next HVB-100A 750V communication output
⑩IN COM	Connection position with previous HVB-100A750V communication input
⑪PCS COM	Communication interface with charging and discharging equipment
⑫START	A start switch of 12VDC power inside the high-voltage control box
⑬COMM1	Communicative connection with the cabinet
⑭COMM2	Communicative connection with the first battery module; and providing 12VDC power for the first battery module.

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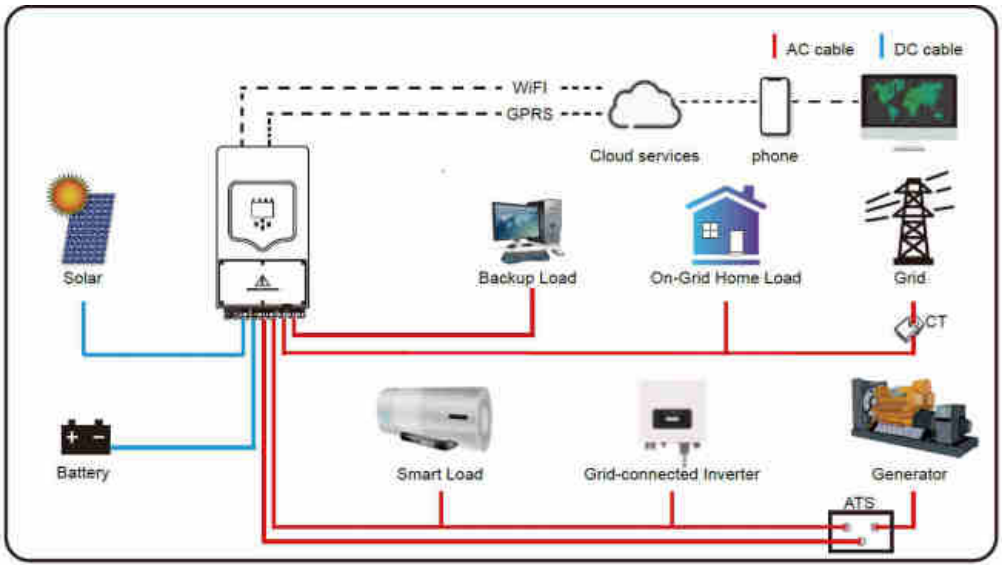
Working Principle of Deye Hybrid Inverter

The modern tech Deye provides hybrid inverters that are suitable for residential and C&I segment. The wide range of hybrid inverters are available in single phase and three phase. The low voltage hybrid inverters available from **3kW to 12kW** supports both **lead acid batteries and lithium batteries** while high voltage hybrid inverters support **lithium batteries** that starts from **20kW to 50kW.** The 3kW in single phase inverter supports batteries at 24V or 25.6V and 48V or 51.2V and the other low voltage inverters are available at 48V or 51.2V. The battery range in high voltage hybrid inverter is 160-800V.

The advanced technology **hybrid inverter supports 100% unbalanced load** with 50% in two phases. These inverters can handle **resistive load, capacitive load** and even surge peaks of any **inductive load** by allowing upto **2times of the rated capacity for 10s** and continuous 10% AC overloading.

Working Principle of Solar Hybrid Plant

The solar hybrid plant is comprises of C-Si (crystalline silicon) modules connected to Deye hybrid inverter. The solar plant generates electricity during sunshine hours and cater the load connected to the inverter. The clipped energy, due to 30% overloading of solar PV plant, can be stored in batteries. The batteries or grid cater the night or non-sunshine hour loads. In cases where solar is generating less comparatively, the grid as supplement is used to fulfil the requirement i.e to charge the battery and to power the load.



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The advanced function of Deye hybrid inverter includes:

Selling First

This allows hybrid inverter to **sell the surplus energy generated by solar panels to grid**. If Time of Use mode is activated, then battery energy can also be exported to grid.

Time of Use

The "**Time of Use**" feature in hybrid inverters allow user to set the window for charging and discharging the batteries based on peak and off-peak hours tariff and demand.

The batteries can be charge through grid or DG.

Integration of Diesel Generator

The virtual synchronise generator (VSG) feature in inverters grants existing diesel generator to integrate to the system. This integration assures continuous working of load connected to the system and zero blackout.

When solar, grid or SoC of the battery is less, inverter sends signal to generator and generator then cater the load and simultaneously charge the battery.

Zero Export

hybrid inverters have **inbuilt zero export feature** which enables to limit the daily generation as per running load.

Hybrid inverter allows user to select the conditions which are as follows:

1. **Zero Export to Load**

   Hybrid inverter will be able to power the connected backup load. The inverter will neither power to the home load nor export power to grid. The built in current transformer (CT) will sense the power and will reduce the inverter power if needed depending on the running load and the power needed to charge the battery.

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2. **Zero Export to CT**

   Hybrid inverter will power the backup load and home load connected to the system. Incase of less generation from solar or less SoC of battery, grid will act as supplement to fulfil the requirement. No surplus energy will be exported to grid.

Solar Sell option with zero export to load and zero export to CT enables the export the surplus energy to grid.

3. **Zero Export Power**

   Deye hybrid inverter ensures no energy is fed to grid.

Grid Peak Shaving

Deye hybrid inverter **limits the input from grid**. It ensures no excess or more than the set values power is imported from grid. Incase when more load is running, generation of solar plant or battery will be used as supplement.

AC Coupling

In diesel generator port of the hybrid inverter, the existing ongrid solar plant can be **retrofitted**. The load can be powered by hybrid solar plant and if needed from ongrid solar plant. The generation from ongrid solar plant can also be simultaneously fed to grid.

Smart Load

In situation where customer wish to run the heavy load or inductive load or any **smart load** only on battery energy storage solution, then hybrid inverter synchronises and turn on the smart load/inductive load/heavy load automatically when the SoC of the battery is 100% and turn off the load when it reaches its specified lower limits.

These loads are connected to the diesel generator port of the hybrid inverter which is available in all variants.

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Max Sell Power

The maximum power to be fed to grid can be set in the inverter.

Energy Pattern

Depending on the priority of customer, the energy pattern can be set.

Batt First:

This enables user to charge the battery first through solar plant and then to cater the load. If less generation if observed from solar plant then the batteries are charged from grid.

Load First:

This enables user to power the connecter load and then excess can be used to charge the battery first through solar pl ant. If less generation if observed from solar plant then the load is catered by grid power.

High Performance Lithium Batteries

In conjunction with inverter, Deye provides reliable and high-performance energy storage systems with lithium chemistry. The lithium batteries ensure timely dispatch of energy to cater the peak load demand by **peak shaving and load levelling**. For low voltage requirement for residential applications, Deye have lithium batteries at **25.6V and 51.2V**. Deye's high voltage batteries having voltage range from **160-800V** can be used in large scale **commercial & industrial applications** such as schools, colleges, banks, farms, resorts, data centres, malls, factories etc and also in **residential areas** and is expanding in areas where there is no access to grid power or frequent power outages is experienced.

The **intelligent BMS** in each module/rack manages the charge and discharge and automatically balances the current and voltage of each cell. The energy storage systems can maintain the voltage and frequency of power supply. Thus, the BESS helps in **frequency regulations, peak shaving and power management**.

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The regular batteries/gel batteries/acid-based batteries available in market have less life cycle and also charges and discharges at C8, C10 or C20 rating which are not capable of handling inductive load or high current load. In situation where these load needs to be handled, then batteries are connected in parallel to increase the overall output from the batteries whereas **0.5C or 1C rated** single battery of **lithium-based** can fulfil the requirement.

The maintenance free lithium batteries have life cycle of more than 6000 cycles with a life span of more than 10 years while the regular batteries requires maintenance for smooth operation and replacement after certain interval of time.

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Deye 德業

TO WHOM SO IT MAY CONCERN

This is to certify Mr. Aswin B.S holding position of Service Engineer at Solgen Energy Pvt Ltd has successfully completed training in Battery Energy Storage System(BESS)

ESIC NO : 5404062914

EPFO NO: 101865713006

For Deye Inverter Technology Private Limited

Authorised Signatory

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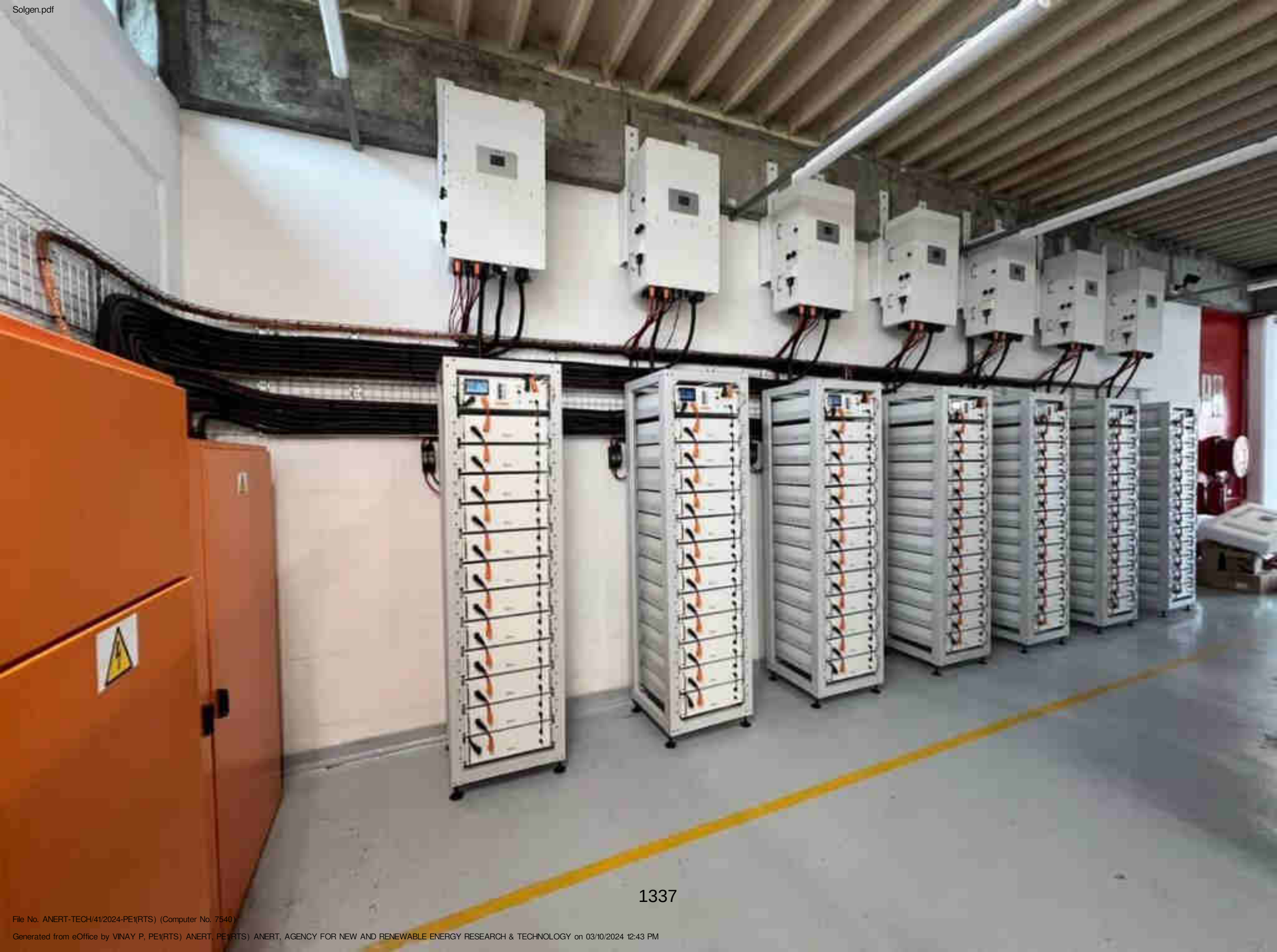

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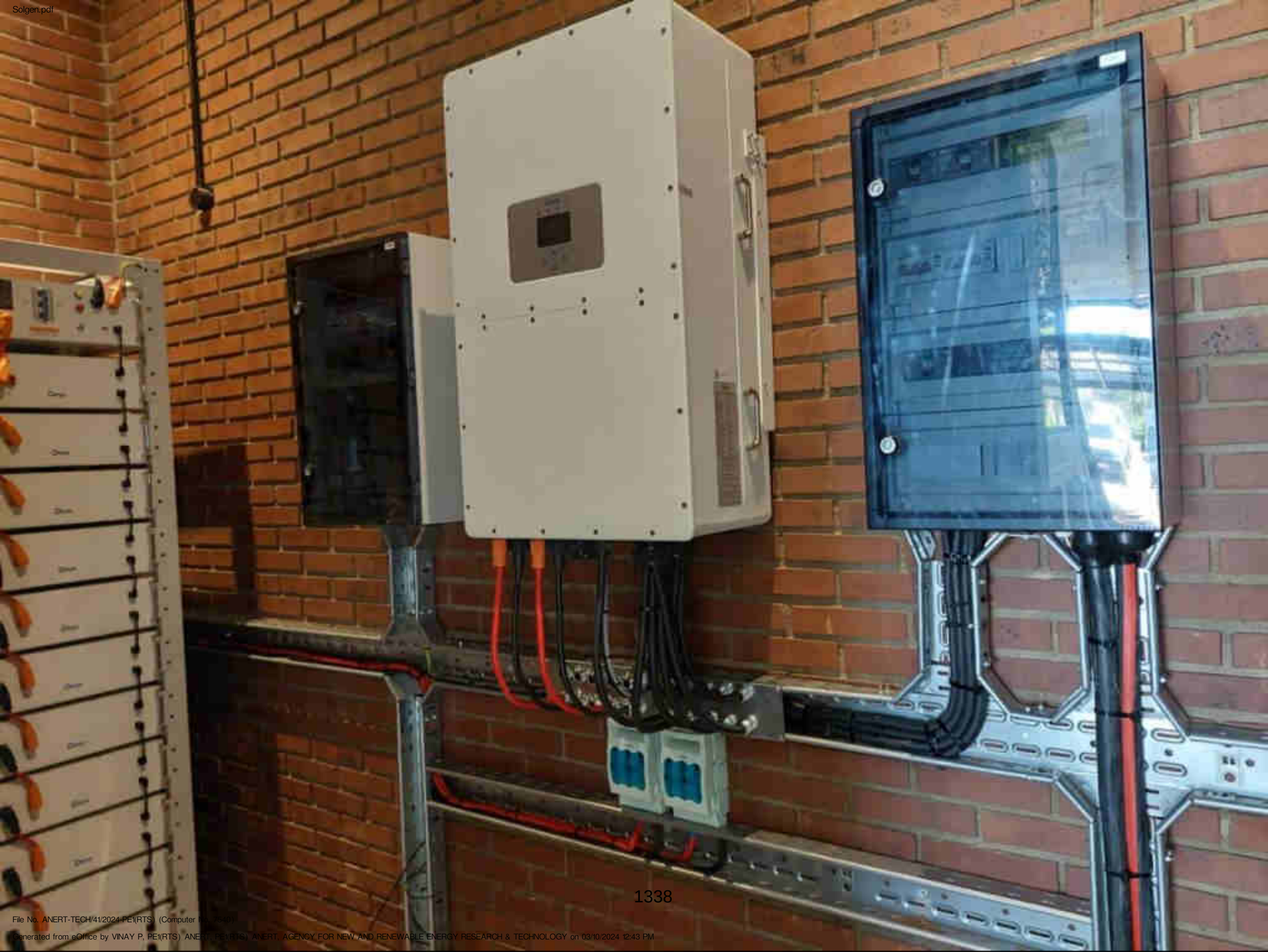

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EMPLOYEE'S PROVIDENT FUND

ELECTRONIC CHALLAN CUM RETURN (ECR)

Name of Establishment	SOLGEN ENERGY PRIVATE LIMITED		
Establishment Id	KRKCH1342281000	LIN	1689562699
Wage Month	FEB-2024	Return Month	MAR-2024
Contribution Rate (%)	12	ECR Type	ECR
Salary Disbursement Date	11-MAR-2024	Uploaded Date Time	12-MAR-2024 09:46
Exemption Status	Unexempted	TRRN Number	
Remarks	February 2024	ECR Id	102566743
Total Members	21		
Contribution and Remittance Details (In Rupees) :			
Total EPF Contribution Remitted	33,816	Total EPS Contribution Remitted	19,590
Total EPF-EPS Contribution Remitted	12,226	Total Refund Advance	0
PMRPY Upfront Benefit Details (In Rupees) :			
Total PMRPY Upfront EPF Amount	0	Total PMRPY Upfront EPS Amount	0
PMRPY benefit remarks	NA		
ABRY Upfront Benefit Details (In Rupees) :			
Total ABRY benefit Amount	Employee EPF Share	Employer EPS Share	Employer EPF Share
	0	0	0
ABRY benefit remarks	Establishment is not eligible for ABRY benefit as employee count [21] is less than required employee count of 24 from base month.		

Member Details :-

Sl. No.	UAN	Name as per		Wages				Contribution Remitted				Refunds	PMRPY / ABRY Benefit			Posting Location of the member
		ECR	UAN Repository	Gross	EPF	EPS	EDLI	EE	EPS	ER	NCP Days		Pension Share	ER PF Share	EE Share	
1	100779345400	ABHILASH C V	ABHILASH C V	15,000	15,000	15,000	15,000	1,800	1,250	550	0	0	-	-	-	N.A.
2	101289871231	ABHILASH M G	ABHILASH M G	15,000	15,000	15,000	15,000	3,800	1,250	551	0	0	-	-	-	N.A.
3	101975663761	ALWIN SOJAN	ALWIN SOJAN	4,968	4,968	4,968	4,968	596	414	182	7	0	-	-	-	N.A.
4	101895524778	ANJALY A T	ANJALY A T	6,548	6,548	6,548	6,548	786	545	240	0	0	-	-	-	N.A.
5	100896251266	APARNA K	APARNA K	15,000	15,000	15,000	15,000	1,800	1,250	551	0	0	-	-	-	N.A.
6	101905042245	ARUN P V	ARUN P V	9,823	9,823	9,823	9,823	1,179	818	360	0	0	-	-	-	N.A.
7	101865713006	ASWIN B S	ASWIN B S	6,548	6,548	6,548	6,548	786	545	240	0	0	-	-	-	N.A.
8	100111879136	BHAVEESH M.B	BHAVEESH M.B	15,000	15,000	15,000	15,000	1,800	1,250	551	0	0	-	-	-	N.A.
9	101895524750	DEEPAK K V	DEEPAK K V	9,823	9,823	9,823	9,823	1,179	818	360	0	0	-	-	-	N.A.
10	101110805407	DILIP JOSE T	DILIP JOSE T	15,000	15,000	15,000	15,000	1,800	1,250	551	0	0	-	-	-	N.A.
11	101998738034	GOPALAKRISHNAN P	GOPALAKRISHNAN P	15,000	15,000	15,000	15,000	1,800	1,250	550	0	0	-	-	-	N.A.
12	101518438601	HYBIN VINCENT	HYBIN VINCENT	15,000	15,000	15,000	15,000	1,800	1,250	550	0	0	-	-	-	N.A.
13	101583633873	JINI DEVASSY	JINI DEVASSY	15,000	15,000	15,000	15,000	1,800	1,250	550	0	0	-	-	-	N.A.
14	101289871249	MITHUN K K	MITHUN K K	15,000	15,000	15,000	15,000	1,800	1,250	550	0	0	-	-	-	N.A.
15	100617632769	MITHUN T M	MITHUN T M	15,000	15,000	15,000	15,000	1,800	1,250	550	0	0	-	-	-	N.A.
16	101813116290	PRIMA JOHNY P	PRIMA JOHNY P	15,000	15,000	0	15,000	1,800	0	1,800	0	0	-	-	-	N.A.
17	100617226158	RAGESH K	RAGESH K	15,000	15,000	15,000	15,000	1,800	1,250	551	0	0	-	-	-	N.A.
18	101461401527	V V JYOTHISH KUMAR	V V JYOTHISH KUMAR	9,484	9,484	9,484	9,484	1,138	790	348	1	0	-	-	-	N.A.
19	101756643567	VINEETH V	VINEETH V	15,000	15,000	0	15,000	1,800	0	1,800	0	0	-	-	-	N.A.
20	100669640540	VIPIN P.C	VIPIN P.C	13,110	13,110	13,110	13,110	1,573	1,092	481	0	0	-	-	-	N.A.
21	101904809484	VIPINKUMAR V	VIPINKUMAR V	9,823	9,823	9,823	9,823	1,179	818	360	0	0	-	-	-	N.A.

Note:
1) UANs are prefixed with Asterisk sign (*) in case AADHAAR is not seeded /unverified
2) EPS Contribution Remitted is prefixed with Hash sign (#) when Member's age is more than 58 years.
Please ensure that this is the case of "Deferred Pension".

PMRPY Benefit Not Given Remarks :-

Reason Code	Reason Name
EC10001	ECR already filed for this member
EC10002	Parallel Employment: ECR already filed for this
EC10003	Benefit already availed for this member
EC10004	Gross/EPF wages greater than 15,000/-
EC10005	Mismatch in EPF and EPS wages
EC10006	Mismatch in Due and Remitted values
EC10007	UAN Deactivated

ABRY Benefit Not Given Remarks :-

Reason Code	Reason Name
GK10001	EPF wages are greatter than or equal to 15,000/-
GK10002	Mismatch in EPF and EPS wages
GK10003	EPF contribution remitted is greatter than due remittance
GK10004	EPS contribution remitted is greatter than due remittance
GK10005	(EPF - EPS) diffrence contribution remitted is greatter than due
GK10006	EPS contribution remitted is greatter than due remittance
GK10007	Aadhaar not seeded

EMPLOYEES' STATE INSURANCE CORPORATION

e-Pehchan Card

PERSONAL DETAILS

Name of IP	:	ASWIN B S	**Insurance No.**	:	5404062914
Date of Birth	:	27/03/2002	**UHID**	:	NA
Gender	:	Male	**UAN**	:	NA
Mobile Number	:	9961442248	**ABHA Number**	:	NA
Email ID	:	NA	**ABHA Address**	:	NA
Registration Date	:	22/05/2023	**Aadhaar**	:	NA

REGISTRATION DETAILS

Marital Status	:	Unmarried	**Name of Father / Husband**	:	BINU S
Type Of Disability	:	NA			
Present Address	:	S/O BINU S,SUJITH BHAVAN,KERALADITHYAPURAM,POWDIKONAM P.O,ULIYAZHATHURA,THIRUVANATHAPURAM,Dist:Thiruvananthapuram,Kerala,695587	**Permanent Address**	:	S/O BINU S,SUJITH BHAVAN,KERALADITHYAPURAM,POWDIKONAM P.O,ULIYAZHATHURA,THIRUVANATHAPURAM,Dist:Thiruvananthapuram,Kerala,695587
Dispensary / IMP for IP	:	Kazhakuttam,KL(ESIS Disp)	**Dispensary / IMP for Family**	:	Kazhakuttam,KL(ESIS Disp)

CURRENT EMPLOYER DETAILS

Employer's Code No.	:	54000228350000699	**Name of Employer**	:	SOLGEN ENERGY PVT LTD
Sub Unit's Code No.	:	None	**Date of Appointment**	:	13/05/2023
Address of Employer	:	22/314 B,,Kuttanellur.P.O,Dist:ThrissurKerala68	**Branch Office**	:	BO - Ollur,ESI Corporation,ESI Dispensary Compound,Near Industrial Estate,Ollur-680 306,

FAMILY DETAILS

Name	Relation with IP	Date of Birth	UHID/ABHA Number	ABHA Address	UAN/ Aadhaar	Is Residing with IP	State/District
SUJITHA S	Dependant mother	15/08/1980	NA / NA	NA	NA	Yes	Kerala / Thiruvananthapuram

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NOMINEE DETAILS

Name of Nominee	Relation with IP	Date of Birth	UHID/ ABHA Number	Address of Nominee	Percentage(%)
BINU S	Dependant father	NA	NA	SUJITH BHAVAN,KERALADITHYAPURAM,POWDIKONAM,ULIYAHATHURA,THIRUVANANTHAPURAM,KeralaDist:Thiruvananthapuram695587	100

Affix Your Family Photograph Here. (Attested and Stamped by Employer / ESIC Official)

Signature / LTI of Registered Employee / IP

Signature / Stamp of ESIC Officer / Employer

Note:

- This e-Pehchan card affixed with photograph of family & duly attested by the Employer/ESIC Staff shall be requested for availing cash/medical benefit.
- e-Pehchan card is a proof of registration under ESI scheme. However eligibility for various benefits depends upon the contribution conditions. For further information on eligibility to various Benefits, please visit- www.esic.in

Printed By (Employer/User Name)	:	SOLGEN ENERGY PVT LTD
IP Number	:	5404062914
Address	:	S/O BINU S,SUJITH BHAVAN,KERALADITHYAPURAM,POWDIKONAM P.O,ULIYAZHATHURA,THIRUVANATHAPURAM,Dist:Thiruvananthapuram,Kerala,6
Date	:	23/07/2023 2:01:09PM

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Deye

Stock Code : 605117

Ningbo Deye Inverter Technology Co., Ltd

Hybrid Inverters & ESS

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About Deye

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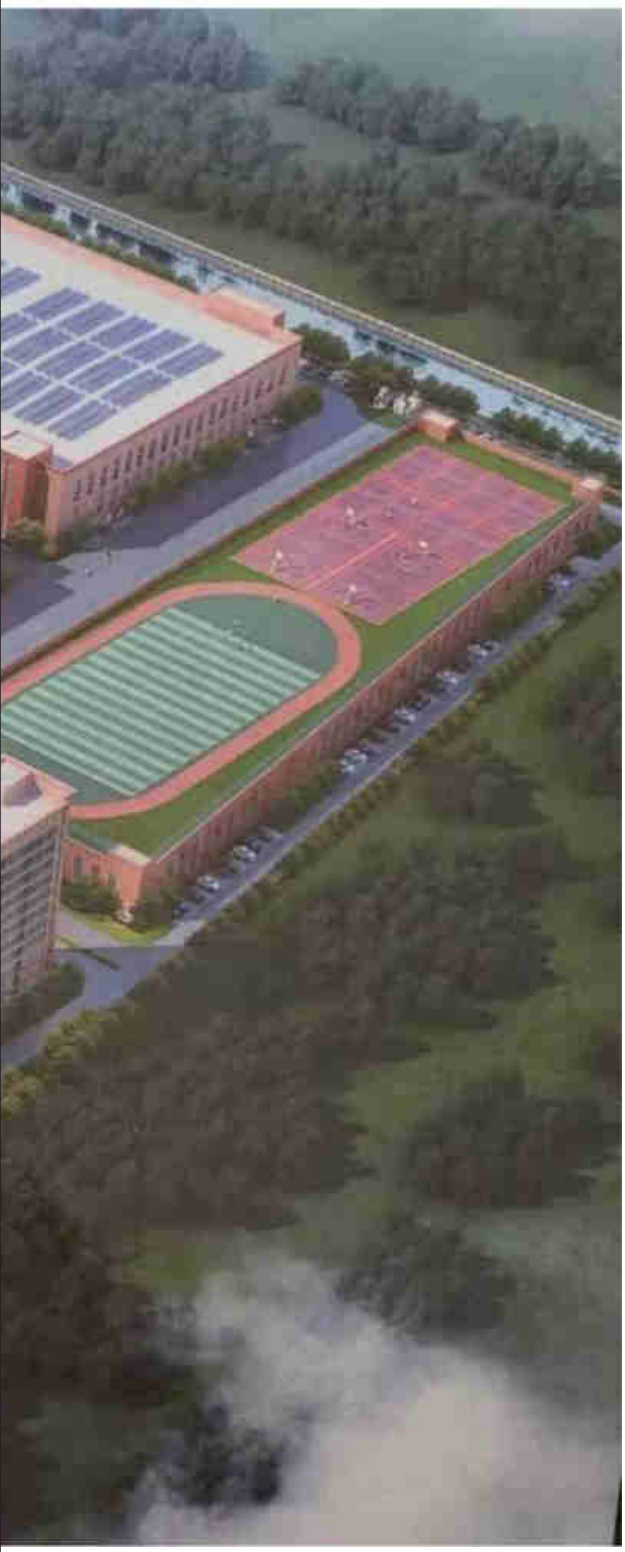

China Stock Code:605117

- Ningbo Deye Technology Co., Ltd. is a large-scale manufacturing technology enterprise integrating R&D,design,production,sales and services.
- Deye has five core industrial chains:
  - The solar inverter system
  - The Li battery energy storage system
  - The frequency conversion control system
  - The environmental electrical appliance series
  - The heat exchanger series
- Deye ESS base in CiXi city of Ningbo. More than 170,000 square meter R&D center,battery pack,BMS, sheet metal processing, and spray factory. Deye ESS has15,000 sets(100,000 sets before 2025) ESS product capacity per month. Deye ESS product is certified by UL,CE etc.

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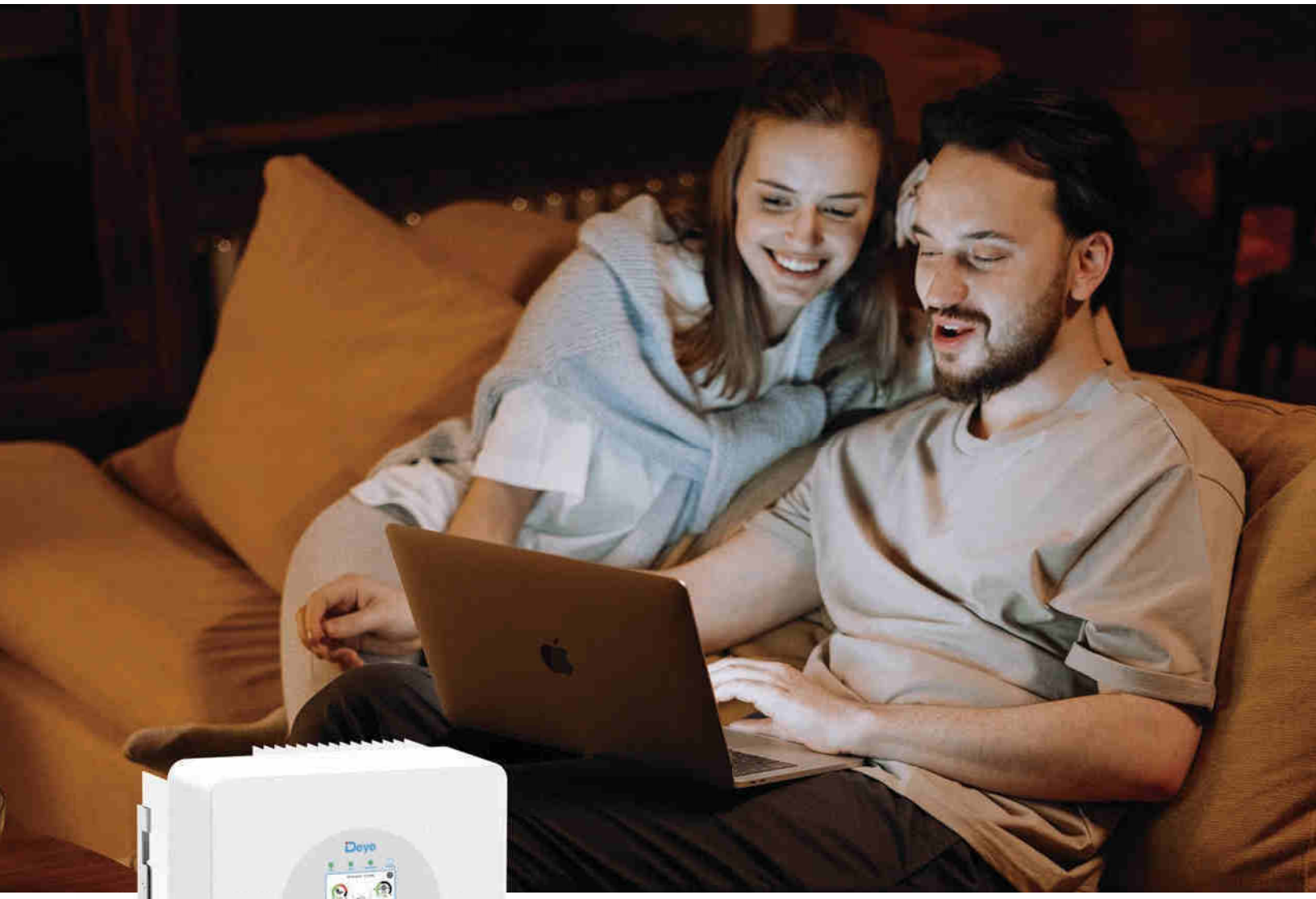
Hybrid Inverter

SUN- 3 / 3.6 / 5 / 6 K-SG04LP1-EU



- Colorful touch LCD, IP65 protection degree
- DC couple and AC couple to retrofit existing solar system
- 16 — Max. 16pcs parallel for on-grid and off-grid operation; Support multiple batteries parallel
- 140 — Max. charging/discharging current of 140A
- 6 — 6 time periods for battery charging/discharging
- Support storing energy from diesel generator

Deye

Stock Code: 605117 SH

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Solgen.pdf

Technical Data

Model	SUN-3K -SG04LP1-24-EU	SUN-3K -SG04LP1-EU	SUN-3.6K -SG04LP1-EU	SUN-5K -SG04LP1-EU	SUN-6K -SG04LP1-EU
Battery Input Data					
Battery Type	Lead-acid or Li-Ion				
Battery Voltage Range (V)	20~30	40~60	40~60	40~60	40~60
Max. Charging Current (A)	140	70	90	120	135
Max. Discharging Current (A)	140	70	90	120	135
Number of battery input	Yes				
Charging Curve	3 Stages / Equalization				
Charging Strategy for Li-Ion Battery	Self-adaption to BMS				
PV String Input Data					
Max. DC Input Power (W)	3900	3900	4680	6500	7800
Rated PV Input Voltage (V)	370 (125~500)				
Start-up Voltage (V)	125				
MPPT Voltage Range (V)	150-425				
Full Load DC Voltage Range (V)	300-425				
PV Input Current (A)	13		13+13		
Max. PV I_{SC} (A)	17		17+17		
No.of MPP Trackers	1		2		
No.of Strings per MPP Tracker	1				
AC Output Data					
Rated AC Output and UPS Power (W)	3000		3600	5000	6000
Max. AC Output Power (W)	3300		3690	5500	6600
AC Output Rated Current (A)	13.6/13		16.4/15.7	22.7/21.7	27.3/26.1
Max. AC Current (A)	15/14.3		18/17.2	25/23.9	30/28.7
Max. Continuous AC Passthrough (A)	35				40
Peak Power (off grid)	2 time of rated power, 10 S				
Power Factor	0.8 leading to 0.8 lagging				
Output Frequency and Voltage	50/60Hz; L/N/PE 220/230Vac (single phase)				
Grid Type	Single Phase				
DC injection current (mA)	THD<3% (Linear load<1.5%)				
Efficiency					
Max. Efficiency	97.60%				
Euro Efficiency	96.50%				
MPPT Efficiency	99.90%				
Protection					
Integrated	PV Input Lightning Protection, Anti-islanding Protection, PV String Input Reverse Polarity Protection, Insulation Resistor Detection, Residual Current Monitoring Unit, Output Over Current Protection, Output Shorted Protection, Surge protection				
Output Over Voltage Protection	DC Type II/AC Type III				
Certifications and Standards					
Grid Regulation	VDE4105, IEC61727/62116, VDE0126, AS4777.2, CEI 0 21, EN50549-1, G98, G99, C10-11, UNE217002, NBR16149/NBR16150				
Safety EMC / Standard	IEC/EN 61000-6-1/2/3/4, IEC/EN 62109-1, IEC/EN 62109-2				
General Data					
Operating Temperature Range (℃)	-40~60℃, >45℃ derating				
Cooling	Natural cooling				
Noise (dB)	<30 dB				
Communication with BMS	RS485; CAN				
Weight (kg)	14			15.1	
Size (mm)	330W x 433H x238D				
Protection Degree	IP65				
Installation Style	Wall-mounted				
Warranty	8 years				

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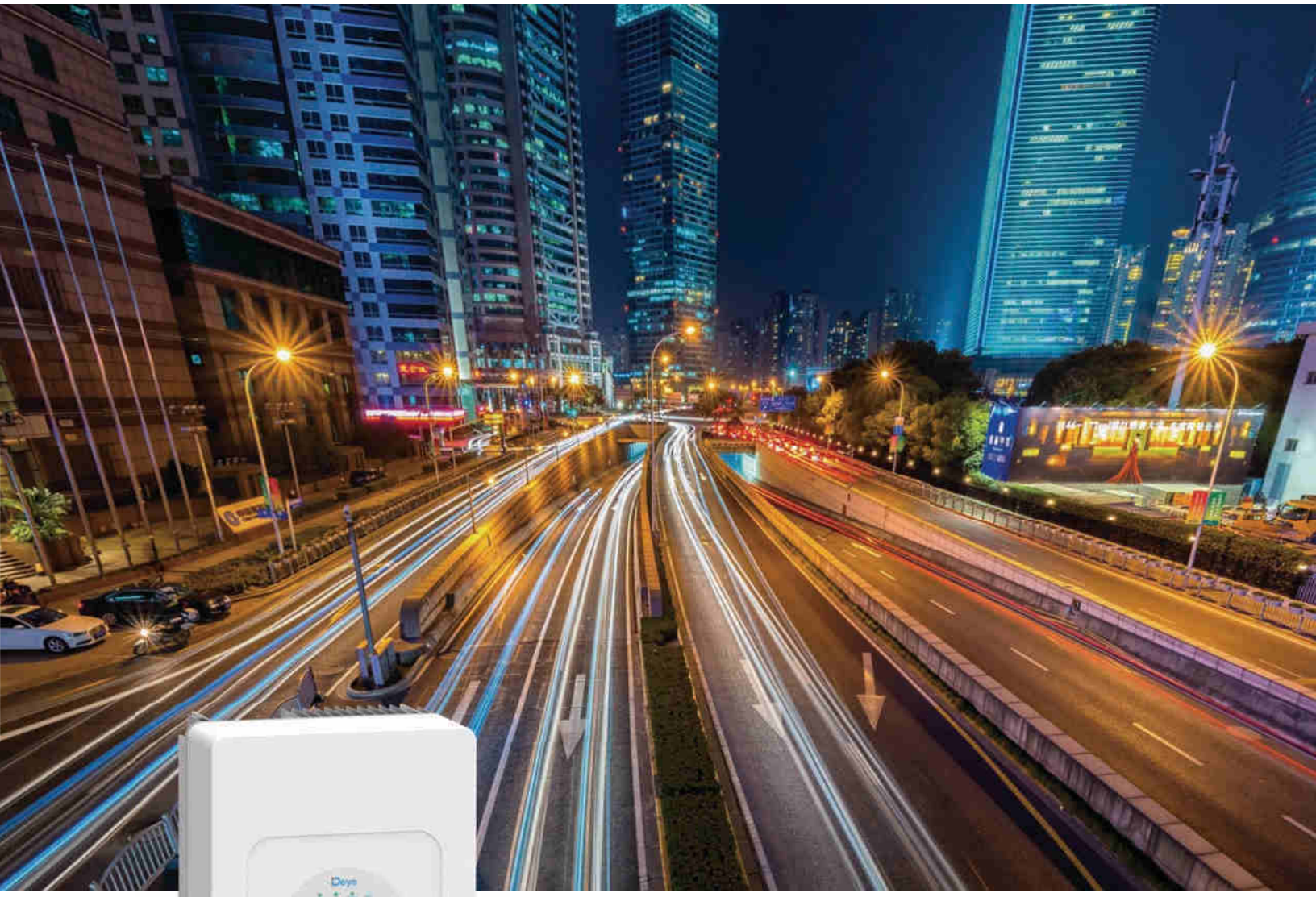
Hybrid Inverter

SUN- 3.6 / 5 / 6 / 7.6 / 8 K-SG05LP1-EU



- Colorful touch LCD, IP65 protection degree
- DC couple and AC couple to retrofit existing solar system
- 16 — Max. 16pcs parallel for on-grid and off-grid operation; Support multiple batteries parallel
- 190 — Max. charging/discharging current of 190A
- 6 — 6 time periods for battery charging/discharging
- Support storing energy from diesel generator

Deye

Stock Code: 605117 SH

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Technical Data

Model	SUN-3.6K -SG05LP1-EU	SUN-5K -SG05LP1-EU	SUN-6K -SG05LP1-EU	SUN-7.6K -SG05LP1-EU	SUN-8K -SG05LP1-EU
Battery Input Data					
Battery Type	Lead-acid or Li-Ion				
Battery Voltage Range (V)	40~60				
Max. Charging Current (A)	90	120	135	190	190
Max. Discharging Current (A)	90	120	135	190	190
External Temperature Sensor	Yes				
Charging Curve	3 Stages / Equalization				
Charging Strategy for Li-Ion Battery	Self-adaption to BMS				
PV String Input Data					
Max. DC Input Power (W)	4680	6500	7800	9880	10400
Rated PV Input Voltage (V)	370 (125~500)				
Start-up Voltage (V)	125				
MPPT Voltage Range (V)	150-425				
Full Load DC Voltage Range (V)	300-425			200-425	
PV Input Current (A)	13+13			26+26	
Max. PV I_{SC} (A)	17+17			34+34	
No.of MPP Trackers	2				
No.of Strings per MPP Tracker	1			2	
AC Output Data					
Rated AC Output and UPS Power (W)	3600	5000	6000	7600	8000
Max. AC Output Power (W)	3690	5500	6600	8360	8800
AC Output Rated Current (A)	16.4/15.7	22.7/21.7	27.3/26.1	34.5/33	36.4/34.8
Max. AC Current (A)	18/17.2	25/23.9	30/28.7	38/36.3	40/38.3
Max. Continuous AC Passthrough (A)	35		40	50	
Peak Power (off grid)	2 time of rated power, 10 S				
Power Factor	0.8 leading to 0.8 lagging				
Output Frequency and Voltage	50/60Hz; L/N/PE 220/230Vac (single phase)				
Grid Type	Single Phase				
DC injection current (mA)	THD<3% (Linear load<1.5%)				
Efficiency					
Max. Efficiency	97.60%				
Euro Efficiency	96.50%				
MPPT Efficiency	99.90%				
Protection					
Integrated	PV Input Lightning Protection, Anti-islanding Protection, PV String Input Reverse Polarity Protection, Insulation Resistor Detection, Residual Current Monitoring Unit, Output Over Current Protection, Output Shorted Protection, Surge protection				
Output Over Voltage Protection	DC Type II/AC Type III				
Certifications and Standards					
Grid Regulation	VDE4105, IEC61727/62116, VDE0126, AS4777.2, CEI 0 21, EN50549-1, G98, G99, C10-11, UNE217002, NBR16149/NBR16150				
Safety EMC / Standard	IEC/EN 61000-6-1/2/3/4, IEC/EN 62109-1, IEC/EN 62109-2				
General Data					
Operating Temperature Range (℃)	-40~60℃, >45℃ derating				
Cooling	Natural cooling				
Noise (dB)	<30 dB				
Communication with BMS	RS485; CAN				
Weight (kg)	24				
Size (mm)	330W x 580H x232D				
Protection Degree	IP65				
Installation Style	Wall-mounted				
Warranty	8 years				

Hybrid Inverter

SUN- 5 / 6 / 8 / 10 / 12 K-SG04LP3-EU

- 100 — 100% unbalanced output, each phase; Max. output up to **50%** rated power
- DC couple and AC couple to retrofit existing solar system
- 10 — Max. 10pcs parallel for on-grid and off-grid operation; Support multiple batteries parallel
- 240 — Max. charging/discharging current of 240A
- 48 — 48V low voltage battery, transformer isolation design
- 6 — 6 time periods for battery charging/discharging
- 1356 — Support storing energy from diesel generator

Deye

Stock Code: 605117.SH

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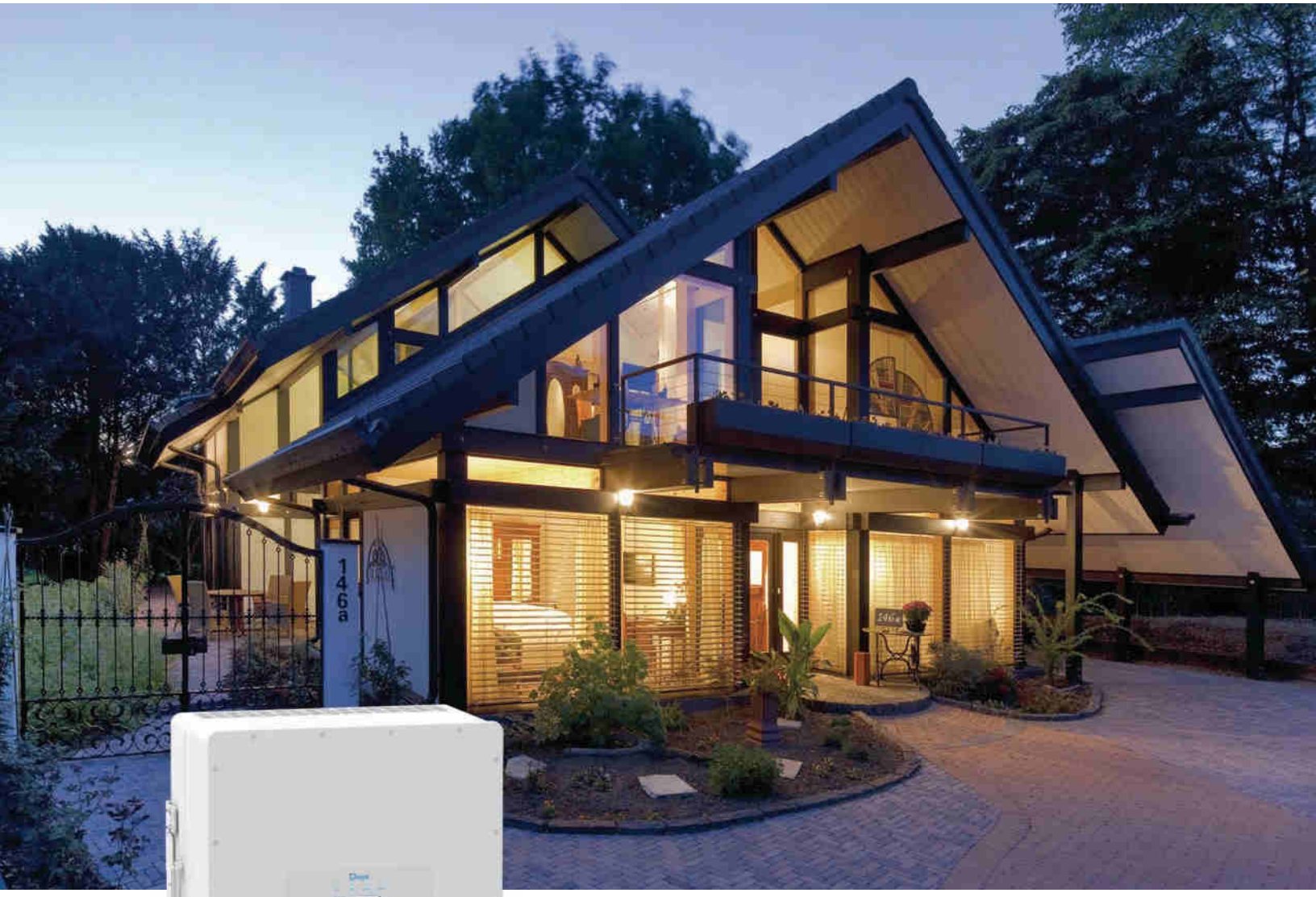
Technical Data

Model	SUN-5K -SG04LP3-EU	SUN-6K -SG04LP3-EU	SUN-8K -SG04LP3-EU	SUN-10K -SG04LP3-EU	SUN-12K -SG04LP3-EU
Battery Input Data					
Battery Type	Lead-acid or Li-Ion				
Battery Voltage Range (V)			40~60		
Max. Charging Current (A)	120	150	190	210	240
Max. Discharging Current (A)	120	150	190	210	240
External Temperature Sensor	Yes				
Charging Curve	3 Stages / Equalization				
Charging Strategy for Li-Ion Battery	Self-adaption to BMS				
PV String Input Data					
Max. DC Input Power (W)	6500	7800	10400	13000	15600
Rated PV Input Voltage (V)	550 (160~800)				
Start-up Voltage (V)	160				
MPPT Voltage Range (V)	200-650				
Full Load DC Voltage Range (V)	350-650				
PV Input Current (A)	13+13			26+13	
Max. PV I_{SC} (A)	17+17			34+17	
No.of MPP Trackers	2				
No.of Strings per MPP Tracker	1			2+1	
AC Output Data					
Rated AC Output and UPS Power (W)	5000	6000	8000	10000	12000
Max. AC Output Power (W)	5500	6600	8800	11000	13200
AC Output Rated Current (A)	7.6/7.2	9.1/8.7	12.1/11.6	15.2/14.5	18.2/17.4
Max. AC Current (A)	11.4/10.9	13.6/13	18.2/17.4	22.7/21.7	27.3/26.1
Max. Continuous AC Passthrough (A)	45				
Peak Power (off grid)	2 time of rated power, 10 S				
Power Factor	0.8 leading to 0.8 lagging				
Output Frequency and Voltage	50/60Hz; 3L/N/PE 220/380, 230/400Vac				
Grid Type	Three Phase				
DC injection current (mA)	THD<3% (Linear load<1.5%)				
Efficiency					
Max. Efficiency	97.60%				
Euro Efficiency	97.00%				
MPPT Efficiency	99.90%				
Protection					
Integrated	PV Input Lightning Protection, Anti-islanding Protection, PV String Input Reverse Polarity Protection, Insulation Resistor Detection, Residual Current Monitoring Unit, Output Over Current Protection, Output Shorted Protection, Surge protection				
Output Over Voltage Protection	DC Type II/AC Type III				
Certifications and Standards					
Grid Regulation	VDE4105, IEC61727/62116, VDE0126, AS4777.2, CEI 0 21, EN50549-1, G98, G99, C10-11, UNE217002, NBR16149/NBR16150				
Safety EMC / Standard	IEC/EN 61000-6-1/2/3/4, IEC/EN 62109-1, IEC/EN 62109-2				
General Data					
Operating Temperature Range (℃)	-40~60℃, >45℃ derating				
Cooling	Smart cooling				
Noise (dB)	<45 dB				
Communication with BMS	RS485; CAN				
Weight (kg)	33.6				
Size (mm)	422W x 699.3H x279D				
Protection Degree	IP65				
Installation Style	Wall-mounted				
Warranty	8 years				

Three Phase Hybrid Inverter

SUN- 25 / 30 / 40 / 50 K-SG01HP3-EU-BM2/3/4



- 100% unbalanced output, each phase; Max. output up to **50%** rated power
- DC couple and AC couple to retrofit existing solar system
- Max. 10pcs parallel for on-grid and off-grid operation; Support multiple batteries parallel
- Max. charging/discharging current of 100A
- High voltage battery, higher efficiency
- 6 time periods for battery charging/discharging
- Support storing energy from diesel generator

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Technical Data

Model	SUN-25K-SG01HP3 -EU-BM2	SUN-30K-SG01HP3 -EU-BM3	SUN-40K-SG01HP3 -EU-BM4	SUN-50K-SG01HP3 -EU-BM4
Battery Input Data				
Battery Type	Li-Ion			
Battery Voltage Range (V)	160~800			
Max. Charging Current (A)	50+50			
Max. Discharging Current (A)	50+50			
Number of battery input	2			
Charging Strategy for Li-Ion Battery	Self-adaption to BMS			
PV String Input Data				
Max. DC Input Power (W)	32500	39000	52000	65000
Max. DC Input Voltage (V)	1000			
Start-up Voltage (V)	180			
MPPT Range (V)	150-850			
Full Load DC Voltage Range (V)	450-850	360-850	360-850	450-850
Rated DC Input Voltage (V)	600			
PV Input Current (A)	36+36	36+36+36	36+36+36+36	
Max. PV I_{SC} (A)	55+55	55+55+55	55+55+55+55	
No.of MPP Trackers	2	3	4	
No.of Strings per MPP Tracker	2			
AC Output Data				
Rated AC Output and UPS Power (W)	25000	30000	40000	50000
Max. AC Output Power (W)	27500	33000	44000	55000
AC Output Rated Current (A)	37.9/36.3	45.5/43.5	60.7/58	75.8/72.5
Max. AC Output Rated Current (A)	41.7/39.9	50/47.9	66.7/63.8	83.4/79.8
Max. Three-phase Unbalanced Output Current	50	60	70	83.3
Max. Continuous AC Passthrough (A)	150			
Peak Power (off grid)	1.5 time of rated power, 10 S			
Generator input/Smart load /AC couple current (A)	37.9 / 150 / 37.9	45.5 / 150 / 45.5	60.7 / 150 / 60.7	75.8 / 150 / 75.8
Power Factor	0.8 leading to 0.8 lagging			
Output Frequency and Voltage	50/60Hz; 3L/N/PE 220/380, 230/400Vac			
Grid Type	Three Phase			
DC injection current (mA)	<0.5%1n			
Efficiency				
Max. Efficiency	97.60%			
Euro Efficiency	97.00%			
MPPT Efficiency	99.90%			
Protection				
Integrated	PV Input Lightning Protection, Anti-islanding Protection, PV String Input Reverse Polarity Protection, Insulation Resistor Detection, Residual Current Monitoring Unit, Output Over Current Protection, Output Shorted Protection, Surge protection			
Output Over Voltage Protection	DC Type II/AC Type III			
Certifications and Standards				
Grid Regulation	VDE4105, IEC61727/62116, VDE0126, AS4777.2, CEI 0 21, EN50549-1, G98, G99, C10-11, UNE217002, NBR16149/NBR16150			
Safety EMC / Standard	IEC/EN 61000-6-1/2/3/4, IEC/EN 62109-1, IEC/EN 62109-2			
General Data				
Operating Temperature Range (℃)	-40~60℃, >45℃ derating			
Cooling	Smart cooling			
Noise (dB)	<45 dB			
Communication with BMS	RS485; CAN			
Weight (kg)	75			
Size (mm)	527W×894H×294D			
Protection Degree	IP65			
Installation Style	Wall-mounted			
Warranty	5 years			

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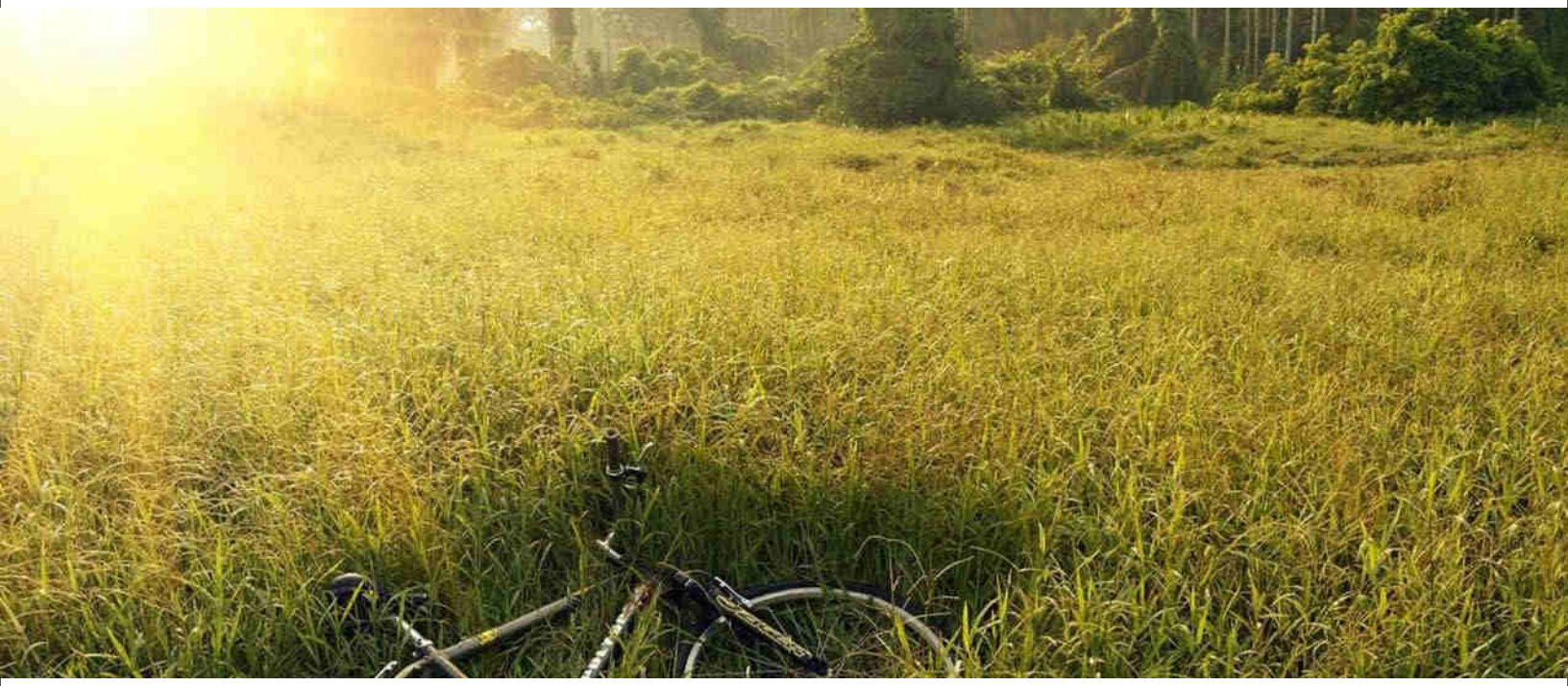
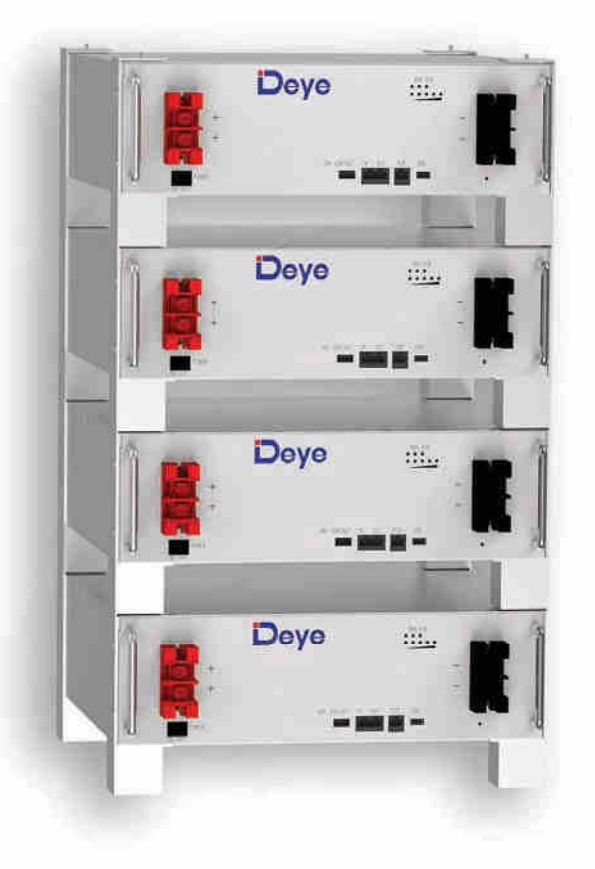
SE-G5.1 Pro





- **Safer**

Cobalt Free Lithium Iron Phosphate (LFP) Battery: Safety and long Lifespan, high efficiency and high-Power density.
Intelligent BMS, providing complete protection.

- **Reliable**

Support high discharge power. IP20, natural cooling, wide temperature range: -20℃ to 55℃.

- **Flexible**

Modular design, easy to expand, Max. 64 units in parallel, Max. capacity of 327kWh.
Suited to residential and commercial applications for increasing the self-consumption ratio.

- **Convenient**

Battery module auto networking, Automatic IP addressing, Easy maintenance, remotely monitoring and upgrade, Support USB drive upgrade the firmware.

- **Eco-Friendly**

Use environmental protection materials, the whole module non-toxic, pollution-free.

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Technical Data

Model		SE-G5.1 Pro
Main Parameter		
Battery Chemistry		LiFePO4
Capacity (Ah)		100
Scalability		Max. 64 pcs pack (327kWh) in parallel (Max. 32 pcs no external setup)
Nominal Voltage (V)		51.2
Operating Voltage(V)		43.2~57.6
Energy (kWh)		5.12
Usable Energy (kWh) [1]		4.61
Charge/Discharge Current (A)	Recommend [2]	50
	Max. [2]	100
	Peak(2mins,25℃)	150
Other Parameter		
Recommend Depth of Discharge		90%
Dimension (W/H/D, mm)		445*133*430
Weight Approximate(kg)		44
Master LED Indicator		5LED(SOC:20%~SOC100%),3LED (working, alarming, protecting)
IP Rating of Enclosure		IP20
Operating Temperature		Charge:0～55℃ / Discharge:-20℃～55℃
Storage Temperature		0℃～35℃
Humidity		5%~95%
Altitude		≤2000m
Cycle Life		≥6000(25℃±2℃,0.5C/0.5C,70%EOL)
Installation		19-inch standard cabinet, cabinet depth ≥600mm / with rack
Communication Port		CAN2.0, RS485
Warranty Period [3]		10 years
Energy Throughput [3]		16MWh@70%EOL
Certification		UN38.3, UL1973, IEC62619, CE, CEI 0-21

[1] DC Usable Energy, test conditions: 90% DOD, 0.5C charge & discharge at 25°C. System usable energy may vary due to system configuration parameters.

[2] The current is affected by temperature and SOC.

[3] The warranty is due whichever reached first of warranty period or life cycle power.

Introduction

This series lithium iron phosphate battery is one of new energystorage products developed and produced by Deye , it can be used to support reliable power forvarious types of equipment and systems.

This series is especially suitable for application scene of high power,limited installation space, restricted load- bearing and long cycle life.

This series has built-in BMS battery management system, which can manage and monitor cells information including voltage, current and temperature. What's more, BMS can balance cells charging and discharging to extend cycle life. Multiple batteries can connect in parallel to expand capacity and power in parallel for larger capacity and longer power supporting duration requirements.

RW-M6.1

- **Safer**
Cobalt Free Lithium Iron Phosphate (LFP) Battery, safety and long lifespan, high efficiency and high-power density. Intelligent BMS, providing complete protection.

- **Reliable**
Support high discharge power. IP65, natural cooling, wide temperature range: -20℃ to 55℃.

- **Flexible**
Modular design, easy to expand, Max. 32 units in parallel, Max. capacity of 196kWh. Suited to residential and commercial applications for increasing the self-consumption ratio.

- **Convenient**
Battery module auto networking, Automatic IP addressing, easy maintenance, remotely monitoring and upgrade, support USB drive upgrade the firmware.

- **Eco-Friendly**
Use environmental protection materials, the whole module non-toxic, pollution-free.

- **Wall-Mounted**
Flat design, wall-mounted, saving installation space.

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Technical Data

Model		RW-M6.1
Main Parameter		
Battery Chemistry		LiFePO4
Capacity (Ah)		120
Scalability		Max.32 pcs in Parallel(196kWh)
Nominal Voltage (V)		51.2
Operating Voltage(V)		43.2~57.6
Energy (kWh)		6.14
Usable Energy (kWh) [1]		5.53
Charge/Discharge Current (A)	Recommend [2]	60
	Max. [2]	100
	Peak(2mins,25℃)	150
Other Parameter		
Recommend Depth of Discharge		90%
Dimension (W/H/D, mm)		460*720*143(Depth of 160mm With Hanging Board)
Weight Approximate(kg)		55
Master LED Indicator		5LED(SOC:20%~SOC100%),3LED (working, alarming, protecting)
IP Rating of Enclosure		IP65
Operating Temperature		Charge:0～55℃ / Discharge:-20℃～55℃
Storage Temperature		0℃～35℃
Humidity		5%~95%
Altitude		≤2000m
Cycle Life		≥6000(25℃±2℃,0.5C/0.5C,70%EOL)
Installation		Wall-Mounted, Floor-Mounted
Communication Port		CAN2.0, RS485
Warranty Period [3]		10 years
Energy Throughput [3]		20MWh@70%EOL
Certification		UN38.3, UL1973, FCC, IEC62619, CE, CEI 0-21

[1] DC Usable Energy, test conditions: 90% DOD, 0.5C charge & discharge at 25°C. System usable energy may vary due to system configuration parameters.

[2] The current is affected by temperature and SOC.

[3] The warranty is due whichever reached first of warranty period or life cycle power.

Introduction

This series lithium iron phosphate battery is one of new energystorage products developed and produced by Deye , it can be used to support reliable power forvarious types of equipment and systems.

This series is especially suitable for application scene of high power,limited installation space, restricted load- bearing and long cycle life.

This series has built-in BMS battery management system, which can manage and monitor cells information including voltage, current and temperature. What's more, BMS can balance cells charging and discharging to extend cycle life. Multiple batteries can connect in parallel to expand capacity and power in parallel for larger capacity and longer power supporting duration requirements.

A1-W5.1

- **Safer**

Cobalt Free Lithium Iron Phosphate (LFP) Battery, safety and long lifespan, high efficiency and high-power density. Intelligent BMS, providing complete protection.

- **Reliable**

Support high discharge power. IP65, natural cooling, wide temperature range: -20℃ to 55℃.

- **Flexible**

Modular design, easy to expand, Max. 6 clusters in parallel(36 pcs), Max. capacity of 184kWh.
Suited to residential and commercial applications for increasing the self-consumption ratio.

- **Convenient**

Battery module auto networking, automatic IP addressing, easy maintenance, remotely monitoring and upgrade, support USB drive upgrade the firmware.

- **Eco-Friendly**

Use environmental protection materials, the whole module non-toxic, pollution-free.

- **Quick Installation**

Flat and stackable design, floor-mounted or wall-mounted, no wiring and extra fixing screws, rapid and easy installation.

Deye

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Stock Code: 605117.SH

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Technical Data

Model		AI-W5.1				
Main Parameter						
Battery Chemistry		LiFePO4				
Battery Module Energy (kWh)		5.12				
Battery Module Voltage (V)		51.2				
Battery Module Capacity (Ah)		100				
Scalability		2	3	4	5	6
Nominal Voltage (V)		51.2				
Operating Voltage(V)		43.2~57.6				
Energy (kWh)		10.24	15.36	20.48	25.6	30.72
Usable Energy (kWh) [1]		9.2	13.8	18.4	23.0	27.6
Charge/Discharge Current (A)	Recommend [2]	100	150	200	250	250
	Max. [2]	180	210	240	300	300
	Peak(30s,25℃)	270	315	360	360	360
Other Parameter						
Recommend Depth of Discharge		90%				
Dimension (W/D/H, mm, ref)		720*255*770	720*255*1055	720*255*1340	720*255*1625	720*255*1910
Weight Approximate (kg)		117	163	209	255	301
Master LED Indicator		5LED(SOC:20%~100%), 3LED (working, alarming, protecting)				
IP Rating of Enclosure		IP65				
Operating Temperature		Charge: 0～55℃/ Discharge: -20℃～55℃				
Storage Temperature		0～35℃				
Humidity		5%~95%				
Altitude		≤2000m				
Cycle Life [3]		≥6000(25℃±2℃,0.5C/0.5C,70%EOL)				
Installation		Floor-Mounted, Wall-Mounted				
Communication Port		CAN2.0, RS485				
Warranty Period [3]		10 years				
Energy Throughput [3]		16MWh(Battery Module @70%EOL)				
Certification		IEC62619, CE,VDE2510-10, CEI 0-21, UL1973, UL9540A, FCC, UN38.3				

[1] DC Usable Energy, test conditions: 90% DOD, 0.5C charge & discharge at 25°C. System usable energy may vary due to system configuration parameters.

[2] The current is affected by temperature and SOC.

[3] The warranty is due whichever reached first of warranty period or energy throughput.

Introduction

This series lithium iron phosphate battery is one of new energy storage products developed and produced by Deye , it can be used to support reliable power forvarious types of equipment and systems.

This series is especially suitable for application scene of high power,limited installation space, restricted load-bearing and long cycle life.

This series has built-in BMS battery management system, which can manage and monitor cells information including voltage, current and temperature. What's more, BMS can balance cells charging and discharging to extend cycle life.

Multiple batteries can connect in parallel to expand capacity and power in parallel for larger capacity and longer power supporting duration requirements.

BOS-G

- **Convenient**

Quick installation standard of 19-inch embedded designed module is comfortable for installation and maintenance.

- **Safe and reliable**

Cathode material is made from LiFePO4 with safety performance and long cycle life, The module has less self-discharge, up to 6 months without charging it on shelf, no memory effect, excellent performance of shallow charge and discharge.

- **Intelligent BMS**

It has protection functions including over-discharge, over-charge, over-current and over-high or low temperature. The system can automatically manage charge and discharge state and balance current and voltage of each cell.

- **Eco-friendly**

The whole module is non-toxic, non-polluting and environmentally friendly.

- **Flexible configuration**

Multiple battery modules can be in parallel for expanding capacity and power. Support USB upgrade, wifi upgrade(optional), remote up grade(Compatible with Deye inverter).

- **Wide temperature**

Working temperature range is from -20°C to 55°C, with excellent discharge performance and cycle life.

Deye

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Technical Data

Model	B0S-G		
Main Parameter			
Cell Chemistry	LiFePO4		
Module Energy (kWh)	5.12		
Module Nominal Voltage (V)	51.2		
Module Capacity (Ah)	100		
Battery Module Qty in series. (Optional)	4 (Min)	8 (Standard US Cluster)	12 (Standard EU Cluster)
System Nominal Voltage (V)	204.8	409.6	614.4
System Operating Voltage (V)	180~230	359~460	538~691
System Energy (kWh)	20.48	40.96	61.44
System Usable Energy (kWh)	18.5	36.86	55.29
Charge/Discharge Current (A) – Recommend	50		
Charge/Discharge Current (A) – Max	100		
Charge/Discharge Current (A) – Peak (2 mins, 25°C)	125		
Working Temperature (°C)	Charge: 0~50/Discharge: -20~55		
Status Indicator	Yellow: Battery High Voltage Power On Red: Battery System Alarm		
Communication Port	CAN2.0/RS485		
Humidity	5~85%RH		
Altitude	≤2000m		
IP Rating of Enclosure	IP20		
Dimension (W/D/H,mm)	580*590*1615		580*590*2200
Weight Approximate (kg)	258	434	628
Installation Location	Rack Mounting		
Storage Temperature (°C)	0~35		
Recommend Depth of Discharge	90%		
Cycle Life	25±2°C, 0.5C/0.5C, EOL70%≥6000		
Warranty	10 years		
Certification	CE/IEC62619 / UL1973 / UL9540A / UN38.3		

1 DC Usable Energy, test conditions: 90% DOD, 0.5C charge & discharge at 25°C. System usable energy may vary due to system configuration parameters.

2 The current is affected by temperature and SOC.

3 The warranty is due whichever reached first of warranty period or life cycle power.

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System Components

Model	Description
HVB750V/100A-EU	High Voltage Battery cluster control box conforming to European or British Standards

Operating Voltage	120 ~ 750Vdc
Nomina Charge/Discharge Current	100A
Max.Charge/Discharge Current	125A
DC Input Rating	12±2%V/4.15A
Operating Temperature Range	-20~55°C
Ingress Protection	IP20
Dimension (W/D/H)	440*565*150mm
Weight Approximate	15.5kg

HVB750V/100A-US	High Voltage Battery cluster control box conforming to North American Standard

Operating Voltage	120 ~ 750Vdc
Nominal Charge/Discharge Current	100A
Max.Charge/Discharge Current	125A
DC Input Rating	12±2%V/4.15A
Operating Temperature Range	-20~55°C
Ingress Protection	IP20
Dimension (W/D/H)	440*565*150mm
Weight Approximate	17kg

High voltage box Standard configuration:
① 120 ohm terminal resistance
② 140mm communication cable
③ 220mm power cable
④1.5m power cable（US Version）
2.1m power cable（EU Version）

BOS-GM5.1	5.12 kwh battery module

Battery Type	LiFePO4(LFP)
Nominal Voltage	51.2Vdc
Nominal Capacity	100Ah
Nominal Energy	5.12kWh
Nominal Charge/Discharge Current	100A
Max.Charge/Discharge Current	125A
Charge Temperature	0~50°C
Discharge Temperature	-20℃ ~ 55°C
Storage Temperature	0℃ ~ 35°C
Ingress Protection	IP20
Dimension (W/D/H)	440*570*133mm
Weight Approximate	44kg

Battery module Standard configuration:
①110mm communication cable
② 200mm power cable

EPCable5.0(Optional)	Standard 5-meter power cable connected to the positive pole of the external PCS

1000V/4AWG cable

ENCable5.0(Optional)	Standard 5-meter power cable connected to the negative pole of the external PCS

1000V/4AWG cable

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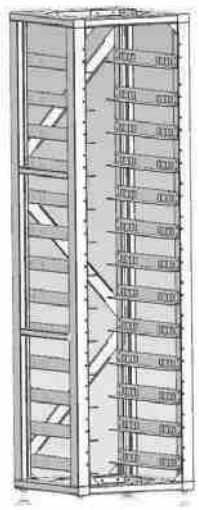
System Components

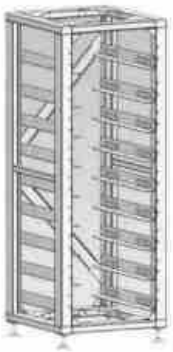
Model	Description
EPWR Cable5.0(Optional)	Standard 5-meter cable connected to external 12VDC power supply

ECOM Cable5.0(Optional)	Standard 5-meter commumication cable connected to the external device

3U-HRACK(Optional)	Standard 19inch rack, caninstall 12 pcs batteries and 1 pcs High Voltage Battery cluster control box
Dimension (W/D/H)	580*590*2200mm
Weight Approximate	85kg



3U-LRACK(Optional)	Standard 19inch rack, caninstall 8 pcs batteries and 1 pcs High Voltage Battery cluster control box
Dimension (W/D/H)	580*590*1615mm
Weight Approximate	65kg



GB-L

- **Structural safety**

Meet high seismic grade zone 4.

- **High-voltage stack**

Modules are connected in series without cable connection, and high -voltage platform improves system efficiency.

- **Thermal management**

Temperature detection of key parts, cell, power plug-in, etc.

- **Wide temperature operation**

The heating function is optional to meet the application scenarios with low temperature and nosense.

- **Environmental friendliness**

IP protection grade 65, anti-corrosion grade ≥C2, environmental protection battery.

- **Intelligent and visual**

Support remote upgrade, real-time battery warning information push, LCD data display.

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Technical Data

Model	GB-L				
Main Parameter					
Cell Chemistry	LiFePO4				
Module Energy (kWh)	4.09				
Module Nominal Voltage (V)	102.4				
Module Capacity (Ah)	40				
Battery Module Qty In Series (Optional)	2	3	4	5	6
System Nominal Voltage (V)	204.8	307.2	409.6	512	614.4
System Operating Voltage (V)	179.2~691.2				
System Energy (kWh)	8.18	12.27	16.36	20.45	24.56
System Usable Energy (kWh)	7.36	11.04	14.72	18.40	22.10
Charge/Discharge Current (A)	Recommend	20			
	Max	40			
	Peak (2 mins,25°C)	50			
Working Temperature (°C)	Charge/Discharge:-20~55				
LCD Display	SOC%,Power,Total Voltage				
Communication Port	CAN2.0, RS485				
Humidity	5%~90%				
Altitude	≤2000m				
IP Rating of Enclosure	IP65				
Storage Temperature(°C)	0~35				
Dimension (W/D/H,mm)	540*385*640	540*385*860	540*385*1080	540*385*1300	540*385*1520
Weight(kg)	76	108	140	172	204
Installation Location	Floor Mount				
Recommend Depth of Discharge	90%				
Cycle Life	25±2°C,0.5C/0.5C, EOL70%≥6000				
Warranty	10 years				
Certification	CE/IEC62619 /VDE2510-50/ UL1973/UL9540A/UN38.3				

1 DC Usable Energy, test conditions: 90% DOD, 0.5C charge & discharge at 25°C. System usable energy may vary due to system configuration parameters.

2 The current is affected by temperature and SOC.

3 The warranty is due whichever reached first of warranty period or life cycle power.

System Components

Model	Description
GB-LBS	High voltage battery cluster control box
Operating Voltage	120 ~ 750Vdc
NominalCharge/Discharge Current	40A
Max.Charge/Discharge Current	50A
Operating Temperature Range	-40~85°C
Ingress Protection	IP65
Dimension (W/D/H)	540*385*110mm
Weight Approximate	7kg

GB-LM4.0	4.09 kWh battery module
Battery Type	LiFePO4(LFP)
Nominal Voltage	102.4Vdc
Nominal Capacity	40Ah
Nominal Energy	4.09kWh
NominalCharge/Discharge Current	40A
Max.Charge/Discharge Current	50A
Charge Temperature	0~50°C
Discharge Temperature	-20℃ ~ 55°C
Storage Temperature	0℃ ~ 35°C
Ingress Protection	IP65
Dimension (W/D/H)	540*385*220mm
Weight Approximate	32kg

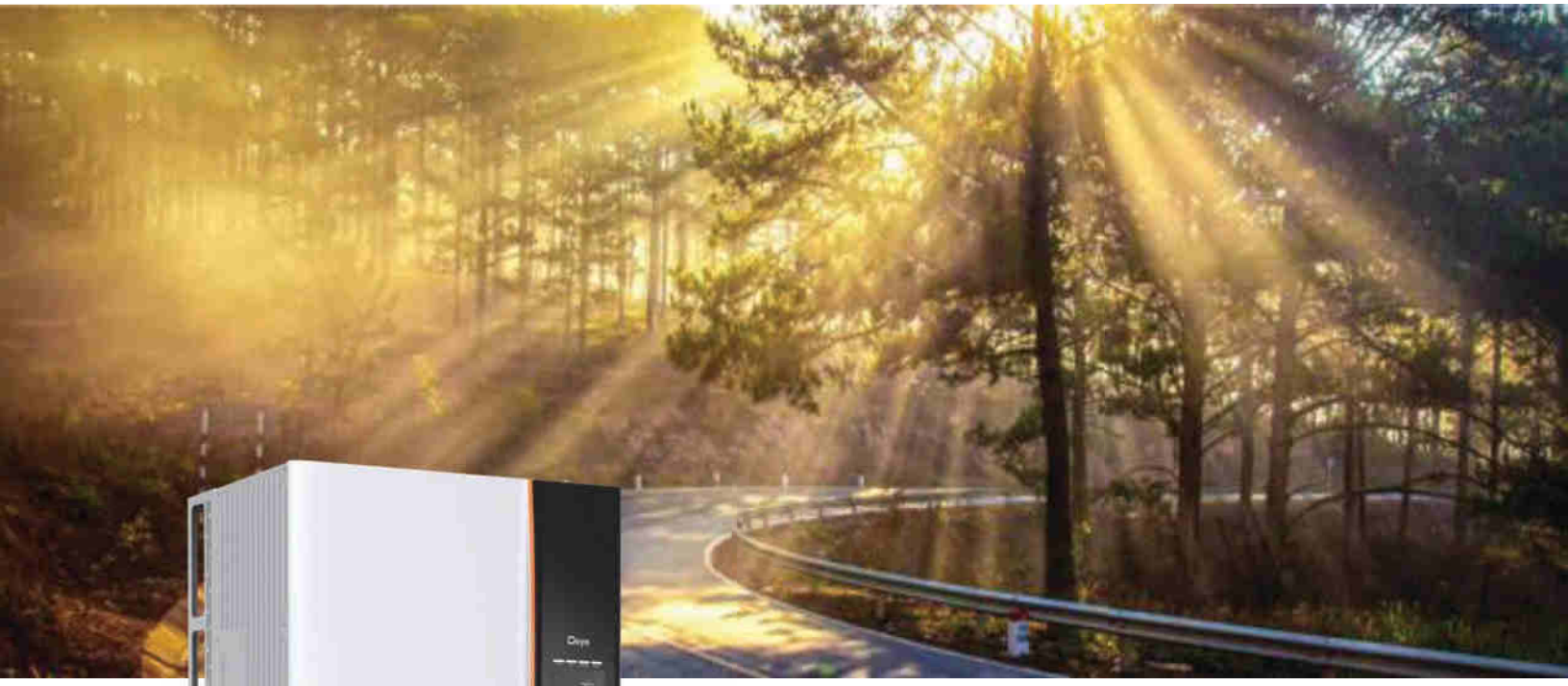
GB-LBase	Battery module base
Dimension (W/D/H)	540*385*90mm
Weight Approximate	5kg

ECOM Cable5.0(Optional)	Standard 5-meter commumication cable connected to the external device

EPCable5.0(Optional)	Standard 5-meter power cable connected to the positive pole of the external PCS
1000V/4AWG cable	

ENCable5.0(Optional)	Standard 5-meter power cable connected to the negative pole of the external PCS
1000V/4AWG cable	

GB-SCL-EU



- **ALL IN ONE PLUS**
  Optical storage and charging integrated solution,one-stop service
- **Maximum output**
  100% unbalanced output, each phase; Max. output up to 50% rated power
- **Maximum connection**
  Max. 10pcs parallel for on-grid and off-grid operation
- **More support**
  Support storing energy from diesel generator
- **High-voltage stack**
  Modules are connected in series without cable connection, and high-voltage platform improves system efficiency
- **Thermal management**
  Temperature detection of key parts, cell, power plug-in, etc.
- **Wide temperature operation**
  The heating function is optional to meet the application scenarios with low temperature and no sense

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Technical Data

Model	GB-S6K-EU	GB-S8K-EU	GB-S10K-EU	GB-S12K-EU	GB-S15K-EU	GB-S20K-EU
Battery Data						
Battery Type	Li-Ion					
Battery Voltage Range (V)	150~700					
Max. Charging Current(A)	37					
Max. Discharging Current(A)	37					
Number of battery input	1					
Charging Strategy for Li-Ion Battery	Self-adaption to BMS					
PV String Input Data						
Max. DC Input Power (W)	7800	10400	13000	15600	19500	26000
Max. DC Input Voltage (V)	1000					
Start-up Voltage(V)	150					
MPPT Range (V)	150-850					
Full Load DC Voltage Range (V)	195-850	260-850	325-850	340-850	423-850	500-850
Rated DC Input Voltage (V)	600					
PV Input Current (A)	20+20			26+20		26+26
Max. PV I_{SC}(A)	23+23			32+23		32+32
No.of MPP Trackers	2					
No of Strings per MPP Tracker	1			2+1		2
AC Output Data						
Rated AC Output and UPS Power (W)	6000	8000	10000	12000	15000	20000
Max. AC Output Power (W)	6600	8800	11000	13200	16500	22000
AC Output Rated Current (A)	9.1	12.2	15.2	18.2	22.8	30.3
Max. AC Current (A)	13	18	22	25	30	35
Max. Continuous AC Pass through (A)	80					
Peak Power (off grid)	1.5 time of rated power, 10S					
Generator input/Smart load /AC couple current (A)	9.1 / 80 / 9.1	12.2 / 80 / 12.2	15.2 / 80 / 15.2	18.2 / 80 / 18.2	22.8 / 80 / 22.8	30.3 / 80 / 30.3
Power Factor	0.8 leading to 0.8 lagging					
Output Frequency and Voltage	50/60Hz; 3L/N/PE 220/380, 230/400Vac					
Grid Type	Three Phase					
DC injection current (mA)	<0.5%1n					
Efficiency						
Max. Efficiency	97.60%					
Euro Efficiency	97.00%					
MPPT Efficiency	99.90%					
Protection						
Integrated	PV Input Lightning Protection, Anti-islanding Protection, PV String Input Reverse Polarity Protection, Insulation Resistor Detection, Residual Current Monitoring Unit, Output Over Current Protection, Output Shorted Protection, Surge protection					
Output Over Voltage Protection	DC Type II/AC Type III					
Certifications and Standards						
Grid Regulation	CEI 0-21, VDE-AR-N 4105, NRS 097, IEC 62116, IEC 61727, G99, G98, VDE 0126-1-1, RD 1699, C10-11					
Safety EMC /Standard	IEC/EN 61000-6-1/2/3/4, IEC/EN 62109-1, IEC/EN 62109-2					
Genera Data						
Operating Temperature Range (℃)	-40~60˚C, >45˚C derating					
Cooling	Smart cooling					
Communication with BMS	RS485; CAN					
Warranty	5 years					

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Technical Data

Model	GB-C20K-EU
Charger Module Data	
Rate Power (kw)	20
Output Voltage Range (V)	50~750
Output Current Range (A)	0~50
Communication Port	CAN2.0
Charging standard	CCS2 Type
Standards/regulations	IEC61851-1
Operating Temperature Range (°C)	40~60
Cooling	Smart cooling
Warranty	5 years
Certification	EN61851-1/EN61851-23

Model	GB-L			
Batter S stem Data				
Cell Chemistry	LiFePO4			
Module Energy (kWh)	4.09			
Module Nominal Voltage (V)	102.4			
Module Capacity (Ah)	40			
Battery Module Qty in series.(Optional)	3	4	5	6
System Nominal Voltage (V)	307.2	409.6	512	614
System Operating Voltage (V)	268.8~691.2			
System Energy (kWh)	12.27	16.36	20.45	24.57
System Usable Energy (kWh)	11.04	14.72	18.40	22.11
Charge/Discharge Current (A) – Recommend	20			
Charge/Discharge Current (A) – Max	40			
Charge/Discharge Current (A) – peak (2mins, 25℃)	50			
Working Temperature (°C)	Charge/Discharge:-20~55			
Communication Port	CAN2.0/RS485			
Thermal Management	Natural Cooling/Smart Heating			
Recommend Depth of Discharge	90%			
Cycle Life	25±2°C,0.5C/0.5C,70%EOL≥6000			
Warranty	10 years			
Certification	CE/IEC 62619/VDE 2510-50/UN38.3			
0ther Data				
Humidity	5~85%RH			
Altitude (m)	≤2000			
IP Rating of Enclosure	IP65			
Noise (dB)	<45			
Storage Temperature (°C)	0~35			
Dimension (W/D/H,mm)	540*385*1420	540*385*1530	540*385*1640	540*385*2080
Weight Approximate (kg)	173	205	237	269
Installation Location	Floor Mount			

1 DC Usable Energy, test conditions: 90% DOD, 0.5C charge & discharge at 25°C. System usable energy may vary due to system configuration parameters.

2 The current is affected by temperature and SOC.

3 The warranty is due whichever reached first of warranty period or life cycle power.

System Components

Model	Description
GB-S6K/8K/10K/12K/15K/20K-EU	Hybrid inverter
Dimension (W/D/H)	540*385*450mm
Weight Approximate	45kg

GB-C20K-EU	20KW Charge module
Dimension (W/D/H)	540*385*110mm
Weight Approximate	20kg

GB-LB	High voltage battery cluster control box
Operating Voltage	120 ~ 750Vdc
Nominal Charge/Discharge Current	40A
Max.Charge/Discharge Current	50A
Operating Temperature Range	-40~85°C
Ingress Protection	IP65
Dimension (W/D/H)	540*385*110mm
Weight Approximate	7kg

GB-LM4.0	4.09 kWh battery module
Battery Type	LiFePO4(LFP)
Nominal Voltage	102.4Vdc
Nominal Capacity	40Ah
Nominal Energy	4.09kWh
Nominal Charge/DischargeCurrent	40A
Max.Charge/Discharge Current	50A
Charge Temperature	0~50°C
Discharge Temperature	-20℃ ~ 55°C
Storage Temperature	0℃ ~ 35°C
Ingress Protection	IP65
Dimension (W/D/H)	540*385*220mm
Weight Approximate	32kg

GB-LBase	Battery module base
Dimension (W/D/H)	540*385*90mm
Weight Approximate	5kg

System Components

Model	Description
EVC50-EU	Standard 4-meter charge power cable & CC2 DC connector cable
ECOM Cable5.0(Optional)	Standard 5-meter commumication cable connected to the external device

- 48KW
- Lebanon
- SUN-12K-SG

- 72KW
- Lebanon
- SUN-12K-SG

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Project cases

- 24KW
- Philippines
- SUN-8K-SG

- 48KW
- Lebanon
- SUN-12K-SG

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To Make ESS Better

NINGBO DEYE ESS TECHNOLOGY Co., Ltd.

Add: No.1 Tianxu Road, Economic Development Zone, Cixi, Ningbo, China

Tel: 0086-0574-86120560 | Fax: 0086-0574-86228852

E-mail: market@deye.com.cn | Web: www.deyeess.com

Note: The technical data above mentioned may be updated or revised due to product development. The data in this brochure is subject to change without notice. The latest datasheet and catalogue can be acquired via market@deye.com.cn

Ver: 1.0 2022

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Certificate of Conformity

By the product certificate number: **No. 230022RECO08-CER**

Issued to:

License holder: **NingBo Deye Inverter Technology Co., Ltd.**
No. 26 South YongJiang Road, Daqi, Beilun, NingBo, China

Trademark: Deye

Manufacturer: **NingBo Deye Inverter Technology Co., Ltd.**
No. 26 South YongJiang Road, Daqi, Beilun, NingBo, China

It is certified that the product:

Type of generating unit: **Hybrid inverter**

Models: **SUN-29.9K-SG01HP3-EU-BM3, SUN-30K-SG01HP3-EU-BM3, SUN-35K-SG01HP3-EU-BM3, SUN-40K-SG01HP3-EU-BM4, SUN-50K-SG01HP3-EU-BM4.**

Technical Data:		
	Nominal power [W]	**See page 2**
	Nominal voltage [V]	**3/N/PE, 230/400 V**
	Nominal frequency [Hz]	**50 Hz / 60 Hz**
	Firmware version	**MAIN: Ver 3102**
	Number of phases	**Three Phase**
	Isolation Transformer	**No**

Is in compliance with the standard:

IEC 61727: 2004. "Photovoltaic (PV) systems – Characteristics of the utility interface."

This certificate is based upon the test results of the Test Report GZES221102230701 (1)
(1) The tests shown in this test report are carried out at a frequency of 50 Hz and 60 Hz

The above-mentioned generating unit is certified according to the SGS internal procedure PE.T-ECPE-32 based on the requirements of the UNE-EN ISO / IEC 17065.

First issued on 16th May 2023
This certificate is valid until 16th May 2028

Madrid, 16th May 2023

Daniel Arranz Muñiz
Certification Manager

File No. ANERT-TECR-xxxxx-xxxx-xxx (Internal Number: xxxx)
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Full list of product references and nominal characteristics:

Model	SUN-29.9K-SG01HP3-EU-BM3	SUN-30K-SG01HP3-EU-BM3	SUN-35K-SG01HP3-EU-BM3	SUN-40K-SG01HP3-EU-BM4	SUN-50K-SG01HP3-EU-BM4
PV Input					
Rated input voltage	600 V				
MPPT operating voltage range	150~850 V				
Max. input current	36/36/36 A			36/36/36/36 A	
Max. short current	55/55/55 A			55/55/55/55 A	
Battery Input					
Battery Type	Li-Ion				
Battery Voltage Range	160~800 V				
Max. Charging Current	50/50 A				
Max. Discharging Current	50/50 A				
AC Output					
Rated AC power	29900 W	30000 W	35000 W	40000 W	50000 W
Max. AC power	29900 VA	33000 VA	38500 VA	44000 VA	55000 VA
Rated AC current	43.4 A	43.5 A	50.8 A	58.0 A	72.5 A
Max. AC current	43.4 A	47.9 A	55.8 A	63.8 A	79.8 A

SGS Tecnos, S.A.U. C/ Trespaderne, 29 - 28042 Madrid
This certificate is issued by SGS under its General Conditions for Product Certification at www.sgs.com/terms_and_conditions.
The status and validity of the certificate can be checked scanning the QR code above included or through the following web link.
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Certificate of Conformity

Product certificate number **No. 230022RECO11-CER**

Issued to:

Holder: **NingBo Deye Inverter Technology Co., Ltd.**
No.26 South YongJiang Road, Daqi, Beilun, NingBo, China

Trademark: Deye

Manufacturer: **NingBo Deye Inverter Technology Co., Ltd.**
No.26 South YongJiang Road, Daqi, Beilun, NingBo, China

It is certified that the product:

Type of generating unit: **Hybrid inverter**

Models **SUN-29.9K-SG01HP3-EU-BM3, SUN-30K-SG01HP3-EU-BM3, SUN-35K-SG01HP3-EU-BM3, SUN-40K-SG01HP3-EU-BM4, SUN-50K-SG01HP3-EU-BM4.**

Technical Data	**Nominal power**	**See page 2**
	Nominal voltage	**3/N/PE, 230/400 V**
	Nominal frequency	**50 Hz / 60 Hz**
	Firmware version	**MAIN: Ver 3102**
	Number of phases	**Three Phase**
	Isolation Transformer	**No**

Is in compliance with the standards:

IEC 60068-2-1: 2007. "Environmental testing. Part 2-1. Test Ae: Cold"
IEC 60068-2-2: 2007. "Environmental testing. Part 2-2. Test Be: Dry heat"
IEC 60068-2-14: 2009. "Environmental testing. Part 2-14. Test Na Changes of temperature"
IEC 60068-2-30: 2005. "Environmental testing. Part 2-30. Test Db – Variant 2: Damp heat, cyclic (12 h + 12 h)"

This certificate is based upon the test results of the Test Report nº GZES221102230704 This report confirms that one sample of the above-mentioned products has been tested with positive result against the requirements of these IEC standards for environmental conditions.

The above-mentioned generating unit is certified according to the SGS internal process 4 based on the requirements of the UNE-EN ISO/IEC 17065.

First issued on 16th May 2023
This certificate is valid until 16th May 2028

Madrid, 16th May 2023

Daniel Arranz Muñiz
Certification Manager

SGS Tecnos, S.A.U. C/ Trespaderne, 29 - 28042 Madrid
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Full list of product references and nominal characteristics:

Model	SUN-29.9K-SG01HP3-EU-BM3	SUN-30K-SG01HP3-EU-BM3	SUN-35K-SG01HP3-EU-BM3	SUN-40K-SG01HP3-EU-BM4	SUN-50K-SG01HP3-EU-BM4
PV Input					
Rated input voltage	600 V				
MPPT operating voltage range	150~850 V				
Max. input current	36/36/36 A			36/36/36/36 A	
Max. short current	55/55/55 A			55/55/55/55 A	
Battery Input					
Battery Type	Li-Ion				
Battery Voltage Range	160~800 V				
Max. Charging Current	50/50 A				
Max. Discharging Current	50/50 A				
AC Output					
Rated AC power	29900 W	30000 W	35000 W	40000 W	50000 W
Max. AC power	29900 VA	33000 VA	38500 VA	44000 VA	55000 VA
Rated AC current	43.4 A	43.5 A	50.8 A	58.0 A	72.5 A
Max. AC current	43.4 A	47.9 A	55.8 A	63.8 A	79.8 A

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	Ref. Certif. No.
IEC IECEE CB SCHEME	**BE-43933**

IEC SYSTEM FOR MUTUAL RECOGNITION OF TEST CERTIFICATES FOR ELECTRICAL EQUIPMENT (IECEE) CB SCHEME

CB TEST CERTIFICATE

Product	Rechargeable Li-ion Battery System
Name and address of the applicant	NINGBO DEYE ESS TECHNOLOGY CO., LTD No.18, Zhenglong 2 Road, Binhai Economic Development Zone, Cixi, Ningbo, Zhejiang, China
Name and address of the manufacturer	NINGBO DEYE ESS TECHNOLOGY CO., LTD No.18, Zhenglong 2 Road, Binhai Economic Development Zone, Cixi, Ningbo, Zhejiang, China
Name and address of the factory Note: *When more than one factory, please report on page 2*	NINGBO DEYE ESS TECHNOLOGY CO., LTD No.18, Zhenglong 2 Road, Binhai Economic Development Zone, Cixi, Ningbo, Zhejiang, China ☐ Additional Information on page 2
Ratings and principal characteristics	Rated Voltage: 51,2 Vd.c., Rated Capacity: 100 Ah
Trademark (if any)	Deye
Customer's Testing Facility (CTF) Stage used	-
Model / Type Ref.	SE-G5.1 Pro
Additional information (if necessary may also be reported on page 2)	- ☐ Additional Information on page 2
A sample of the product was tested and found to be in conformity with	IEC 62619:2017 National Differences: EU Group Differences
As shown in the Test Report Ref. No. which forms part of this Certificate	SHES221001908601

This CB Test Certificate is issued by the National Certification Body

SGS Belgium NV - Division SGS CEBEC
Riverside Business Park
Bld Internationalelaan 55, Building K
B-1070 Brussels, Belgium

SGS CEBEC

Date: 2023-02-01

Signature: Mark Lohmann

This certificate is issued by the company under its General Conditions for Certification Services accessible at http://www.sgs.com/en/Terms-and-Conditions.aspx
Attention is drawn to the limitations of liability defined therein and in the Test Report here above mentioned which findings are reflected in this certificate. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

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VERIFICATION OF EMC COMPLIANCE

Verification No.:	SZEM2209006433BAV
Applicant:	NINGBO DEYE ESS TECHNOLOGY CO., LTD
Address of Applicant:	No.1 TianxuRoad,BinHai Economic Development Zone,Cixi, NingBo, China
Manufacturer:	NINGBO DEYE ESS TECHNOLOGY CO., LTD
Address of Manufacturer:	No.1 TianxuRoad,BinHai Economic Development Zone,Cixi, NingBo, China
Factory：	NINGBO DEYE ESS TECHNOLOGY CO., LTD
Address of Factory:	No.1 TianxuRoad,BinHai Economic Development Zone,Cixi, NingBo, China
Product Description:	Rechargeable Li-ion Battery System
Model No.:	SE-G5.1 Pro
Trade Mark:	Deye

Sufficient samples of the product have been tested and found to be in conformity with

Test Standards:	EN IEC 61000-6-1: 2019 EN IEC 61000-6-3: 2021
As shown in the Test Report Number(s):	SZEM220900643301

This verification of EMC Compliance has been granted to the applicant based on the results of the tests, performed by laboratory of SGS-CSTC Standards Technical Services Co., Ltd. on the sample of the above-mentioned product in accordance with the provisions of the relevant specific standards under Directive 2014/30/EU.
The CE mark as shown below can be used, under the responsibility of the manufacturer, after completion of an EU Declaration of Conformity and compliance with all relevant EU Directives.

SGS-CSTC STANDARDS TECHNICAL SERVICES CO., LTD. SHENZHEN BRANCH EMC LAB

Keny Xu
EMC Laboratory Manager

Date: 2022-09-07

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Member of SGS Group (Société Générale de Surveillance)

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C E R T I F I C A T E
of Conformity

TÜVRheinland®

Registration No.: AK 50569453 0001

Report No.: CN225BCZ 001

Holder:
NingBo Deye Inverter Technology Co., Ltd.
No. 26 South YongJiang Road, Daqi,
Beilun NingBo,
315800 Zhejiang
P.R. China

Product:
PV-Inverter
(Hybrid Inverter)

Identification:

```
Type Designation: SUN-29.9K-SG01HP3-EU-BM3
                  SUN-30K-SG01HP3-EU-BM3
                  SUN-35K-SG01HP3-EU-BM3
                  SUN-40K-SG01HP3-EU-BM4
                  SUN-50K-SG01HP3-EU-BM4
Serial Number   : Engnieer Sample
Firmware Version: 1020
Remark          : Refer to report CN225BCZ 001 for details.
```

Tested acc. to:

IEC 60068-2-27:2008
IEC 60068-2-64:2008

The certificate of conformity refers to the above mentioned product. This is to certify that the specimen is in conformity with the assessment requirement mentioned above. This certificate does not imply assessment of the production of the product and does not permit the use of a TÜV Rheinland mark of conformity.

Certification Body

Date 31.12.2022

TÜV Rheinland LGA Products GmbH Zertifizierstelle TÜVRheinland®

Weichun Li

TÜV Rheinland LGA Products GmbH - Tillystraße 2 - 90431 Nürnberg

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Deye ESS | Energy Storage System Products

To Make ESS Better

Festa Solar
Delivers - Eco justice

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Energy Storage System Products

Content

ANERT – Tender Summary

Why BESS & Its Applications

Product Overview

Typical Application Scenarios

Advantage Analysis

Summary

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ANERT – Tender Summary

Festa Solar
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ANERT TENDER – Summary

Tender: Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram.

Issued By: ANERT

Location: ANERT HQ, Thiruvananthapuram

Capacity: 100 kW Battery Energy Storage System (BESS) with 150kWh Battery

What this Project plans to achieve:

- Round the Clock (RTC) from Renewables,
- Complete back up to the HQ building,
- Reference / demo installation for all the stakeholders in the State,
- Replacing the current Diesel generator,
- Charge the BESS from the existing Solar Power plants,
- Exporting from the storage at Peak Hours

SCOPE OF WORK

Sources of power – Solar, Utility power & Backup DG.

Function:

- Time Of Use
- 100 kW Bi-Directional PCS + Provision for connecting existing Solar through a Static Transfer Switch
- Mobile or stationary use in a modular container divided into battery room and PCS room
- Fire-protecting equipment and Air conditioner-based Cooling
- Grid-connected discharge, grid-connected charging, and system off-grid operation
- PCU system has a wide DC input range, which can better suit the charging and discharging requirements of different battery combinations

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ANERT TENDER – Summary

Items	Specs
Battery Tech	Maintenance free Battery
No OF Cycle	4000
DOD	80%
C Rate	1C
Name Plate – AC	100KW, (50KW of two units), N+1 expendable to 200KW
Name Plate – DC	150 kWh (80% of this capacity at EOL)
System AC-DC-AC efficiency	90%
Use case requirements	Peak Management Voltage Support Frequency Regulation (demonstration only) Intermittent Resource Support
Black Start Capability	YES
Ventilation System inside the Container	YES
Grid Charging	YES
Warranties	10-year warranty for Battery, Seven (7) year parts and labour warranty for the entire BESS

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ANERT TENDER – Site Summary

Site	ANERT HQ
Sanctioned load	**80 KVA**
DG Capacity	**82.5 KVA**
Exiting Solar	**55 KW**
Transformer	**160 KVA**

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Why BESS & Its Applications

Festa Solar
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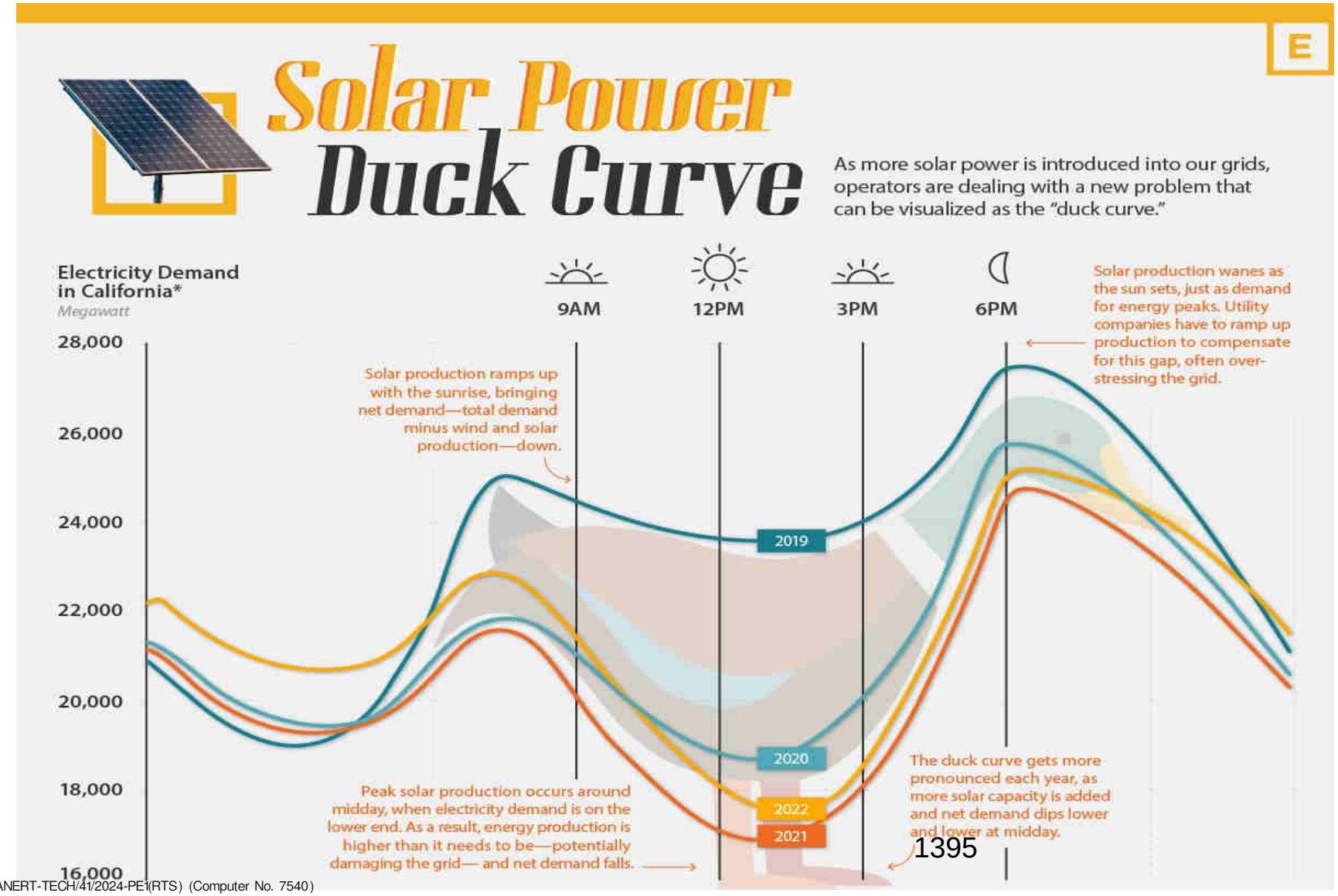
The Solar Power Duck Curve



Flattening the Duck

Energy Storage: Overproduction of solar power during the day can be utilized by improving batteries and grid storage capacity

Powering Alternatives: Extra solar power can go towards powering energy generation at night, such as pumping water for hydroelectricity or overheating a material to dissipate energy later.

Other Clean Sources: Unlike solar energy, sources like nuclear, hydroelectric, and geothermal can operate continuously and fill in the demand gap

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ENERGY STORAGE AND APPLICATIONS

Storage applications

- Address supply disruptions
- Address variability of renewable resources
- Provide peaking capacity

Storage applications

- Defer transmission upgrades
- Relieve transmission congestion
- Provide grid (ancillary) services

Storage applications

- Defer distribution upgrades
- Provide backup power during outages
- Support microgrids
- Reduce demand charges

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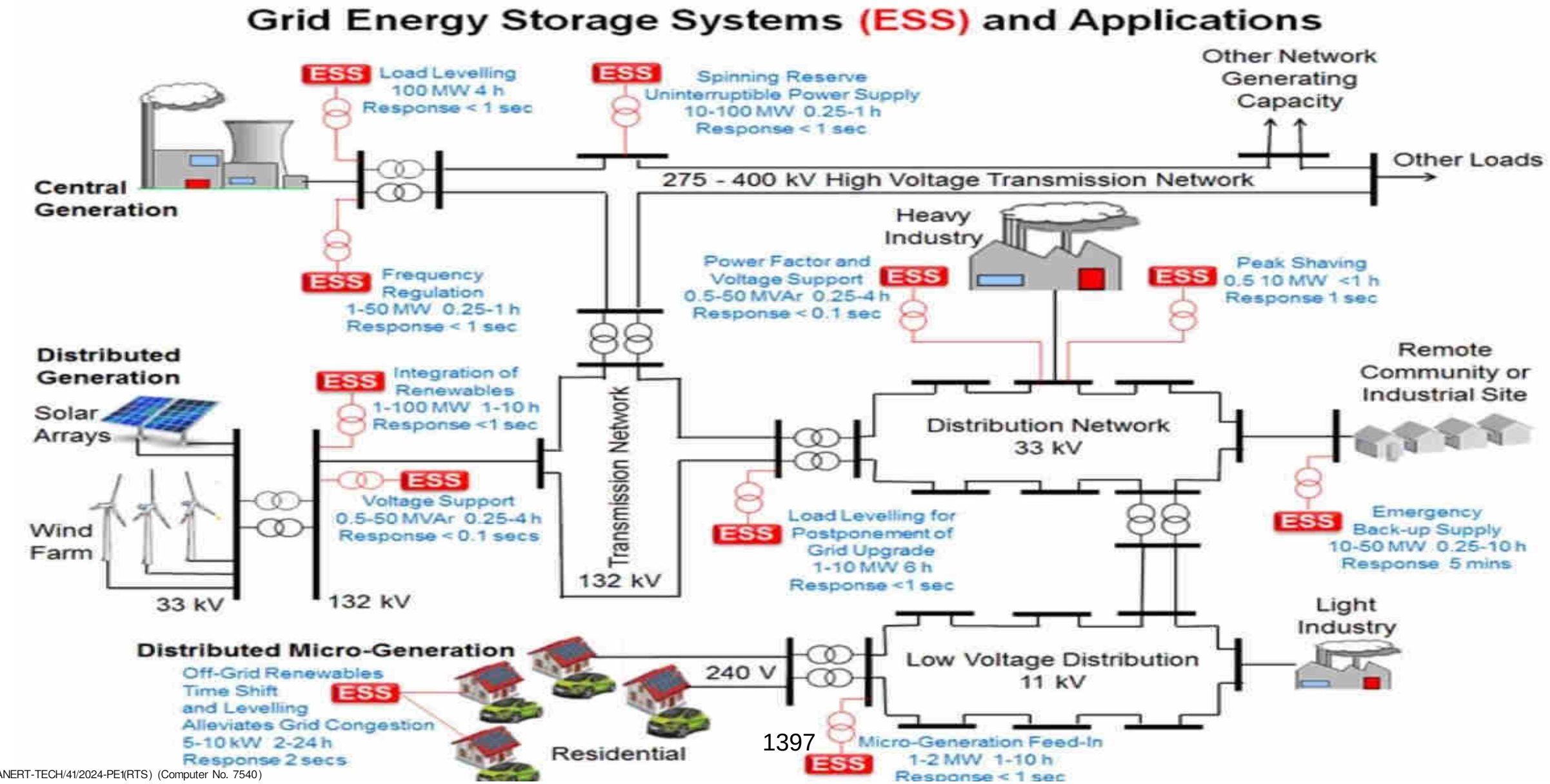
ENERGY STORAGE AND APPLICATIONS



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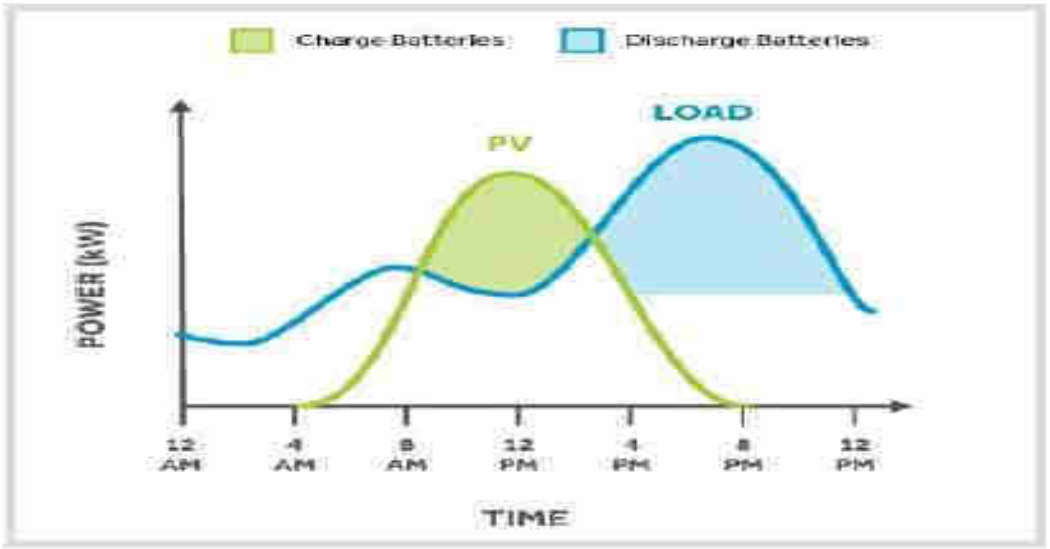
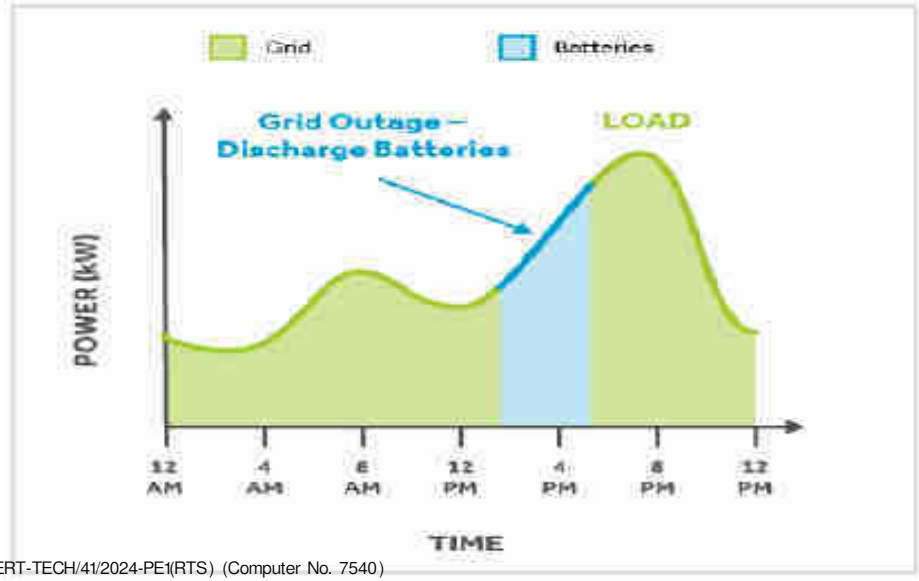
BESS APPLICATIONS



PV Self-Consumption (Load Shifting)

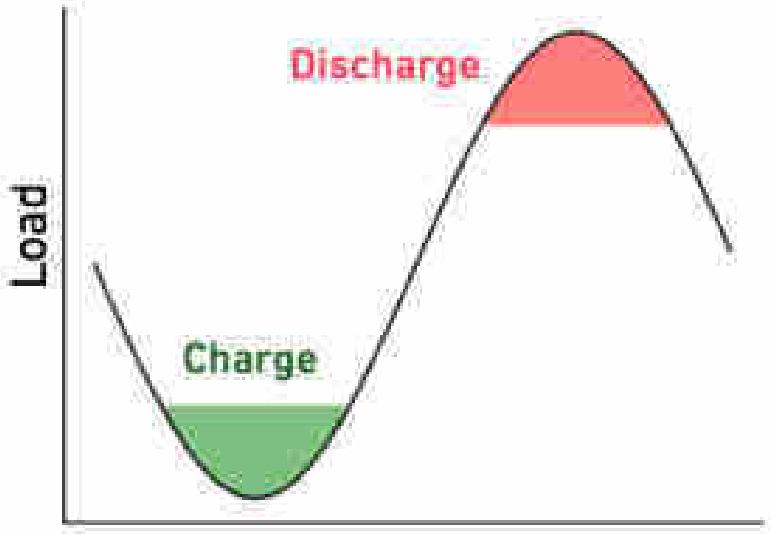
- Fully utilize power generation from PV system
- Decrease contracted capacity with Utility company for cost saving



Back-up & Power Quality

- Improve power quality
- Seamless transition

Energy Arbitrage



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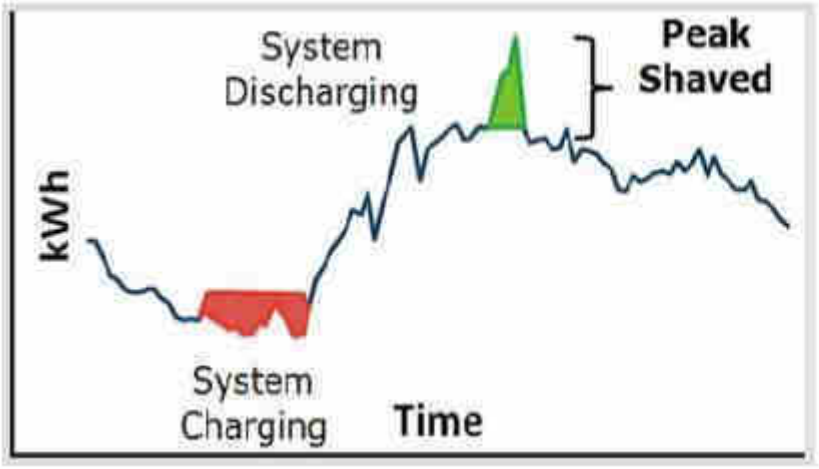
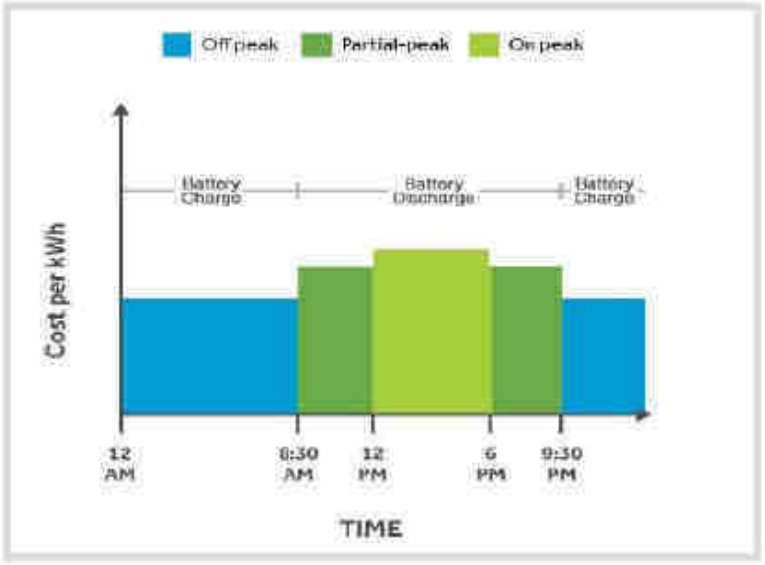
BESS APPLICATIONS



Peak Shaving

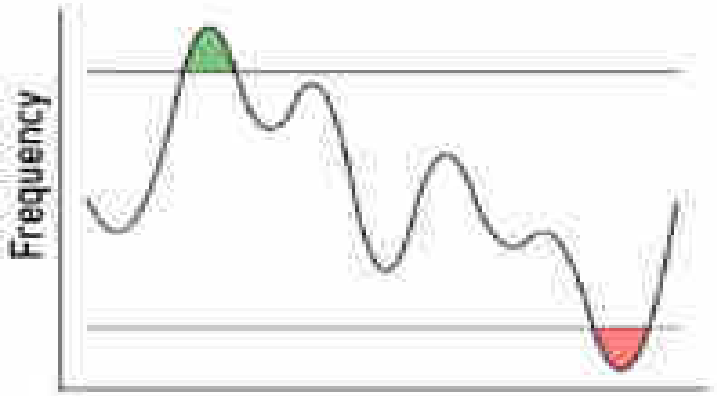
- Defer distribution network and generation investment
- Avoid high demand charge



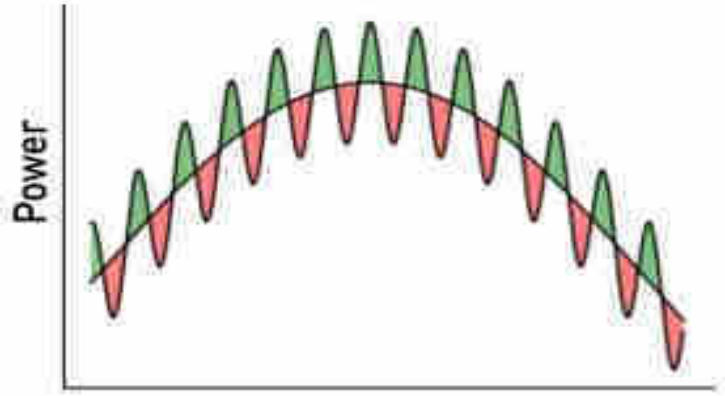
Time of Use Optimization

- Leveling power consumption at peak and off-peak hours
- Decrease contracted capacity with utility company for cost saving

Frequency Regulation



Generation Smoothing



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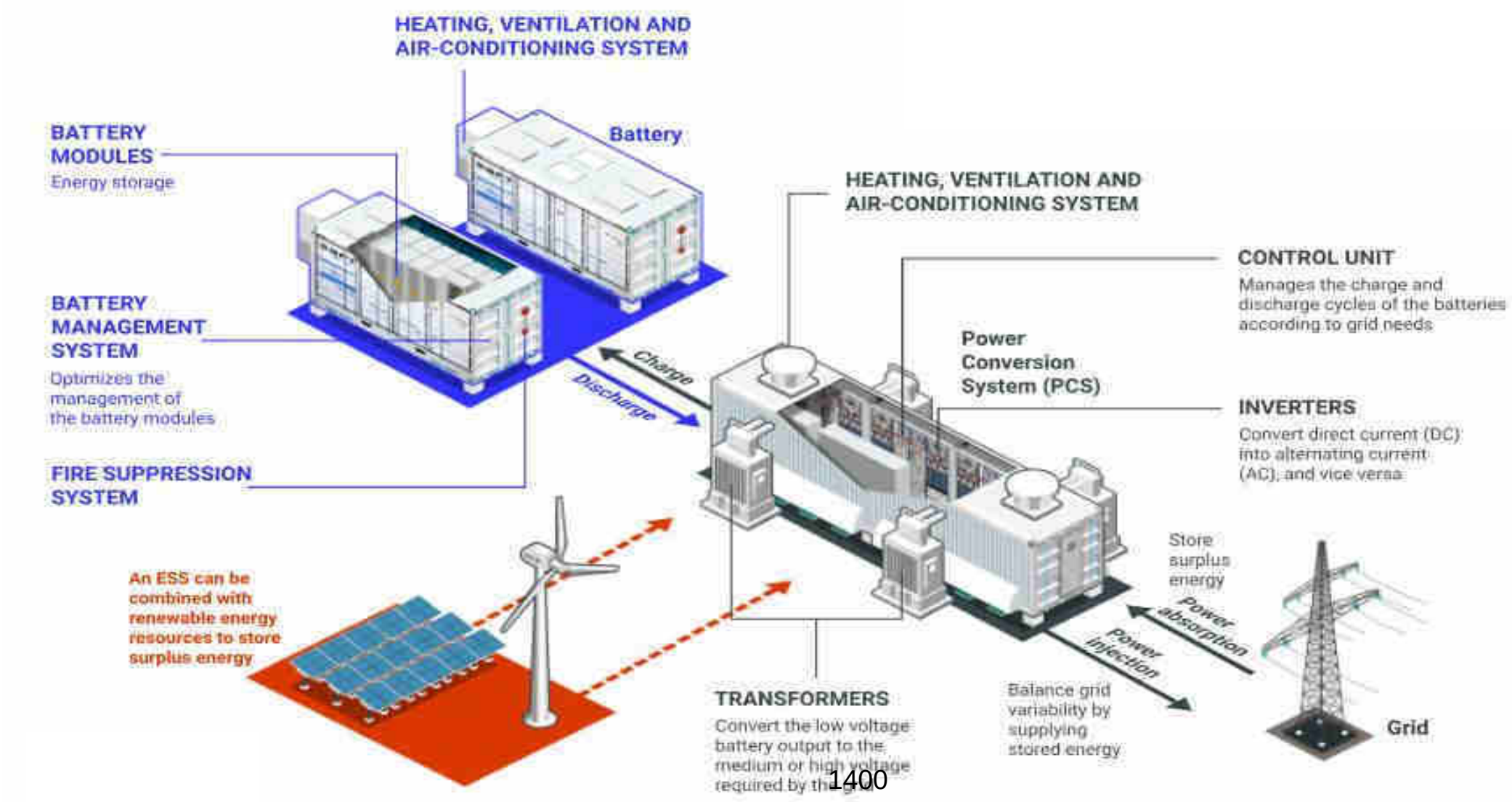
SLD FOR PCS



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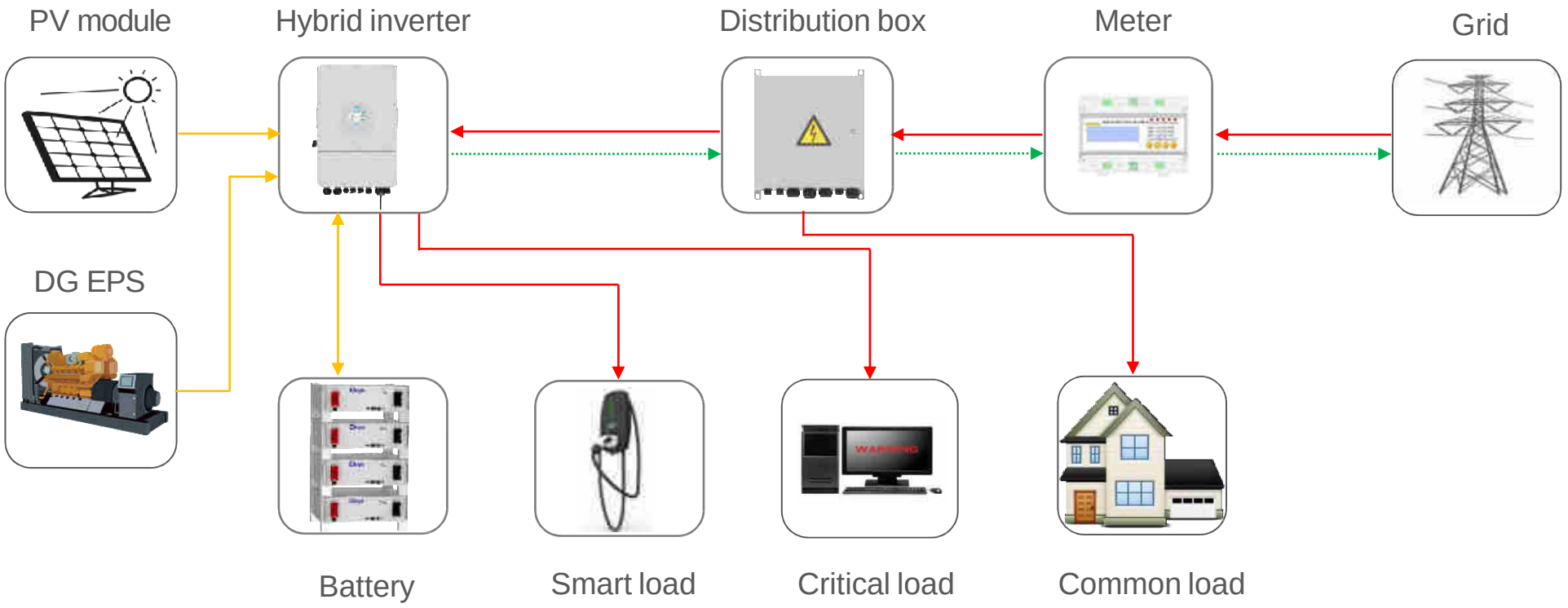
SLD FOR HYBRID SYSTEMS

Energy Storage Battery Products (Low Voltage and High Voltage)



Solar Energy Storage System applications:

Improving self-consumption ratio of solar, reducing your electricity bills

Suitable for the area where the mains grid is unstable

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Product Overview

Festa Solar
Delivers - Eco justice

1402

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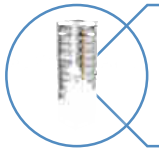
Products Overview – Hybrid Inverter

Hybrid Inverter

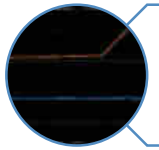
Available capacity – 30kW to 50kW

Features & Advantages

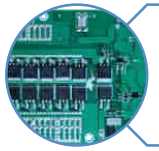
Supports AC coupling & DC coupling



Surge Power (1.5times of the rated power (10s)).



Support **high discharge power**, Smart cooling



TIME OF USE, Unbalanced Output Load

Supports inverter parallel connection

IP65 protection

1403

Standard 19” inch 3U

Hybrid Inverter	
Battery Input Data	
Battery Type	Li-Ion
Battery Voltage Range (V)	160~800
Max. Charging Current (A)	50+50
No Of Battery Input	2
PV String Input Data	
Max. DC Input Voltage (V)	1000
Start-up Voltage (V)	180
No.of MPP Trackers	4
No OF string Per MPPT	2
AC Output Data	
Output Frequency and Voltage	50/60Hz; 3L/N/PE 220/380, 230/400Vac
Max. AC Current (A)	83.3
Power Factor	0.8 leading to 0.8 lagging
Grid Type	Three Phase
General Data	
Operating Temperature Range (℃)	40 -60
Cooling	Smart cooling
Weight (kg)	75
Size (mm)	527W×894H×294D

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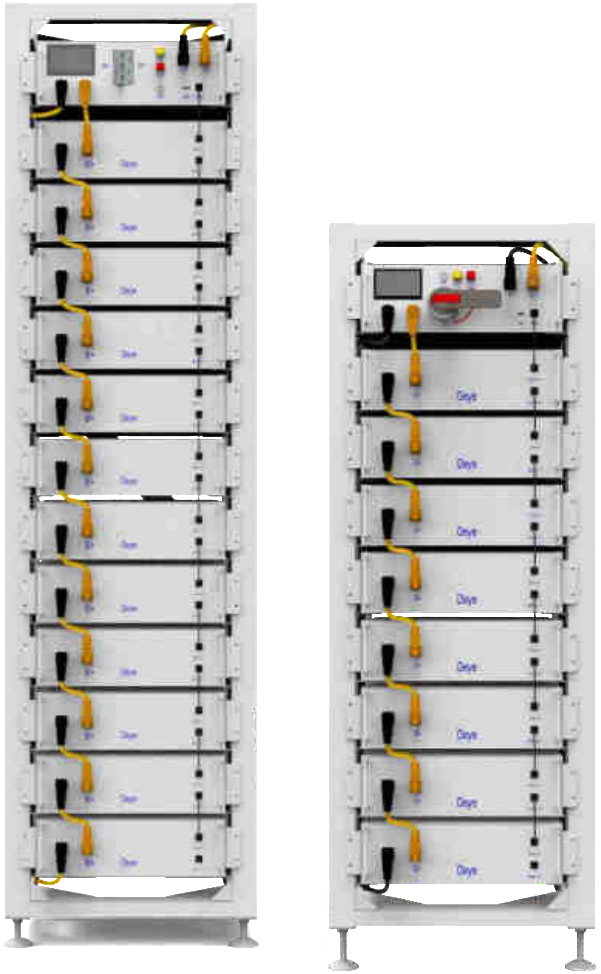
Products Overview – HV Battery

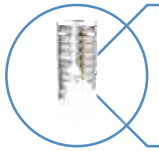
HV Floor-Mounted & Rack-Mounted

BOS-G

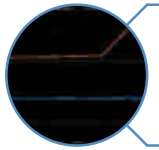


Features & Advantages

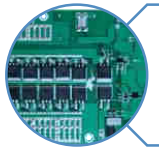
Safer, Prismatic Lithium Iron Phosphate (**LFP**) Battery



Standard US & EU Cluster, 3~12 module in series.



Support **high discharge power**, natural cooling



Reliable, **Intelligent BMS**, providing complete protection

Auto networking, **Support USB upgrade**, wifi upgrade(optional)

Use environmental protection materials, the whole module **non-toxic, pollution-free**

Standard 19” inch 3U

Model (Module)	BOS-GM5.1
HV BOX CHARACTERISTICS	
Voltage / Current	120~750V / 100A
NOMINAL CHARACTERISTICS	
Battery Nominal Voltage	51.2V
Battery Nominal Capacity	100 Ah
Battery Nominal Energy	5.12 kWh
Battery Weight (N.W.)	44kg
Battery Size(W*D*H)	440*570*133 mm
Enclosure protection	IP20
ELECTRICAL CHARACTERISTICS	
Voltage Window	43.2~57.6 V
Max. Continuous Discharge Current	100 A
Peak Discharge Current (25℃)	125 A 2mins
Max. Continuous Charge Current	100 A
Cycle Life(25℃,0.5C/0.5C,70%EOL)	≥6000
OPERATION ENVIRONMENT	
Charge Temperature	0~55 ℃(Optional heating)
Discharge Temperature	-20~55 ℃
Storage Temperature	-20~35 ℃
CERTIFICATION	
UN38.3, IEC62619, CE, FCC, UL1973, UL9540A, CEC	

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Products Overview - GE-F60 (50kW/60kWh)

High Voltage

All-In-One Hybrid ESS

GE-F60 (50kW/60kWh)

Features & Advantages

◆ Intelligent temperature control

The system meets 1C high rate operation, Built-in air conditioner, the maximum temperature of the battery is less than 40℃

◆ Reliable

Positive Balance Intelligent BMS, providing complete protection, can effectively extend cycle life of battery packs

◆ Flexible

Single Inverter support 1~6 cabinet DC parallel capacity expansion, Max. 50kW/360kWh.

Support 1~6 cabinet AC parallel capacity expansion, Max. 300KW/360KWh

◆ Safer

Prismatic Lithium Iron Phosphate (LFP) Battery, Built-in aerosol fire extinguishing.

IP55, Unique modular design

Model (Module)	GE-F60
NOMINAL CHARACTERISTICS	
Hybrid inverter	50kW
AC Output Frequency and Voltage	50/60Hz,3L/N/PE 220/380, 230/400Vac
Nominal Voltage	614.4V
Nominal Capacity	100 Ah
Nominal Energy	61.4 kWh
Weight (N.W.)	880kg
Size(W*D*H)	1200*750*2160 mm
Enclosure protection	IP55
ELECTRICAL CHARACTERISTICS	
Voltage Window	480 V~691.2 V
Max. Continuous Discharge Current	100 A
Peak Discharge Current (25℃)	125A 2mins
Max. Continuous Charge Current	100 A
System Efficiency (25℃,0.5C)	91%
Cycle Life(25℃,0.5C/0.5C,70%EOL)	≥6000
OPERATION ENVIRONMENT	
Charge Temperature	-20~55 ℃
Discharge Temperature	-20~55 ℃
Storage Temperature	-20~35 ℃
CERTIFICATION	
UN38.3, IEC62619, CE, CEI 0-21, VDE-AR-N 4105, IEC 62109	

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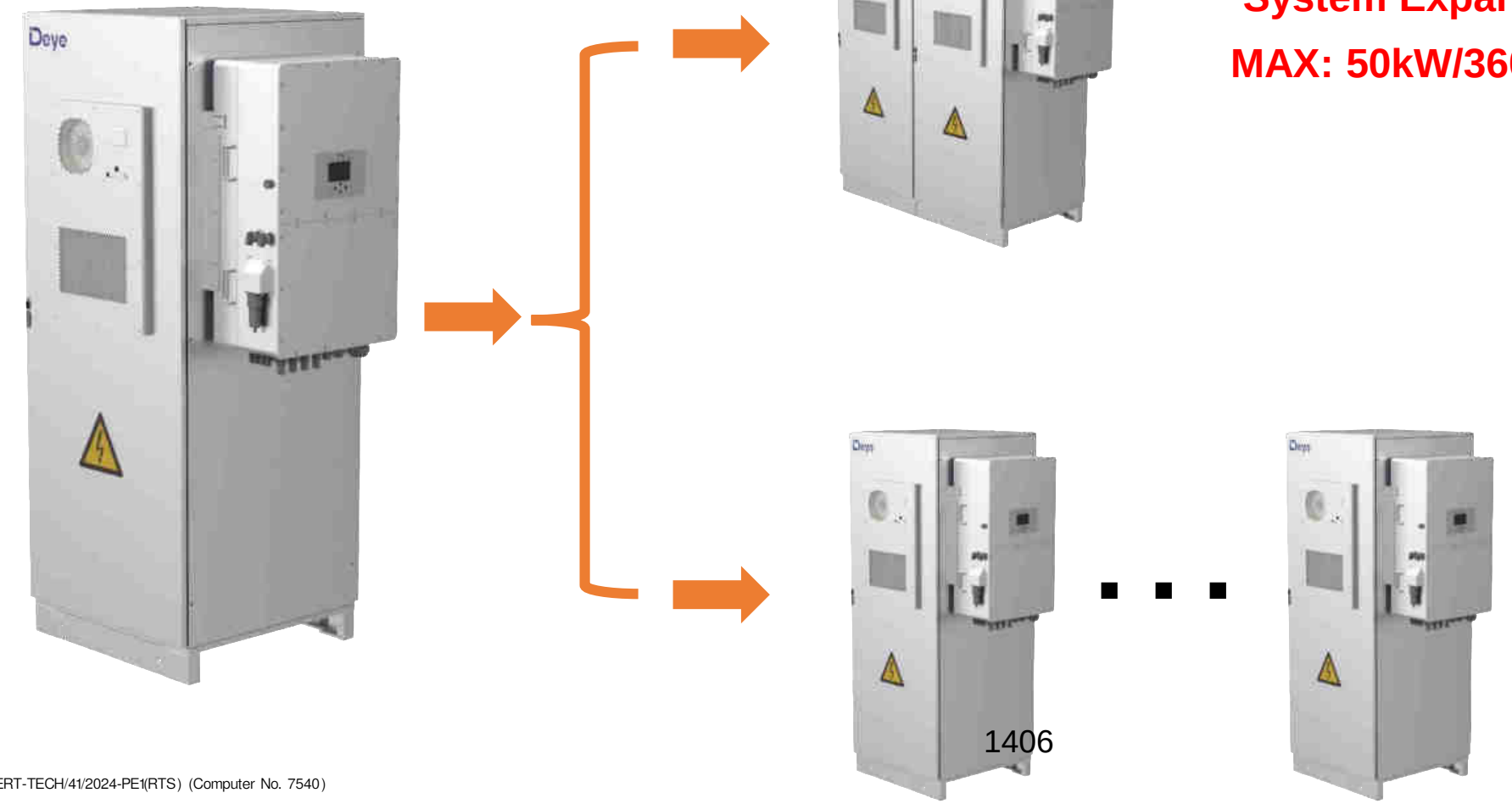
Deye ESS

Products Overview - GE-F60 (50kW/60kWh)

High Voltage All-In-One Hybrid ESS

GE-F60 (50kW/60kWh)



System Expansion

MAX: 50kW/360kWh

System Expansion

MAX: 300kW/360kWh

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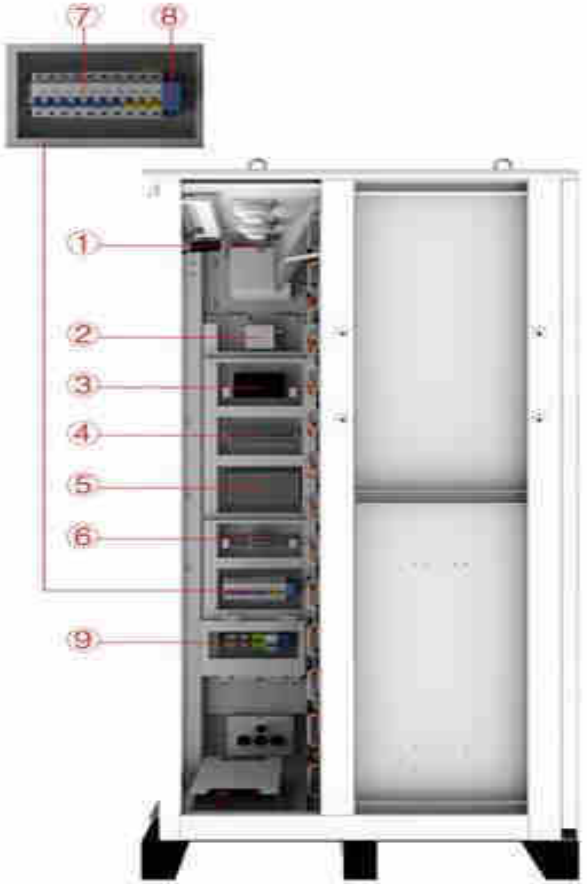
Deye ESS

Products Overview - GE-F60 (50kW/60kWh)

①Air conditioner	Cooling the BESS.
②Travel switch	When the BESS is detected to be on fire, aerosol is emitted to extinguish the fire. Check whether the BESS's door is closed.
③Smoke detector	A device used to detect smoke in a fire and sound an alarm when smoke is detected.
④Heat detector	A device used to measure temperature and sound an alarm if it detects excessive temperature.
⑤Fire suppression water pipe	Fire suppression and cooling.
⑥Aerosol Fire Suppression Device	When the BESS is detected to be on fire, aerosol is emitted to extinguish the fire.



①Fan	Emission of combustible gas
②Combustible gas sensor	Detect combustible gases and notify aerosol fire suppression systems
③Serial relay	Control system
④Terminal line	For connecting cables
⑤Switching Mode Power Supply	Power source
⑥Combustible gas sensor	Detect combustible gases and notify aerosol fire suppression systems
⑦Miniature circuit breaker	Controlled power-on and power-off
⑧Water immersion sensor	Check the BESS for water leakage
⑨Terminal line	Connect external cables

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Products Overview - GE-F60 (50kW/60kWh)

60kWh BESS

50KW Hybrid Inverter

50KW Inverter with 60kWh BESS

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Products Overview - GE-F60 (50kW/60kWh)

Warranty content	Warranty period	Warranty environment
inverter	10years	-40~60℃
BMS	10years	-40~70℃
Air conditioning system	10years	-10~+50℃
Fire protection system	10years	≤60℃
Circuit breaker	10years	-25~60℃

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Products Overview -MS-G230 (100kW/230kWh)

High Voltage

All In One C&I ESS

MS-G230 (100kW/230kWh)

Features & Advantages

◆ Intelligent temperature control

Built-in air conditioner, the maximum temperature of the battery is less than 40℃

◆ Reliable

Positive Balance Intelligent BMS, providing complete protection, can effectively extend cycle life of battery packs

◆ Flexible

EMS and BMS integrated technology, AC/DC power supply redundancy design, support black start function

◆ Safer

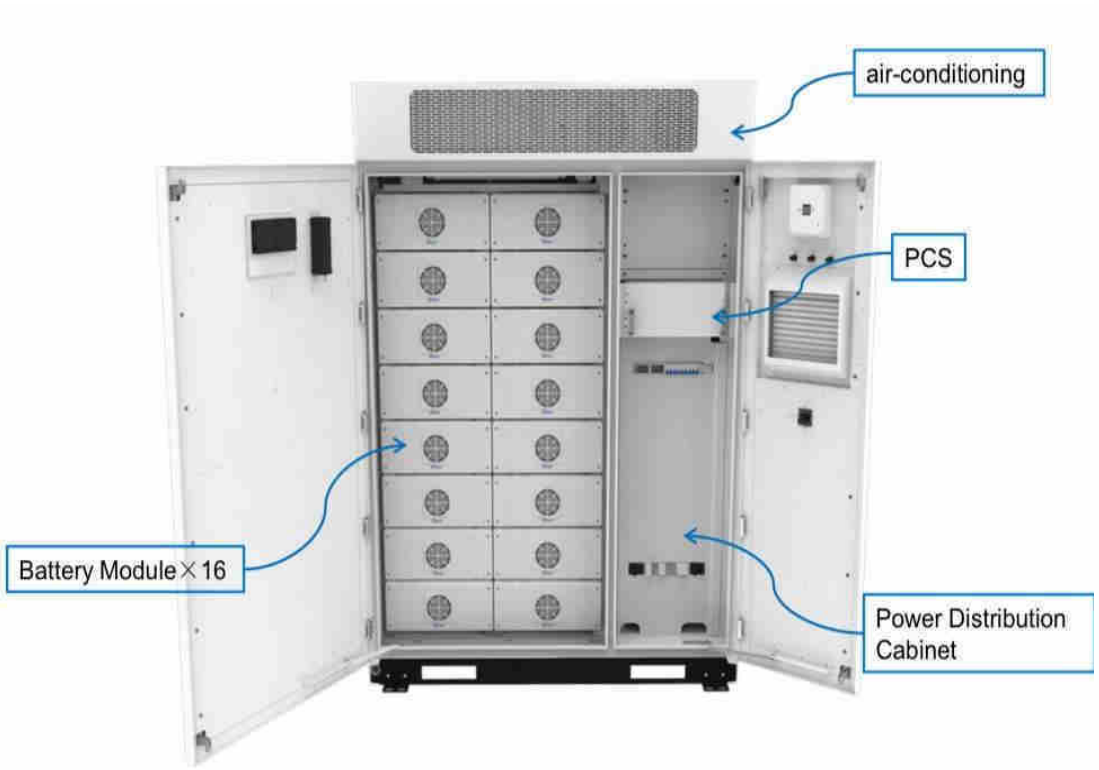
Prismatic Lithium Iron Phosphate (LFP) Battery, Using perfluorohexanone fully submerged fire fighting system

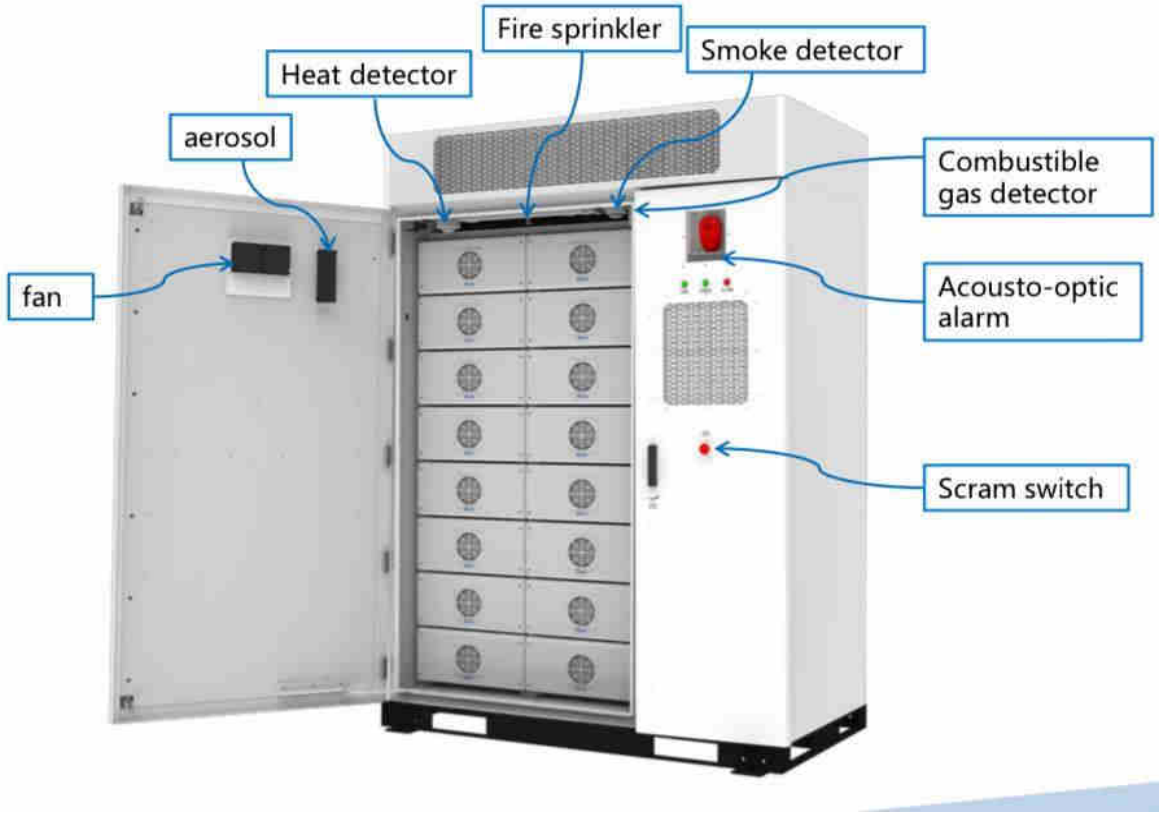
1410

IP54, All-in-one design

Model (Module)	MS-G230
NOMINAL CHARACTERISTICS	
PCS	100kW
AC Output Frequency and Voltage	50/60Hz,3L/N/PE 220/380, 230/400Vac
Nominal Voltage	819.2 V
Nominal Capacity	280 Ah
Nominal Energy	230 kWh
Weight (N.W.)	2300 kg
Size(W*D*H)	1400*1300*2400 mm
Enclosure protection	IP54
ELECTRICAL CHARACTERISTICS	
Voltage Window	716 V~934 V
Max. Continuous Discharge Current	150 A
Max. Continuous Charge Current	150 A
System Efficiency (25℃,0.5C)	88%
Cycle Life(25℃,0.5C/0.5C,70%EOL)	≥6000
OPERATION ENVIRONMENT	
Charge Temperature	-20~55 ℃
Discharge Temperature	-20~55 ℃
Storage Temperature	-20~35 ℃
CERTIFICATION	
UN38.3, IEC62619, CE, CEI 0-21, VDE-AR-N 4105, IEC 62109	

Products Overview - MS-G230 (100kW/230kWh)





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Products Overview - BOW-G1000

High Voltage

All In One **Utility BSS**

PCS – 500KW

Battery – 1000 kWh

HV BMS technology

EMS technology

Features & Advantages

◆ **Intelligent temperature control**

Built-in air conditioner, the maximum temperature of the battery is less than 40℃

◆ **Reliable**

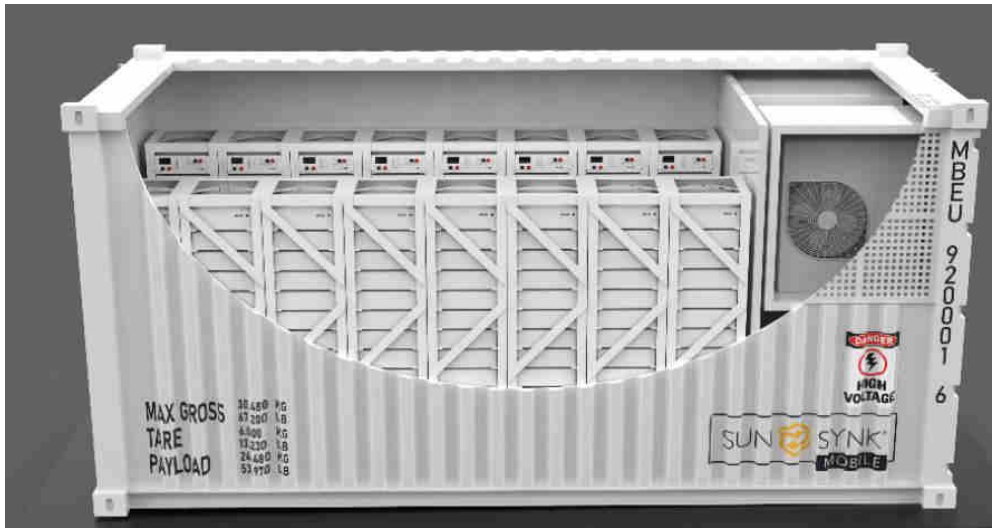
Positive Balance Intelligent BMS, providing complete protection, can effectively extend cycle life of battery packs

◆ **Flexible**

EMS and BMS integrated technology, AC/DC power supply redundancy design, support black start function

◆ **Safer**

Prismatic Lithium Iron Phosphate (LFP) Battery, Using perfluorohexanone fully submerged fire fighting system



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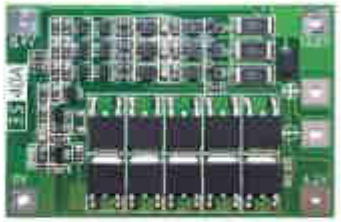
Deye FESTA ESS Advantages

Battery Cell:

- Chemistry – LiFePO4 (LFP)
- Cell Type – Prismatic
- Inbuilt BMS
- Depth of discharge is 90%
- Easy to expand
- Cycles >6000 cycles @ 25° C, 0.5C/0.5C
- Warranty 10 Years or Life Cycle Whichever comes first



BMS
(Battery Management System)

DEYE & Festa Solar:

- Presence Across Solar value chain from KW to MW scale projects
- Service network available across India
- Dedicated warehouse across South India

EMS
(Energy Management System)

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Solgen.pdf

Deye ESS Advantages at a glance

NO.	Performance	Deye ESS advantages
1	High integration	As a high-tech enterprise engaged in independent research and development of a **full range of inverter and energy storage battery products**, Deye is better at and understands system integration technology, System products are more stable and reliable.
2	Safety Guarantee	A grade LFP cell of famous brand and intelligent BMS and aerosol fire extinguishing inside to make sure highest level battery safety. All parts and packs are certified by TUV or SGS with CB or UL standard.
3	Life Cycle	Charge and discharge life cycle is more than 6000 cycles in normal temperature under condition of 0.5C charge and 1C discharge in 90% DoD, make sure more than **10years service life warranty**.
4	Energy Density Bulk Density Power Density	More than 100Wh/kg energy density, lower than 45kg (5kWh), **leading in the market**. More than 135Wh/m^3 bulk density, lower than 0.038m^3(5kWh), **leading in the market**. High current BMS technology， One single pack(5kWh) support 5kW inverter, **leading in the market**.
5	Easy Installation	Plug and Play, Floor-mounted or Wall-mounted, easy to install, suit for small space. BMS without manual coding required for automatic battery programming, **leading in the market**.
5	Compatibility Extensibility	Compatible with other brand inverters. Max. 64 pcs pack (327kWh) in parallel(Max. 32 pcs no external setup),**leading in the market**.
6	Thermal management	IP20 to IP65, heating optional, Intelligent temperature control, **covering all indoor or outdoor scenarios**.
7	Software update	BMS software supports Internet OTA (inverter WIFI) /USB/PC **software update in three ways**.

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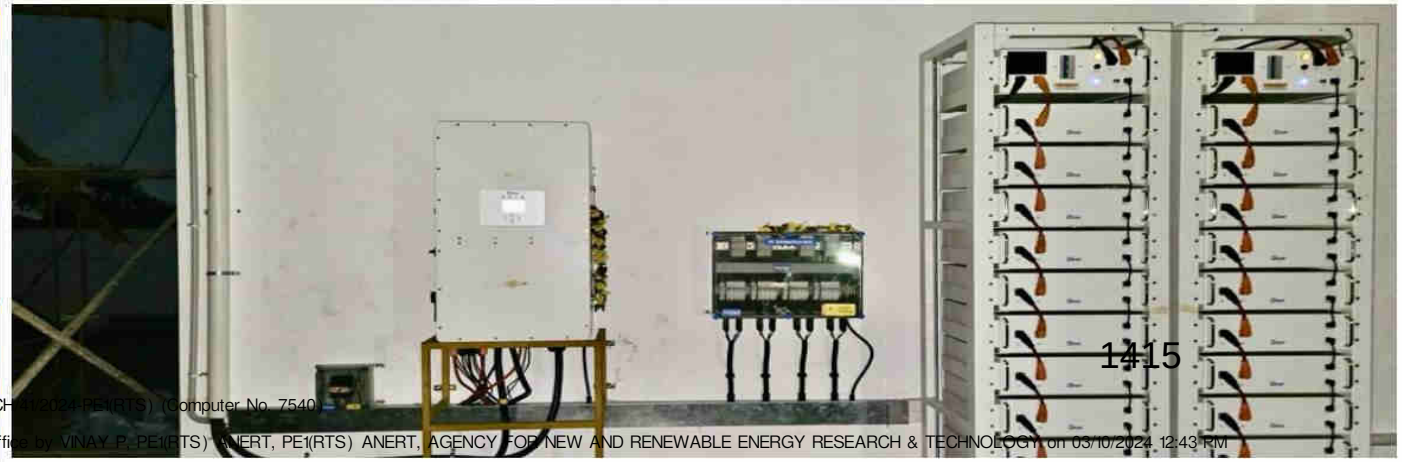
Application – PV Self consumption

50KW inverter with 100kWh Battery



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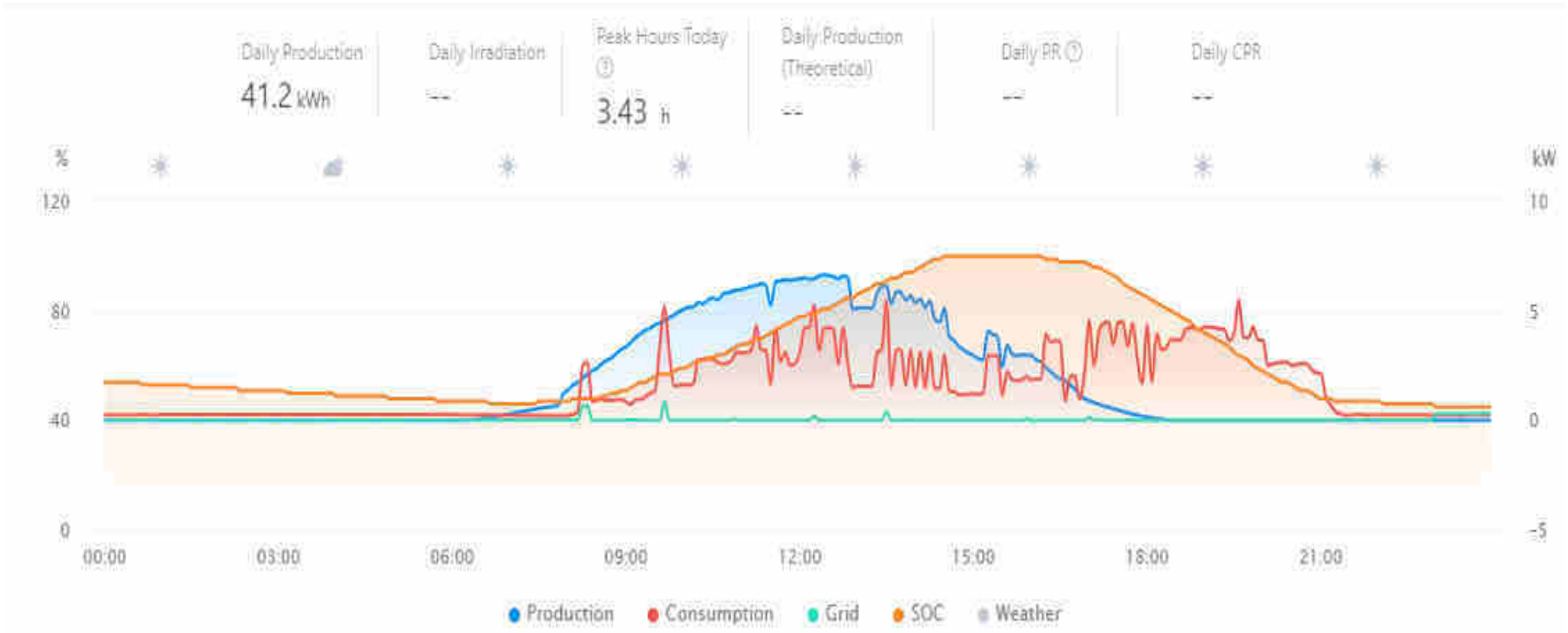
Application – PV Load Shifting

10KW inverter with 15kWh Battery



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Application – Backup Load

30KW inverter with 20kWh Battery

Project Overview

System Size: 30kW / 20 kWh

Solar Capacity: 30kWp

Application: back up Support

Project Life: 10 Years

Interconnection Voltage: 410V

Battery Type: Li-Ion (HV)

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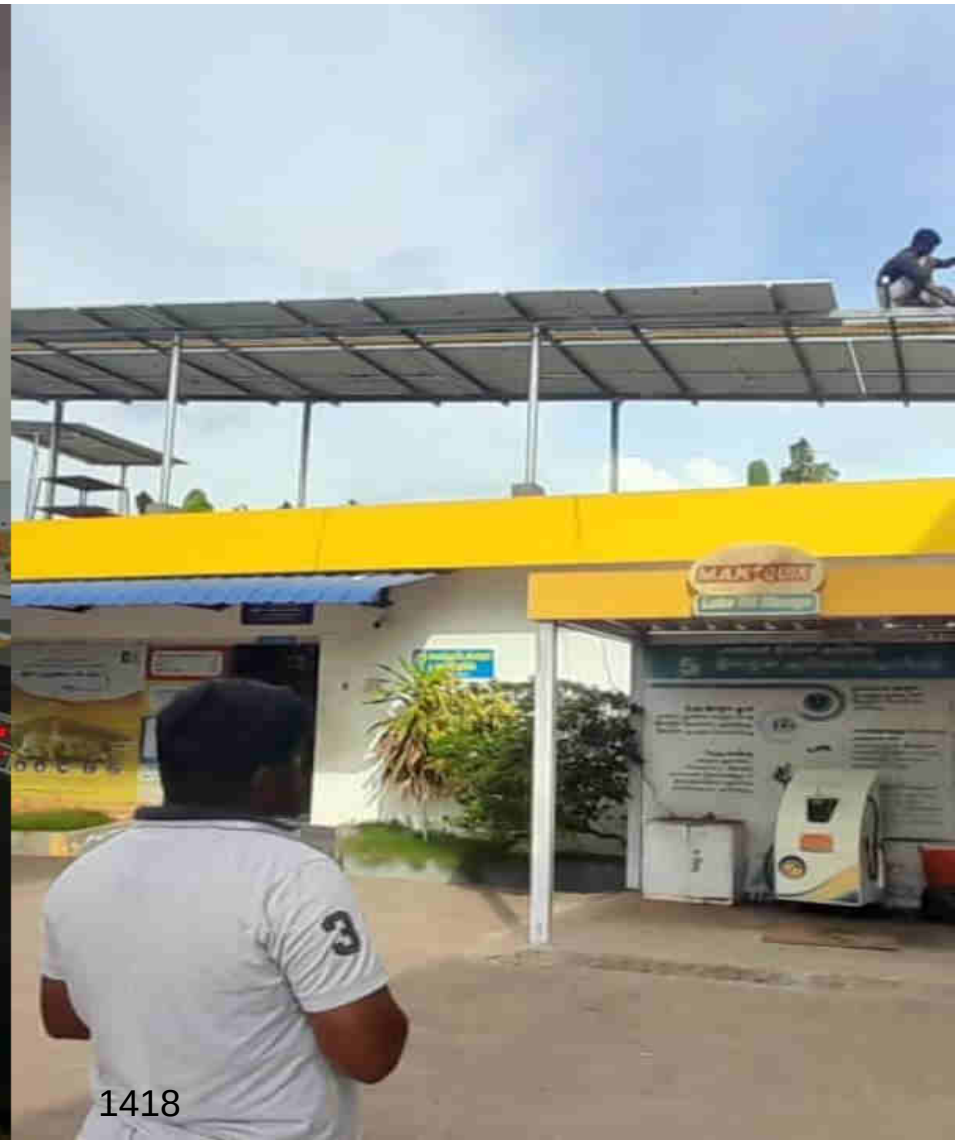
Application – Voltage Issue

10KW inverter with 20kWh Battery



ANERT TENDER – Summary with DEYE Solutions

Items	Specs	GE-F60	MS-G230
Battery Tech	Maintenance free Battery	LFP	LFP
No OF Cycle	4000	6000	6000
DOD	80%	90%	90%
C Rate	1C	1C	1C
Name Plate – AC	100KW, (50KW of two units), N+1 expendable to 200KW	50KW (Can Be extend to 6 Units in Parallel)	100KW
Name Plate – DC	150 kWh (80% of this capacity at EOL)	60kWh (Can Be extend to 6 Units in Parallel)	230kWh
System AC-DC-AC efficiency	90%	90%	90%
Use case requirements	Peak Management Voltage Support Frequency Regulation (demonstration only) Intermittent Resource Support	Peak Management Voltage Support Frequency Regulation (demonstration only) Intermittent Resource Support (Solar Can Be connected Directly)	Peak Management Voltage Support Frequency Regulation (demonstration only) Intermittent Resource Support
Black Start Capability	YES	YES	YES
Ventilation System inside the Container	YES	YES	YES
Grid Charging	YES	YES	YES
Warranties	10-year warranty for Battery, Seven (7) year parts and labour warranty for the entire BESS	10-year warranty for Battery & System	10-year warranty for Battery & System

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IF ANERT want some new configuration of BESS we can able customize the solutions as well

Deye ESS

To Make ESS Better

To Be ESS Leader in the World!

Festa Solar
Delivers - Eco justice

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Hykon India Ltd.
Hykon House, Ikkandawarrier Road, Thrissur-1
Ph : 0487-2444163, 2444183
ho@hykonindia.com, www.hykonindia.com
CIN : U52599KL1998PLC012330

FORMAT FOR COVERING LETTER

Sir,

I/We hereby e-tender to render the services under annexed terms and conditions of contract, the whole of the articles referred to and described in the attached specification and quantity decided by the Agency for New & Renewable Energy Research and Technology (ANERT), at the rates quoted against each item.

I am/We are remitting herewith the required amount of Rs. Nil (Exempted) towards the registration Fee by electronic payment vide transaction No .....
dtd.....

Yours faithfully,

Place:Thrissur
Date:31-05-2024

Signature
Name: Harikumar R
Designation: Chief Operating officer
(Office Seal)

www.hykonindia.com

Hykon India Ltd.
Hykon House, Ikkandawarrier Road, Thrissur-1
Ph : 0487-2444163, 2444183
ho@hykonindia.com, www.hykonindia.com
CIN : U52599KL1998PLC012330

ANNEXURE A – SUMMARY OF BID QUALIFICATION REQUIREMENTS

1.	Name of the applicant and address with email, phone etc.	M/s. Hykon India Ltd., Hykon House, Ikkandawarrier Road, Thrissur – 680 001 e mail : hari@hykonindia.com Mob : 9846035209
2.	Main area of Business	Inverter, UPS, BES, Solar Water Heater, Lithium Battery, Electric Vehicle, Energy Storage System, Solar Pump, ON grid, Off grid System, etc...
3.	Registered Office in Kerala	Hykon India Limited 41/1984, T.A Beerankunju Road, Ernakulam, Kerala, 682018
4.	Details of Power of Attorney	Harikumar R Chief Operating Officer
5.	Proof for Experience	Purchase Orders attached separately

Documentary evidence for the bid qualification requirements are submitted along with this document and the details furnished above are true and correct.

Date:31-05-2024

Signature
of authorised signatory

(Office seal)

Name : Harikumar R

Designation : Chief operating Officer

www.hykonindia.com

കേരളം केरल KERALA CV 024729

Subject: Selection of Consultant for Setting up the Project Management Unit (PMU) for Kerala Green Hydrogen Mission

With reference to the RFP Document for the captioned Project, I **Harikumar R Chief operating Officer** authorized signatory of **Hykon India Limited, Hykon house, Ikkandawarrier road, Thrissur 680001** having examined all relevant documents and understood their contents hereby undertake that the Proposal is unconditional and unqualified.

1. I/We confirm that I/we have examined the terms and conditions published in the EOI and accordingly submitting the Application. The proposal is unconditional and unqualified.
2. All information provided in the Proposal is true and correct and all documents accompanying such Proposal are true copies of their respective originals.
3. This statement is made for the express purpose of appointment Providing PMU services in terms of providing Consultancy and Technical Services

No. 7965 Value Rs : 50
Sold to
Hykon India Ltd
Thrissur

Mrs. JERTHRUDE
VENDOR No. 36, THRISSUR

HYKON INDIA LTD. HYKON HOUSE THRISSUR PH: 0487

DIST. TREASURY STAMP DEPOT 27 MAY 2024 THRISSUR

9-28-5-24

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भारतीय गैर न्यायिक

भारत

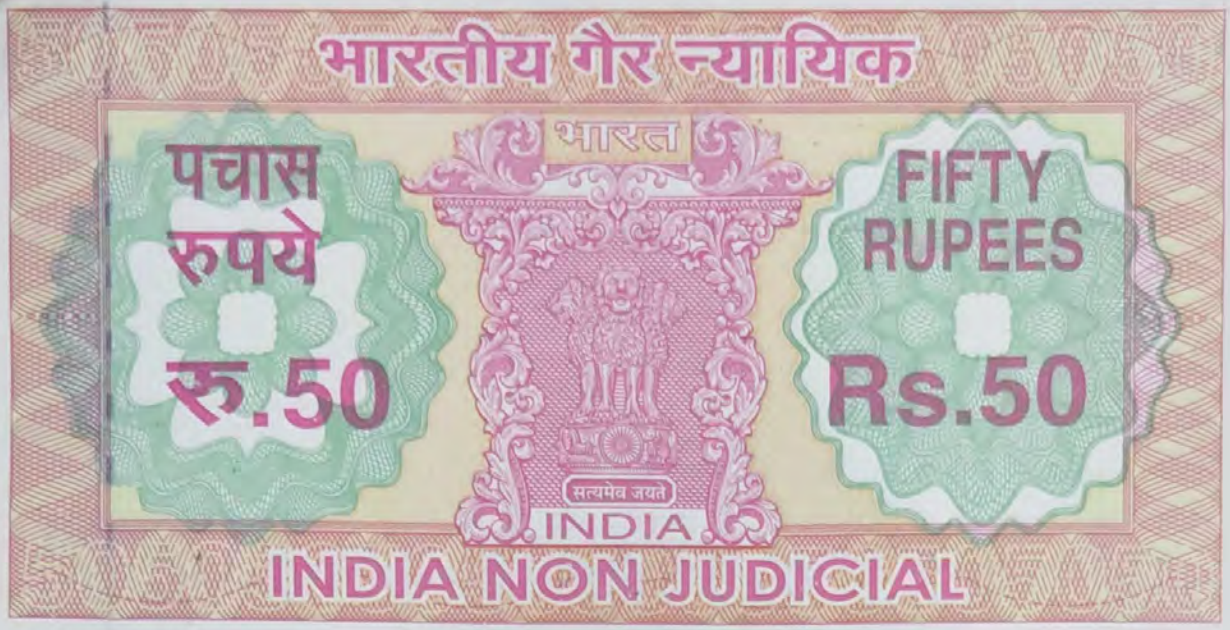
पचास रुपये रु.50

FIFTY RUPEES Rs.50

सत्यमेव जयते

INDIA

INDIA NON JUDICIAL



കേരളം केरल KERALA

CV 024730

4. I/We shall make available to ANERT any additional information it may deem necessary or require for supplementing or authenticating the Proposal.
5. I/We acknowledge the right of the ANERT to reject our application without assigning any reason or otherwise and hereby waive our right to challenge the same on any account whatsoever.
6. I/We certify that in the last three years, I/we have neither failed to perform on any contract, as evidenced by imposition of a penalty by an arbitral or judicial Court or a judicial pronouncement or arbitration award against us, nor have been expelled from any project or contract nor have had any contract terminated for breach on our part.
7. I/We declare that:
   1. I/We have examined and have no reservations to the EOI Documents, including any Addendum thereto, issued by the ANERT;
   2. I/We do not have any conflict of interest in accordance with provisions of the EOI

Document No. 7966 Value Rs : 50

Sold to

Hykon India Ltd
Thrissur

Mrs. JERTHRUDE
VENDOR No. 36, THRISSUR

HYKON INDIA LTD. HYKON HOUSE THRISSUR PH: 0487-2444183 WATER ROAD

DIST. TREASURY STAMP DEPOT 27 MAY 2024 THRISSUR

29.5.24

1424

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3. I/We have not directly or indirectly or through an agent engaged or indulged in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice, as defined in the EOI document, in respect of any tender or request for proposal issued by or any agreement entered into with the ANERT or any other public sector enterprise or any Government, Central or State; and
4. I/We hereby certify that we have taken steps to ensure that in conformity with the provisions of this EOI, no person acting for us or on our behalf will engage in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice.

8. I / We understand that you may cancel the Selection Process at any time and that ANERT is neither bound to accept any Proposal that you may receive nor to select the Consultant, without incurring any liability to the Applicants in accordance with the EOI document.

No.....7767..... Value Rs :.....50.....
Sold to

Hykon India Ltd
Thrissur

Mrs. JERTHRUDE
VENDOR No. 36, THRISSUR

27.5.24

HYKON INDIA LTD. HYKON HOUSE THRISSUR

DIST. TREASURY STAMP DEPOT 27 MAY 2024 THRISSUR

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9. I / We certify that in regard to matters other than security and integrity of the country, we or any of our Associates have not been convicted by a Court of Law or indicted or adverse orders passed by a regulatory authority which would cast a doubt on our ability to undertake the Consultancy for the Project or which relates to a grave offence that outrages the moral sense of the community.

10. I / We further certify that in regard to matters relating to security and integrity of the country, we have not been charge-sheeted by any agency of the Government or convicted by a Court of Law for any offence committed by us or by any of our Associates.

11. I / We hereby irrevocably waive any right or remedy which we may have at any stage at law or howsoever otherwise arising to challenge or question any decision taken by the ANERT (and/ or the Government of Kerala / India) in connectionwith the selection of Consultant or in connection with the Selection Process itself in respect of the above mentioned Project.

No. 1168 Value Rs : 50
Sold to
Hykon India Ltd
Thrissur

HYKON INDIA LTD. HYKON HOUSE THRISSUR-1 PH: 0487-2444183

DIST. TREASURY STAMP DEPOT 27 MAY 2024 THRISSUR

Mrs. JERTHRUDE
VENDOR No. 36, THRISSUR

12. I / We agree and understand that the aforesaid is subject to the provisions of the

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EOI document. In no case, shall I/we have any claim or right of whatsoever nature if the Consultancy for the Project is not awarded to me/us or our proposal is not opened or rejected.

13. I / We agree to keep this offer valid for (120) days from the date of opening of technical bid.
14. I/We have studied EOI and all other documents carefully. We understand that we shall have no claim, right or title arising out of any documents or information provided to us by the ANERT or in respect of any matter arising out of or concerning or relating to the Selection Process including the award of Consultancy.
15. The Technical Proposals and Financial Proposals are being submitted in separate Covers available in the etenders portal.
16. I/We agree and undertake to abide by all the terms and conditions of the EOI Document. In witness thereof, I/we submit this Proposal under and in accordance with the terms of the EOI Document.

HYKON INDIA LTD. HYKON HOUSE THRISSUR-1 PH: 0487-2444183 VADAKKANDA WARRIER ROAD

Signed by Sri .HariRumar R

31-05-2024

in the presence of witnesses

1. Decky John

2. Sharon Tom

Signed by Sri .....

(Date) .....

in the presence of witnesses

1.

2.

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POWER OF ATTORNEY

Know all men by these presents, We, Hykon India Limited 41/1984, T.A Beerankunju Road, Ernakulam, Kerala, 682018 do hereby constitute, nominate, appoint and authorize Mr. Harikumar R son of Raveendran Nair and presently residing at Flat No.-CF VI-123 Tilak Nagar Parottukonam, Thiruvanathapuram, 695015 who is presently employed with us and holding the position of Chief Operating Officer as our true and lawful attorney (Hereinafter referred to as the —Authorized Representative) to do in our name and on our behalf, all such acts, deeds and things as are necessary or required in connection with or incidental to submission of our Proposal for and selection as the Consultant for

Re-Invitation of Expression of Interest (EoI) for the Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram (ANERT-TECH/41/2024-PE1(RTS)) including but not limited to signing and submission of all applications, proposals and other documents and writings, participating in pre-bid and other conferences and providing information/ responses to the ANERT, representing us in all matters before the ANERT, signing and execution of all contracts and undertakings consequent to acceptance of our proposal and generally dealing with the Authority in all matters in connection with or relating to or arising out of our Proposal for the said Project and/or upon award thereof to us till the entering into of the Agreement with the ANERT.

NOTARY No. 1759 Value Rs : 50
Sold to
RAJITH DAVIS ATTATHARA THRISSUR DISTRICT Reg. No: 6524 Expiry Date: 8-8-2028
GOVT. OF INDIA
31 MAY 2024

Hykon India Ltd
Thrissur

For Hykon India Ltd
Christo George
(Managing Director)

DIST. TREASURY STAMP DEPOT
27 MAY 2024
THRISSUR

Mrs. JERTHRUDE
VENDOR No. 36, THRISSUR
29.5.24

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भारतीय गैर न्यायिक

भारत

पचास रुपये रु.50

FIFTY RUPEES Rs.50

सत्यमेव जयते

INDIA

INDIA NON JUDICIAL

കേരളം केरल KERALA

CV 024724

And, We do hereby agree to ratify and confirm all acts, deeds and things lawfully done or caused to be done by our said Authorized Representative pursuant to and in exercise of the powers conferred by this Power of Attorney and that all acts, deeds and things done by our said Authorized Representative in exercise of the powers hereby conferred shall and shall always be deemed to have been done by us.

IN WITNESS WHEREOF WE, HYKON INDIA LIMITED THE ABOVE - NAMED AUTHORISED REPRESENTATIVE HAVE EXECUTED THIS POWER OF ATTORNEY ON THIS 30TH DAY OF MAY 2024

For HYKON INDIA LIMITED

CHRISTO GEORGE

CHAIRMAN & MANAGING DIRECTOR

For Hykon India Ltd.

Christo George
(Managing Director)

Witnesses:

1. Decky John, Asst. Manager- Sales EV, Hykon India Ltd. Hykon house, Ikkandawarrier road, Thrissur
2. Sharon Tom, Asst. Manager-Tenders, Hykon India Ltd. Hykon house, Ikkandawarrier road, Thrissur

Accepted

Harikumar R

Chief Operating Officer

Flat No.-CF VI-123 Tilak Nagar Parottukonam, Thiruvanathapuram, 695015

HYKON INDIA LTD. HYKON HOUSE THRISSUR-1 PH: 0487-2444183 IKKANDA WARRIER ROAD

Executed and Signed before me on this 31 MAY 2024 the day of 20..... in my office Thrissur - Kerala.

NOTARY RAJITH DAVIS ATTATHARA THRISSUR DISTRICT Reg. No. 6524 Expiry Date 8-8-2024 GOVT. OF INDIA

SPECIAL ADHESIVE

No. 7760 Value Rs : 50

Sold to

Hykon India Ltd
Thrissur

Mrs. JERTHRUDE
VENDOR No. 36, THRISSUR

RAJITH DAVIS ATTATHARA
ADVOCATE & NOTARY, REG. No.: 6524
ROLL No.: K/1252/98
THRISSUR - 680 306
KERALA

31 MAY 2024

DIST. TREASURY STAMP DEPOT THRISSUR 27 MAY 2024

NOTARY REG. No. 389/24
BOOK No.: XIII
VOL - XIII
PAGE - 51

29.5.24

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ANNEXURE D – DECLARATION BY THE BIDDER

e- EoI Notification No:ANERT-TECH/41/2024-PE1(RTS) dtd 21-May-2024 for Re-Invitation of Expression of Interest (EoI) for the Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram

To

The CEO

ANERT

We, the undersigned, declare that:

1. We have examined and have no reservations to the Bidding Document, including Addenda No.: ..... (if any)
2. We offer to supply in conformity with the Bidding Document and in accordance with the delivery schedule
3. Our Bid shall be valid for a period of 4 months from the date fixed as deadline for the submission of EoIs in accordance with the Bidding Document, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;
4. If our Bid is accepted, we commit to submit a Security Deposit in the amount of 3 percent of the Contract Price for the due performance of the Contract;
5. We are not participating, as Bidders, in more than one Bid in this bidding process;
6. Our firm, its affiliates or subsidiaries, including any subcontractors or suppliers for any part of the Contract, has not been declared ineligible by the ANERT or Government of Kerala;
7. We understand that this Bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal Contract is prepared and executed.
8. Our firm has obtained the certifications from MNRE or NABL approved Test laboratories that the goods and services are satisfying the technical criteria specified in the bid.

Date:31-05-2024

Signature

Name: Harikumar R

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ANNEXURE E – DECLARATION OF RELATIONSHIP WITH ANERT EMPLOYEE

(to be signed and submitted by the bidder along with the bid)

EoI Notification No.: ANERT-TECH/41/2024-PE1(RTS)

Re-Invitation of Expression of Interest (EoI) for the Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram

To

The CEO

ANERT

Name of the ANERT employee with Designation:NIL

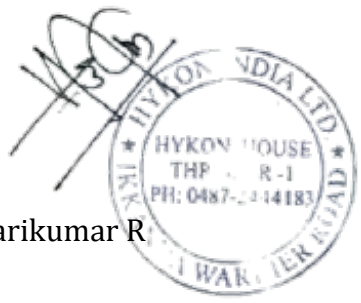
Name of the bidder related to the employee:NIL

This is to put on record that Shri/Smt ……NIL…….. currently working as ……NIL…….. in ANERT is related to ……NIL……., who is the bidder in the bid. We are aware of the Anti-corruption policy of ANERT and will observe the highest standards during the execution of contract and shall retain from corrupt, fraudulent, collusive or coercive practices on competing for the contract.

Date:31-05-2024

Signature

Name: Harikumar R



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Undertaking for No Blacklisting & No Banning

To

The CEO
ANERT

Sub: Re-Invitation of Expression of Interest (EoI) for the Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram

I / We hereby declare that presently our Company/Limited Liability Partnership/ Partnership Firm/ Sole Proprietorship is having unblemished record and is not declared ineligible for corrupt/fraudulent practices by any State/Central Government/PSU on the date of Bid Submission.

HYKON INDIA LTD. HYKON HOUSE THRISSUR-1 PH: 0487-2444183 IKKANDA WARRIER ROAD

No....7761.... Value Rs :.....50.....
Sold to

Hykon India Ltd
Thrissur

Mrs. JERTHRUDE
VENDOR No. 36, THRISSUR

TREASURY STAMP DEPOT 27 MAY 2024 THRISSUR

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CV 024726

I / We further declare that presently our Company/Limited Liability Partnership/ Partnership Firm/ Sole Proprietorship is not blacklisted and not declared ineligible for reasons other than corrupt/fraudulent practices by any State/Central Government/PSU on the date of Bid Submission.

HYKON INDIA LTD. HYKON HOUSE THR R-1 PH: 0487-2444183 IKKANDA WARRIER ROAD

No. 1762 Value Rs : 50

Sold to

Hykon India Ltd
Thrissur

Mrs. JERTHRUDE
VENDOR No. 36, THRISSUR

27 MAY 2024
THRISSUR

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If this declaration is found to be incorrect then without prejudice to any other action that may be taken, our security may be forfeited in full and the EoI if any to the extent accepted may be cancelled.

HYKON INDIA LTD. HYKON HOUSE THRISSUR-1 PH: 0487-2444183 KKANDA WARRIER ROAD

No. 7963 Value Rs : 50

Sold to

Hykon India Ltd
Thrissur

Mrs. JERTHRUDE
VENDOR No. 36, THRISSUR

DIST. TREASURY STAMP DEPOT 27 MAY 2024 THRISSUR

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CV 024728

Name of Authorized Signatory: Mr. Harikumar R

Designation: Chief Operating Officer

Date: 31-05-2024

Place: Thrissur

HYKON INDIA LTD. HYKON HOUSE THRISSUR-1 PH: 0487-2444183 IKKANDA WARRIER ROAD

No. 7964 Value Rs : 50

Sold to

Hykon India Ltd
Thrissur

Mrs. JERTHRUDE
VENDOR NO. 35, THRISSUR

DIST. TREASURY STAMP DEPOT
27 MAY 2024
THRISSUR

27.5.24

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Hykon®
Powering the Nation
Hykon India Ltd
Hykon House, Ikkandawarrier Road, Thrissur
Ph : 0487-2444163, 2444183
ho@hykonindia.com, www.hykonindia.com
CIN: U52599KL 1998PLC012330

ANNEXURE G – CERTIFICATE OF FINANCIAL QUALIFICATION

Financial Qualification Certificate

(Rupees in Crores)

S/N	Financial parameters	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23
1.	**Net Worth**					
a)	Paid up Capital	0.0535	0.0535	0.0535	0.0535	0.0535
b)	Free Reserves and Surplus*	7.888236	8.872376	12.859743	14.658579	21.843855
c)	Misc expenses to the extent not written off					
	Net Worth (a+b-c)	7.941736	8.925876	12.913243	14.712079	21.906366
2.	**Annual Turnover ****	72.116706	75.840009	68.909650	82.657203	103.391186

** Free Reserve and Surplus shall be Exclusive of Revaluation Reserve, written back of Depreciation Provision and Investments*

*** Annual total Income/ Turnover as incorporated in the Profit and Loss Account excluding non-recurring income, sale of fixed asset etc.*

It is certified that all the figures are based on audited accounts read with auditors report and Notes to Accounts etc.

(Signature & Seal of Authorized Signatory

Name of Authorized Signatory: Harikumar B

Designation: Chief Operating Officer

Date: 09.03.2024

Place: Thrissur

Certifying Chartered Accountant:

Name of Firm: M/S. HYKON INDIA LTD.

UDIN No: 24022768BJZWWY7836

Date: 09/03/2024

Place: THRISSUR

CA K.J. TOMY, Bsc, FCA
Chartered Accountant
Membership No: 22768

Note:

1. In addition to above certificate from Chartered Accountant, Bidder is required to submit Firm's Annual Audit Report, Balance sheet, Profit & Loss and Income Tax Returns / CA certificate for last Five [illegible] FY: 2017-18, 2018-19, 2019-20, 2020-21 & 2021-22.

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Certificate of Incorporation Consequent upon conversion to Public Limited Company

सत्यमेव जयते

GOVERNMENT OF INDIA

MINISTRY OF CORPORATE AFFAIRS

Registrar of companies, Ernakulam
1st Floor, Company Law Bhawan BMC Road, Ernakulam, Kerala, India, 682021

Corporate Identity Number: U52599KL1998PLC012330

Fresh Certificate of Incorporation Consequent upon Conversion from Private Company to Public Company

IN THE MATTER OF HYKON INDIA PRIVATE LIMITED

I hereby certify that HYKON INDIA PRIVATE LIMITED which was originally incorporated on Seventeenth day of June One thousand nine hundred ninety-eight under the Companies Act, 1956 as HYKON MARKETING SYSTEMS PRIVATE LIMITED. and upon an intimation made for conversion into Public Limited Company under Section 18 of the Companies Act, 2013; and approval of Central Government signified in writing having been accorded thereto by the RoC - Ernakulam vide SRN G44430239 dated 05.06.2017 the name of the said company is this day changed to HYKON INDIA LIMITED.

Given under my hand at Ernakulam this Fifth day of June Two thousand seventeen.

DS MINISTRY OF CORPORATE AFFAIRS 12

A SEHAR PONRAJ
Registrar of Companies
Registrar of Companies
RoC - Ernakulam

Mailing Address as per record available in Registrar of Companies office:

HYKON INDIA LIMITED
41/1948, 1ST FLOOR, CITY MEMORIAL BUILDING, T.A
BEERANKUNJU ROAD, ERNAKULAM, Kerala, India, 682018

HYKON INDIA LTD HYKON HOUSE THP R-1 PH: 0487-

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Powering the Nation

Hykon India Ltd.
Hykon House, Ikkandawarrier Road, Thrissur-1
Ph : 0487-2444163, 2444183
ho@hykonindia.com, www.hykonindia.com
CIN : U52599KL1998PLC012330

ANERT-TECH/41/2024-PE1(RTS)
31.05.2024

To
CEO ANERT
Office of CEO,
ANERT Law College Road, Vikas Bhavan. PO, Thiruvananthapuram - 695 033

Sir,
Sub :Factory Location & Contact Info
Ref id: ANERT-TECH/41/2024-PE1(RTS)

We Hykon India Limited do hereby declare that we have our Head office at Hykon house, Ikkandawarrier road Thrissur,Kerala 680001. We hereby confirm the bid will be valid for 6 months

We have our factories at : Hykon India Unit 1, Near NH 544, bypass, Thalore, Kerala 680306 Mob no.+91 98460 57592
Our Office at Thiruvanathapuram : Hykon India Limited, TC-2/1420/2,3 Vaidhyuthi Bhavan Road, Vrindavan Gardens, Pattom, Thiruvananthapuram, Kerala 695004

Contact Person : Mrs. Decky John, +91 75949 70050, rm.ev@hykonindia.com Toll free number-902012121,18604250121
We request you to kindly consider and accept the same.

Yours faithfully
For HYKON INDIA LTD

www.hykonindia.com

europass

BIJU RAMU A R

Nationality: Indian **Date of birth:** 22/02/1989

Phone number: (+91) 8943677466 **Email address:** bijuramuar@gmail.com

Whatsapp Messenger: +918943677466

LinkedIn: https://www.linkedin.com/in/biju-ramu-a-r-aba60249/

Home: ARATTUPUZHA HOUSE ANTHIKAD P O, 680641 THRISSUR (India)

ABOUT ME

As an electrical engineer with expertise in power electronics, I would be responsible for designing, developing, and testing electronic devices and systems that control and convert electrical power. You would work on a wide range of projects, from small-scale consumer electronics to large-scale industrial systems.
Some of the tasks you might perform as an electrical engineer in power electronics include:

1. Designing power electronic circuits and systems using tools like simulation software, CAD, Psim, proteus and prototype testing.
2. Selecting and integrating components such as power semiconductor devices, capacitors, and inductors to achieve specific performance requirements.
3. Designing and testing power electronics converters, such as DC-DC converters, AC-DC converters, and DC-AC inverters.
4. Troubleshooting and debugging power electronic circuits and systems to ensure reliable and efficient operation.
5. Keeping up-to-date with new developments in power electronics technology and incorporating these advances into your designs.

WORK EXPERIENCE

Research engineerElectrical engineer

[06/01/2023 – Current]

City: THRISSUR

Country: India

1. Designing electrical systems: Electrical R&D engineers are responsible for designing electrical systems, including circuits, equipment, and other related components. They need to have a deep understanding of electrical theory, as well as the ability to use CAD software to create 2D and 3D designs.
2. Developing prototypes: Electrical R&D engineers work closely with other engineers and technicians to develop prototypes of new electrical equipment and systems. They use their designs to create functional prototypes that can be tested and refined.
3. Conducting testing: Once prototypes have been developed, electrical R&D engineers are responsible for conducting testing to ensure that the equipment or system meets all requirements and specifications. They may use a variety of testing methods, including simulations and experiments.
4. Analyzing data: Electrical R&D engineers need to be able to analyze data and draw conclusions from it. They may use statistical software or other tools to analyze test results and make recommendations for improvements.
5. Writing reports: Electrical R&D engineers must be able to communicate their findings and recommendations clearly and effectively. They may write reports detailing the results of their testing, including any issues or problems that were identified, as well as proposed solutions.
6. Collaborating with other engineers and stakeholders: Electrical R&D engineers work closely with other engineers, technicians, and stakeholders to ensure that the equipment or system meets all requirements and specifications. They must be able to collaborate effectively and communicate complex technical information to non-technical stakeholders.

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7. Staying up-to-date with industry trends: Electrical R&D engineers must stay up-to-date with the latest industry trends and advancements in electrical engineering. This may involve attending conferences, reading industry publications, and collaborating with other engineers in their field.

Electronics engineering technician

Centre for Development of Advanced Computing Trivandrum [21/12/2018 – 05/01/2023]

City: Trivandrum

Country: India

I worked as a part of a research team which worked in the field of solar inverter. Main activities are as follows

1. Testing and verification of PCBs and wirings of the unit.
2. Trail run of solar inverter lab level and onsite.
3. inspection of solar installations
4. involve in the teamwork of design of various electrical circuits in
5. the solar inverter

Engineering assistant

Sree chithra Tirunal institute of Medical Science [30/08/2016 – 30/11/2017]

City: Trivandrum

Country: India

I worked as a part of research team , worked in the field of biomedical implants

1. Involved in testing of various electronic circuits
2. Testing of various circuits
3. create reports

Electrical drafter

Al kaleej Modern Lights [01/04/2009 – 14/05/2010]

City: Doha

Country: Qatar

1. Responsible to attend meeting with the main Contractor and
2. Consultants.
3. Preparation of electrical drawing, cross checking various
4. revision of electrical drawings including industrial & domestic
5. using AutoCAD
6. Site inspection.

Electrical supervisor

Prime electrical contractors and engineering [01/04/2009 – 14/05/2010]

City: THRISSUR

Country: India

1. Supervising the electrical installation in the site.
2. Prepare the electrical drawings using Autocad.
3. Dealing with clients and attending technical discussion

EDUCATION AND TRAINING

Bachelor of Technology in Electrical and Electronics Engineering

Cochin University of Science And Technology [01/04/2013 – 01/04/2017]

Address: Pulinccunnu Alappuzha District, 688504 Alappuzha (India)

Website: cusat.ac.in

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Three-year Diploma in Electrical and Electronics Engineering

Sree Rama Govt. Polytechnic College, [01/04/2006 – 01/04/2009]

Address: Sree Rama Govt. Polytechnic College Thriprayar, 680567 THRISSUR (India)
Website: http://sreeramapoly.ac.in

LANGUAGE SKILLS

Mother tongue(s): **malayalam**

Other language(s):

English

LISTENING B2 **READING** B2 **WRITING** B1

SPOKEN PRODUCTION B2 **SPOKEN INTERACTION** B1

DIGITAL SKILLS

Microsoft Office / Autocad / Psim / Proteus / Matlab / Microsoft Word / Microsoft Excel

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Adarsh Chandra Mohan
adarshchandra98@gmail.com

Graduate Apprentice at Keltron Equipment Complex (12/09/2022 to 11 /09/2023)

- ✓ 1 year experience in Security Systems.
- ✓ Experience in Installation of Biometric Punching machines and its relevant firmwares.
- ✓ Experience in conducting site studies and marking the relevant device location points in accordance with the Clients requirements and providing estimate of the metric measurement of electrical and LAN cable requirement.
- ✓ Experience in activating smart cards to facilitate Biometric punching.
- ✓ Good experience in troubleshooting of Biometric punching machines, UPS (600 VA) and Ethernet cable.
- ✓ Well versed in crimping of Ethernet cable with RJ45 connector.
- ✓ Good knowledge in setting up electrical power box.
- ✓ Self-motivated with proven analytical, technical and communication skills.
- ✓ Strong team player, collaborates well with others to solve problems and actively incorporates input from various sources.
- ✓ Excellent attention to detail and strong communication skills.

Engineer Trainee at Red Labs (1/11/2023 to present)

- ✓ Responsible for servicing of Red Button Voice module which is a real time alert system.
- ✓ Designed a wiring system to effectively carry power from source to the Red Button system.
- ✓ Conducted calculation of Connected Loads to decide the type of power supply required .
- ✓ Testing of 4K Dahua IP camera's , Power Over Ethernet Switch (POE), Network Video Recorder (NVR), Ethernet Cables.
- ✓ Assigning of ip's to Individual cameras .

EDUCATION

Title of the Degree with Branch	College/University	Year of Passing
B Tech (Electrical and Electronics Engineering)	Mar Baselios College of Engineering & Technology, Thiruvananthapuram	2020
XII	Indian Community School (Senior), Kuwait	2016
X	Indian Community School (Senior), Kuwait	2014

TECHNICAL SKILLS

- Crimping LAN cable.
- Basic electrical works.

File No. ANERT-TECH/41/2024-PE1(RTS) (Computer No. 7540)

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- Basic knowledge in C, C++.
- Basic networking knowledge.
- Circuit Assembly on Breadboard .
- Electrical Wire Looping .
- CCTV hardware installation .

SAMPLE ASSIGNMENTS

Project Title: Aadhaar Enabled Biometric Attendance System (AEBAS) Installation and Software configuration

Client: Department of Electrical Inspectorate
Company: Keltron Equipment Complex
Description: This project involved installation of AEBAS and it's related firmwares

- ✓ Conducted site study and located device points where the devices are to be mounted .
- ✓ Upgraded firmwares - AEBAS firmware and Vendor firmware to install AEBAS application and fingerprint sensor respectively to facilitate smooth operation of punching machines .
- ✓ On boarded the Employees on to the attendance site , and generated Attendance id to facilitate punching.
- ✓ Generated Activation code to activate the device and to add the device into the attendance site .
- ✓ Provided training to the concerned authorities on the usage of attendance site to add designations , leave records , On Duty records and generation of attendance records .

Project Title: Aadhaar Enabled Biometric Attendance System (AEBAS) Type 0 Installation and Software configuration.

Client : State Water Transport Department
Company: Keltron Equipment Complex .
Description: This project involved installation of AEBAS and it's related firmwares.

- ✓ Requested the Client to provide Windows 10 PC or higher to install the firmwares into the system .
- ✓ Type 0 AEBAS being a USB type machine is inserted into the CPU .
- ✓ Firmwares are installed into the system .
- ✓ Biometric Attendance System (BAS) application is installed into the system .
- ✓ Activation code is generated from the attendance site and the code is entered on to the BAS application to activate the device and register it into the attendance site .
- ✓ On boarded the Employees on to the attendance site , and generated Attendance id to facilitate punching.
- ✓ Provided training to the concerned authorities on the usage of attendance site to add designations , leave records , On Duty records and generation of attendance records .

Project Title: Aadhaar Enabled Biometric Attendance System (AEBAS) Servicing .

Client: Kerala Toddy Workers Welfare Fund Board

Company: Keltron Equipment Complex
Description: The Client had reported a complaint on the device being not powered .

- ✓ Reported to the site and noted that the adapter extension cable has been damaged and the damaged cable has been replaced with a new DC cable . Power has been then restored .

PERSONAL INFORMATION

Permanent Address : House no: 47 , Vrindavan Gardens , Pattom , Trivandrum , 695004

Email : adarshchandra98@gmail.com

Phone : 7034685247

(Amended)

Government of India

Form GST REG-06

[See Rule 10(1)]

Registration Certificate

Registration Number :32AAACH6869H1ZH

1.	Legal Name	HYKON INDIA LIMITED				
2.	Trade Name, if any	HYKON INDIA LIMITED				
3.	Additional trade names, if any					
4.	Constitution of Business	Public Limited Company				
5.	Address of Principal Place of Business	HYKON HOUSE974, IKKANDA WARRIER ROAD, THRISSUR, Thrissur, Kerala, 680001				
6.	Date of Liability	01/07/2017				
7.	Date of Validity	From	01/07/2017	To	Not Applicable	
8.	Type of Registration	Regular				
9	Particulars of Approving Authority	Section 25 of the Goods and Services Tax Act, 2017				
Signature						

Validity unknown

Digitally signed by DS GOODS AND SERVICES TAX NETWORK(4)
Date: 2022.11.03 13:46:30 IST

Name	Fleming T D
Designation	Superintendent
Jurisdictional Office	Commercial Tax Office, I Circle
9. Date of issue of Certificate	03/11/2022
Note: The registration certificate is required to be prominently displayed at all places of Business/Office(s) in the State.	

This is a system generated digitally signed Registration Certificate issued based on the approval of application granted on 03/11/2022 by the jurisdictional authority.

1445

Annexure A

Details of Additional Place of Business(s)

GSTIN	32AAACH6869H1ZH
Legal Name	HYKON INDIA LIMITED
Trade Name, if any	HYKON INDIA LIMITED
Additional trade names, if any	

Total Number of Additional Places of Business(s) in the State 11

Sr. No.	Address
1	X1/855, Industrial Estate, Ollur, THRISSUR, Thrissur, Kerala, 680306
2	A-33, 35, Industrial Estate, Ollur, THRISSUR, Thrissur, Kerala, 680306
3	TC2/1420/3, VYDHUTHI BHAVAN ROAD, PATTOM, THIRUVANANTHAPURAM, Thiruvananthapuram, Kerala, 695004
4	21/311, GROUD FLOOR, VELAMPARAMBIL BUILDING, PARKLINE, KOTTAYAM, Kottayam, Kerala, 686001
5	41/1948, T A BEERAN KUNJU ROAD, ERNAKULAM, Ernakulam, Kerala, 682018
6	27/478, DEEPAM, PARAYANCHERY, KOZHIKODU, Kozhikode, Kerala, 673016
7	SB5-668, GROUND FLOOR, SUPEX CORNER, NEAR TRAINING SCHOOL, KANNUR, Kannur, Kerala, 670002
8	2/489,490,491, NH BY-PASS, THALORE, Thrissur, Kerala, 680306
9	39, 6, Hykon India Limited, Vellikulangara, Kodasserry Panjayath, Thrissur, Thrissur, Kerala, 680721
10	9/52-1, Govt College Road, Kuttanellur, Thrissur, Kerala, 680006
11	XIII/368A,368B, CREZENT TOWER, AMBATTUKAVU,THAIKKATUUKARA P O, ALWAYE, ERNAMKULAM, Ernakulam, Kerala, 683103

File No. ANERT-TECH/41/2024-PE1(RTS) (Computer No. 7540)

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Annexure B

GSTIN	32AAACH6869H1ZH
Legal Name	HYKON INDIA LIMITED
Trade Name, if any	HYKON INDIA LIMITED
Additional trade names, if any	

Details of Managing / Whole-time Directors and Key Managerial Persons

1		Name	CHRISTO GEORGE
		Designation/Status	Managing Director
		Resident of State	Kerala
2		Name	CATHERINE CHRISTO
		Designation/Status	Director
		Resident of State	Kerala
3		Name	GEORGE CHRISTO
		Designation/Status	Director
		Resident of State	Kerala

File No. ANERT-TECH/41/2024-PE1(RTS) (Computer No. 7540)

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आयकर विभाग
INCOME TAX DEPARTMENT
भारत सरकार
GOVT. OF INDIA
स्थायी लेखा संख्या कार्ड
Permanent Account Number Card
AAACH6869H
नाम / Name
HYKON INDIA LIMITED
निगमन/गठन की तारीख
Date of Incorporation / Formation
17/06/1998
14052018

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इस कार्ड के खोने / पाने पर कृपया सूचित करें / लौटाए :
आयकर पैन सेवा इकाई, एन एस डी एल
5 वीं मंजिल, मंत्री स्टर्लिंग, प्लॉट नं. 341, सर्वे नं. 997/8,
मॉडल कालोनी, दीप बंगला चौक के पास,
पुणे – 411 016.

If this card is lost / someone's lost card is found, please inform / return to :
Income Tax PAN Services Unit, NSDL
5th floor, Mantri Sterling,
Plot No. 341, Survey No. 997/8,
Model Colony, Near Deep Bungalow Chowk,
Pune – 411 016.

Tel: 91-20-2721 8080, Fax: 91-20-2721 8081
e-mail: tininfo@nsdl.co.in

HYKON INDIA LTD
HYKON HOUSE
THP R-1
PH: 0487-2444183
IKKANDI WARRIER ROAD

Contract

Contract No: GEMC-511687706822699
Generated Date: 23-Nov-2021
Bid/RA/PR No: GEM/2021/B/1605157

Organisation Details

Type:	State Government
Ministry:	-
Department:	Animal Husbandry Department Kerala
Organisation Name:	N/A
Office Zone:	Directorate Of Animal Husbandy

Buyer Details

Designation:	Assistant Director FD DAH
Contact No.:	0471-2302381-94
Email ID:	adfd.ahd@kerala.gov.in
GSTIN:	-
Address:	Directorate of Animal Husbandry, 6th Floor, Vikas Bhavan, Palayam, Thiruvananthapuram, THIRUVANANTHAPURAM, KERALA-695033, India

Financial Approval Detail

IFD Concurrence:	No
Designation of Administrative Approval:	Director, Dept of Animal Husbandry, Kerala
Designation of Financial Approval:	Director, Dept of Animal Husbandry, Kerala

Paying Authority Details

Payment Mode:	Offline
Designation:	Administrative Assistant 1
Email ID:	aa1.ahd@kerala.gov.in
GSTIN:	-
Address:	Directorate of Animal Husbandry, 6th Floor, Vikas Bhavan, Palayam, Thiruvananthapuram, THIRUVANANTHAPURAM CITY, KERALA-695033, India

Seller Details

GeM Seller ID:	D3A1180000090647
Company Name:	HYKON INDIA LIMITED
Contact No.:	08086088848
Email ID:	tenders@hykonindia.com
Address:	9/525 21,22,23,HYKON HOUSE,IKKANDA WARRIER ROAD,TRICHUR, Thrissur, KERALA-680001, -
MSME verified:	Yes
MSME Registration number:	KL13B0004274
MSE Social Category:	General
MSE Gender:	Male
GSTIN:	32AAACH6869H1ZH , 29AAACH6869H1Z4 , 33AAACH6869H1ZF , 32AAACH6869H1ZH , 36AAACH6869H1Z9

*GST / Tax invoice to be raised in the name of - Buyer

Product Details

#	Item Description	Category Name & Quadrant	Model	HSN Code	Ordered Quantity	Unit	Lead Time(Days)	Price (Inclusive of all Duties and Taxes in INR)
1	**Product Name :** HYKON 10.0 KVA UPS **Brand :** HYKON **Brand Type :** Registered Brand **Catalogue Status :** OEM verified catalogue **Selling As :** OEM	Online Ups-IS:9000 (Q3)	AEBTS 10000	HSN not specified by seller	1	pieces	-	1,004,500
Total Order Value (in INR)								**1,004,500**

Consignee Detail

S.No	Consignee	Item	Lot No.	Quantity	Delivery Start After	Delivery To Be Completed By
1	Designation: - Email ID: adfd.ahd@kerala.gov.in Contact: 0471-2302381-94 GSTIN: - Address: Directorate of Animal Husbandry, 6th Floor, Vikas Bhavan, Palayam, Thiruvananthapuram, THIRUVANANTHAPURAM, KERALA-695033, India	HYKON 10.0 KVA UPS	-	1	23-Nov-2021	21-Feb-2022

Product Specification for HYKON 10.0 KVA UPS

Specification	Sub-Spec	Value

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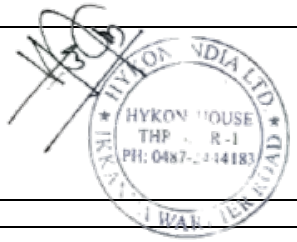
Generic	Rating in KVA (KVA)	10.0 KVA
	Technology	IGBT-PWM with inbuilt isolation transformer
	Input Power	Three phase 300 V - 450V sinewave,50Hz
	Output power	Single phase 230V +/-1% sinewave 50 Hz
	Backup time (Minutes)	240
	Minimum VAH (VAH)	48000
	Warranty for UPS (Years)	3
	Movable trolly for Batteries	Without trollery but with rack
	Warranty for battery	2
	Degree of Protection	IP20
	Cabling 5 meters for input and out put	Without
	Paralleling kit for synchronising	Without
	Installation and Commissioning	Yes
Constructional	Minimum thickness of M.S.Sheet Enclosure duly painted (mm)	1.2
	Type of Battery	Lithium ion
Functional	Maximum overshoot and Under shoot of output rated voltage	4
	Voltage Regulation from no load to full load (%)	< / = 3%
	20% Overload limit for minimum 10 minutes	No, only for 5 Minutes
	Overall Efficiency (%)	>/=90%
	Total Harmonic Distortion(THD) (%)	Maximum 3%
	50% Overload limit for minimum 1 minutes	No, only for 3 seconds
Protection	Protection for under voltage at battery terminal at 10.5V per 12 V battery	Yes
	Protection of Over voltage,Short Circuit & over load at UPS output terminal	Yes
Metering And Indications	Digital Metering in UPS for AC Input Voltage,Output AC Voltage,Current,Frequency,Battery Voltage and Current	Yes
	Indicators for mains presence,Battery charging and discharging,Output Over Load, Low Battery Voltage	Yes
Reports And Certification	Damp Heat : in accordance with IS:9000(part 5/sec.2)1981 at Temperature of 40 degree C,two cycles of (12+12) hours each 2007)	Yes
	Dry Heat Test : in accordance with IS:9000 (part 3/sec.5)1977 (reaffirmed 2007) at 55 degree C for 16 hrs	Yes
	Cold Test : in accordance with IS:9000 (Part 2/Sec.4)1977 (Reaffirmed 2007) at -10 degree C for 4 hrs.	Yes
	Availability of the Type Test Report from Central Govt. /NABL/ILAC Accredited lab covering all technical requirements.	Yes
	Type Test Certificate No.	TR/ETL/63748-1
	Type Test Certificate date	27/4/2016
	Name of Lab	ETDC
	Address of Lab	BANGALORE
	As per Meity (Government of India) guidelines UPS shall have valid BIS CRS certifications as applicable	Yes

Buyer Defined Additional Specification for HYKON 10.0 KVA UPS

Specification	Value
Warranty for Battery in years	Minimum 5 years
Installation and commissioning at premises	complete within 15 days after awarding BID



Terms and Conditions

1. Special terms and conditions- Version:1 effective from 04-05-2020

1.1

Calculation of Minimum VAH based on Back up time
Minimum VAH requirements would be calculated on the basis of following:
(VAH Calculation: Battery Voltage x Battery Ah x No. of Batteries = VAH)

UPS Rating	15 Minutes	30 Minutes	60 Minutes	90 Minutes	120 Minutes	180 Minutes	240 Minutes
1 KVA	400 VAH	800 VAH	1600 VAH	2400 VAH	3200 VAH	4800 VAH	6400 VAH
2 KVA	800 VAH	1600 VAH	3200 VAH	4800 VAH	6400 VAH	9600 VAH	12800 VAH
3 KVA	1200 VAH	2400 VAH	4800 VAH	7200VAH	9600 VAH	14400 VAH	19200 VAH
5 KVA	2000 VAH	4000 VAH	8000 VAH	12000 VAH	16000 VAH	24000 VAH	32000 VAH
6 KVA	2400 VAH	4800 VAH	9600 VAH	14400 VAH	19200 VAH	28800 VAH	38400 VAH
7.5 KVA	3000 VAH	6000 VAH	12000 VAH	18000 VAH	24000 VAH	36000 VAH	48000 VAH
10 KVA	4000 VAH	8000 VAH	16000 VAH	24000 VAH	32000 VAH	48000 VAH	64000 VAH
15 KVA	6000 VAH	12000 VAH	24000 VAH	36000 VAH	48000 VAH	72000 VAH	96000 VAH
20 KVA	8000 VAH	16000 VAH	32000 VAH	48000 VAH	64000 VAH	96000 VAH	128000 VAH
30 KVA	12000 VAH	24000 VAH	48000 VAH	72000 VAH	96000 VAH	144000 VAH	192000 VAH
40 KVA	16000 VAH	32000 VAH	64000 VAH	96000 VAH	128000 VAH	192000 VAH	256000 VAH
60 KVA	24000 VAH	48000 VAH	96000 VAH	144000 VAH	192000 VAH	288000 VAH	384000 VAH
80 KVA	32000 VAH	64000 VAH	128000 VAH	192000 VAH	256000 VAH	384000 VAH	512000 VAH
100 KVA	40000 VAH	80000 VAH	160000 VAH	240000 VAH	320000 VAH	480000 VAH	640000 VAH

2. General Terms and Conditions-

2.1 This Contract between the Seller and the Buyer, is for the supply of the Goods and/ or Services, detailed in the schedule above, in accordance with the General Terms and Conditions (GTC) as available on the GeM portal (unless otherwise superseded by Goods / Services specific Special Terms and Conditions (STC) and/ or BID/Reverse Auction Additional Terms and Conditions (ATC), as applicable

2.2 Terms of delivery: Free Delivery at Site including loading/unloading. In respect of items requiring installation and / or commissioning and other services in the scope of supply (as indicated in respective product category specification / STC / ATC), and the cost of the same is also included in the Contract price.

2.2.1 Contracted goods should be delivered at the consignee or designated delivery location as per the working time of the buying organisation. Seller may get the same confirmed from consignee before scheduling delivery.

2.2.2 A copy of the contract should be available with the messenger / dispatching agency that delivers the Goods at consignee / delivery location (preferably pasted / attached outside the consignment / package) for easy reference and ease in delivery acceptance.

2.3 Delivery period: The Delivery Period/Time shall be essence of the Contract and delivery must be completed not later than such date(s). Any modification thereto shall be mutually agreed and incorporated in the Contract as per the provisions of the GTC.

2.4 Performance Security: If the Seller fails or neglects to observe or perform any of his obligations under the contract it shall be lawful for the Buyer to forfeit either in whole or in part, the Performance Security furnished by the Seller.

2.5 Taxes and Duties: Contract Prices are all inclusive i.e. including all taxes, duties, local levies / transportation / loading-unloading charges etc. Break up of GST shall be indicated by the Seller while raising invoice / bill on GeM. While submitting the bill / invoice Seller shall undertake that the Goods and Services Tax (GST) charged on this bill is not more than what is payable under the provision on the relevant Act or the Rules made there under and that the Goods on which GST has been charged have not been exempted under the GST Act or the Rules made there under and the charges on account of GST on these goods are correct under the provision of that Act or the rules made there under.

2.6 Octroi Duty and / or other local taxes:Contract Prices are all inclusive hence no reimbursement over and above the contract price(s) shall be allowed to seller towards payment of local taxes (such as levy of town duty, Octroi Duty, Terminal Tax and other levies of local bodies etc).

2.7 Limitation of Liability: The provisions of limitation of liability between Buyer and Seller as given in the GTC shall be applicable here.

2.8 Resolution of disputes: The provisions of DISPUTE RESOLUTION BETWEEN BUYER AND SELLER as given in the GTC shall be applicable here.

2.9 Liquidated Damages: If the Seller fails to deliver any or all of the Goods/Services within the original/re-fixed delivery period(s) specified in the contract, the Buyer will be entitled to deduct/recover the Liquidated Damages for the delay, unless covered under Force Majeure conditions aforesaid, @ 0.5% per week or part of the week of delayed period as pre-estimated damages not exceeding 10% of the contract value without any controversy/dispute of any sort whatsoever. In case, Service Level Agreement (SLA) is applicable the same shall be applicable for the Contract.

2.10 Financial Certificate:

2.10.1 The expenditure involved for this purpose has received the Sanction of the competent financial authority.

2.10.2 The funds are available under the proper head in the sanction budget allotment for the concern financial year.

2.10.3 I have been fully authorized by the department to sign the supply order or incur the liability of the Goods being ordered.

2.11 The bidder should submit a self declaration to the effect in bidder's official letter head that their agency have not been black listed by any Agency whatsoever till date.

3. Buyer Added Bid Specific Terms and Conditions-

3.1 Availability of Service Centres: Bidder/OEM must have a Functional Service Centre in the State of each Consignee's Location in case of carry-in warranty. (Not applicable in case of goods having on-site warranty). If service center is not already there at the time of bidding, successful bidder / OEM shall have to establish one within 30 days of award of contract. Payment shall be released only after submission of documentary evidence

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of having Functional Service Centre.

3.2 Dedicated /toll Free Telephone No. for Service Support : BIDDER/OEM must have Dedicated/toll Free Telephone No. for Service Support.

3.3 Warranty period of the supplied products shall be as given in specifications from the date of final acceptance of goods or after completion of installation, commissioning & testing of goods (if included in the scope of supply), at consignee location. OEM Warranty certificates must be submitted by Successful Bidder at the time of delivery of Goods. The seller should guarantee the rectification of goods in case of any break down during the guarantee period. Seller should have well established Installation, Commissioning, Training, Troubleshooting and Maintenance Service group in INDIA for attending the after sales service. Details of Service Centres near consignee destinations are to be uploaded along with the bid.

3.4 Over and above the normal Warranty terms as per GeM GTC, the successful bidder / OEM shall have to provide Comprehensive Warranty during the entire Standard warranty period as per contract. : The comprehensive warranty shall be covering the following scope Replacing of all components of UPS including battery at no cost basis (Upload an undertaking with the bid confirming compliance by the bidder if Bidder is taking onus of this compliance. In case OEM is taking onus of this compliance, OEM undertaking is to be uploaded along with Bidder undertaking)

3.5 Successful bidder will have to ensure that adequate number of dedicated technical service personals / engineers are designated / deployed for attending to the Service Request in a time bound manner and for ensuring Timely Servicing / rectification of defects during warranty period, as per Service level agreement indicated in the relevant clause of the bid.

3.6 Scope of supply (Bid price to include all cost components) : Supply Installation Testing Commissioning of Goods and Training of operators and providing Statutory Clearances required (if any)

Note: This is system generated file. No signature is required. Print out of this document is not valid for payment/ transaction purpose.

Contract

Contract No: GEMC-511687718955640
Generated Date: 15-Jul-2022
Bid/RA No: GEM/2022/B/2175497

Organisation Details

Type:	Central Autonomous
Ministry:	Ministry of Electronics and Information Technology
Department:	NA
Organisation Name:	Centre for Development of Advanced Computing (C-DAC)
Office Zone:	Thiruvananthapuram

Buyer Details

Name:	Bindhu Thomas
Designation:	Senior Assistant
Contact No.:	471-2723333-283
Email ID:	buycon3.cdacc.kl@gembuyer.in
GSTIN:	32AAATC0934H2Z8
Address:	Purchase Department, Centre for Development of Advanced Computing, Vellayambalam, THIRUVANANTHAPURAM, KERALA-695033, India

Financial Approval Detail

IFD Concurrence:	No
Designation of Administrative Approval:	Section Head Purchase
Designation of Financial Approval:	Senior Finance Officer

Paying Authority Details

Payment Mode:	Internet Banking
Designation:	Senior Finance Officer
Email ID:	pao1.meit.kl@gembuyer.in
GSTIN:	N
Address:	Purchase Department, Centre for Development of Advanced Computing, Vellayambalam, THIRUVANANTHAPURAM CITY, KERALA-695033, India

Seller Details

GeM Seller ID:	D3A1180000090647
Company Name:	HYKON INDIA LIMITED
Contact No.:	08086088848
Email ID:	tenders@hykonindia.com
Address:	9/525 21,22,23,HYKON HOUSE,IKKANDA WARRIER ROAD,TRICHUR, Thrissur, KERALA-680001, -
MSME verified:	Yes
MSME Registration number:	KL13B0004274
MSE Social Category:	General
MSE Gender:	Male
GSTIN:	32AAACH6869H1ZH

*GST / Tax invoice to be raised in the name of - Consignee

Product Details

#	Item Description	Ordered Quantity	Unit	Unit Price (INR)	Tax Bifurcation (INR)	Price (Inclusive of all Duties and Taxes in INR)
1	**Product Name :** 500 AH LFP Battery Module **Brand :** HYKON **Brand Type :** Registered Brand **Catalogue Status :** Catalogue not verified by OEM **Selling As :** Reseller not verified by OEM **Category Name & Quadrant :** 500 AH LFP Battery Module (Q3) **Model:** HY-LFP-48500P **HSN Code:** HSN not specified by seller	3	pieces	706,808.2	NA	2,120,424.6
Total Order Value (in INR)						**2,120,424.6**

Consignee Detail

S.No	Consignee	Item	Lot No.	Quantity	Delivery Start After	Delivery To Be Completed By
1	Designation: - Email ID: buycon3.cdacc.kl@gembuyer.in Contact: 471-2723333-283 GSTIN: 32AAATC0934H2Z8 Address: Purchase Department, Centre for Development of Advanced Computing, Vellayambalam, THIRUVANANTHAPURAM, KERALA-695033, India	500 AH LFP Battery Module	-	3	15-Jul-2022	30-Jul-2022

Product Specification for 500 AH LFP Battery Module

Specification	Sub-Spec	Value

1454

Custom Specification	Custom Specification	Yes

Seller Specification Document:

1. SpecificationDocument1	mkp.gem.gov.in/catalog_data/catalog_support_document/62/03/406/CatalogAttrs/SpecificationDocument/2022/6/2/2022_06_02_18_24_16_spec_2022-06-02-18-24-19_5a5d13dfa21afc7901e56f3b48d6c332.pdf

Buyer Specification Document:

1. SpecificationDocument	mkp.gem.gov.in/catalog_data/catalog_support_document/buyer_documents/48214/54/78/703/CatalogAttrs/SpecificationDocument/2022/5/13/document1_2022-05-13-10-40-42_7a6f4eca47c17298b76d1adc2f0bfe1a.pdf

Terms and Conditions

1. General Terms and Conditions-

1.1 This contract is governed by the General Terms and Conditions, conditions stipulated to this Product/Service as provided in the Marketplace.

1.2 This Contract between the Seller and the Buyer, is for the supply of the Goods and/ or Services, detailed in the schedule above, in accordance with the General Terms and Conditions (GTC) unless otherwise superseded by Goods / Services specific Special Terms and Conditions (STC) and/ or BID/Reverse Auction Additional Terms and Conditions (ATC), as applicable

2. Buyer Added Bid Specific Terms and Conditions-

2.1 *Scope of Supply*:
Scope of supply (Bid price to include all cost components) : Supply Installation Testing and Commissioning of Goods

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Contract|अनुबंध

Contract No|अनुबंध क्रमांक: GEMC-511687773839679

Generated Date|अनुबंध तिथि : 23-Feb-2023

Organisation Details|संगठन विवरण

Type|प्ररूप :	State Autonomous
Ministry|मंत्रालय :	-
Department|विभाग :	Higher Education Department Kerala
Organisation Name|संगठन का नाम :	Mahatma Gandhi University Kottayam
Office Zone|कार्यालय क्षेत्र:	686560

Buyer Details|खरीदार विवरण

Designation|पद :	JOINT REGISTRAR I ADMN
Contact No.|संपर्क नंबर :	-
Email ID|ईमेल आईडी :	jr1admn.mgu@kerala.gov.in
GSTIN|जीएसटीआईएन :	-
Address|पता :	MAHATMA GANDHI UNIVERSITY PRIYADARSHINI HILLS P O ATHIRAMPUZHA KOTTAYAM 686560, KOTTAYAM, KERALA-686560, India

Financial Approval Detail|वित्तीय स्वीकृति विवरण

IFD Concurrence|आईएफडी सहमति:	No
Designation of Administrative Approval| प्रशासनिक अनुमोदन का पदनाम:	VICE CHANCELLOR
Designation of Financial Approval| वित्तीय अनुमोदन का पदनाम :	FINANCE OFFICER

Paying Authority Details|भुगतान प्राधिकरण विवरण

Role:	PAO
Payment Mode|भुगतान का तरीका:	Offline
Designation|पद :	FINANCE OFFICER
Email ID|ईमेल आईडी :	financeof.mgu@kerala.gov.in
GSTIN|जीएसटीआईएन :	-
Address|पता:	MAHATMA GANDHI UNIVERSITY PRIYADARSHINI HILLS P O ATHIRAMPUZHA KOTTAYAM 686560, Kottayam, KERALA-686560, India

Seller Details|विक्रेता विवरण

GeM Seller ID|जेम विक्रेता आईडी :	D3A1180000090647
Company Name|कंपनी का नाम :	HYKON INDIA LIMITED
Contact No.|संपर्क नंबर :	08086088848
Email ID|ईमेल आईडी :	tenders@hykonindia.com
Address|पता :	9/525 21,22,23,HYKON HOUSE,IKKANDA WARRIER ROAD,TRICHUR, Thrissur, KERALA-680001, -
MSME verified|एमएसएमई सत्यापित :	Yes
MSME Registration number|एमएसएमई पंजीकरण संख्या :	KL13B0004274
MSE Social Category|एमएसई सामाजिक श्रेणी :	General
MSE Gender|एमएसई लिंग श्रेणी :	Male
GSTIN|जीएसटीआईएन:	32AAACH6869H1ZH

*GST / Tax invoice to be raised in the name of|जिसके नाम के पक्ष में GST/TAX इनवॉइस पेश किया जाएगा - Buyer

Product Details|उत्पाद विवरण

#	Item Description|आइटम विवरण	Ordered Quantity| आइटम विवरण	Unit | इकाई	Unit Price (INR)| इकाई मूल्य (INR)	Tax Bifurcation (INR)| कर विभाजन (INR)	Price (Inclusive of all Duties and Taxes in INR)| मूल्य (INR में सभी शुल्क और कर सहित)
1	**Product Name|उत्पाद का नाम :** HYKON Online UPS of Rating 20.0 KVA With Battery Of Backup Time 60 Minutes **Brand|ब्रांड :** HYKON **Brand Type|ब्रांड प्रकार :** Registered Brand **Catalogue Status|कैटलॉग की स्थिति:** OEM verified catalogue **Selling As|कैसे बेचा जा रहा है :** OEM **Category Name & Quadrant|श्रेणी का नाम और चतुर्थांश :** Online UPS (Version 2.0) (Q2) **Model|मॉडल:** GEBTS 20000 **HSN Code|एचएसएन कोड:** HSN not specified by seller	1	pieces	462,000	NA	462,000
Total Order Value |कुल ऑर्डर मूल्य (in INR)						**462,000**

Consignee Detail|परेषिती विवरण

S.No| क्र.सं.	Consignee|परेषिती	Item|वस्तु	Lot No.| लॉट नंबर	Quantity| मात्रा	Delivery Start After| दिनांक के बाद डिलीवरी शुरू करना है	Delivery To Be Completed By| वितरण पूरा कब तक करना है
	Designation|पद : Section Officer Stores Email ID|ईमेल आईडी : sostores.mgu@kerala.gov.in Contact|संपर्क : 0481-2733432-	HYKON Online UPS of				

1456

1	GSTIN|जीएसटीआईएन : - Address|पता : MAHATMA GANDHI UNIVERSITY PRIYADARSHINI HILLS P O ATHIRAMPUZHA KOTTAYAM 686560, KOTTAYAM, KERALA-686560, India	Rating 20.0 KVA With Battery Of Backup Time 60 Minutes	-	1	23-Feb-2023	24-May-2023

Product Specification for HYKON Online UPS of Rating 20.0 KVA With Battery Of Backup Time 60 Minutes

Specification|विनिर्देश	Sub-Spec|उप-विनिर्देश	Value|मूल्य
Generic	Rating in KVA	20.0 KVA
	Switching Technology	IGBT-PWM
	Input Voltage	AC Three phase 300 V - 450V sinewave 50Hz
	Output Voltage	AC Single phase 230V +/-1% 50 Hz
	Warranty for UPS (Years)	3
Battery/Backup Bank	Battery/Backup Bank Provided with Online UPS (Hint: In case the UPS is supplied with battery, seller shall ensure compliance to the GST Rates as per recommendations made in the 45th Meeting of GST council dated 17th Sep 2021)	With Battery
	Type of Battery (hint: NA in case Battery not provided)	Lead Acid type (with tubular positive plates) conforming to IS:1651:1991 latest
	Backup time (Minutes) (hint: NA in case battery not provided)	60 Minutes
	Battery Make	HYKON
	Battery Model Number	240V-48AH
	Battery capacity (Ah)	65
	Weight of the Battery (kg)	50
	Number of Batteries	20
	Minimum Guaranteed VAH	1600 X Per KVA X Per hour of backup time
	Warranty for battery (Years) by Battery Manufucaturer/Brand hint: NA in case battery not provided	3
	Accessories with Battery	NA
Installation and Commissioning or Service	Installation and Commissioning (Covered in the Scope of Supply)	Provided
	After sales service (Turn Around Time)	NA
	Preventive Maintenance (Hint: Mention Timeline if provided, NA if not provided)	NA
	Other Services provided	PAN India service support on 24 x 7 basis,AMC support available warranty,Availability of spares in close proximity (Spares should be easily available close to the site),NA
Performance / Functional	Inbuilt isolation transformer	With
	Overall Efficiency (%)	>/=90% & <94% without Inbuilt isolation transformer
	Power Factor Load Supported	0.8 or better
	Overload limit	50% Overload for minimum 3 seconds
	Total Harmonic Distortion(THD) (%)	3% Maximum @ 100% Linear Load
	Other Functional Features	Crest factor on full non-linear load is not less than 3:1
Accessories	Accessories	Cabling 6 meters (input upto 3m and output upto 3m)
Salient Features	Protection	Over temperature protection
	Metering	Input Voltage
	Alarms and Indications	Indicator for Mains presence,Alarm for Low Battery
	Additional Features	NA
Design / Construction	Type of Design / Construction	Floor Standing
	Form factor of UPS	NA (for Floor Standing)
	Enclosure (mm)	1.2 mm Minimum Thickness of M.S. Sheet duly powder coated
	Degree of Protection	IP21
	DC Bus Voltage (In Volts)	240
	Other Constructional Features	Mains ON/OFF MCB
Operating Conditions	Minimum Operating Temperature	0
	Maximum Operating Temperature	40

	Relative Humidity Non Condensing at 40 deg C	90
Buyer Specific Requirement	Environmental Test Report Requirements	NA
	Battery Test Report	NA
	Intended Applications	NA
	Other Requirements	ROHS compliance
Reports And Certification	Type of lab which carried out Test of Complete Product to prove the conformity of product as per specification	OEM
	Agree to provide all relevant documents Test Reports/supporting document /reports etc to the buyer at the time of bidding or on demand	Yes
	As per Meity (Government of India) guidelines UPS shall have valid BIS CRS certifications as applicable	Yes (For UPS rating upto 10KVA)

Terms and Conditions | नियम और शर्तें

1. Special terms and conditions- Version:1 effective from 06-07-2022

1.1 In addition to General Terms and Conditions of GeM, the following Special T&C shall be applicable for Online UPS (Version 2.0) with reference to Installation and Commissioning.

Seller's Responsibility: Installation and Commissioning shall involve all the interconnections, any cabling between power source, switch boards within 3 metre range for input power and connecting Output power in the Scope of seller.

Buyer's Responsibility: Buyer will ensure well ventilated/covered site/room having requisite power points/distribution board to provide input power to UPS as well as to take out power from UPS within 3 metre of the location of UPS placement.

The above is not applicable for the stores supplied without installation and commisioning.

Note: The above is indicative and any incidental requirement related to above responsibilities shall also be considered in the responsibilities of Buyer/Seller as applicable.

2. General Terms and Conditions-

2.1 This contract is governed by the General Terms and Conditions, conditions stipulated to this Product/Service as provided in the Marketplace.

2.2 This Contract between the Seller and the Buyer, is for the supply of the Goods and/ or Services, detailed in the schedule above, in accordance with the General Terms and Conditions (GTC) unless otherwise superseded by Goods / Services specific Special Terms and Conditions (STC) and/ or BID/Reverse Auction Additional Terms and Conditions (ATC), as applicable

Note: This is system generated file. No signature is required. Print out of this document is not valid for payment/ transaction purpose.

नोट: यह सिस्टम जनरेटेड फाइल है। कोई हस्ताक्षर की आवश्यकता नहीं है। इस दस्तावेज़ का प्रिंट आउट भुगतान/लेनदेन उद्देश्य के लिए मान्य नहीं है।

PLUSTECH
SYSTEMS & SOLUTIONS (P) LTD.

207, Lloyds Chambers, Barne Road 409,Mangalwar Peth, Maldhaka Chowk,Pune - 411 011, India
Tel:+91-020- 2605 6366 **E-mail** : info@plustech.co.in **Website** : www.plustech.co.in **CIN NO -** U74210PN2006PTC022119

PURCHASE ORDER

PO No : **POMB23240364A01**

PO Date : **28/07/2023**

Project Name : A 000 - New Office

Supplier Offer Ref.: HIKK-PE/DS/1167R2/2023-24

To,

Hykon India Limited
46, Park Area, 2nd main, 10th cross, Wilson Gardens, Bangalore, Bengaluru Urban, Karnataka, 560027.

GSTIN No : 29AAACH6869H1Z4
Kind Attn : Ranjini
(M. No. : 9343349898)
Phone no :
E-mail : mlr@hykoindia.com

Buyer Name & Address
Plustech Systems and Solutions (P) Ltd.
Address : 207, Lloyds Chambers, Barne Road, 409, Mangalwar Peth, Maldhakka Chowk, Pune - 411011, Maharashtra, India
GSTNo 27AADCP8513B1ZO

Consinee GSTIN No :

We hereby Place Order for Supply of following Materials.

Sr	Description	Quantity		Unit Rate (Rs.)	Total Basic Amt. (Rs.)
1)	Supply of Online UPS with lithium battery as per annexure - I	1.00	SET	4,858,000.00	4,858,000.00

Amount in Words: RUPEES FORTY-EIGHT LAKH FIFTY-EIGHT THOUSAND ONLY.

Total Basic Amount 4,858,000.00

Amendment Remark : Due to change in quantity and Specification (Total PO value remains Same)

Terms & Conditions :

PRICE BASIS	: EX - WORKS	FREIGHT	: INCLUDED
PACKG & FRWG	: INCLUDED	GST TAXES	: IGST Iı / EXTRA AT ACTUAL
DISPATCH DATE	: 17/08/2023	MODE OF DESPATCH	: BY ROAD

PENALTY : IF THERE IS A DELAY, PENALTY @ 0.5% PER WEEK SUBJECTED TO MAX OF 5% OF TOTAL PO VALUE.

GAURANTEE/WARANTY : 60 MONTHS AFTER COMMISSIONING OF PLANT / 60 MONTHS FROM THE DATE OF DISPATCH.

INSTRUCTION MANUALS : SETS OF INSTRUCTION & MAINTENANCE MANUALS, PERFORMANCE TESTS, CALIBRATION REPORTS, GAURANTEE CERTIFICATES & RECOMMENDED SPARE PARTS LIST IN HARD AND **01** SET OF SOFT ON DISPATCH OF MATERIAL AT OUR HEAD OFFICE, ALONG WITH HARDCOPY OF ORIGINAL SALE INVOICE & LR.

Payment Terms	Percentage	Amount
ADVANCE ALONG WITH PO	50.00 %	2429000.00
BALANCE PLUS TAXES & DUTIES AGAINST PROFORMA INVOICE.	40.00 %	1943200.00
AFTER RECEIPT OF MATERIAL AT SITE AFTER 30 DAYS.	10.00 %	485800.00

1. Annex - I : Price Break up, Specification & Excise classification as enclosed.
2. Annex - II : General Terms & Conditions.
3. Annex - III : For Sales Tax & other Terms as enclosed
4. Annex - IV General Terms and Conditions for Manufacturing and Supply

Please send your acceptance to this PO within 7 days from the date of issue in case of no response from your side it will be assumed accepted.

Thanking you,

For PLUSTECH SYSTEMS AND SOLUTIONS P. LTD

Authorized Signatory.

Vendor' Acceptance

Signature

Signatory Name:

File No. ANERT-TECH/41/2024-PE1(RTS) (Computer No. 7540)
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PURCHASE ORDER NO. : POMB23240364A01	**Supplier : Hykon India Limited**
Purchase Order DATE : 28/07/2023	

ANNEXURE - I

PRICE BREAK UP & SPECIFICATION CHART

Sr No	Tag No. / ItemCode	Item Description	Qty	UOM	Unit Rate	Disc Amt	Amount
1)		7.5KVA Online UPS Hykon Make UPS: AEBTS7500/7.5KVA/240VDC True Online, Double Conversion Type, IGBT based (3 phase input and 1 phase output) with Isolation Transformer WARRANTY FOR UPS - 2 YEARS (FROM DATE OF INVOICE)	1.00	Nos	78000.00		78000.00
2)		Lithium Ion Battery: LFP 100AH/ 240V Lithium Ion Battery: LFP 100AH/ 240V (One Pack) for 3 hours backup WARRANTY FOR BATTERY - 5 YEARS (FROM DATE OF INVOICE)	1.00	Nos	519000.00		519000.00
3)		60KVA Online UPS Hykon Make UPS: GEBTT60/60KVA/360VDC True Online, Double Conversion Type, IGBT based (3 phase input and 3 phase output) with Isolation Transformer WARRANTY FOR UPS - 2 YEARS (FROM DATE OF INVOICE)	1.00	Nos	334000.00		334000.00
4)		100KVA Online UPS Hykon Make UPS: 100KVA/360VDC True Online, Double Conversion Type, IGBT based (3 phase input and 3 phase output) with Isolation Transformer WARRANTY FOR UPS - 2 YEARS (FROM DATE OF INVOICE)	1.00	Nos	615000.00		615000.00
5)	**BAT300360**	Lithium Ion Battery: LFP 400AH/ 360V Lithium Ion Battery: LFP 400AH/ 360V (One Pack) for 1 hour backup (FOR BOTH 60KVA & 100KVA UPS) WARRANTY FOR BATTERY - 5 YEARS (FROM DATE OF INVOICE) NOTE - PACKING MATERIAL SHOULD BE USE ABOVE THAN 100 MICRON AS PER GOV. RULE	1.00	Nos	3312000.00		3312000.00
					TOTAL BASIC AMOUNT (RUPEES)		**4858000.00**

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PURCHASE ORDER NO. : POMB23240364A01 **Purchase Order DATE : 28/07/2023**	**Supplier : Hykon India Limited**

For PLUSTECH SYSTEMS AND SOLUTIONS P. LTD

(Authorised Signatory)

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PURCHASE ORDER NO. : POMB23240364A01	**Supplier : Hykon India Limited**
Purchase Order DATE : 28/07/2023	

ANNEXURE - II

GENERAL TERMS AND CONDITIONS FOR MANUFACTURING AND SUPPLY.

1. Sub-contracting and/or sub letting of this purchase order shall not be allowed unless & until agreed in writing by Plustech.
2. Proper engineering practice shall be followed for manufacturing.
3. Welding electrodes shall be of reputed make like ADVANI, ESAB etc.
4. Manufacturer must forward inspection report prior to despatch for our approval and obtain clearance for dispatch.
5. All despatch documents should be as per our detailed purchase order instruction.
6. Packing and forwarding shall be done by the manufacturer so as to avoid damage during transit.

For PLUSTECH SYSTEMS AND SOLUTIONS P. LTD

(Authorised Signatory)

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PURCHASE ORDER NO. : POMB23240364A01	**Supplier : Hykon India Limited**
Purchase Order DATE : 28/07/2023	

ANNEXURE - III

TERMS & CONDITIONS

1. Freight shall be to our account; Transportation shall be arranged by us.
2. Commercial Invoice to be raised on the following address.
   PLUSTECH SYSTEMS AND SOLUTIONS P. LTD
   207, Lloyds Chambers, Barne Road, 409, Mangalwar Peth, Maldhakka Chowk, Pune - 411011
3. HSN heading of the material should be clearly mentioned as per GST.
4. Name & Address of the Consignee should be clearly mentioned.
5. If any cutting or over writing has been done on Invoice that should be signed by the Signatory who has signed the Invoice.
6. Goods to be directly delivered to ()
7. Internal Inspection report should be provided before dispatching the Materials.
8. Delivery
   Delivery schedule should be as per our order otherwise penalty will be applicable as per Annexure - II.
9. Calibration report & Guarantee certificates :
   Performance test calibration reports & guarantee certificates in four copies should be provided **on dispatch of material.**
10. Any service technician required at site for commissioning of equipment or trouble shooting will be deputed with in 24 Hours after intimation.
11. Transit Insurance
    Insurance for the consignment shall be arranged by M/s. PLUSTECH SYSTEMS AND SOLUTIONS P. LTD Details of the consignment along with its value to be intimated by supplier to the following address prior to dispatch.

    M/s. PLUSTECH SYSTEMS AND SOLUTIONS P. LTD
    207, Lloyds Chambers, Barne Road, 409, Mangalwar Peth, Maldhakka Chowk, Pune - 411011

    Attn: **Mr. Kiran Patil / Mr. Jayvant Jamdade / Mr. Devendra Natekar**
    Tel No : 020 - 26056366
    e-mail: kiran.k@plustech.co.in / jaywant@plustech.co.in / natekar@plustech.co.in

For PLUSTECH SYSTEMS AND SOLUTIONS P. LTD

(Authorised Signatory)

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PURCHASE ORDER NO. : POMB23240364A01	Supplier : Hykon India Limited
Purchase Order DATE : 28/07/2023	

ANNEXURE -IV

GENERAL INSTRUCTIONS ON MANUFACTURING & SUPPLY OF TANKS/PANELS.

1. All tank modules when aligned should be diagonally true and dimensionally should be with in the allowable tolerance limit.
2. Contractor is supposed to use consumable material approved by us like welding Rod, grinding wheels etc. which have impact on final quality of work. Welding electrodes shall be of make ADVANI, ESAB, D& H etc.
3. Material test reports will be submitted and approved by PLUSTECH prior to fabrication
4. All the welding joints will be DP tested for bigger tanks, which is to be fabricated & supplied in modules.
5. Water fill test for leakage will be carried out at your factory for single piece tanks, & site assembled tanks will be carried at site by contractor. If any leakage is observed at site the contractor shall arrange rectification at his cost
6. Necessary stiffener to be provided in the tank module prior to dispatch to prevent the deformation of tank modules
7. Proper visible match marking to be done at the field joint and sketch guiding for it to be provided along with material dispatch documents.
8. End legs to be provided with stiffener to avoid bend/damage during transport
9. Separate list of items (with quantity) dispatched in parts should be submitted along with challan as packing list.
10. Painting instruction to be followed as per drawing, and wherever "NO" painting instruction, Black oil to be applied on MS surfaces to avoid corrosion.
11. The makes of the various materials shall be as follows:-
    - a) Structural steel - SAIL/TISCO
    - b) SS Sheets/Plates - SALEM/IMPORTED
    - c) GI Sheets - SAIL/JINDAL
    - d) MS pipes - JINDAL/PRAKASH/SURYA
    - e) SS Pipes - CHOKSI/REMI/RAVINDRA
    - f) MS Sheets/plates - SAIL/TISCO
    - f) MS Chequered plates - SAIL/TISCO

For PLUSTECH SYSTEMS AND SOLUTIONS P. LTD

(Authorised Signatory)

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Contract

Contract No: GEMC-511687759746531
Generated Date: 06-Dec-2021

Organisation Details

Type:	State Autonomous
Ministry:	-
Department:	Higher Education Department Kerala
Organisation Name:	Mahatma Gandhi University Kottayam
Office Zone:	686560

Buyer Details

Designation:	JOINT REGISTRAR I ADMN
Contact No.:	-
Email ID:	jr1admn.mgu@kerala.gov.in
GSTIN:	-
Address:	MAHATMA GANDHI UNIVERSITY PRIYADARSHINI HILLS P O ATHIRAMPUZHA KOTTAYAM 686560, KOTTAYAM, KERALA-686560, India

Financial Approval Detail

IFD Concurrence:	No
Designation of Administrative Approval:	VICE CHANCELLOR
Designation of Financial Approval:	FINANCE OFFICER

Paying Authority Details

Payment Mode:	Offline
Designation:	FINANCE OFFICER
Email ID:	financeof.mgu@kerala.gov.in
GSTIN:	-
Address:	MAHATMA GANDHI UNIVERSITY PRIYADARSHINI HILLS P O ATHIRAMPUZHA KOTTAYAM 686560, Kottayam, KERALA-686560, India

Seller Details

GeM Seller ID:	D3A1180000090647
Company Name:	HYKON INDIA LIMITED
Contact No.:	08086088848
Email ID:	tenders@hykonindia.com
Address:	9/525 21,22,23,HYKON HOUSE,IKKANDA WARRIER ROAD,TRICHUR, Thrissur, KERALA-680001, -
MSME verified:	Yes
MSME Registration number:	KL13B0004274
MSE Social Category:	General
MSE Gender:	Male
GSTIN:	32AAACH6869H1ZH , 29AAACH6869H1Z4 , 33AAACH6869H1ZF , 32AAACH6869H1ZH , 36AAACH6869H1Z9

*GST / Tax invoice to be raised in the name of - Buyer

Product Details

#	Item Description	Category Name & Quadrant	Model	HSN Code	Ordered Quantity	Unit	Lead Time(Days)	Price (Inclusive of all Duties and Taxes in INR)
1	**Product Name :** HYKON 20.0 KVA UPS **Brand :** HYKON **Brand Type :** Registered Brand **Catalogue Status :** OEM verified catalogue **Selling As :** OEM	Online Ups-IS:9000 (Q3)	GEBTS 20000	HSN not specified by seller	1	pieces	-	499,400
Total Order Value (in INR)								**499,400**

Consignee Detail

S.No	Consignee	Item	Lot No.	Quantity	Delivery Start After	Delivery To Be Completed By
1	Designation: Section Officer Stores Email ID: sostores.mgu@kerala.gov.in Contact: 0481-2733432- GSTIN: - Address: MAHATMA GANDHI UNIVERSITY PRIYADARSHINI HILLS P O ATHIRAMPUZHA KOTTAYAM 686560, KOTTAYAM, KERALA-686560, India	HYKON 20.0 KVA UPS	-	1	06-Dec-2021	06-Mar-2022

Product Specification for HYKON 20.0 KVA UPS

Specification	Sub-Spec	Value

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Generic	Rating in KVA (KVA)	20.0 KVA
	Technology	IGBT-PWM with inbuilt isolation transformer
	Input Power	Three phase 300 V - 450V sinewave,50Hz
	Output power	Single phase 230V +/-1% sinewave 50 Hz
	Backup time (Minutes)	60
	Minimum VAH (VAH)	21000
	Warranty for UPS (Years)	3
	Movable trolly for Batteries	Without trollery but with rack
	Warranty for battery	2
	Degree of Protection	IP20
	Cabling 5 meters for input and out put	Without
	Paralleling kit for synchronising	Without
	Installation and Commissioning	Yes
Constructional	Minimum thickness of M.S.Sheet Enclosure duly painted (mm)	1.2
	Type of Battery	Lithium ion
Functional	Maximum overshoot and Under shoot of output rated voltage	4
	Voltage Regulation from no load to full load (%)	< / = 3%
	20% Overload limit for minimum 10 minutes	No, only for 5 Minutes
	Overall Efficiency (%)	>/=90%
	Total Harmonic Distortion(THD) (%)	Maximum 3%
	50% Overload limit for minimum 1 minutes	No, only for 3 seconds
Protection	Protection for under voltage at battery terminal at 10.5V per 12 V battery	Yes
	Protection of Over voltage,Short Circuit & over load at UPS output terminal	Yes
Metering And Indications	Digital Metering in UPS for AC Input Voltage,Output AC Voltage,Current,Frequency,Battery Voltage and Current	Yes
	Indicators for mains presence,Battery charging and discharging,Output Over Load, Low Battery Voltage	Yes
Reports And Certification	Damp Heat : in accordance with IS:9000(part 5/sec.2)1981 at Temperature of 40 degree C,two cycles of (12+12) hours each 2007)	Yes
	Dry Heat Test : in accordance with IS:9000 (part 3/sec.5)1977 (reaffirmed 2007) at 55 degree C for 16 hrs	Yes
	Cold Test : in accordance with IS:9000 (Part 2/Sec.4)1977 (Reaffirmed 2007) at -10 degree C for 4 hrs.	Yes
	Availability of the Type Test Report from Central Govt. /NABL/ILAC Accredited lab covering all technical requirements.	Yes
	Type Test Certificate No.	NTS/PPTL/UPS-283/03
	Type Test Certificate date	06-02-2015
	Name of Lab	NTS
	Address of Lab	BANGALORE
	As per Meity (Government of India) guidelines UPS shall have valid BIS CRS certifications as applicable	Yes

Terms and Conditions

1. Special terms and conditions- Version:1 effective from 04-05-2020

1.1

Calculation of Minimum VAH based on Back up time

Minimum VAH requirements would be calculated on the basis of following:

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(VAH Calculation: Battery Voltage x Battery Ah x No. of Batteries = VAH)

UPS Rating	15 Minutes	30 Minutes	60 Minutes	90 Minutes	120 Minutes	180 Minutes	240 Minutes
1 KVA	400 VAH	800 VAH	1600 VAH	2400 VAH	3200 VAH	4800 VAH	6400 VAH
2 KVA	800 VAH	1600 VAH	3200 VAH	4800 VAH	6400 VAH	9600 VAH	12800 VAH
3 KVA	1200 VAH	2400 VAH	4800 VAH	7200VAH	9600 VAH	14400 VAH	19200 VAH
5 KVA	2000 VAH	4000 VAH	8000 VAH	12000 VAH	16000 VAH	24000 VAH	32000 VAH
6 KVA	2400 VAH	4800 VAH	9600 VAH	14400 VAH	19200 VAH	28800 VAH	38400 VAH
7.5 KVA	3000 VAH	6000 VAH	12000 VAH	18000 VAH	24000 VAH	36000 VAH	48000 VAH
10 KVA	4000 VAH	8000 VAH	16000 VAH	24000 VAH	32000 VAH	48000 VAH	64000 VAH
15 KVA	6000 VAH	12000 VAH	24000 VAH	36000 VAH	48000 VAH	72000 VAH	96000 VAH
20 KVA	8000 VAH	16000 VAH	32000 VAH	48000 VAH	64000 VAH	96000 VAH	128000 VAH
30 KVA	12000 VAH	24000 VAH	48000 VAH	72000 VAH	96000 VAH	144000 VAH	192000 VAH
40 KVA	16000 VAH	32000 VAH	64000 VAH	96000 VAH	128000 VAH	192000 VAH	256000 VAH
60 KVA	24000 VAH	48000 VAH	96000 VAH	144000 VAH	192000 VAH	288000 VAH	384000 VAH
80 KVA	32000 VAH	64000 VAH	128000 VAH	192000 VAH	256000 VAH	384000 VAH	512000 VAH
100 KVA	40000 VAH	80000 VAH	160000 VAH	240000 VAH	320000 VAH	480000 VAH	640000 VAH

2. General Terms and Conditions-

2.1 This Contract between the Seller and the Buyer, is for the supply of the Goods and/ or Services, detailed in the schedule above, in accordance with the General Terms and Conditions (GTC) as available on the GeM portal (unless otherwise superseded by Goods / Services specific Special Terms and Conditions (STC) and/ or BID/Reverse Auction Additional Terms and Conditions (ATC), as applicable

2.2 Terms of delivery: Free Delivery at Site including loading/unloading. In respect of items requiring installation and / or commissioning and other services in the scope of supply (as indicated in respective product category specification / STC / ATC), and the cost of the same is also included in the Contract price.

2.2.1 Contracted goods should be delivered at the consignee or designated delivery location as per the working time of the buying organisation. Seller may get the same confirmed from consignee before scheduling delivery.

2.2.2 A copy of the contract should be available with the messenger / dispatching agency that delivers the Goods at consignee / delivery location (preferably pasted / attached outside the consignment / package) for easy reference and ease in delivery acceptance.

2.3 Delivery period: The Delivery Period/Time shall be essence of the Contract and delivery must be completed not later than such date(s). Any modification thereto shall be mutually agreed and incorporated in the Contract as per the provisions of the GTC.

2.4 Performance Security: If the Seller fails or neglects to observe or perform any of his obligations under the contract it shall be lawful for the Buyer to forfeit either in whole or in part, the Performance Security furnished by the Seller.

2.5 Taxes and Duties: Contract Prices are all inclusive i.e. including all taxes, duties, local levies / transportation / loading-unloading charges etc. Break up of GST shall be indicated by the Seller while raising invoice / bill on GeM. While submitting the bill / invoice Seller shall undertake that the Goods and Services Tax (GST) charged on this bill is not more than what is payable under the provision on the relevant Act or the Rules made there under and that the Goods on which GST has been charged have not been exempted under the GST Act or the Rules made there under and the charges on account of GST on these goods are correct under the provision of that Act or the rules made there under.

2.6 Octroi Duty and / or other local taxes:Contract Prices are all inclusive hence no reimbursement over and above the contract price(s) shall be allowed to seller towards payment of local taxes (such as levy of town duty, Octroi Duty, Terminal Tax and other levies of local bodies etc).

2.7 Limitation of Liability: The provisions of limitation of liability between Buyer and Seller as given in the GTC shall be applicable here.

2.8 Resolution of disputes: The provisions of DISPUTE RESOLUTION BETWEEN BUYER AND SELLER as given in the GTC shall be applicable here.

2.9 Liquidated Damages: If the Seller fails to deliver any or all of the Goods/Services within the original/re-fixed delivery period(s) specified in the contract, the Buyer will be entitled to deduct/recover the Liquidated Damages for the delay, unless covered under Force Majeure conditions aforesaid, @ 0.5% per week or part of the week of delayed period as pre-estimated damages not exceeding 10% of the contract value without any controversy/dispute of any sort whatsoever. In case, Service Level Agreement (SLA) is applicable the same shall be applicable for the Contract.

2.10 Financial Certificate:

2.10.1 The expenditure involved for this purpose has received the Sanction of the competent financial authority.

2.10.2 The funds are available under the proper head in the sanction budget allotment for the concern financial year.

2.10.3 I have been fully authorized by the department to sign the supply order or incur the liability of the Goods being ordered.

2.11 The bidder should submit a self declaration to the effect in bidder's official letter head that their agency have not been black listed by any Agency whatsoever till date.

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Contract

Contract No: GEMC-511687715461829
Generated Date: 22-Apr-2022

Organisation Details

Type:	State Autonomous
Ministry:	-
Department:	Higher Education Department Kerala
Organisation Name:	Mahatma Gandhi University Kottayam
Office Zone:	686560

Buyer Details

Designation:	JOINT REGISTRAR I ADMN
Contact No.:	-
Email ID:	jr1admn.mgu@kerala.gov.in
GSTIN:	-
Address:	MAHATMA GANDHI UNIVERSITY PRIYADARSHINI HILLS P O ATHIRAMPUZHA KOTTAYAM 686560, KOTTAYAM, KERALA-686560, India

Financial Approval Detail

IFD Concurrence:	No
Designation of Administrative Approval:	VICE CHANCELLOR
Designation of Financial Approval:	FINANCE OFFICER

Paying Authority Details

Payment Mode:	Offline
Designation:	FINANCE OFFICER
Email ID:	financeof.mgu@kerala.gov.in
GSTIN:	-
Address:	MAHATMA GANDHI UNIVERSITY PRIYADARSHINI HILLS P O ATHIRAMPUZHA KOTTAYAM 686560, Kottayam, KERALA-686560, India

Seller Details

GeM Seller ID:	D3A1180000090647
Company Name:	HYKON INDIA LIMITED
Contact No.:	08086088848
Email ID:	tenders@hykonindia.com
Address:	9/525 21,22,23,HYKON HOUSE,IKKANDA WARRIER ROAD,TRICHUR, Thrissur, KERALA-680001, -
MSME verified:	Yes
MSME Registration number:	KL13B0004274
MSE Social Category:	General
MSE Gender:	Male
GSTIN:	32AAACH6869H1ZH , 29AAACH6869H1Z4 , 33AAACH6869H1ZF , 32AAACH6869H1ZH , 36AAACH6869H1Z9

*GST / Tax invoice to be raised in the name of - Buyer

Product Details

#	Item Description	Ordered Quantity	Unit	Unit Price (INR)	Tax Bifurcation (INR)	Price (Inclusive of all Duties and Taxes in INR)
1	**Product Name :** HYKON 20.0 KVA UPS **Brand :** HYKON **Brand Type :** Registered Brand **Catalogue Status :** OEM verified catalogue **Selling As :** OEM Category Name & Quadrant : Online Ups-IS:9000 (Q3) GEBTS 20000 HSN not specified by seller	1	pieces	420,000	NA	420,000
Total Order Value (in INR)						**420,000**

Consignee Detail

S.No	Consignee	Item	Lot No.	Quantity	Delivery Start After	Delivery To Be Completed By
1	Designation: Section Officer Stores Email ID: sostores.mgu@kerala.gov.in Contact: 0481-2733432- GSTIN: - Address: MAHATMA GANDHI UNIVERSITY PRIYADARSHINI HILLS P O ATHIRAMPUZHA KOTTAYAM 686560, KOTTAYAM, KERALA-686560, India	HYKON 20.0 KVA UPS	-	1	22-Apr-2022	21-Jul-2022

Product Specification for HYKON 20.0 KVA UPS

1468

Specification	Sub-Spec	Value
Generic	Rating in KVA (KVA)	20.0 KVA
	Technology	IGBT-PWM with inbuilt isolation transformer
	Input Power	Three phase 300 V - 450V sinewave,50Hz
	Output power	Single phase 230V +/-1% sinewave 50 Hz
	Backup time (Minutes)	15
	Minimum VAH (VAH)	11520
	Warranty for UPS (Years)	3
	Movable trolly for Batteries	Without
	Warranty for battery	2
	Degree of Protection	IP20
	Cabling 5 meters for input and out put	Without
	Paralleling kit for synchronising	Without
	Installation and Commissioning	Yes
Constructional	Minimum thickness of M.S.Sheet Enclosure duly painted (mm)	1.2
	Type of Battery	Lithium ion
Functional	Maximum overshoot and Under shoot of output rated voltage	4
	Voltage Regulation from no load to full load (%)	< / = 3%
	20% Overload limit for minimum 10 minutes	No, only for 5 Minutes
	Overall Efficiency (%)	>/=90%
	Total Harmonic Distortion(THD) (%)	Maximum 3%
	50% Overload limit for minimum 1 minutes	No, only for 3 seconds
Protection	Protection for under voltage at battery terminal at 10.5V per 12 V battery	Yes
	Protection of Over voltage,Short Circuit & over load at UPS output terminal	Yes
Metering And Indications	Digital Metering in UPS for AC Input Voltage,Output AC Voltage,Current,Frequency,Battery Voltage and Current	Yes
	Indicators for mains presence,Battery charging and discharging,Output Over Load, Low Battery Voltage	Yes
Reports And Certification	Damp Heat : in accordance with IS:9000(part 5/sec.2)1981 at Temperature of 40 degree C,two cycles of (12+12) hours each 2007)	Yes
	Dry Heat Test : in accordance with IS:9000 (part 3/sec.5)1977 (reaffirmed 2007) at 55 degree C for 16 hrs	Yes
	Cold Test : in accordance with IS:9000 (Part 2/Sec.4)1977 (Reaffirmed 2007) at -10 degree C for 4 hrs.	Yes
	Availability of the Type Test Report from Central Govt. /NABL/ILAC Accredited lab covering all technical requirements.	Yes
	Type Test Certificate No.	NTS/PPTL/UPS-346/02
	Type Test Certificate date	08-07-2017
	Name of Lab	NTS
	Address of Lab	BANGALORE
	As per Meity (Government of India) guidelines UPS shall have valid BIS CRS certifications as applicable	Yes

Terms and Conditions

1. Special terms and conditions- Version:1 effective from 04-05-2020

1.1

Calculation of Minimum VAH based on Back up time
Minimum VAH requirements would be calculated on the basis of following:
(VAH Calculation: Battery Voltage x Battery Ah x No. of Batteries = VAH)

UPS Rating	15 Minutes	30 Minutes	60 Minutes	90 Minutes	120 Minutes	180 Minutes	240 Minutes
1 KVA	400 VAH	800 VAH	1600 VAH	2400 VAH	3200 VAH	4800 VAH	6400 VAH
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THIRUVANANTHAPURAM MUNICIPAL CORPORATION

E13/S-170/2023 24/02/2023

M/s Hykon India Ltd
TC-2/1420/2.3
Vydhyuthi Bhavan Road
Pattom

Letter of Acceptance

Ref: - 1. Tender Reference E13/S 182/21-22(S-1102/22) Vide Tender ID **2022_UAD_472039_4** dated 28/JAN/2023
2. Negobation Letter No HI/TV/352/22-23 DATED 23 02 23

We are happy to inform you that you are the Qualified for the tender for Supplying and installing UPS and shifting old UPS with electrical work with LFP battery. In view of that you are requested to make arrangements and supply the UPS and other works mentioned in the tender documents as per schedule

You are also requested to execute an agreement on non-judicial Kerala stamp paper worth ₹~~200/-~~ within one week from the date of this LoA

Accepted Rates

S#	Item	Rate	Tax	Amount (in ₹)
1	10KVA UPS with LFP Battery			2656050.00
2	Wiring Charges	64000.00	11520.00	75520.00
3	Shifting and reinstallation Charges	25200.00	4536.00	29736.00
	Total			**2761306.00**

Wiring Charges will be paid on actuals as per the inspection of electrical Committee subject to Maximum quoted amount

Amount quoted are inclusive of all taxes and freight charges. No additional amount will be bared by TMC

Thiruvananthapuram
24/02/23

Yours truly

Assistant Executive Engineer and
Implementing Officer,TMC

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中国认可
国际互认
检测
TESTING
CNASL14149

UN38.3 Test Report
UN38.3 检测报告

Report No.: 报告编号：	P24031500802
Name of Products: 产品名称：	51.2V280Ah (14.336kWh) air-cooled energy storage system (BESS) 51.2V280Ah（14.336kWh）风冷储能电池箱（BESS）
Model and Spec.: 型号规格:	51.2V280Ah, 51.2V 280Ah 14336Wh
Applicant: 委托单位：	Hykon India Limited /
Manufacturer: 生产厂商：	Hebei Juyuan Lithium Battery Technology Co., Ltd. 河北巨源锂电科技有限公司
Date of issue： 签发日期：	2024-04-07

Shenzhen NTEK New Energy Technology Co., Ltd.

深 圳 市 北 测 新 能 源 技 术 有 限 公 司

File No. ANERT-TECH/41/2024-PE1(RTS) (Computer No. 7540)
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Applicant 委托单位	Hykon India Limited
Address of Applicant 委托单位地址	Thrissur-680001, Kerala, India
Manufacturer 生产厂商	Hebei Juyuan Lithium Battery Technology Co., Ltd. 河北巨源锂电科技有限公司
Address of manufacturer 生产厂商地址	Car No.3, North Hatchery Park, east of Xingyuan North Street, North of Huangjin Avenue, Julu Economic Development Zone Hebei, Julu County Xingtai, Hebei, 523080 CN 河北省邢台市巨鹿县河北巨鹿经济开发区黄巾大道北侧兴源北街东侧北孵化园 3 号车间
Name of Products 产品名称	51.2V280Ah (14.336kWh) air-cooled energy storage system (BESS) 51.2V280Ah（14.336kWh）风冷储能电池箱（BESS）
Model/Type 型号	51.2V280Ah
Ratings 额定参数	51.2V 280Ah 14336Wh
Date of receipt of test item 接收日期	2024-01-22
Completion Date 完成日期	2024-02-19

Tested according to 测试依据:

United Nations Manual of Tests and Criteria, PART III, section 38.3 Lithium metal and lithium ion batteries, the seventh revised edition amendment 1(ST/SG/AC.10/11/Rev.7/Amend.1).

联合国《试验和标准手册》，第三部分，38.3 节锂金属和锂离子电池要求，第七修订版修正 1 (ST/SG/AC.10/11/Rev.7/Amend.1)

Tests performed 测试项目:

Test T.1: Altitude simulation 试验 T.1：高度模拟	Test T.5: External short circuit 试验 T.5：外部短路
Test T.2: Thermal Test 试验 T.2：温度试验	Test T.6: Crush 试验 T.6：挤压
Test T.3: Vibration 试验 T.3：振动	Test T.7: Overcharge 试验 T.7：过度充电
Test T.4: Shock 试验 T.4：冲击	Test T.8: Forced discharge 试验 T.8：强制放电

Test Conclusion 试验结论:

The 51.2V280Ah (14.336kWh) air-cooled energy storage system (BESS) submitted by Hykon IndiaLimited. is tested according to the United Nations Manual of Tests and Criteria, PART III, section 38.3 Lithium metal and lithium ion batteries, the seventh revised edition *amendment 1 (ST/SG/AC.10/11/Rev.7/Amend.1).*

Test results: PASS

由 Hykon India Limited 提交的 51.2V280Ah（14.336kWh）风冷储能电池箱（BESS）按照联合国《试验和标准手册》，第三部分，38.3 节锂金属和锂离子电池要求，第七修订版修正 1(ST/SG/AC.10/11/Rev.7/Amend.1)进行测试。

测试结果：合格

Tested by: 主检人：	James Cai 蔡锦忠	蔡锦忠
Reviewed by: 审核人：	Shaw Xiao 肖辉	肖辉
Approved by: 批准人：	Jesse Zhang 张士杰	张士杰 报告单位（盖章） Seal of NTEK

File No. ANERT-TECH/41/2024-PE1(RTS) (Computer No. 7540)

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General product information 通用产品信息:			
Battery 电池组			
Model/Type 型号	51.2V280Ah	Rated Rating 额定值	51.2V 280Ah 14336Wh
Standard Charging Current 标准充电电流	140A	Max. Charging Current 最大充电电流	280A
Standard Discharge Current 标准放电电流	140A	Max. Discharge Current	280A
Limited Charging Voltage 充电限制电压	58.4V	Cut-off Voltage 放电截止电压	40V
Appearance 外观	White, Prismatic 白色、棱柱形	Dimension (T×W×H) 尺寸(mm)	221.7×493.0×745.9
Classification 类别	Large Lithium ion Batteries 大型锂离子电池		
Cell 电芯			
Model number of the cell 内部电芯型号	CBA71173204-280Ah	Rated Rating 额定值	3.2V 280Ah 896Wh
Cell's Max. Discharge Current 电芯最大放电电流	280A	Limited Charging Voltage 充电限制电压	3.65V
Cell number per battery 每个电池的组成电芯数量	16PCS, 16S1P	Cut-off Voltage 放电截止电压	2.0V

Sample description 样品说明			
Type 类型	Sample No. 样品编号	Sample Sub-No. 样品子编号	State of samples 样品状态
Batteries 电池	NE240115246001-X*	001~002	Fully charged at first cycle 首次循环满电状态
		015~016	
		003~004	Fully charged after 25 cycles 25 次循环后满电状态
		007~008	
Component cells 元件电池芯	NE230725238001-X*	011~015	50% of the design rated capacity at first cycle 首次循环 50%电荷状态
		016~020	50% of the design rated capacity after 25 cycles 25 次循环后 50%电荷状态
		021~030	Fully discharged at first cycle 首次循环完全放电状态
		031~040	Fully discharged after 25 cycles 25 次循环后完全放电状态
* "X" contained in Sample No. represents Sample Sub-No., it consists of three digit. 包含在样品编号中的"X"表示样品子编号，由 3 位数字组成。			

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Test environment condition: Room temperature: 15°C-25°C; Room humidity: 40-70%
试验环境条件：环境温度：15°C-25°C；环境湿度：40-70%
Remark 备注：
All test data of this report are based on the original test report issued by Shenzhen NTEK New Energy Technology Co., Ltd., Report No. P24011800301, dated by 2024-02-22
本报告中的所有测试数据基于深圳市北测新能源技术有限公司签发的原始报告，报告编号 P24011800301，出版日期为 2024-02-22。

Summaries of testing 测试摘要:
All rechargeable battery types, including those composed of previously tested cells, shall be subjected to tests T.1 to T.5 and T.7.
所有可充电的电池组类型，包括由已经通过试验的电芯组成的电池，均须做 T.1 至 T.5 和 T.7 的试验。
Tests T.1 to T.5 are conducted in sequence on the same battery. Tests T.6 and T.8 are conducted using not otherwise tested batteries. Test T.7 may be conducted using undamaged batteries previously used in Tests T.1 to T.5 for purposes of testing on cycled batteries.

电池必须按顺序在相同的一组电池上进行T.1至T.5的试验。T.6和T.8的试验应使用另外未试验过的电池。T.7的试验可以使用先前在T.1至T.5的试验中使用过的未损坏电池进行，以便测试进行在循环过的电池上。
In order to quantify the mass loss, the following procedure is provided:

$$\text{Mass loss}(\%)=(M_1-M_2)/M_1\times 100$$

为了量化质量损失，使用以下公式计算：

$$\text{质量损失}(\%)=(M_1-M_2)/M_1\times 100$$

Where M_1 is the mass before the test and M_2 is the mass after the test. When mass loss does not exceed the values in Table below, it is considered as "no mass loss".

式中：M_1是试验前的质量，M_2是试验后的质量。如果质量损失不超过下表所列的数值，应视为“无质量损失”。

Mass M of cell or battery 电芯或电池的质量	Mass loss limit 质量损失限值
M＜1g	0.5%
1g≤M≤75g	0.2%
M＞75g	0.1%

In tests T.1 to T.4, batteries meet this requirement if there is no leakage, no venting, no disassembly, no rupture and no fire and if the open circuit voltage of each test battery after testing is not less than 90% of its voltage immediately prior to this procedure.

在T.1至T.4的试验中，电池须满足无渗漏、无泄气、无解体、无破裂和无起火，并且每个试验电池在试验后的开路电压不小于其在进行这一试验前电压的90%。

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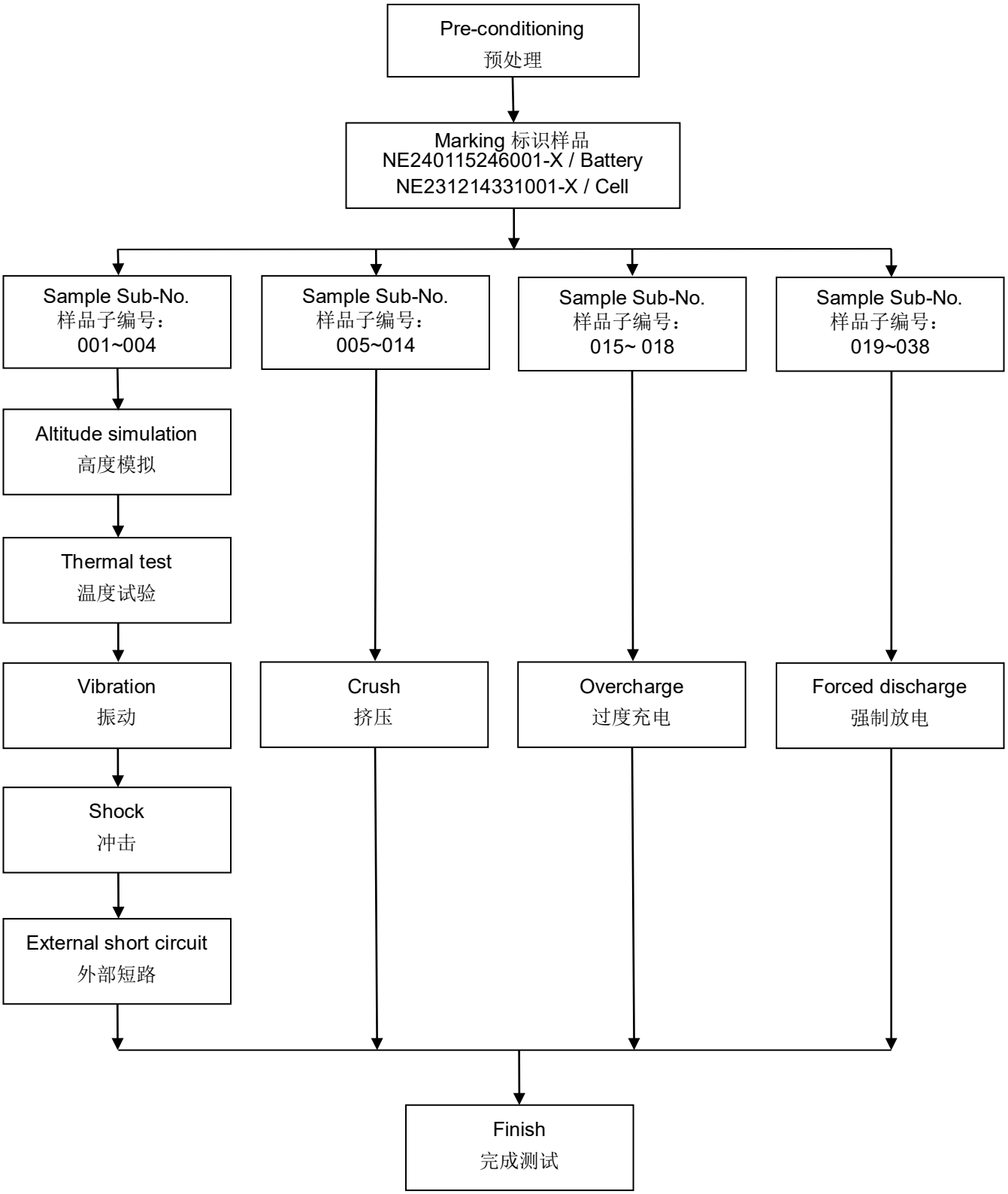
Test Procedure 测试程序



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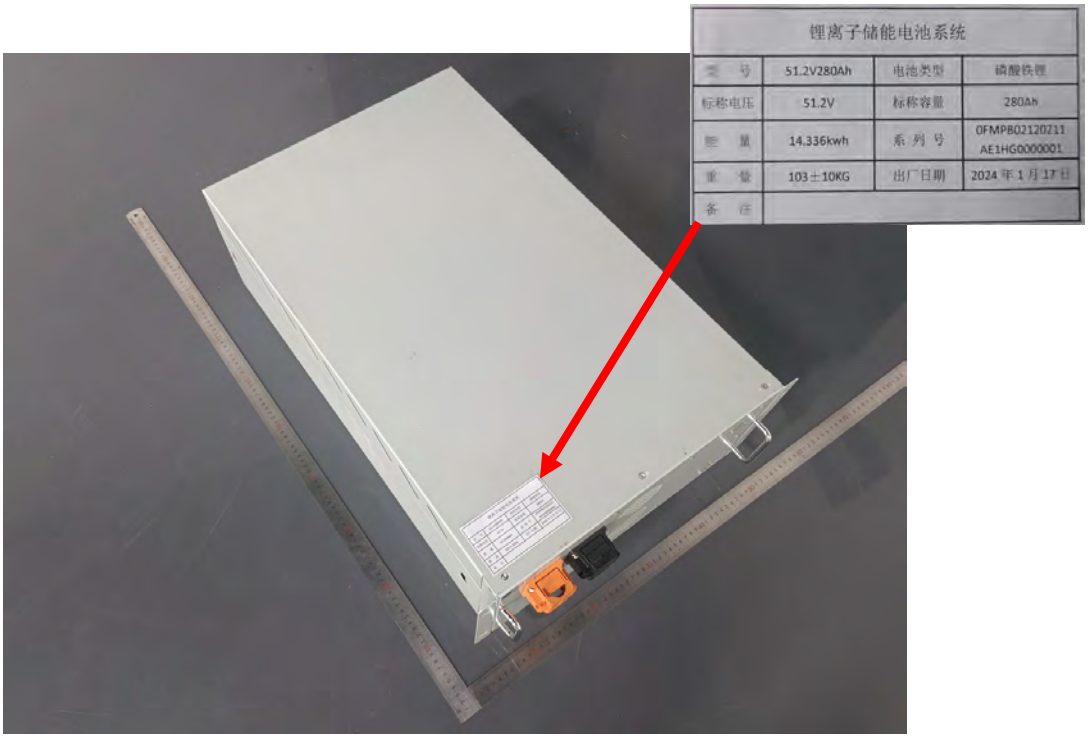
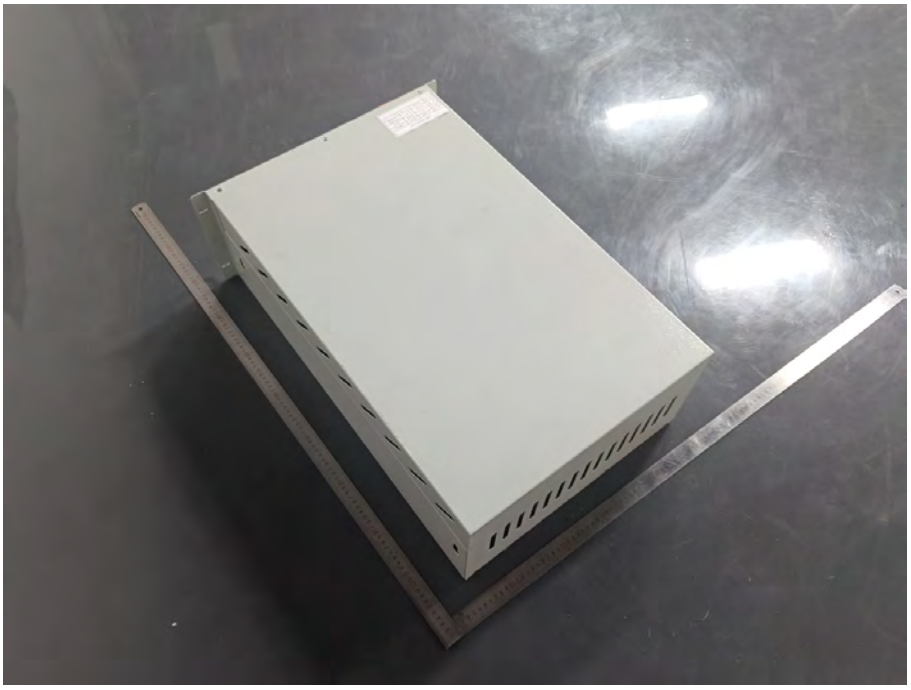
Photos of sample 样品照片





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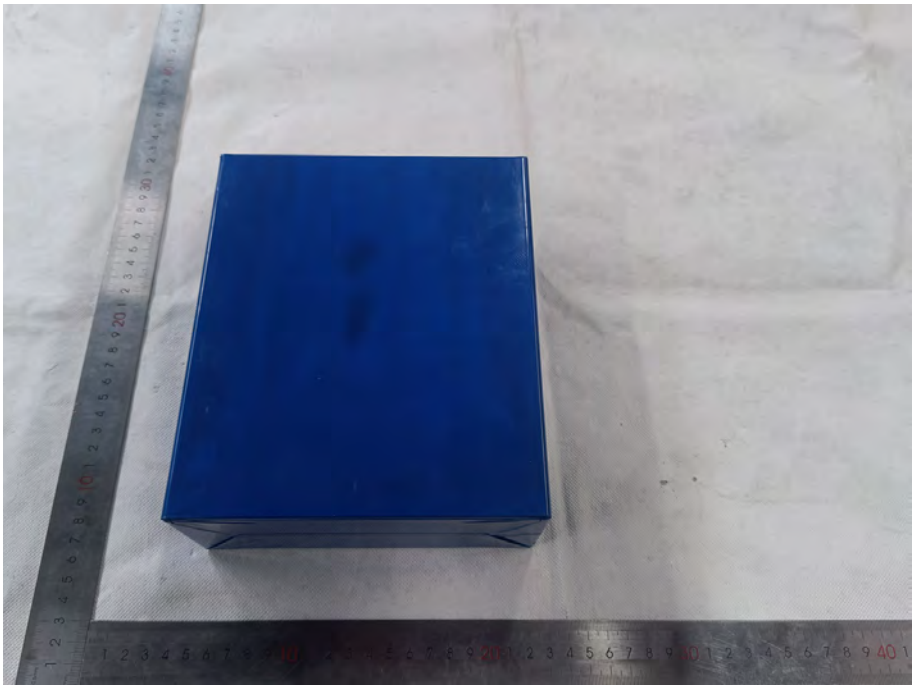
Photos of sample 样品照片



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Test results 测试结果:

Test T.1: Altitude simulation 试验T.1：高度模拟

Test method 测试方法

Batteries are stored at a pressure of 11.6 kPa or less for at least six hours at ambient temperature (20 ± 5°C).
试验电池被放置在压力等于或低于11.6 kPa和环境温度(20±5°C)下存放至少6小时。

Requirement 要求

Batteries meet this requirement if there is no leakage, no venting, no disassembly, no rupture and no fire and if the open circuit voltage of each test battery after testing is not less than 90% of its voltage immediately prior to this procedure.
电池须无渗漏、无泄气、无解体、无破裂和无起火，并且每个试验电池在试验后的开路电压不小于其在进行这一试验前电压的90%。

Test Data showed in table below 测试数据见下表

Sample Sub-No. 样品子编号	Prior to test 试验前		After test 试验后		Mass loss 质量损失 (%)	Voltage after test/ voltage prior to test 试验后电压/试验前电压(%)	Results 结果
	Mass 质量 (Kg)	Voltage 电压 (V)	Mass 质量 (Kg)	Voltage 电压 (V)			
001	104.46	54.14	104.46	54.04	0.000	99.82	PASS 合格
002	104.39	54.13	104.39	54.03	0.000	99.82	PASS 合格
003	104.44	54.14	104.44	54.05	0.000	99.83	PASS 合格
004	104.37	54.12	104.37	54.04	0.000	99.85	PASS 合格

Notes 注释:

After the test, there is no leakage, no venting, no disassembly, no rupture and no fire.
测试后，电池未渗漏、未泄气、未解体、未破裂和未起火。

Room temperature 环境温度: 21.4°C

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Test T.2: Thermal test 试验 T.2：温度试验

Test method 测试方法

Batteries are to be stored for at least 12 hours at a test temperature equal to 72 ± 2°C, followed by storage for at least 12 hours at a test temperature equal to -40 ± 2°C. The maximum time interval between test temperature extremes is 30 minutes. This procedure is to be repeated 10 times, after which all test batteries are to be stored for 24 hours at ambient temperature (20 ± 5°C).

电池放置在试验温度等于72±2°C的条件下存放至少12小时，接着再在试验温度等于-40±2°C的条件下存放至少12小时。两个极端试验温度之间的最大时间间隔为30分钟。此程序重复进行，共完成10次，接着将所有试验电池在环境温度(20±5°C)下存放24小时。

Requirement 要求

Batteries meet this requirement if there is no leakage, no venting, no disassembly, no rupture and no fire and if the open circuit voltage of each test battery after testing is not less than 90% of its voltage immediately prior to this procedure.

电池须无渗漏、无泄气、无解体、无破裂和无起火，并且每个试验电池在试验后的开路电压不小于其在进行这一试验前电压的90%。

Test Data showed in table below 测试数据见下表

Sample Sub-No. 样品子编号	Prior to test 试验前		After test 试验后		Mass loss 质量损失 (%)	Voltage after test/ voltage prior to test 试验后电压/试验前电压(%)	Results 结果
	Mass 质量 (Kg)	Voltage 电压 (V)	Mass 质量 (Kg)	Voltage 电压 (V)			
001	104.46	54.04	104.42	53.54	0.038	99.07	PASS 合格
002	104.39	54.03	104.36	53.56	0.029	99.13	PASS 合格
003	104.44	54.05	104.41	53.53	0.029	99.04	PASS 合格
004	104.37	54.04	104.35	53.54	0.019	99.07	PASS 合格

Notes 注释:

After the test, there is no leakage, no venting, no disassembly, no rupture and no fire.

测试后，电池未渗漏、未泄气、未解体、未破裂和未起火。

Room temperature 环境温度: 21.7°C

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Test T.3: Vibration 试验 T.3：振动

Test method 测试方法

Batteries are firmly secured to the platform of the vibration machine without distorting the cells in such a manner as to faithfully transmit the vibration. The vibration shall be a sinusoidal waveform with a logarithmic sweep between 7 Hz and 200 Hz and back to 7 Hz traversed in 15 minutes. This cycle shall be repeated 12 times for a total of 3 hours for each of three mutually perpendicular mounting positions of the cell. One of the directions of vibration must be perpendicular to the terminal face.

The logarithmic frequency sweep is as follows: from 7 Hz to a peak acceleration of 1 g_n is maintained until 18 Hz is reached. The amplitude is then maintained at 0.8 mm (1.6 mm total excursion) and the frequency increased until a peak acceleration of 2 g_n occurs (approximately 25 Hz). A peak acceleration of 2 g_n is then maintained until the frequency is increased to 200 Hz.

电池紧固于振动台台面，但不得造成电芯变形，并能准确可靠地传播振动。振动应是正弦波形，对数扫描频率在7 Hz和200 Hz之间，再回到7 Hz，1次循环时间为15分钟。这一振动过程须对三个互相垂直的电芯安装方位的每一方向重复进行12次，总共为时3小时。其中一个振动方向必须与端面垂直。

对数扫频方式：从7 Hz开始，保持1 g_n的峰值加速度，直到频率达到18 Hz，然后将振幅保持在0.8mm（总位移1.6mm），并增加频率直到峰值加速度达到2 g_n（频率约为25 Hz），将峰值加速度保持在2 g_n直到频率增加到200 Hz。

Requirement 要求

Batteries meet this requirement if there is no leakage, no venting, no disassembly, no rupture and no fire during the test and after the test and if the open circuit voltage of each test battery directly after testing in its third perpendicular mounting position is not less than 90% of its voltage immediately prior to this procedure.

测试中和测试后电池须无渗漏、无泄气、无解体、无破裂和无起火，并且每个试验电池在第三个垂直安装方位上的试验后立即测得的开路电压不小于在进行这一试验前电压的90%。

Test Data showed in table below 测试数据见下表

Sample Sub-No. 样品子编号	Prior to test 试验前		After test 试验后		Mass loss 质量损失 (%)	Voltage after test/ voltage prior to test 试验后电压/试验前电压(%)	Results 结果
	Mass 质量 (Kg)	Voltage 电压 (V)	Mass 质量 (Kg)	Voltage 电压 (V)			
001	104.42	53.54	104.42	53.49	0.000	99.91	PASS 合格
002	104.36	53.56	104.36	53.50	0.000	99.89	PASS 合格
003	104.41	53.53	104.41	53.47	0.000	99.89	PASS 合格
004	104.35	53.54	104.35	53.49	0.000	99.91	PASS 合格

Notes 注释:

During and after the test, there is no leakage, no venting, no disassembly, no rupture and no fire.

测试中和测试后，电池未渗漏、未泄气、未解体、未破裂和未起火。

Room temperature 环境温度: 21.3°C

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Test T.4: Shock 试验 T.4：冲击

Test method 测试方法

Batteries are secured to the testing machine by means of a rigid mount which will support all mounting surfaces of each test battery. Each battery is subjected to a half-sine shock of peak acceleration depending on the mass of the battery. The pulse duration is 11 milliseconds.

Each battery is subjected to three shocks in the positive direction followed by three shocks in the negative direction of three mutually perpendicular mounting positions of the battery for a total of 18 shocks.

试验电池用刚性支架紧固在试验装置上，支架支撑着每个试验电池的所有安装面。每个电池须经受基于电池质量的一个峰值加速度半正弦波冲击。

每个电池须在三个互相垂直的电池安装方位的正方向经受三次冲击，接着在反方向经受三次冲击，总共经受18次冲击。

The formula below is provided to calculate the appropriate minimum peak accelerations.

如下公式用于计算适用的最小峰值加速度：

Mass of the battery 电池的质量	Minimum peak acceleration 最小峰值加速度		Pulse duration 脉冲持续时间
104.42kg	$Acceleration(g_n) = \sqrt{\left(\frac{30000}{mass*}\right)}$	16g_n	11 ms

* Mass is expressed in kilograms. *质量单位表示为kg.

每个电池须在三个互相垂直的电池安装方位的正方向经受三次冲击，接着在反方向经受三次冲击，总共经受18次冲击。

Requirement 要求

Batteries meet this requirement if there is no leakage, no venting, no disassembly, no rupture and no fire and if the open circuit voltage of each test battery after testing is not less than 90% of its voltage immediately prior to this procedure.

电池须无渗漏、无泄气、无解体、无破裂和无起火，并且每个试验电池在试验后的开路电压不小于其在进行这一试验前电压的90%。

Test Data showed in table below 测试数据见下表

Sample Sub-No. 样品子编号	Prior to test 试验前		After test 试验后		Mass loss 质量损失 (%)	Voltage after test/ voltage prior to test 试验后电压/试验前电压(%)	Results 结果
	Mass 质量 (Kg)	Voltage 电压 (V)	Mass 质量 (Kg)	Voltage 电压 (V)			
001	104.42	53.49	104.42	53.49	104.42	100.0	PASS 合格
002	104.36	53.50	104.36	53.50	104.36	100.0	PASS 合格
003	104.41	53.47	104.41	53.47	104.41	100.0	PASS 合格
004	104.35	53.49	104.35	53.49	104.35	100.0	PASS 合格

Notes 注释:

After the test, there is no leakage, no venting, no disassembly, no rupture and no fire.

测试后，电池未渗漏、未泄气、未解体、未破裂和未起火。

Room temperature 环境温度: 21.6°C

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Test T.5: External short circuit 试验 T.5：外部短路

Test method 测试方法

Batteries to be tested are heated for a period of time necessary to reach a homogeneous stabilized temperature of 57 ± 4 °C, measured on the external case. This period of time depends on the size and design of the battery and is assessed and documented. Then the battery at 57 ± 4 °C is subjected to one short circuit condition with a total external resistance of less than 0.1 ohm.

This short circuit condition is continued for at least one hour after the battery external case temperature has returned to 57 ± 4 °C.

The short circuit and cooling down phases are conducted at least at ambient temperature.

试验电池首先被加热或恒定一段时间，使其达到57 ± 4 °C并使其外表面温度均匀恒定在57 ± 4 °C。该加热时间或热恒定时间的长短取决于该电池的尺寸和设计，并同时加以评估及提供文件证明。然后该电池在57 ± 4 °C的条件下承受一个外部总阻抗小于0.1Ω的短路条件。

该短路测试持续到电池外表面温度返回至57 ± 4 °C后再保持至少1小时。

该短路和冷却阶段均被执行在57 ± 4 °C的环境温度下。

Requirement 要求

Batteries meet this requirement if their external temperature does not exceed 170°C and there is no disassembly, no rupture and no fire during the test and within six hours after test.

电池外壳温度不超过170°C，并且在试验过程中及试验后6小时内无解体、无破裂，无起火。

Test data showed in table below 测试数据见下表

Sample Sub-No. 样品子编号	Maximum outer casing temperature 电池表面最高温度 (°C)	Results 结果
001	57.9	PASS 合格
002	58.2	PASS 合格
003	57.7	PASS 合格
004	58.0	PASS 合格

Notes 注释:

There is no disassembly, no rupture and no fire during the test and within six hours after test.

电池在测试中和测试后 6 小时内未解体、未破裂，未起火。

Room temperature 环境温度: 21.5°C

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Test T.6: Crush 试验 T.6：挤压

Test method 测试方法

A component cell is to be crushed between two flat surfaces. The crushing is to be gradual with a speed of approximately 1.5 cm/s at the first point of contact. The crushing is to be continued until the first of the three options below is reached.

(a) The applied force reaches 13 kN ± 0.78 kN; (b) The voltage of the cell drops by at least 100 mV; or

(c) The cell is deformed by 50% or more of its original thickness.

Once the maximum pressure has been obtained, the voltage drops by 100 mV or more, or the cell is deformed by at least 50% of its original thickness, the pressure is released.

A prismatic or pouch cell shall be crushed by applying the force to the widest side. A button/coin cell shall be crushed by applying the force on its flat surfaces. For cylindrical cells, the crush force shall be applied perpendicular to the longitudinal axis.

Each component cell is to be subjected to one crush only. The test sample is observed for a further 6 h. The test is conducted using component cells that have not previously been subjected to other tests.

将元件电池芯放在两个平面之间挤压，挤压力度逐渐加大，在第一个接触点上的速度大约为 1.5 cm/s。挤压持续进行，直到出现以下三种情况之一：

a)施加的力量达到 13 kN ± 0.78 kN；b)电芯的电压下降至少 100mV；或

c)电芯形变达原始厚度的 50%或更多。

一旦达到最大压力、电压下降 100mV 或更多，或电芯形变至少达原厚度的 50%，即可解除压力。

棱柱形或袋装电芯须从最宽的面施压。扣式或币式电芯，须施加挤压力在它的扁平面之间。圆柱形电芯，挤压力须施加于垂直于电芯纵轴的方向上。

每个试样元件电池芯只做一次挤压试验。试样须继续观察 6 小时。试验须使用之前未做过其他试验的元件电池芯进行。

Requirement 要求

Component cells meet this requirement if their external temperature does not exceed 170°C and there is no disassembly and no fire during the test and within six hours after the test.

元件电池芯外壳温度不超过170°C，并且在试验过程中及试验后6小时内无解体，无起火。

Test data showed in table below 测试数据见下表

Sample Sub-No. 样品子编号	Maximum outer casing temperature 电池芯表面最高温度 (°C)	Results 结果
011	23.5	PASS 合格
012	23.4	PASS 合格
013	23.4	PASS 合格
014	23.5	PASS 合格
015	23.6	PASS 合格
016	23.5	PASS 合格
017	23.4	PASS 合格
018	23.5	PASS 合格
019	23.5	PASS 合格
020	23.6	PASS 合格

Notes 注释:

There is no disassembly, no rupture and no fire during the test and within six hours after the test.

元件电池芯在测试中和测试后 6 小时内未解体、未起火。

Room temperature 环境温度: 23.0°C

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Test T.7: Overcharge 试验 T.7：过度充电

Test method 测试方法

The charge current is twice the manufacturer's recommended maximum continuous charge current. The minimum voltage of the test is as follows:

☐ When the manufacturer's recommended charge voltage is not more than 18V, the minimum voltage of the test is the lesser of two times the maximum charge voltage of the battery or 22V.

☒ When the manufacturer's recommended charge voltage is more than 18V, the minimum voltage of the test shall be 1.2 times the maximum charge voltage.

Tests are to be conducted at ambient temperature. The duration of the test is 24 hours.

充电电流为制造商建议的最大持续充电电流的两倍。试验的最小电压如下：

☐ 制造商建议的充电电压不大于18V时，试验的最小电压应是电池最大充电电压的两倍或22伏两者中的较小者。

☒ 制造商建议的充电电压大于18V时，试验的最小电压应是电池最大充电电压的1.2倍。

试验在环境温度下进行。试验时间为24小时。

Requirement 要求

Batteries meet this requirement if there is no disassembly and no fire during the test and within seven days after the test.

电池在试验过程中和试验后7天内无解体，无起火。

Test data showed in table below 测试数据见下表

Overcharge current 过充电电流(A) .....:	2×280=560A
Overcharge voltage 过充电电压(Vdc) .....:	1.2×58.4=70.08V
Duration of the test 过充试验时间(hours).....:	24 hours
Sample Sub-No.样品子编号	Results 结果
005	PASS 合格
006	PASS 合格
007	PASS 合格
008	PASS 合格

Notes 注释:

There is no disassembly and no fire during the test and within seven days after the test.

电池在测试中和测试后 7 天内未解体，未着火。

Room temperature 环境温度: 21.7°C

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Test T.8: Forced discharge 试验 T.8：强制放电

Test method 测试方法

Each component cell is forced discharged at ambient temperature by connecting it in series with a 12V D.C. power supply at an initial current equal to the maximum discharge current specified by the manufacturer. The specified discharge current is to be obtained by connecting a resistive load of the appropriate size and rating in series with the test cell. Each cell is forced discharged for a time interval (in hours) equal to its rated capacity divided by the initial test current (in ampere).

每个元件电池芯在环境温度下与 12V 直流电电源串联在起始电流等于制造商给定的最大放电电流的条件下强制放电。

电芯与一个适当大小的电阻负载串联以调节到规定大小的放电电流。每块电芯的放电时间（单位为 h）等于电芯的额定容量除以试验初始放电电流（单位 A）。

Requirement 要求

Component cells meet this requirement if there is no disassembly and no fire during the test and within seven days after the test.

元件电池芯在试验过程中和试验后 7 天内无解体，无起火。

Test data showed in table below 测试数据见下表

Initial current 初始电流(A).....:		280A	
Supply voltage 试验电压(Vdc) .....:		12Vdc	
Time interval 试验时间(Minutes).....:		60 Minutes	
Sample Sub-No. 样品子编号	Results 结果	Sample Sub-No. 样品子编号	Results 结果
021	PASS 合格	031	PASS 合格
022	PASS 合格	032	PASS 合格
023	PASS 合格	033	PASS 合格
024	PASS 合格	034	PASS 合格
025	PASS 合格	035	PASS 合格
026	PASS 合格	036	PASS 合格
027	PASS 合格	037	PASS 合格
028	PASS 合格	038	PASS 合格
029	PASS 合格	039	PASS 合格
030	PASS 合格	040	PASS 合格

Notes 注释:

There is no disassembly and no fire during the test and within seven days after the test.

元件电池芯在测试中和测试后 7 天内未解体，未着火。

Room temperature 环境温度: 22.4°C

*********End of Test Report 检测报告结束*********

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6. The test report is valid for the tested samples only.
   本报告仅对测试样品有效。
7. The Chinese contents in this report are only for reference.
   本报告中的中文内容仅供参考。

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深圳市北测新能源技术有限公司
Address 1: Room 101, Building C, Fenda Hi-Tech Park, Sanwei Community, Hangcheng Subdistrict, Bao'an District, Shenzhen, Guangdong, China.
Address 2: Building 2, Shuoyi Industrial Park, Jinglong Industrial Zone, Zhenlong, Huiyang District, Huizhou, Guangdong, China
地址 1：深圳市宝安区航城街道三围社区奋达高新科技园 C 栋 101
地址 2：广东省惠州市惠阳区镇隆镇井龙工业区硕翊工业园 2 幢
Tel 电话：+86(0)-755-3699 5529　　E-mail 邮箱：Quality@ntekbat.org.cn
Website 网址：http://www.ntekbat.org.cn

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CNAS IB0074-012

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编号：240100320446285
日期：2024年4月1日

中国检验认证集团江苏有限公司
检验检测专用章
3204

危险特性分类鉴别报告

（危险货物）

样品名称：51.2V280Ah 风冷储能电池箱

委托单位：Hykon India Limited

供应商：河北巨源锂电科技有限公司

公司：中国检验认证集团江苏有限公司
地址：中国.常州市天宁区青洋北路47号
Add：47 Qingyang North Road, Tianning District, Changzhou, China
电话（Tel）：+86-519-83277160
网址：www.ccicjs.com
邮编（P.C.）：213000

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检验鉴定报告

INSPECTION REPORT

电话：0519-83277160
公司：中国检验认证集团江苏有限公司

编号：240100320446285
日期：2024 年 4 月 1 日

危险特性分类鉴别报告

样品名称	中文名称	51.2V280Ah 风冷储能电池箱	
	英文名称	51.2V280Ah（14.336kWh）air-cooled energy storage system（BESS）	
委托单位	Hykon India Limited		
供应商	河北巨源锂电科技有限公司		
分析/试验要求	危险特性分类鉴别	样品数量/重量	—
检验依据	联合国《关于危险货物运输的建议书 规章范本》（第二十三修订版） 《危险化学品目录》（2015 版）		
样品标识	——		

一、 样品信息

1. 组分（企业申报）：--
2. 样品性状：锂离子电池，单独包装。

二、 鉴定结论

1. 正式运输名称：锂离子电池组（包括聚合物锂离子电池）。
   技术名称：不适用。
2. 联合国编号：3480。
3. 危险货物类别：9。
4. 建议包装类别：包装必须符合Ⅱ类包装性能水平。
5. GHS分类：详见第3页。
6. 是否属于《危险化学品目录》（2015版）列明的化学品：否。
   是否符合《危险化学品目录》（2015版）中关于"危险化学品的定义和确定原则"：委托单位未申请鉴定。

中国检验认证集团江苏有限公司 检验检测专用章 3204

签发：For and on behalf of CCIC JIANGSU CO., LTD. 中国检验认证集团江苏有限公司

王珍

4 授权签字人 Authorized Signature(s)

签发日期：2024 年 4 月 1 日

本鉴定证书有效期至 2025 年 3 月 31 日。根据联合国《关于危险货物运输的建议书 规章范本》规定，锂电池（组）需通过 UN38.3 测试，才能按照本报告分类结论进行运输。

公司：中国检验认证集团江苏有限公司 地址：中国.常州市天宁区青洋北路 47 号 Add：47 Qingyang North Road, Tianning District, Changzhou, China
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日期：2024 年 4 月 1 日

二、鉴定结论（续）

5. GHS 分类（续）：　**委托单位未申请鉴定。**

运输标签：

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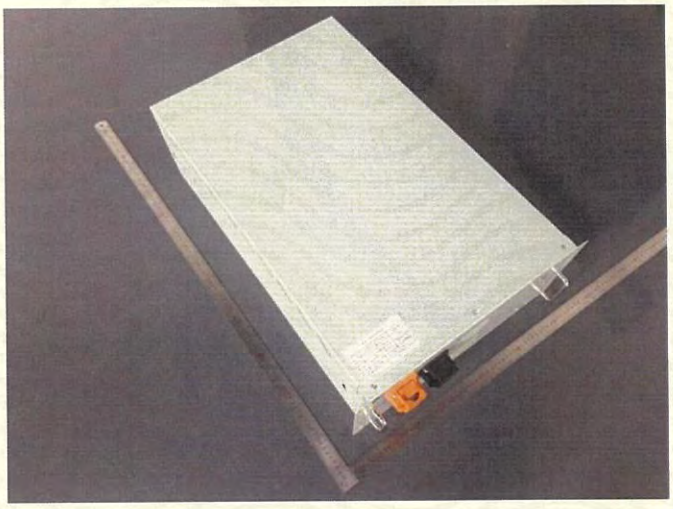
编号：240100320446285
日期：2024 年 4 月 1 日

三、样品图片

锂离子储能电池系统			
型　号	51.2V280Ah	电池类型	磷酸铁锂
标称电压	51.2V	标称容量	280Ah
能　量	14.336kwh	系 列 号	0FMPB02120211 AE1HG0000001
重　量	103±10KG	出厂日期	2024 年 1 月 17 日
备　注			



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运 输 危 险 性 鉴 别 报 告 书

Identification and Classification Report for Transport of Goods

危险物品
(Dangerous Goods)

此报告本年度有效
有效期至2024年12月31日

报告编号：
Issued No: SEKSZ2024041196 72ZN160001

生效日期：
Effective Date: 2024.04.11

委托单位：Hykon India Limited

Applicant: Hykon India Limited

物品名称：51.2V280Ah（14.336kWh）风冷储能电池箱（BESS） 51.2V280Ah 51.2V 280Ah 14336Wh

Name of Goods: 51.2V280Ah (14.336kWh) air-cooled energy storage system (BESS) 51.2V280Ah, 51.2V 280Ah 14336Wh

北京迪捷姆空运技术开发有限公司

Beijing DGM Air Transport Technology Development Co.,Ltd.

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电话：010-69479673　　传真：010-69479621

网址：www.dgmchina.com.cn　　E-mail: test@dgmchina.com.cn

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北京迪捷姆空运技术开发有限公司

项目编号 Item No.		SEKSZ202404119672	签发日期 Issued Date	2024.04.11
鉴别目的 Identification Purpose		是否属于运输危险物品 Dangerous Goods or not restricted	鉴别日期 Identification Date	2024.04.11-2024.04.11
鉴别依据 Identification Criteria		IMDG CODE (Amdt 41-22)		
物品名称 Name of Goods	中文名称 Name of Chinese	51.2V280Ah（14.336kWh）风冷储能电池箱（BESS） 51.2V280Ah 51.2V 280Ah 14336Wh		
	英文名称 Name of English	51.2V280Ah (14.336kWh) air-cooled energy storage system (BESS) 51.2V280Ah, 51.2V 280Ah 14336Wh		
生产厂家 Manufacturer		河北巨源锂电科技有限公司 Hebei Juyuan Lithium Battery Technology Co., Ltd.		
物品信息 Nature of Goods		该物品为锂离子电池，白色，近长方体，尺寸：221.7×493.0×745.9mm。 型号/族号：51.2V280Ah 每包装件中电池或电芯数量：2块 单独包装 （注：单块电池的重量约为104.5kg。该电池的UN38.3报告由深圳市北测新能源技术有限公司出具，报告编号：P24031500802。） The goods are lithium ion batteries,white,almost cuboid,Size:221.7×493.0×745.9mm. Model/Group:51.2V280Ah Number of batteries or cells per package:2 pieces Cells or batteries only		
鉴别结论 Conclusions	危险物品 (Dangerous Goods)			
	UN 编号(UN No.):	UN3480		
	运输专用名称(PSN)	Lithium ion batteries		
	危险性类别(Class or Div.)	9		
	包装等级(PG)			
备注 Comment	包装必须达到 II 级包装的性能标准。 Packagings must meet Packing Group II performance standard.			

主检员 Appraiser

审核人 Checker

批准人 Approver

报告单位（盖章） Stamp

北京迪捷姆空运技术开发有限公司 识别分类专用章 06 DGM-CHINA

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项目编号 Item No.		SEKSZ202404119672
物品名称 Name of Goods	中文名称 Name of Chinese	51.2V280Ah（14.336kWh）风冷储能电池箱（BESS） 51.2V280Ah 51.2V 280Ah 14336Wh
	英文名称 Name of English	51.2V280Ah (14.336kWh) air-cooled energy storage system (BESS) 51.2V280Ah, 51.2V 280Ah 14336Wh

鉴别项目名称 Item	检验结果 Inspection Result
该电池额定瓦特小时数为 14336 Wh。 Watt-hour rating of the battery is 14336 Wh.	>100Wh
锂电池已通过 UN38.3 测试。 Each battery is of a type proved to meet the Requirements of each test in the UN MANUAL OF TESTS AND CRITERIA, Part III,sub-section 38.3.	符合 Conform
电池按照规定的质量管理体系进行制造。 Batteries be manufactured under a quality management programme.	符合 Conform
该锂电池不属于召回电池，不属于废弃和回收电池。 The lithium batteries don't belong to batteries returned to the manufacturer for safety reasons，are not waste lithium batteries and not lithium batteries being shipped for recycling or disposal.	符合 Conform
通过包装件 1.2 米跌落试验。 Each package is capable of withstanding a 1.2m drop test in any orientation.	不适用 Not applicable
包装件需要按照特殊规定188的要求进行适当标记。 The package must be appropriately marked according to special provision 188.	不适用 Not applicable
每票托运物品均有随附文件说明： 包装件内装锂离子电池或电芯； 必须小心操作。如包装件破损，有易燃危险性； 包装件破损时应采取的特殊措施，包括检查和必要时的重新包装； 应急电话号码。 Each consignment is accompanied with a document with an indication that: the package contains lithium ion cells or batteries; the package must be handled with care, and that a flammability hazard exists if the package is damaged; special procedures should be followed in the event the package is damaged, to include inspection and repacking if necessary; and a telephone number for additional information.	不适用 Not applicable
/	/
/	/

注意事项 Remarks	每一单电池必须做好防短路措施，并装入坚固外包装内。 Each single battery must be packed in such a way as to prevent short circuits under the normal conditions and packed in strong outer packagings.

出单：罗晓锋

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北京迪捷姆空运技术开发有限公司

51.2V280Ah（14.336kWh）风冷储能电池箱（BESS）

51.2V280Ah 51.2V 280Ah 14336Wh

SEKSZ202404119672

锂离子储能电池系统			
型　号	51.2V280Ah	电池类型	磷酸铁锂
标称电压	51.2V	标称容量	280Ah
能　量	14.336kwh	系 列 号	0FMPB02120211 AE1HG0000001
重　量	103±10KG	出厂日期	2024 年 1 月 17 日
备　注			

附页

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锂电池 UN38.3 试验概要 Lithium Battery Test Summary

项目编号：SEKSZ202404119672

单位信息 Company Information	
委托单位 Consignor	Hykon India Limited Thrissur-680001, Kerala, India 电话/Tel: 91 99958 61163 邮箱/Mail: dgmrd@hykonindia.com 网址/Website: None
生产单位 Manufacturer	河北巨源锂电科技有限公司 河北省邢台市巨鹿县河北巨鹿经济开发区黄巾大道北侧兴源北街东侧北孵化园 3 号车间 电话/Tel: 86-13058597323 邮箱/Mail: 272046014@qq.com 网址/Website: None
测试单位 Test Lab	深圳市北测新能源技术有限公司 深圳市宝安区航城街道三围社区奋达高新科技园 C 栋 101 电话/Tel：+86(0)-755-3699 5529　邮箱/Mail：Quality@ntekbat.org.cn 网址/Website: http://www.ntekbat.org.cn

电池信息 Battery Information			
名称 Name	51.2V280Ah（14.336kWh）风冷储能电池箱（BESS） 51.2V280Ah (14.336kWh) air-cooled energy storage system (BESS)	电池/电芯类别 Battery/Cell Classification	锂离子电池 Li-ion Battery
型号 Type	51.2V280Ah	商标 Trademark	/
额定电压 Normal Voltage	51.2V	额定容量 Rated Capacity	280Ah
额定能量 Watt-hour rating	14336Wh	外观/Appearance	白色近长方体 White almost cuboid
质量/Mass	104.5Kg	锂含量/Li Content	不适用 N/A

测试信息 Test Information					
测试报告编号 Test Report Number	P24031500802		测试报告签发日期 Date of Test Report	2024-03-21	
测试标准 Edition of UN Manual of Tests and Criteria Used	联合国《试验和标准手册》（第 7 版修订 1）38.3 节 UN "Manual of Tests and Criteria" ST/SG/AC.10/11/Rev.7/Amend1/Subsection 38.3				
T.1：高度模拟 Altitude Simulation	通过 Pass	T.2：温度试验 Thermal Test	通过 Pass	T.3：振动 Vibration	通过 Pass
T.4：冲击 Shock	通过 Pass	T.5：外部短路 External Short Circuit	通过 Pass	T.6：撞击/挤压 Impact/Crush	通过 Pass
T.7：过度充电 Overcharge	通过 Pass	T.8：强制放电 Forced Discharge	通过 Pass		
UN38.3.3(f)	不适用 N/A		UN38.3.3(g)	不适用 N/A	
签名 Signatory 职务 Title	检验员		签发日期 Issued Date	2024.04.11	

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Report No./报告编号:
P24031500902

Material Safety Data Sheet
材料安全数据表

Name of Goods:	51.2V280Ah (14.336kWh) air-cooled energy storage system (BESS)
物品名称:	51.2V280Ah（14.336kWh）风冷储能电池箱（BESS）
Model and Spec.:	51.2V280Ah, 51.2V 280Ah 14336Wh
型号规格:	
Applicant:	Hykon India Limited
委托单位:	/
Effective date:	2024-04-07
生效日期:	
Date of issue:	2024-04-07
签发日期:	

Shenzhen NTEK New Energy Technology Co., Ltd.

深 圳 市 北 测 新 能 源 技 术 有 限 公 司

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1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION 化学品及企业标识	
Name of Products 产品名称	51.2V280Ah (14.336kWh) air-cooled energy storage system (BESS) 51.2V280Ah（14.336kWh）风冷储能电池箱（BESS）
Model/Type 型号	51.2V280Ah
Ratings 额定参数	51.2V 280Ah 14336Wh
Applicant 委托单位	Hykon India Limited
Address of Applicant 委托单位地址	Thrissur-680001, Kerala, India
Manufacturer 生产厂商	Hebei Juyuan Lithium Battery Technology Co., Ltd. 河北巨源锂电科技有限公司
Address of manufacturer 生产厂商地址	Car No.3, North Hatchery Park, east of Xingyuan North Street, North of Huangjin Avenue, Julu Economic Development Zone Hebei, Julu County Xingtai, Hebei, 523080 CN 河北省邢台市巨鹿县河北巨鹿经济开发区黄巾大道北侧兴源北街东侧北孵化园3号车间
Emergency telephone call 应急电话	+86-13058597323
Prepared by 编制人	Jake Chen 陈嘉南
Reviewed by 审核人	Jemery Li 黎宗豪
Approved by 批准人	Jesse Zhang 张士杰 报告单位（盖章） Seal of NTEK

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2. Hazards Identification
危险性概述

Dangerous classification 物品危险分类	
Explosive risk 爆炸危险性	This article does not belong to the explosion dangerous goods 该物品不属于爆炸危险品
Flammable risk 易燃危险性	This article does not belong to the flammable material 该物品不属于易燃危险品
氧化危险性 Oxidation risk	This article does not belong to the oxidation of dangerous goods 该物品不属于氧化危险品
Toxic risk 毒害危险性	This article does not belong to the toxic dangerous goods 该物品不属于毒害危险品
Radioactive risk 放射危险性	This article does not belong to the radiation of dangerous goods 该物品不属于放射危险品
Mordant risk 腐蚀危险性	This article does not belong to the corrosion of dangerous goods 该物品不属于腐蚀危险品
Other risk 其他危险性	Lithium-ion batteries, The Watt-hour rating of the battery is 14336Wh 锂离子电池，该电池额定瓦时为14336Wh

3. COMPOSITION INFORMATION
成分/组成信息

Chemical Composition **化学成分**	**CAS No.** **CAS号**	**Weight (%)** **重量百分比**
Lithium Iron Phosphate	15365-14-7	25-40
Graphite	7782-42-5	10-20
Ethylene carbonate	96-49-1	3-20
Dimethyl carbonate	616-38-6	
Ethyl methyl carbonate	623-53-0	
Lithium Hexafluorophosphate	21324-40-3	
Propylene carbonate	108-32-7	
Copper	7440-50-8	5-20
Aluminium	7429-90-5	5-20
Polypropylene	9003-07-0	2-7
Polyvinyl chloride	9002-86-2	5-20

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4. First aid measures
急救措施

Once battery shell rupture, content contact with the human body will produce harm, once contact, should take the following emergency measures:

电池外壳破裂，内容物接触人体会产生危害，一旦发生接触，应采取以下应急措施：

Eye:

Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

眼睛：

万一接触，立即用大量的清水冲洗至少15分钟，翻起上下眼睑，直到化学的残留物消失为止，迅速就医。

Skin:

Remove contaminated clothes and rinse skin with plenty of water or shower for 15 minutes. Get medical aid.

皮肤：

万一接触，用大量水冲洗至少15分钟，同时除去污染的衣物和鞋子，迅速就医。

Inhalation: Remove from exposure and move to fresh air immediately. Use oxygen if available.

吸入：

立即从暴露处移至空气清新处，如果呼吸困难给予输氧，立即就医。

Ingestion: Give at least 2 glasses of milk or water. Induce vomiting unless patient is unconscious. Call a physician

食入：

饮用两杯牛奶或水。如果当事人仍然清晰可以采取催吐的方法，并且立即就医。

5. Fire-fighting measures
消防措施

Flash Point: N/A.

燃点：不适用

Auto-Ignition Temperature: N/A.

自燃温度：不适用

Extinguishing Media: Water, CO_2.

灭火介质：大量水（降温），二氧化碳

Special Fire-Fighting Procedures: Self-contained breathing apparatus.

特殊灭火程序：自给式呼吸器

Unusual Fire and Explosion Hazards: Cell may vent when subjected to excessive heat-exposing battery contents.

异常火灾或爆炸：当电芯暴露于过热的环境中时，安全阀可能会打开。

Hazardous Combustion Products: Carbon monoxide, carbon dioxide, lithium oxide fumes.

燃烧产生的危险物品：一氧化碳，二氧化碳，锂氧化物烟气。

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6. Accidental release measures
泄露应急处理

Steps to be Taken in case Material is Released or Spilled

If the battery material is released, remove personnel from area until fumes dissipate. Provide maximum ventilation to clear out hazardous gases. Wipe it up with a cloth, and dispose of it in a plastic bag and put into a steel can. The preferred response is to leave the area and allow the battery to cool and vapors to dissipate. Provide maximum ventilation. Avoid skin and eye contact or inhalation of vapors. Remove spilled liquid with absorbent and incinerate.

为防止电池材料泄露或释放采取的措施

如果电池内部材料泄露，试验人员应立刻撤离试验区直到烟气消散。将通风设备打开吹散危险性气体。用抹布擦净试验区，清除溢出的液体，将泄露电池放进塑料袋中，然后放进钢制容器。避免皮肤和眼睛接触或吸入有害气体。

Waste Disposal Method

It is recommended to discharge the battery to the end, to use up the metal lithium inside the battery, and to bury the discharged battery in soil.

废弃物处置方法

建议将电池完全放电，消耗电池内部的锂金属，并且深埋于土壤中。

7. Handling and storage
操作处置和储存

The battery should not be opened, destroyed or incinerate, since they may leak or rupture and release to the environment the ingredients that they contain in the hermetically sealed container. Do not short circuit terminals, or over charge the battery, forced over-discharge, throw to fire. Do not crush or puncture the battery, or immerse in liquids.

禁止打开、毁坏或焚烧电池，因为电池有可能在这些处理过程中发生爆炸、破裂或泄露等事故。禁止将电池短路、过充、强制放电或扔入火中。禁止挤压刺穿电池或将电池浸入溶液中。

Precautions to be taken in handling and storing

Avoid mechanical or electrical abuse. Storage preferably in cool, dry and ventilated area, which is subject to little temperature change. Storage at high temperatures should be avoided. Do not place the battery near heating equipment, nor expose to direct sunlight for longperiods.

操作处置和储存中的防范措施

禁止物理或电滥用，禁止高温储存，最好将电池储存在阴凉、干燥、通风等温度变化较小的环境中。禁止将电池接触加热设备或将电池直接暴露与阳光中。

Other Precautions

The battery may explode or cause burns, if disassembled, crushed or exposed to fire or high temperatures. Do not short or install with incorrect polarity.

其他要注意的防范措施

拆解、挤压、直接放入火中或高温条件下，电池可能发生爆炸和燃烧。禁止短接或将电池正负极错误的安装在设备中。

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8. Exposure controls/personal protection
接触控制/个人防护

Respiratory Protection: In case of battery venting, provide as much ventilation as possible. Avoid confined areas with venting cell cores. Respiratory Protection is not necessary under conditions of normal use.

呼吸防护：当电池排气阀打开时，应尽量使通风设备开至最大，避免将打开排气阀的电芯局限在某一狭窄空间内。正常操作条件下，呼吸保护是不必要的。

Ventilation: Not necessary under conditions of normal use.

通风条件：正常使用条件下不需要。

Protective Gloves: Not necessary under conditions of normal use.

防护手套：正常使用条件下不需要。

Other Protective Clothing or Equipment: Not necessary under conditions of normal use.

其他防护服装或设备：正常使用条件下不需要。

Personal Protection is recommended for venting battery: Respiratory Protection, Protective Gloves, Protective Clothing and safety glass with side shields.

电池开阀试验时应做好个人防护：呼吸防护，防护手套，防护服装和有护边的安全玻璃罩都是要准备的。

9. Physical and chemical properties
物理和化学特性

Appearance: Prismatic

外形：棱柱形

Odors: If leaking, smells of medical ether.

气味： 泄漏时，有醚的气味。

PH: Not applicable as supplied.

酸碱度：不适用

Flash Point: Not applicable unless individual components exposed.

燃点：除单个电芯暴露试验外其他不适用。

Flammability: Not applicable unless individual components exposed.

可燃性：除单个电芯暴露试验外其他不适用。

Relative density: Not applicable unless individual components exposed.

相对密度：除单个电芯暴露试验外其他不适用。

Solubility (water): Not applicable unless individual components exposed.

溶解性（水溶性）：除单个电芯暴露试验外其他不适用。

Solubility (other): Not applicable unless individual components exposed.

溶解性（其他）：除单个电芯暴露试验外其他不适用。

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10. Stability and reactivity
稳定性和反应活性

Stability: Product is stable under conditions described in Section 7.

稳定性：产品在第 7 节所述的条件下稳定。

Conditions to Avoid: Heat above 70°C or incinerate. Deform. Mutilate. Crush. Disassemble. Overcharge. Short circuit. Expose over a long period to humid conditions.

应避免的条件：加热 70°C 以上或焚烧。变形。毁坏。粉碎。拆卸。过充电。短路。长时间暴露在潮湿的条件下。

Materials to avoid: Oxidising agents, alkalis, water.

应避免的材料：氧化剂，碱，水。

Hazardous Decomposition Products: Toxic Fumes, and may form peroxides.

危险分解物：有毒烟雾，并可能形成过氧化物。

Hazardous Polymerization: N/A.

聚合危害：不适用

If leaked, forbidden to contact with strong oxidizers, mineral acids, strong alkalies, halogenated hydrocarbons.

如果发生泄露，避免与强氧化剂，无机酸，强碱，卤代烃接触。

11. Toxicological information
毒理学资料

Signs & symptoms: None, unless battery ruptures.

标志及症状：无，除非电池破裂。

In the event of exposure to internal contents, vapour fumes may be very irritating to the eyes and skin.

内部物质暴露的情况下，蒸汽烟雾可能对眼睛和皮肤的刺激性。

Inhalation: Lung irritant.

吸入：对肺有刺激性。

Skin contact: Skin irritant.

皮肤接触：对皮肤刺激性。

Eye contact: Eye irritant.

眼睛接触：对眼睛有刺激性。

Ingestion: Poisoning if swallowed.

食入：吞下中毒。

Medical conditions generally aggravated by exposure: In the event of exposure to internal contents, moderate to server irritation, burning and dryness of the skin may occur, Target organs nerves, liver and kidneys.

下列情况下健康状况会恶化：万一发生与电池内部材料接触的事故，轻微或严重的刺激，都可能使皮肤出现干燥和灼烧的感觉，并且损坏靶器官（肝脏，肾脏）的神经。

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12. Ecological information
生态学资料

Mammalian effects: None known at present.

对哺乳动物的影响： 目前未知。

Eco-toxicity: None known at present.

生态毒性： 目前未知。

Bioaccumulation potential: Slowly Bio-degradable.

生物体内积累： 慢慢地生物降解。

Environmental fate: None known environmental hazards at present.

环境危害： 目前没有已知的环境危害。

13. Disposal consideration
废弃处置

Do not incinerate, or subject cells to temperature in excess of 70°C, Such abuse can result in loss of seal leakage, and/or cell explosion. Dispose of in accordance with appropriate local regulations.

不要焚烧，或使电池温度超过 70°C，这种滥用可导致泄漏和/或电池爆炸。按照相应的地方性法规处理。

14. Transport information
运输信息

UN No. and Shipping name:

UN 3480 Lithium ion batteries

UN编号及运输专有名称：

UN 3480 Lithium ion batteries

Label for conveyance: Class 9 lithium battery hazard label, Cargo Aircraft Only Label

运输标签： 第 9 类锂电池危险品标签，仅限货机标签

Packaging Group/包装等级： II

EmS No./EmS 编号： F-A, S-I

Marine pollutants/海洋污染物： No/否

ICAO/IATA	Shipped by air in accordance with International Civil Aviation Organization (ICAO), TI or International Air Transport Association (IATA), DRG Packing Instructions PI 965 IA 根据国际民用航空组织(ICAO), TI或者国际航空协会(IATA), DGR包装说明PI 965 IA相关规定进行空运	DGR 65th (2024) ICAO (2023-2024 edition)
IMDG CODE	Shipped by sea in accordance with International Maritime Dangerous Code (IMDG CODE) Special Provision 230, 310, 348, 376, 377, 384, 387 根据《国际海运危险货物规则》(IMDG CODE)特殊规定230，310，348，376，377，384，387条款相关规定运输	IMDG CODE (Amdt. 41-22)

15. Regulation information
法规信息

Law information 法律信息

《Dangerous Goods Regulations》

《危险品规则》

《Recommendations on the Transport of Dangerous Goods Model Regulations》

《关于危险货物运输的建议书 规章范本》

《International Maritime Dangerous Goods Code》

《国际海运危险货物规则》

《Technical Instructions for the Safe Transport of Dangerous Goods》

《危险品安全运输技术指令》

16. Other Information
其他信息

This file is only effective to the batteries (51.2V280Ah) provided by commissioner (Hykon India Limited.) which manufactured by Hebei Juyuan Lithium Battery Technology Co., Ltd. The commissioner provides the composition information of batteries, and promises its integrity and accuracy. Users should read this file carefully, and use the batteries in correct method. Shenzhen NTEK New Energy Technology Co., Ltd. doesn't assume responsibility for any damage or loss because of misuse of batteries.

本文件仅对由委托方（Hykon India Limited）提供的，并由河北巨源锂电科技有限公司生产的电池（51.2V280Ah）有效。该电池的成分信息由委托方提供并承诺其完整性和准确性。用户应仔细阅读此文件，并按照正确的方法使用电池，如因电池使用不当造成的损害或损失，深圳市北测新能源技术有限公司不承担任何责任。

--End of Material Safety Data Sheet 材料安全数据表结束--

Important Notice
注意事项

1. The test report is invalid without the Report Seal of NTEK and Paging seal of NTEK.

   本报告书无本公司报告专用章、骑缝章无效。

2. Nobody is allowed to photocopy or partly photocopy this test report without written permission of NTEK.

   未经本试验室书面同意，不得部分地复制本报告。

3. The test report is invalid without the signatures of Approver, Reviewer and Preparer.

   本报告书无批准人、审核人及编制人签名无效。

4. The report is invalid when anything of following happens – illegal transfer, reproduce, embezzlement, imposture, modification or tampering in any media form.

   私自转让、复制、盗用、冒用、涂改、或以任何媒体形式篡改的报告书无效。

5. Objections to the test report must be submitted to NTEK within 15 days.

   对报告书若有异议，应于收到报告之日起15天内向本公司提出。

6. The Chinese contents in this report are only for reference.

   本报告中的中文内容仅供参考。

Shenzhen NTEK New Energy Technology Co., Ltd.

深圳市北测新能源技术有限公司

Address: Room 101, Building C, Fenda Hi-Tech Park, Sanwei Community, Hangcheng Subdistrict, Bao'an District, Shenzhen, Guangdong, China.

地址：深圳市宝安区航城街道三围社区奋达高新科技园 C 栋 101

Tel 电话：+86(0)-755-3699 5529　E-mail 邮箱：Quality@ntekbat.org.cn

Website 网址：http://www.ntekbat.org.cn

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AGENCY FOR NEW & RENEWABLE ENERGY RESEARCH AND TECHNOLOGY (ANERT)
Department of Power, Government of Kerala
Thiruvananthapuram, Kerala – 695 033;
www.anert.gov.in , projects@anert.in

E-EOI DOCUMENT

Re-Invitation of Expression of Interest (EoI) for the Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram

Ref. No.: ANERT-TECH/41/2024-PE1(RTS)

PART – 1: GENERAL CONDITIONS

Date of Publishing of Bids : - **21/05/2024**

Last Date of Submission of Bids : - **31/05/2024**

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EOI NOTICE

EoIs in two cover system with Earnest Money Deposit (EMD) are invited from reputed Consultant Agencies / Consultants, with relevant experience in Government and Management Consultancy services in the ***Re-Invitation of Expression of Interest (EoI) for the Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram***. The e-EoI documents can be downloaded from the e-Tendering website of Govt. of Kerala – www.etenders.kerala.gov.in. The EoI form will not be available in any other form.

Thiruvananthapuram CEO

21/05/2024

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ABSTRACT

Ref. No.	**ANERT-TECH/41/2024-PE1(RTS)**
Name of Work	**Re-Invitation of Expression of Interest (EoI) for the Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram**
Download of EoI Form	http://www.etenders.kerala.gov.in
Last date of submission of bids	31/05/2024 @ 1.00 PM
Date and Time of opening the bids	31/05/2024 @ 2.00 PM
Cost of EoI form	**Rs. 1,18,000/- (Including GST)**
Period of Warranty	7 Years from the date of Commercial operation
Availability of EoI Forms	Website http://www.etenders.kerala.gov.in
Place of opening of EoI	Office of CEO, ANERT Law College Road, Vikas Bhavan. PO, Thiruvananthapuram - 695 033, Kerala

Thiruvananthapuram
21/05/2024

Sd/-
CEO

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GENERAL TERMS AND CONDITIONS FOR E-PROCUREMENT

This e-EoI is being published by ANERT inviting Re-Invitation of Expression of Interest (EoI) for the Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram. The EoI is invited in two cover system through e-procurement portal of Government of Kerala (www.etenders.kerala.gov.in). The Prospective bidders willing to participate in this EoI shall necessarily register themselves with above mentioned e-procurement portal.

The EoI timeline is available in the critical date section of this EoI published in www.etenders.kerala.gov.in

1. ONLINE BIDDER REGISTRATION PROCESS:

1.1 Bidders should have a Class III or above Digital Signature Certificate (DSC) to be procured from any Registration Authorities (RA) under the Certifying Agency of India. Details of RAs will be available on www.cca.gov.in. Once, the DSC is obtained, bidders have to register on www.etenders.kerala.gov.in website for participating in this EoI. Website registration is a one-time process without any registration fees. However, bidders have to procure DSC at their own cost.

1.2 Bidders may contact e-Procurement support desk of Kerala State IT Mission over telephone at 0471- 2577088, 2577188, 2577388 or 0484 – 2336006, 2332262 - through email: helpeEoI@gmail.com/eEoIshelp@kerala.gov.in for assistance in this regard

2. ONLINE PROCESS:

The EoI process shall consist of the following stages:

i. Downloading of EoI document: The EoI document will be available for free download on www.etenders.kerala.gov.in. However, EoI document fees shall be payable at the time of bid submission as stipulated in this EoI document.

ii. Pre-bid meeting: (will be updated in ANERT website – www.anert.gov.in)

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iii. Publishing of Corrigendum: All corrigenda shall be published on www.etenders.kerala.gov.in and shall not be available elsewhere.

iv. Bid submission: Bidders have to submit their bids along with supporting documents to support their eligibility, as required in this EoI document on www.etenders.kerala.gov.in. No manual submission of bid is allowed and manual bids shall not be accepted under any circumstances.

v. In case bidder encounters any technical issues pertaining to e-Procurement system while acting on the EoI, computer screen shot of the error message with date & time stamp on the web-browser along with the query shall be e-mailed by the bidder to the help desk **(helpetenders@gmail.com/ etendershelp@kerala.gov.in)**, for resolution of the problem. At the same time, problem must be intimated to the concerned EoI Inviting Authority via email.

vi. The time taken to ascertain, evaluate and suggest a solution for the problem reported by bidder may vary from case to case. Hence bidders are advised to submit the bid **at least 2 working days before the due date** and time of bid submission to avoid any last-minute issues that may come up.

vii. Opening of Bid and Bidder short-listing: The single cover bids will be opened, evaluated and shortlisted as per the eligibility. Failure to submit the required documents online will attract disqualification. Price bids of the eligible bidder's will open the same day of opening and the work will be awarded.

3. DOCUMENTS COMPRISING BID:

3.1 (a) The First Stage - Pre- Qualification cum Technical Bid with Commercial terms

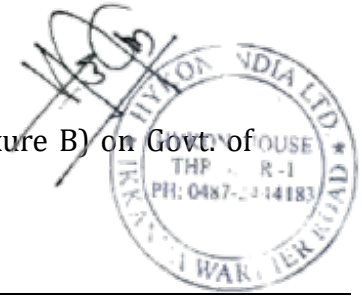
Technical proposal shall contain the scanned copies of the following documents which every bidder has to upload:

Cover 1 shall contain, Part-I (this document in PDF form)/scanned copies of:

i. EoI documents downloaded (signed with office seal)

ii. Summary of Bid qualification requirement (Annexure A)

iii. Undertaking of the agency in the prescribed format (Annexure B) on Govt. of Kerala stamp paper worth Rs.200/-



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iv. Power of Attorney for the authorised signatory to sign the documents on behalf on the Consultancy firm.
v. Copy of Registration Certificate of the bidder firm
vi. Copy of GST Certificate
vii. Copy of PAN card / TAN
viii. Documents proving Previous Experience and Pre-Qualification
ix. Declaration by the bidder (format as in Annexure – D)
x. Declaration of relationship with ANERT employee (format as in Annexure - E)
xi. Undertaking for No Blacklisting & No Banning (Annexure - F)

3.2 The department doesn't take any responsibility for any technical snag or failure that has taken place during document upload.

4. DOCUMENT FEES

4.1 The Bidder shall pay a fee of Rs. 50,000/-. MSMEs, MSEs or NSIC registered agencies are exempted from payment of this fee.

4.2 Online Payment modes: The fees can be paid in through e-Payment facility provided by the e-Procurement system. Bidders can make payment only via Internet banking facility.

State Bank of India Multi Option Payment System (SBI MOPS Gateway): Bidders are required to avail Internet Banking Facility in any of below banks for making EoI remittances in eProcurement System.

A) Internet Banking Options (Retail)			
1	Allahabad Bank	32	Kotak Mahindra Bank
2	Axis Bank	33	Lakshmi Vilas Bank
3	Andhra Bank	34	Mehsana Urban Co-op Bank
4	Bandan Bank	35	NKGSB Co-operative Bank
5	Bank of Bahrain and Kuwait	36	Oriental Bank of Commerce
6	Bank of Baroda	37	Punjab and Maharashtra Cooperative Bank
7	Bank of India	38	Punjab National Bank
8	Bank of Maharashtra	39	Punjab and Sind Bank

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9	Bassein Catholic Co-operative Bank	40	RBL Bank
10	BNP Paribas	41	Saraswat Cooperative Bank
11	Canara Bank	42	ShamraoVithal Cooperative Bank
12	Catholic Syrian Bank	43	South Indian Bank
13	Central Bank of India	44	Standard Chartered Bank
14	City Union Bank	45	State Bank of India
15	Corporation Bank	46	Syndicate Bank
16	Cosmos Bank	47	Tamilnad Mercantile Bank
17	DCB Bank	48	Tamilnadu Cooperative Bank
18	Dena Bank	49	The Kalyan Janata Sahakari Bank
19	Deutsche Bank	50	TJSB Bank
20	Dhanalaxmi Bank	51	UCO Bank
21	Federal Bank	52	Union Bank of India
22	HDFC Bank	53	United Bank of India
23	ICICI Bank	54	Vijaya Bank
24	IDBI Bank	55	YES Bank
25	Indian Bank		
26	Indian Overseas Bank		
27	IndusInd Bank		
28	Jammu & Kashmir Bank		
29	Janata Sahakari Bank		
30	Karnataka Bank		
31	Karur Vysya Bank		
B) Internet Banking Options (Corporate)			
1	Bank of Baroda	21	Laxmi Vilas Bank
2	Bank of India	22	Oriental Bank of Commerce
3	Bank of Maharashtra	23	Punjab & Maharashtra Coop Bank
4	BNP Paribas	24	Punjab & Sind Bank
5	Canara Bank	25	Punjab National Bank
6	Catholic Syrian Bank	26	RBL Bank

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7	City Union Bank	27	Shamrao Vitthal Co-operative Bank
8	Corporation Bank	28	South Indian Bank
9	Cosmos Bank	29	State Bank of India
10	Deutsche Bank	30	Syndicate Bank
11	Development Credit Bank	31	UCO Bank
12	Dhanalaxmi Bank	32	Union Bank of India
13	Federal Bank	33	UPPCL
14	HDFC Bank	34	Vijaya Bank
15	ICICI Bank	35	Axis Bank
16	Indian Overseas Bank		
17	Janta Sahakari Bank		
18	Jammu & Kashmir Bank		
19	Karur Vysya Bank		
20	Kotak Bank		

During the online bid submission process, bidder shall select ***SBI MOPS*** option and submit the page, to view the ***Terms and Conditions*** page. On further submitting the same, the e-Procurement system will re-direct the bidder to MOPS Gateway, where two options namely ***SBI*** and ***Other Banks**** will be shown. Here, Bidder may proceed as per below:

a) *SBI Account Holders* shall click ***SBI*** option to with its Net Banking Facility., where bidder can enter their internet banking credentials and transfer the EoI Fee and EMD amount.

b) *Other Bank Account Holders* may click ***Other Banks*** optionto view the bank selection page. Here, bidders can select from any of the 54 Banks to proceed with its Net Banking Facility, for remitting EoI payments.

**Transaction Charges for Other Banks vide SBI Letter No. LHO/TVM/AC/2016-17/47 – 1% of transaction value subject to a minimum of Rs. 50/- and maximum of Rs. 150/-*

** Bidders who are using Other Banks option under SBI MOPS Payment Gateway, are advised by SBI to make online payment 72 hours in advance before EoI closing time.*

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5. SUBMISSION PROCESS:

5.1 For submission of bids, all interested bidders have to register online as explained above in this document. After registration, bidders shall submit their Technical bid online on www.etenders.kerala.gov.in along with online payment of fees. They are also required to fill the form available in the ANERT website.

5.2 For page-by-page instructions on bid submission process, please visit www.etenders.kerala.gov.in and click "Bidders Manual Kit" link on the home page.

5.3 It is necessary to click on "Freeze bid" link/ icon to complete the process of bid submission otherwise the bid will not get submitted online and the same shall not be available for viewing/ opening during bid opening process.

6. BID VALIDITY

6.1 The bid will be valid for a period of 6 months from the date of opening of bids

7. DEVIATIONS

7.1 The offers with Deviations in Commercial terms and Technical Terms of the EoI Document are liable for rejection.

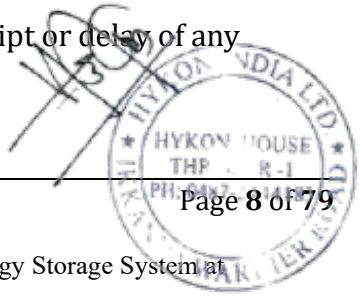
8. BLACK LIST

8.1 All the intending bidders shall agree that in the event of the documents furnished with the offer being found to be bogus or the documents contain false particulars, they shall be blacklisted for future EoIs/ association with ANERT

9. BIDDER'S LOCATION

9.1 The bidders are requested to furnish the exact location of their registered office with detailed postal address and pin code, telephone and fax nos. etc. in their EoIs to arrange inspection by ANERT, if considered necessary.

9.2 All communication shall be made to the registered email of the bidder in the e-tender systems and ANERT shall not be responsible for non-receipt or delay of any such communication.



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10. CORRUPT AND FRAUDULENT PRACTICES

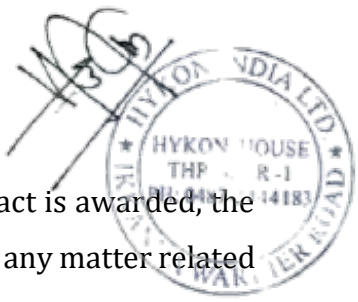
ANERT requires compliance with its policy in regard to corrupt and fraudulent/prohibited practices as set forth in this proposal. In further pursuance of this policy, the selected service Provider(s) shall permit ANERT or its representatives to inspect the accounts, records and other documents relating to the submission of the Proposal and execution of the contract, in case of award, and to have the records inspected by ANERT.

11. CONFLICT OF INTEREST

i. The service Provider(s) is required to provide professional, objective, and impartial services, at all times holding ANERT‟s interests paramount, strictly avoiding conflicts with other assignments or its own corporate interests, and acting without any consideration for future work. The consultant has an obligation to disclose to ANERT any situation of actual or potential conflict that impacts its capacity to serve the best interest of ANERT. Failure to disclose such situations may lead to the disqualification of the supplier or the termination of its Contract and/or sanctions by the Government.

ii. Relationship with the ANERT staff: a service Provider (including its subsidiaries /partners) that has a close business or family relationship with a professional staff of the ANERT who are directly or indirectly involved in any part of the preparation of the Terms of Reference for the assignment, the selection process for the Contract, or the supervision of the Contract, may not be awarded a Contract, unless the conflict stemming from this relationship has been resolved in a manner acceptable to ANERT throughout the selection process and the execution of the Contract. Any other types of conflicting relationships as indicated in the EOI

12. CONFIDENTIALITY



i. From the time the Proposals are opened to the time the Contract is awarded, the agency (ies) should not contact any of the officials of ANERT on any matter related

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to its Technical Proposal. Information relating to the evaluation of Proposals and award recommendations shall not be disclosed to the agency (ies) who submitted the Proposals or to any other party not officially concerned with the process, until the publication of the Contract award information.

ii. Any attempt by the agency (ies) or anyone on behalf of the bidders to influence improperly ANERT in the evaluation of the Proposals or Contract award decisions may result in the rejection of its Proposal and may be subject to the application of prevailing Government sanctions procedures.

iii. Notwithstanding the above provisions, from the time of the Proposals‟ opening to the time of Contract award publication, if a agency (ies) intends to contact ANERT on any matter related to the selection process, it should do so only in writing.

iv. The Bids should be submitted only through the e-EoI portal www.etenders.kerala.gov.in. Agency (ies) shall upload all the necessary documents in the e EoI portal before the last date & time for online submission. Proposal received after the submission deadline will be treated as non-responsive and will be excluded from further evaluation process.

v. Proposals must be direct, concise, and complete. ANERT will evaluate bidder's proposal based on its clarity and the directness of its response to the requirements of the project as outlined in this EoI document. Bidders shall furnish the required information on their technical and financial proposals in the enclosed formats only. Any deviations in format or if the proper information is not provided properly, the EoI will be liable for rejection. EoI Evaluation committee may seek clarification, if required, while evaluating the proposal.

vi. The technical bid opening date, time and the address are as stated in the EoI document.

13. APPLICABLE LAW

This EoI shall be governed by the laws and procedures established by Government of Kerala, within the frame work of applicable legislation and enactment made from time to time concerning such commercial dealings. Any default in the terms and conditions of the document by the service provider will lead to rejection of work order.

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14. AMENDMENT OF EOI DOCUMENT

At any time prior to the deadline for submission of the EoI, ANERT may for any reason, modify the EoI document. The amendment document/ corrigendum shall be notified through the website www.etenders.kerala.gov.in and such amendments shall be binding on all the bidders.

15. GOVERNMENT OF KERALA – CORRUPT AND FRAUDULENT PRACTICES

ANERT follows the policy of the Government of Kerala for anti-corruption and fraudulent practices to maintain sound procurement principles of open competition, economy and efficiency, transparency, and fairness. ANERT requires the agency (ies) to observe the following Government manuals (amended from time-to-time) during the selection process and in execution of such contracts The Kerala Financial Code (KFC), 2008 (7th Edition, 1st Edition was in 1963), The Stores Purchase Manual (SPM), 2013.

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AGENCY FOR NEW & RENEWABLE ENERGY RESEARCH AND TECHNOLOGY (ANERT)

Department of Power, Government of Kerala
Thiruvananthapuram, Kerala – 695 033;
www.anert.gov.in , projects@anert.in

E-EOI DOCUMENT

Re-Invitation of Expression of Interest (EoI) for the Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram

Ref. No.: ANERT-TECH/41/2024-PE1(RTS)

PART – 2: REGISTRATION PROCEDURE

Date of Publishing of Bids : - 21/05/2024

Last Date of Submission of Bids : - 31/05/2024

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SELECTION OF AGENCY

16. GENERAL

16.1 This Expression of Interest is being invited by ANERT from competent and eligible agencies/firms who fulfil the eligibility criteria prescribed in this document for the Pilot implementation of Battery Energy Storage System (ESS) with PCU for powering the full load of ANERT HQ.

16.2 The applicant should not have any pending litigation with ANERT or any other Government agency within the Country.

16.3 ANERT will not have any liability to any prospective Consultancy Company / Firm/ Consortium / Entity or person under any laws (including without limitation the law of contract, tort), the principles of equity, restitution or unjust enrichment or otherwise for any loss, expense or damage which may arise from or be incurred or suffered in connection with anything contained in this EoI document, any matter deemed to form part of this EoI document, the award of the Assignment, the information and any other information supplied by or on behalf of ANERT or its employees, any consultants or otherwise arising in any way from the selection process. ANERT will also not be liable in any manner whether resulting from negligence or otherwise however caused arising from reliance of any Applicant upon any statements contained in this RFP.

17. INTRODUCTION

ANERT is planning to implement a 100 kW Battery Energy Storage System (BESS) on pilot mode, which would function as a reference / demo installation for all the stakeholders in the State. INDIA is moving aggressively towards Renewable Energy and for enabling Round the Clock (RTC) from Renewables, some sort of Energy Storage System is necessary. The city of Thiruvananthapuram is being developed as Solar City, and mere Solarisation through On Grid systems may help us in attaining the tag, for RTC to be ensured, BESS is an essential component.

In this context, a working Pilot installation in the Solar City is proposed at ANERT HQ,

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The system must be capable of providing complete back up to the HQ building, replacing the current Diesel generator, Charge the BESS from the existing Solar Power plants and must also have the feature of exporting from the storage at Peak Hours if required, with prior permission from KSEBL or concerned authorities.

18. SCOPE OF WORK

The Scope of Supply & Work includes all design & engineering, procurement & supply of equipment and materials, testing at manufacturers works, multi – level inspections, packing and forwarding, supply, receipt, unloading and storage at site, associated civil works, services, permits, licences, installation and incidentals, insurance at all stages, erection, testing and commissioning of containerised Battery Energy Storage System and performance demonstration with associated equipment and materials on turnkey basis at ANERT HQ, Thiruvananthapuram, Kerala.

i. The system proposed must have provision to include minimum three sources of power – Solar, Utility power & Backup DG. The BESS system must have provision to manage the input source based on availability and must also be able to schedule based on ToD and should have scheduling capabilities.

ii. The system shall consist of a 100 kW Bi-Directional PCS + Provision for connecting existing Solar and 150 kWh Lithium Battery Storage System, which shall provide uninterrupted power to the output even at failure of 30% of the battery modules. The total system shall be designed for mobile or stationary use in a modular container divided into battery room and PCS room with all requisite fire protecting equipment and Air conditioner-based cooling. The proposed system must have a Power monitoring System (PMS) with to monitor and control all the functions of BESS.

iii. The system will replace the existing Diesel Generator which is powering the ANERT building on black outs and Power cuts. The same is currently connected to the AMF panel, which need to be decommissioned and connected to the new PCU. The output of the PCU is to be connected to this AMF panel, which will act as the primary source of powering the building.

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iv. The PCU part adopts advanced modular digital control technology, which optimizes the control performance, improves the reliability of the system, and realizes uninterrupted switching between modes such as grid-connected discharge, grid-connected charging, and system off-grid operation. The PCU system has a wide DC input range, which can better suit the charging and discharging requirements of different battery combinations. Under the same power output, the diversity of battery pack connections is increased, and the number of parallel battery packs is reduced. It can better manage the battery, improve the life of the battery and the economic benefits of the energy storage system.

v. The abandoned building near the electrical room can be used to house the BESS system. The requisite civil works for accommodating the system inside the building is under the scope of the bidder.

vi. The bidder is required to take necessary approvals from the Electrical Inspectorate and KSEBL as per norms to commission the system.

vii. All associated civil and electrical works are under the scope of the bidder.

19. QUALIFICATION CRITERIA

19.1.1 An undertaking in Rs.200/- Kerala stamp paper as per the format given in Annexure IC must be submitted along with e-EoI document.

19.1.2 Power of Attorney for signing the documents has to be provided by the bidder. The documents signed by this authority only will be accepted for Expression of Interest and other documents submitted under this project. If the agency desires to change this authority fresh PoA has to be submitted.

19.2 Eligibility Requirement

19.2.1 The detail of eligibility requirements is provided in the table below. The bidders are required to furnish the required supporting documents along with the Technical Bid.

S. No.	Criteria	Documents Required

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1.1	The Applicant should be a Legal Entity continuously operational since last 10 Years. i.e., Legal Entity of the firm i.e., • Sole Proprietorship Private Limited • Public Sector Undertaking • Limited Company • Partnership firm • LLP	a) In case of Company – Copy of Registration / Incorporation Certificate issued by MCA b) In case of LLP – Copy of Deed of Partnership along with registration certificate issued by MCA c) In case of Partnership – Copy of Deed of Partnership d) In case of Sole Proprietor – Duly notarized Undertaking from Sole proprietor
1.2	Bidder must have GST Registration	Copy of GST registration certificate with GSTIN.
1.3	The Bidder must have valid PAN Number	Copy of Pan Card
1.4	The bidder should have undertaken and completed at least one installation of BESS system within the Country	Details of installation available in India along with photographs and event log / summary of monitoring details available for the system.
1.5	If the bidder is not an OEM of BESS, authorization certificate along with a copy of agreement between bidder and OEM regarding service and maintenance support must be submitted. Further, at least two service engineers of the bidder must have completed factory training to ensure timely rectification of complaints at the site.	Copy of MoU between OEM and bidder along with authorisation for bidding in the tender. Copy of successful training completion by service engineers along with their EPF / ESIC details.
1.6	The bidder should have a dedicated office in Thiruvananthapuram and personnel with Graduate Engineering degree with prior experience in Solar / BESS / UPS to attend any complaints. In case, the bidder is not having a dedicated office, an undertaking to open	Details of office in Thiruvananthapuram and profile of Engineer available at office.

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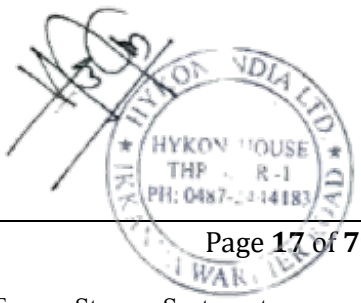
	an office within 30 days of award of work to be submitted.	
1.5	The Applicant entity should have a Minimum Average Annual Turnover of Rs. 5 Crores in any of two out of the last five financial years	Audited Statements of the Last 5 Financial years and Certificate as per Format
1.6	The bidder should be having unblemished record and must not be blacklisted or declared ineligible for corrupt & fraudulent practices by "any state/ central government" department/ company / entity" as on date of bid opening.	The bidder shall provide an Undertaking as per the format provided as Format A.



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CONDITIONS OF CONTRACT

20. GENERAL CONDITIONS

20.1 The bids should be submitted online at www.etenders.kerala.gov.in

20.2 The EoI should be as per the prescribed form which should be downloaded from the e-tender website. The cost of EoI forms if any, should be paid online, and once paid will not be refunded. EoI forms are not transferable. EoIs that are not in the prescribed form are liable to be rejected.

20.3 Intending bidders should submit their EoIs on or before the due date and time mentioned in the document. Late EoI will not be accepted.

20.4 EoIs subject to conditions will not be considered. They are liable to be rejected on that sole ground.

20.5 The final acceptance/rejection of the bids rests entirely with CEO, ANERT who do not bind themselves to accept the lowest or any EoI.

20.6 In case the contractor becomes insolvent or goes into liquidation, or makes or proposes to make any assignment for the benefit of his creditors or proposes any composition with his creditors for the settlement of his debts, carries on his business or the contract under inspection or behalf of or his creditors or in case any receiving order(s) for the administration of his estate are made against him or in case the contractor shall commit any act of insolvency or in case in which under any clause or clauses any act of insolvency or in case in which under any clause(s) of this contract the contractor shall have rendered himself liable to damages amounting to the whole of his security deposits, the contract shall, thereupon, after notice given by the Purchasing Officer to the contractor, be determined and ANERT may complete the contract in such time and manner and by such persons as ANERT shall think fit. But such determination of the contract shall be without any prejudice to any right or remedy of ANERT against the contractor or his sureties in respect of any breach of contract committed by the contractor. All expenses and damages caused to ANERT by any breach of contract by the contractor shall be paid by the contractor to ANERT and may be

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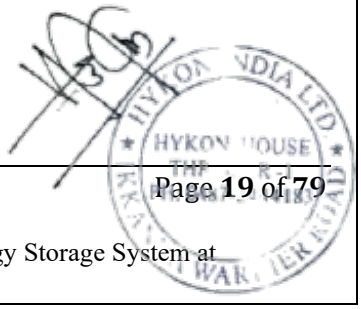
recovered from him under the provisions of the Revenue Recovery Act in force in the State.

20.7 In case the contractor fails to supply and deliver any of the said articles/services and things within the time provided for delivery of the same, or in case the contractor commits any breach of any of the covenants, stipulations and agreements herein contained, and on his part to be observed and performed, then and in any such case, it shall be lawful for ANERT (if they shall think fit to do so) to arrange for the purchase of the said articles and things from elsewhere of on behalf of ANERT by an order in writing under *the* hand of the CEO put an end to this contract and in case ANERT shall have incurred sustained or been put to any costs, damages or expenses by reason of such purchase or by reason of this contract having been so put an end to or in case any difference in price, compensation, loss, costs, damages, expenses or other moneys shall then or any time during the continuance of this contract be payable by the contractor to ANERT under and by virtue of this contract, it shall be lawful for ANERT from and out of any moneys for the time being payable or owing to the contractor from ANERT under or by virtue of this contract or otherwise to pay and reimburse to ANERT all such costs, damages and expenses they may have sustained, incurred or been put to by reason of the purchase made elsewhere or by reason of this contract having been so put an end to as aforesaid and also all such difference in price, compensation, loss, costs, damages, expenses and other moneys as shall for the time being payable by the contractor aforesaid.

20.8 Any sum of money due and payable to the contractor (including security deposit returnable to him) under this contract may be appropriated by the CEO or any other person authorised by ANERT and set off against any claim of ANERT for the payment of a sum of money arising out of or under any other contract made by the contractor with ANERT or any other person authorised by ANERT. Any sum of money due and payable to the successful tenderer from ANERT shall be adjusted against any sum of money due to ANERT from him under any other contracts.



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20.9 Every notice hereby required or authorised to be given may be either given to the contractor personally or left at his residence or last known place of abode or business, or may be handed over to his agent personally, or may be addressed to the contractor by post at his usual or last known place of abode or business and if so addressed and posted, shall be deemed to have been served on the contractor on the date on which in the ordinary course of post, a letter so addressed and posted would reach his place of abode or business.

20.10 **Conditions in the technical document, technical specifications and special conditions of this EoI document would override these General Conditions, wherever applicable.**

20.11 **ANERT, by notice sent to the successful, may terminate the contract, in whole or in part, at any time for its convenience. The notice of termination shall specify that termination is for ANERT's convenience, the extent to which performance of the Supplier under the contract is terminated, and the date upon which such termination becomes effective.**

20.12 **The EoI shall be opened at the time and date announced in the Kerala Tenders portal, and the date for opening of price bid will be updated in the portal in due course after evaluation of the technical bids.**

20.13 **In case any difference or dispute arises in connection with the contract, all legal proceedings relating to the matter shall be instituted in the Court within whose jurisdiction the CEO, ANERT voluntarily resides.**

20.14 **The Courts situated at the place where the headquarters of ANERT is situated viz, Thiruvananthapuram alone will have jurisdiction to entertain civil suits and all other legal pertaining to this contract.**

21. SELECTION PROCESS FOR BIDDER

There are two bid-opening events:

a) Pre-Qualification cum Technical Bid

b) Commercial Bid

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The Commercial Bids of only those bidders will be opened who score equal to or more than qualifying marks in Technical Bid as decided by ANERT.

21.1 PRE-QUALIFICATION PROCESS

a. The Bidders Pre-Qualification Proposal will be evaluated as per the requirements specified in the document and adopting the pre-qualification criteria spelt out. The Bidder is required to submit all required documentation in support of the pre-qualification criteria specified.
b. The Bidder shall meet all the mandatory compliance requirements. Failure in meeting the mandatory compliance requirements will result in disqualification of the Bidder.
c. An undertaking in Rs.200/- Kerala stamp paper as per the format given in Annexure B must be submitted online

21.2 Pre-Qualification Criteria

#	Criteria	Documents Required
1.1	The Applicant should be a Legal Entity continuously operational since last 10 Years. i.e., Legal Entity of the firm i.e., • Sole Proprietorship Private Limited • Public Sector Undertaking • Limited Company • Partnership firm • LLP	a. In case of Company – Copy of Registration / Incorporation Certificate issued by MCA b. In case of LLP – Copy of Deed of Partnership along with registration certificate issued by MCA c. In case of Partnership – Copy of Deed of Partnership d. In case of Sole Proprietor – Duly notarized Undertaking from Sole proprietor
1.2	Bidder must have GST Registration	Copy of GST registration certificate with GSTIN.
1.3	The Bidder must have valid PAN Number	Copy of PAN Card
1.4	The bidder should have undertaken and completed at least one installation of BESS system within the Country	Details of installation available in India along with photographs and event log / summary of monitoring details available for the system.

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1.5	If the bidder is not an OEM of BESS, authorization certificate along with a copy of agreement between bidder and OEM regarding service and maintenance support must be submitted. Further, at least two service engineers of the bidder, must have completed factory training to ensure timely rectification of complaints at the site.	Copy of MoU between OEM and bidder along with authorisation for bidding in the tender. Copy of successful training completion by service engineers along with their EPF / ESIC details.
1.6	The bidder should have a dedicated office in Thiruvananthapuram and personnel with Graduate Engineering degree with prior experience in Solar / BESS / UPS to attend any complaints. In case, the bidder is not having a dedicated office, an undertaking to open an office within 30 days of award of work to be submitted.	Details of office in Thiruvananthapuram and profile of Engineer available at office.
1.7	The bidder should be having unblemished record and must not be blacklisted or declared ineligible for corrupt & fraudulent practices by "any state/ central government" department/ company / entity" as on date of bid opening.	The bidder shall provide an Undertaking as per the format provided as Format A.

21.3 TECHNICAL QUALIFICATION

a. ANERT will review the Technical bids to determine whether the technical bids are substantially responsive. Bids that are not substantially responsive are liable to be disqualified at ANERT's discretion.
b. The bidder's technical solutions proposed in the bid document will be evaluated as per the requirements specified in this document.

21.4 Commercial Qualification

The Bidders shall quote for the entire scope of contract on an "overall responsibility" basis such that the total contract value covers all obligations of the Bidder mentioned in

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or to be reasonably inferred from the Bidding documents in respect of providing the services. The Financial Bid shall be submitted in the format given as in the e-portal.

Prices quoted by the Bidder shall remain firm during the entire contract period and shall not be subject to variation on any account except change in applicable tax rates. A Bid submitted with an adjustable price quotation will be treated as non-responsive and rejected.

22. EVALUATION PROCESS

ANERT shall evaluate the responses and scrutinize the supporting documentary evidence. Inability to submit the requisite supporting documents may lead to rejection. The decision of ANERT in the evaluation of proposals shall be final. No correspondence will be entertained outside the process of evaluation. Each of the responses/Proposals shall be evaluated as per the criteria and requirements specified in this tender document.

An Evaluation Committee will be constituted to evaluate the technical and financial proposals and recommend award of the works. The proposals will be evaluated in three stages.

22.1 Stage 1: - Pre-Qualification Cum Technical Bid

a. Each of the Pre-Qualification condition mentioned in Section24.1 is MANDATORY. In case the Bidder does not meet any one of the conditions, the bidder will be disqualified.
b. Response to the Pre-Qualification Requirements shall be evaluated in accordance with the requirements specified in this document; A checklist has to be created with proper page-wise indexing of all supporting documents
c. ANERT will review the technical bids of the short-listed bidders to determine whether the technical bids are substantially responsive. Bids that are not substantially responsive are liable to be disqualified.

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22.2 Stage 2: - Commercial Bid

a. The bid should include all taxes, duties, fees, levies, works contract tax and other charges as may be applicable in relation to the activities proposed to be carried out.

b. The taxes quoted in the offer should be as per the prevailing tax rates. Any subsequent increase in the tax rates or introduction of new tax will not be paid by ANERT. Similarly, if any benefits arising due to downward revision in tax rates, or any exemptions availed by the Bidders organization should be passed on to ANERT.

23 SPECIAL CONDITIONS

23.1 Each bidder should submit only one (1) bid. Any bidder who submits/participates in more than one bid for the work shall be disqualified.

23.2 If the due date for opening the EoI happens to be declared holiday, then the EoI will be received and opened on the very next day, for which no prior intimation will be given.

23.3 **During the EoI evaluation, ANERT may seek more clarifications/details from any or all of the bidders, if felt necessary.**

23.4 The ownership of all documents, reports, projects etc. being created as part of the assignment will vest with ANERT.

23.5 Any information furnished by the Bidder, if found to be incorrect at any stage, would render them being declared as ineligible.

23.6 Incomplete proposals may be summarily rejected. ANERT reserves the right to reject any or all the bid without assigning any reason thereof.

24. PAYMENT TERMS

24.1 No advance payment will be given. All the documents submitted should be certified by the concerned personnel of ANERT.

24.2 The terms of payment shall be:

i. Upon delivery of materials at the site, 60 % of the contract value against that site will be released as first part payment. The supplier shall submit the invoice for the materials (including serial numbers and delivery chalan) duly certified by

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the concerned District Office along with a report regarding the supply of materials.

ii. On completion of the installation of BESS system and filing application for connectivity, 20% of the contract value shall be released as second part payment. The supplier shall submit the invoice for the materials supplied and all documents related including the Project Completion Report to the completion of the work certified by the district office shall be submitted for the release of the amount. The PCR submitted will be used for conducting the pre-commissioning tests. Proof of the completion report submitted to the electrical inspectorate shall be submitted.

iii. After the Inspection and Approval of the Electrical Inspectorate, date of Energisation to the Grid by the DISCOM will be considered as the official Date of Commissioning (CoD) of the project and this will be treated as the commissioning of the system.

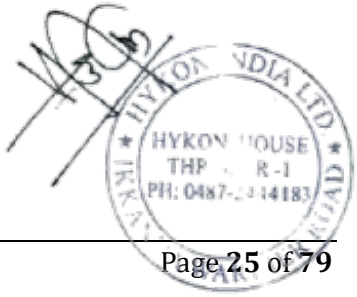
iv. On commissioning of the grid connected system, 10% of the remaining contract value will be released after proving the Key Performance Indexes. All documents related to the completion of the work including commissioning report shall be submitted for the release of the amount.

v. The balance 10% shall be retained as performance security and will be released in parts - 2% after 1 year of operation, 3% after 3 years of operation, 2% after 5 years of operation, 3% after 7 years of operation of warranty.

vi. The security deposit of 3% furnished along with the contract agreement shall be released on successful completion of supply, installation, and commissioning.

25. RIGHTS TO ACCEPT/REJECT ANY OR ALL PROPOSALS

ANERT reserves the right to accept or reject any proposal, and to annul the EoI process and reject all Bids at any time prior to award of Contract, without thereby incurring any liability to the affected Bidders or any obligation to inform the affected Bidders of the grounds for ANERT's action.



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26. FAILURE TO AGREE WITH THE TERMS & CONDITIONS /CONTRACT

Failure of the Bidder to agree with the Terms & Conditions of the EoI shall constitute sufficient grounds for the annulment of the award of contract. The contract may be awarded to the next most responsive bid among other bidders.

27. PERFORMANCE SECURITY

The successful bidder has to remit an amount @ 3% of the total amount quoted by the bidder per annum as performance security deposit in terms of e-Bank Guarantee/Deposit having validity for 3 years from the date of agreement. The bank guarantee/deposit will be released/refunded to the successful bidder after completion of the contract period after deducting the penalties if any.

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TECHNICAL SPECIFICATIONS

GRID BASED BATTERY ENERGY STORAGE SYSTEM

The Scope of Work covered under this specification shall be but not limited to the following.

28. INITIAL DESIGN AND FABRICATION

For the initial design and fabrication of the equipment, the Contractor shall

- Design, fabricate, and assemble a fully functional, transportable BESS that meets the requirements delineated herein.
- Fully document the design and expected performance of the BESS by means of documents, drawings, reports, data, and other submittals, as required herein.
- Perform factory acceptance testing of the BESS.
- Conduct design review meetings during initial design and fabrication, in Consultation with the ANERT with special reference to the geographical/climatic conditions of the Project site.
- Obtain site-specific data in preparation for developing installation implementation plans.
- Develop site installation/construction drawings, specifications, and calculations.
- A control system that provides control actions for all required operational and protective features with event logging facility.
- Supply any special equipment and tools required for maintenance of the BESS.
- Supply an initial complement of spare parts (at a to-be-determined level).
- Provide warranty for the entire BESS and its constituent equipment.

29. TRANSPORTATION AND SITE SETUP

Interconnection of the BESS with the grid is at the point of common connection (PCC). The Contractor shall be responsible for all equipment and installation activities up to the system side of the PCC. The Contractor will be responsible for completing the necessary work for the interconnection point.

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For installation/interconnection, the Contractor shall

- Develop drawings, specifications, and calculations for Contractor's scope of installation equipment and services (that is, up to the BESS side of the PCC).
- Obtain all permits necessary to transport the BESS to the site.
- Ship the BESS to the project site.
- Assemble BESS components on site to produce a functional system (as required).
- Perform start-up testing and SAT of the BESS.
- Provide on-site Contractor representative during installation and/or interconnection activities by the ANERT and during start-up and SAT of the BESS by Contractor.
- Obtain permits necessary to prepare the site and to install and interconnect the BESS to the grid.
- Provide a complete set of as-built drawings.
- Provide a training class for ANERT's technicians and maintenance personnel.

30. OPERATION AND MAINTENANCE

The operation and maintenance (O&M) of the BESS on comprehensive basis to the Contractor on turnkey for the 10 (Ten) years. The rates quoted by bidder for Comprehensive O&M of the Plant Facilities on yearly basis for 10 years shall be inclusive of the replacement costs if any.

31. DEFINITIONS

- PCC - Point of common connection – MSB Panel at ANERT HQ
- Utility - Kerala State Electricity Board Limited (KSEBL)
- Unit battery - A unit battery is the minimum field-replaceable stored energy component or assembly. It may consist of one or more electrochemical cells, electrically interconnected in any series and/or series-parallel configuration. A unit battery has one (and not more than one) set of positive and negative terminals, by which it is interconnected with the rest of the storage system.
- BESS - Transportable, containerized energy storage system based on commercially available electrochemical storage solutions, capable of receiving, it and / or balancing it.

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32. BESS INTERCONNECTION

The BESS will be interconnected with the KSEBL grid at PCC. It is expected that the PCC will be at the MSB panel at ANERT HQ. However, the same must be finalized by the Contractor after consultation with the KSEBL.

33. GRID CHARACTERISTICS

The BESS shall be capable of continuous operation under variable voltage, frequency and phase imbalance conditions at the PCC, as described in the Table below. Information on available fault current and other characteristics of the KSEBL grid will be provided by the KSEBL. The Contractor shall confirm, for each KSEBL site, that this information has been received and understood during the site-specific engineering phase.

Codes and Standards

IEC 62477	Secondary cells and batteries for renewable energy storage for On-grid applications: Non-chemistry Specific (applicable to all secondary battery types) | Safety requirements for power electronic converter systems and equipment
IEC 61000	Electro Magnetic Compatibility of Lithium-Ion Battery Energy Storage System.
IEC 62116	Utility-interconnected photovoltaic inverters - Test procedure of islanding prevention measures
IEC 61727	Photovoltaic (PV) systems - Characteristics of the utility interface
UL 9540 or (IEC TS 629335-1 + IEC 62933-5-2)	Electrical energy storage (EES) systems -Part 5-l: Safety considerations for grid-integrated EES systems - General specification / Standard for Energy Storage Systems and Equipment
IEC 62485-2	Safety requirements for secondary batteries and battery installations – to meet requirements on safety aspects associated with the erection, use, inspection, maintenance, and disposal: Non-chemistry Specific (applicable to all secondary battery types)
IEC 61508 IEC 62620 / IEC 62619	Functional Safety of Electrical/Electronic/Programmable Electronic Safety- related Systems: Applicable for all Battery Energy Storage Systems OR Secondary cells and batteries containing alkaline or other non-acid electrolytes – Safety requirements for secondary lithium cells and batteries, for use in industrial applications

Any other Standards that are mandatory as per Ministry of Power guidelines and not mentioned here, need to comply.

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34. TECHNICAL SPECIFICATION OF BATTERY ENERGY STORAGE SYSTEM

34.1 Procurement-Specific Ratings and Requirements

Item Description	Requirement
Battery Technology	Any battery technology with totally Maintenance Free suitable for operation in site-specific climatic conditions can be used with sufficient HVAC system in place and accessible from outside.
Rated No of Cycles (Minimum)	4000 cycles at rated energy capacity at 80%; Depth of Discharge (DoD) at 25°C and C/1 Rate of Discharge
Nameplate watt rating*, AC (A)	100 kW, continuous. The same shall comprise of two units of 50 kW each, for N+1 redundancy, with capability of extending up to 200kW in the future.
Nameplate watt-hour rating, ac (B)	150 kWh at 100 kW net ac output at the beginning of life and not less than 80% of this capacity at any point of time up to End of Battery Life. The battery Ah shall be 51.2V, 100 AH capacity and shall have provision to expand up to 225 kWhr, without any major hardware changes in the future.
System AC-DC-AC efficiency*:	> 90%
Use case requirements	Peak Management Voltage Support Frequency Regulation (demonstration only) Intermittent Resource Support
Peak Management	Yes Morning and evening (preference to evening) No. of days per year: up to 365 In the Peak Management Use Case scenario, power generated during the early and midday periods shall be stored in the BESS and released later in the day, during peak demand. In this case, the BESS shall be discharged in the Peak Limiting profile in the late afternoon. To the extent that the total energy dispatched does not

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Item Description	Requirement
	exceed the nameplate watt-hour rating, the BESS may be further discharged in Constant Power Mode after Part 01 (Solar PV Plant) is no more generating. One discharge cycle per day is envisaged in this use case.
VAR compensation /voltage support (VC/VS)	Yes
Intermittent resource support (IRS)	Yes This use case is envisaged to be employed during the day, primarily to support variations in Solar PV generation. The days for operation in this use case shall be determined in consultation with the ANERT/KSEBL.
Black Start Capability	Yes
Ventilation System inside the Container	Should be such as to maintain minimum and maximum Temperature as recommended by the manufacturer for optimum performance of the batteries on continuous basis.
Grid Charging	Allowed with the discretion of grid operator. If the BESS is charged through the grid, the energy consumed shall be considered part of the Auxiliary power and shall be metered.
Over Loading Capacity	(105%) : continuous operation (105%~120%) :10min (120%) : stop operation

34.2 Additional Information and Requirements for Frequency Regulation Use Case

This Clause provides information regarding the anticipated energy dispatch under the frequency regulation use case, as described in Clause 35.4. However, the same may be altered as per Control Strategy proposed so as to allow minimum Energy Imbalances.

Table 3: Additional Information and Requirements for Frequency Regulation Use Case

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Item Description: Frequency Regulation Use Case	Requirement
Maximum BESS power level for frequency regulation	Discharging: 50% of nameplate watt rating Charging: 50% of nameplate watt rating

34.3 Additional Information and Requirements for Intermittent Resource Support Use Case

This section provides information regarding the anticipated energy dispatch under the intermittent resource support use case, as described in Clause 35.5.

Table 4: Additional Information and Requirements for Intermittent Resource Support Use Case	
Item Description: Intermittent Resource Support Use Case	Requirement
Voltage flicker compensation:	Yes Compensate for all changes in intermittent resource output power level that exceed 10% per second and in which the new power level remains for at least 5 seconds. The Maximum system Power level for Voltage flicker compensation during discharging and discharging to be determined during detailed system design in terms of % of nameplate watt and VAR rating.
Ramp rate control: period of operation	To be specified in design
Ramp rate control (Power level of the BESS shall decrease at a linear rate)	75 kW/min Maximum BESS power level for charging and discharging to be determined at the time of detailed system design in terms of % of nameplate watt and VAR rating.
Intermittent resource generation following daily schedule and combined power output. Intermittent resource generation following: period of operation	Suggested Scheme (to be finalized during detailed design stage): Charging during morning up to noon and other off-peak periods Begin discharging in load following mode in the afternoon (coinciding with Peak Demand in the evening) Conclude discharging at 08:00

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	PM Combined Power output of Intermittent resources (Part 01 and Part 02) and BESS to be at unity power factor. Maximum BESS power level for charging and discharging to be determined at the time of detailed system design in terms of % of nameplate watt and VAR rating
Warranties	Seven (7) year parts and labour warranty for the entire BESS and its constituent equipment. 10-year warranty for Battery

34.4 Frequency Regulation

The BESS shall be capable of both charging and discharging, at the power level or levels specified in Table above, in response to an external signal (such as an automatic generation control signal). FR may occur for as much as 24 hours per day and for as much as 365 days per year. FR operation would not be simultaneous with any other real power discharge or charge, but it may occur simultaneously with supply of reactive power.

34.5 Intermittent Resource Support

The BESS will support the integration of solar PV plant into the grid by either eliminating or reducing undesirable voltage and power fluctuations on the KSEBL line or by firming the power delivered by the resource (that is, augmenting the power produced so that an expected output may reliably be achieved).

34.6 Nameplate Ratings

34.6.1 Overall System Real Power and Energy Ratings

During discharge, the BESS shall be rated to supply at the PCC the continuous net ac real power and ac energy output specified in *Table 2: Supply-Specific Ratings and Requirements* above. These ratings shall be referred to in all project documentation, including this specification, as the nameplate watt rating and the nameplate watt-hour rating. All nameplate ratings shall be achievable over the End of Battery life, as specified in this tender document. The nameplate watt rating and nameplate watt-hour rating shall be achievable during discharge for the full range of stated environmental conditions, provided that the battery is fully charged and the HVAC system (if

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incorporated in the BESS) has stabilized. In any case, the BESS shall be capable of being discharged at reduced power levels from that specified above. However, in no case will the energy discharged from the battery be greater than the nameplate watt-hour rating.

The Contractor shall clearly state in its O&M manual as well as during design review the expected efficiencies of the major subsystems (battery, PCS) as well as the expected losses from auxiliaries.

Note: There may be specific requirements regarding the attainable power level during charging, which the Contractor may need to identify in co-ordination with the grid operator/ANERT. However, unless otherwise specified in those sections, the real power level attainable during charging shall be at the Contractor's discretion, so long as the other charging requirements in this specification are met.

34.2.1 Overall System Reactive Power Rating

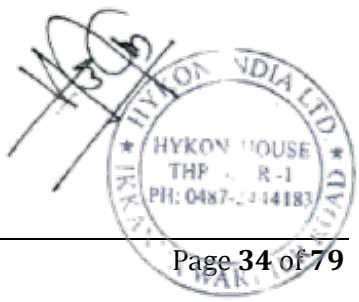
In accordance with the VAR-related control modes identified in Clause 23, the BESS shall be capable of dispatching both leading and lagging reactive power at the PCC, up to the rated VAR capacity specified in Table-2, regardless of whether the battery is being simultaneously discharged or charged. This rating shall be referred to in all project documentation, including this specification, as the nameplate VAR rating. The BESS shall be capable of simultaneously producing real and reactive power as long as no nameplate rating is exceeded. That is, the combination of operation at full nameplate watt rating and full nameplate VAR rating shall not exceed the nameplate VA rating.

35 BESS Use Cases

The BESS shall be capable of operating over its entire life in one or more of the use cases described in this section to meet the system requirements specified in Table-2, and further detailed in the tender document.

The possible use cases supported by this technical specification include the following:

- Peak management (PM)
- VAR compensation /voltage support (VC/VS)
- Frequency regulation (FR)



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- Intermittent resource support (IRS)

The use cases should not be interpreted as either operating modes or control functions. The requirements for the BESS control functions that are required to operate the BESS in a manner that supports these use cases as mentioned in this document. While Use cases describe what the BESS will be used for, whereas control functions describe how the equipment will be operated to achieve those uses. Mapping of the control functions to the use cases is provided in Clause 38.

The purpose for defining and describing the use cases is to provide the Contractor with essential information needed to ensure that the BESS will have the desired life and performance characteristics. In particular, the requirements listed in this section should support Contractor's efforts to accomplish the following:

- Determine other BESS subsystem performance capabilities
- Understand the various combinations of uses that the KSEBL may exercise

The operation of the BESS at the KSEBL site may also include some combination of the above use cases. The possible (or required) combinations are described in Clause 37.

Each use case description in the following subsections includes a capability requirement for a number of cycles and days per year of operation in that use case. On days of the year in which a particular use case is not being used, the BESS shall be considered available for operation in some other use case, so long as the nameplate ratings specified elsewhere are not exceeded. Simultaneous operation in two or more of the real power use cases (PM, FR, IRS) is not required, but it may be optionally provided at the discretion of the Contractor, so long as no nameplate rating is exceeded. In accordance with Clause 37, simultaneous operation in the VC/VS use case together with one of the other use cases is a required capability.

Important Note: The various use cases described below represent a wide range of battery and PCS capabilities. The BESS shall be designed to accommodate the most stringent of the intended operation scenarios so that any of the scenarios can be exercised without exception. The use cases described in this Clause 37 presuppose the provision of a suitably designed control system, as outlined in Clause 40 of this specification. Accordingly, the descriptions of the use cases must be read and understood in conjunction with the description of the control functions specified in Clause 40.

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35.1 Peak Management (PM)

In the PM use case, the BESS is controlled to reduce peak power demand on the KSEBL feeder to which the BESS is connected. The BESS would be discharged at any power level up to the maximum power level specified as the nameplate watt rating. The BESS shall support operation in this application for up to the number of times per year specified, if any, in Table-2. In this Use case, each daily operation is expected to consist of one discharge and charge cycle, in either a variable or a constant power output, as described below.

In that event that two discharges are required in a day, the maximum number of days per year that the system would operate with two daily discharges is one-half the number of days in single-daily-discharge mode. In the case of two discharges in a single day, it may be desirable for the KSEBL to charge the battery between the two discharges (opportunity charging) and the BESS shall permit such operation. For example, a morning and afternoon peak may be shaved, with a partial (or complete) recharge taking place during the day between the morning and evening peaks.

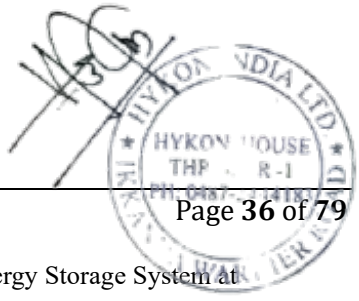
Note: Specification of the number of days per year for the two-daily-discharges scenario at half those for the single-daily-discharge mode assumes that opportunity charging between daily cycles would fully restore battery capacity, so that each of the two discharges in the day would take place at the full nameplate watt-hour rating. If each discharge were less than the nameplate watt-hour rating, the PM operation in a two-daily-discharges scenario could potentially occur on more days per year.

Two different power dispatch profiles during discharge are specified, as described in the following two subsections.

i. Constant Power

The BESS is discharged at a single, constant power level for a specified duration. The dispatch power level may be any value less than or equal to the nameplate watt rating. The duration of the constant power discharge may be any period of time (up to six hours), so long as the total energy dispatched to the load does not exceed the nameplate energy rating of the BESS or exceed any other operational or safety limits.

ii. Peak Limiting



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The BESS is discharged at a varying power level proportional to the amount by which the actual load on the KSEBL feeder or substation transformer exceeds a desired value. The dispatch of power from the BESS in this case would mirror the shape of the KSEBL load (which may be, generally, sinusoidal in shape). The duration of this discharge may be several hours, so long as the total energy dispatched to the load does not exceed the nameplate energy rating of the BESS or any other operational or safety limits. As an example, with the BESS installed at a distribution substation, the load on the secondary winding of the substation transformer would be monitored and sent to the control system. The KSEBL operator would enter a set point, and the BESS would operate so as to prevent or reduce overloading of the transformer by serving some (or all) of its entire peak load.

Actual discharge profiles may vary with respect to overall shape, number of peaks and valleys per day, ramp rate, and overall duration of discharge, including possible standby time between successive peaks. The Contractor shall specify all operational and warranty-specific limitations on the use of the battery for the two different power dispatch profiles.

35.2 VAR Compensation/Voltage Support (VC/VS)

The BESS shall be capable of supporting voltage on the KSEBL feeder to which it is connected by the injection or absorption of both real and reactive power (VARs). This operation shall be possible during real power discharge or charge and during standby. The operation may be dynamic (continuously varying reactive/real power output) or static (operation at a fixed power factor).

In this use, it shall be possible for the KSEBL to determine the priority of operation and/or the level of reactive power support desired, including different levels for leading and lagging VARs, as well as precedence of reactive power over real power or real power over reactive power. Specifically, it shall be possible to give either real power or reactive power the higher priority, so long as the nameplate VA rating (see Clause 71.6.271.6.2) is not exceeded. In this use, the BESS shall be capable of responding to both real-time and pre-programmed control signals (see Clause 74).

i. VAR Compensation Option

The intent of VAR Compensation is that the BESS be capable of carrying out the basic functions of a synchronous generator having the option to include injection voltage

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control/reactive power consumption and limitation of active power when the effect of the reactive power is not sufficient. It uses a progressive curve, whereby the higher the deviation is from the target voltage, the greater is the effort to correct the deviation. It may be necessary to automatically disable over frequency or under frequency protection during operation in VC/VS mode. The Contractor shall coordinate this with the KSEBL.

35.3 Frequency Regulation (FR)

The BESS shall be capable of both charging and discharging, at the power level or levels specified in Table-2, in response to an external signal (such as an automatic generation control signal). FR may occur for as much as 24 hours per day and for as much as 365 days per year. FR operation would not be simultaneous with any other real power discharge or charge, but it may occur simultaneously with supply of reactive power.

35.4 Intermittent Resource Support

The BESS will support the integration of solar PV plant into the grid by either eliminating or reducing undesirable voltage and power fluctuations on the KSEBL feeder or by firming the power delivered by the resource (that is, augmenting the power produced so that an expected output may reliably be achieved).

In IRS use, the BESS shall respond to one of two classes of controlling signals: (1) the voltage at the electrical connection point or PCC and (2) the output power level of the intermittent resource (or some other power level signal). Several scenarios are possible, as described in the following paragraphs.

i. Voltage Flicker

In a voltage flicker control scenario, the BESS shall be dispatched to control rapid but small (such as 2% to 5%), potentially frequent changes in voltage on the utility feeder that produce voltage flicker at other customer loads on the feeder. The flicker standard to be implemented shall be determined during detailed design stage in consonance with the regulation of the jurisdiction having authority.

The control signal is the power output level of the solar PV plant. Drops in power shall be compensated by a discharge of the BESS, whereas increases in power shall be compensated by a charge of the BESS in accordance with a specified scheme (to be finalized during detailed design stage). The BESS shall respond instantaneously for each

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qualifying power level change and then immediately begin a ramp to zero power with a specific ramp rate.

Depending on a number of factors—including the size of the intermittent resource compared to the native feeder load, the impedance of the feeder, and the location of the BESS and the intermittent resource relative to one another—voltage flicker may be improved by the BESS providing either real or reactive power or both in response to either variations in the voltage at the electrical connection point or variations in the output power level of an intermittent resource. The output of the BESS (either discharge or charge) shall be instantaneous in response to a change in the monitored quantity, followed by a ramp to zero over a settable period of time.

ii. Ramp Rate Control

In a ramp-rate-control scenario, the BESS shall be dispatched to limit the rate of power change up or down (ramp rate) from the intermittent resource so that large step changes in power output are smoothed over time to produce a controlled ramp (up or down). Ramp rate control is effectively the same as voltage flicker control from the point of view of power in or out of the storage system except that the goal, for example, is to limit the operation of automatic voltage regulators and tap changers on the feeder or at the substation that are caused by relatively larger changes in output of the intermittent resource.

The control signal is the power output level of solar PV plant. Drops in power shall be compensated by a discharge of the BESS, whereas increases in power shall be compensated by a charge of the BESS in accordance with a specified scheme (to be finalized during detailed design stage). The BESS shall respond instantaneously for each qualifying power level change and then immediately begin a ramp to zero power with a specific ramp rate.

The BESS shall be dispatched in response to variations in power at the point of concern, whether it is the feeder at the electrical connection point or the output terminals of the intermittent resource. The output of the BESS (either discharge or charge) shall be instantaneous in response to a change in the monitored quantity, followed by a ramp to zero over a settable period of time. The maximum output (either discharge or charge) of the BESS shall be specified in the detail design Scheme.

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iii. Generation-Following

In the generation-following scenario, the BESS shall be dispatched to follow the output power from the intermittent resource(s) part of the Plant Facilities to compensate for its variability. The output from the BESS shall be controlled to produce a resultant power output level from the same. The desired level of the resultant power shall be settable. The BESS shall charge the battery with energy from the renewable sources, as determined in consultation with the Owner. The BESS shall discharge the battery so that the output of solar PV plant plus battery is a constant (see Table -2). During the recharge operation, the charging power level should be such that the net output of the array is kept more or less constant (that is, array power momentary dropouts should be compensated to the extent possible during recharge).

In the most general case, both discharge and charge operations will occur depending on the maximum power output capability of the solar PV plant relative to the battery storage system capability, the desired power set point, the window of operation of the storage, and the variations in output of the resource. Actual discharge profiles in the IRS use case may vary with respect to overall shape, number of peaks and valleys per day, ramp rate, and overall duration of discharge, including possible standby time between successive discharges or charges. The Contractor should specify all operational and warranty-specific limitations on the use of the battery for different dispatch profiles.

35.5 Combination Use Case Requirements

On days of the year in which a particular use is not active, the BESS shall be considered available for other uses, so long as the nameplate ratings specified elsewhere (see Clauses 37) are not exceeded. Simultaneous operation in two or more of the real power use cases (PM, FR, IRS) is not required but may be optionally provided at the discretion of the Contractor, so long as no nameplate rating is exceeded. In accordance with Section simultaneous provision of VAR support (VC/VS) with other use cases is a required capability. The BESS shall be capable of operating in several combinations of use cases, like Peak Limiting plus Frequency Regulation, Peak Limiting plus Voltage Flicker, Peak Limiting plus Ramp Rate Control. On any given day of the year, only one of these two dispatch profiles would be executed.

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35.6 Charging Requirements

The control system shall allow the KSEBL to initiate a specified or programmed charge cycle. The Contractor shall work with each KSEBL to ensure that the KSEBL's requirements are met to the full capability of the BESS and that the battery is properly charged manner describe all charging requirements and shall guide the user in ensuring that charging of the battery is properly carried out.

36 DESIGN, FABRICATION, AND CONSTRUCTION REQUIREMENTS OF BESS

36.1 General

The methods and materials specified in this technical specification are intended to represent minimum requirements. Reliance thereon shall not diminish the responsibility for meeting performance and other requirements stated in this technical specification.

The design of the BESS shall incorporate the principle of modularity, with a view to reducing life-cycle costs and ease of replenishment of storage capacity while facilitating ease of maintenance, space requirements, and reliability. The design should also facilitate rapid and easy replacement of the unit batteries without significant downtime. Specifically, the BESS should be designed so that battery replacement is not necessitated within the first five years of operation considering the remoteness of the project sites. Overall, the design philosophy shall be to minimize and optimize all costs to the ANERT, not simply initial capital costs or low maintenance costs.

Life-cycle costs include the following: initial system cost, unit battery replacement cost, periodic equipment upgrades, maintenance costs, auxiliary system energy consumption, charging energy costs (that is, costs due to overall battery and PCS losses), and any other contributors to life-cycle energy cost.

36.2 System-Level Design and Performance Requirements

36.2.1 The major equipment items shall include a battery, battery management system (BMS), PCS, output/isolation transformer, and SCADA which is to be integrated with the solar plant SCADA system defined elsewhere in this document. Additional equipment shall include HVAC, wiring, connectors, protective devices, grounding, junction boxes and enclosures, instrumentation, enclosures, and all other items needed for a fully functional, grid-interactive BESS to meet the

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requirements set forth in this specification. All systems and components of systems—including electrical storage unit, switching devices in the PCS, components of monitoring and control systems, and components of auxiliary systems— must use proven and previously demonstrated technology. Electrochemical cells, PCS switching devices, and control system hardware and software must be commercially available and in use for other markets. Electrochemical cells must be replaceable (in small orders) with a maximum six-week lead time under normal business conditions. Designs using experimental or otherwise undocumented components are not permitted.

36.2.2 The BESS shall be characterized using language and methods consistent with IEEE 1679, "Recommended Practice for the Characterization and Evaluation of Emerging Energy Storage Technologies in Stationary Applications."

36.2.3 The BESS shall be IEEE 1547 (Standard for Interconnecting Distributed Resources with Electric Power Systems)-compliant, where possible.

36.2.4 The prudent design of the BESS should include careful consideration of resonance and Ferro-resonance.

36.3 Containerization and Transportability

36.3.1 The BESS shall be containerized, using either standard International Organization for Standardization (ISO) 668 shipping containers or custom-designed power equipment centres. The container or containers shall be designed to be drop-shipped onto a properly prepared pad or foundation (such as compacted soil, concrete pad or platform, and so on). When fully installed, all BESS components—including battery racks all auxiliaries, such as HVAC and fire suppression systems, (preferably Heptafluoropropane), step-up transformers to match grid, ac switchgear, and so on—and tools shall be enclosed in (or on) the containers, even if certain components must be separately shipped and installed at the site.

36.3.2 Containers shall be designed and constructed to meet IP54 and NEMA 3R requirements, which protect the equipment inside from harmful effects resulting from the ingress of water, dirt, dust, and wind. The design and installation of Containers shall meet relevant regulatory requirements for occupational safety and health under national and state legislations.

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36.3.3 All containers and packaging of separately shipped components shall be suitable for land or sea transport, including offering suitable protection of the equipment inside against damage from weather and vibration or shock from transportation.

36.3.4 The containers and their contents shall be designed to be easily prepared for transport, shipped, connected and operated at site. The Contractor shall ensure that all required bracing and shipping stabilization equipment to enable transport is either kept at hand or brought to the site in a timely manner before transport.

36.4 Additional transportability requirements and/or clarifications

36.4.1 In designing for transportability of the lithium-ion batteries, the Contractor shall follow the relevant guidelines (Sub-section 38.3) set forth in the United Nations document "Recommendations on the Transport of Dangerous Goods—Manual of Tests and Criteria" (ST/SG/AC.10/11/Rev.5), with specific reference to obtaining UN38.3 and UN3480 certifications at the battery module and/or container level.

36.4.2 The BESS container or containers shall be of a size and weight to be capable of being transported to project sites with due consideration for the load bearing restrictions imposed by bridges, if any, and rarefied atmospheric conditions in the region.73.4.3 Containers shall incorporate standard lugs or other means for lifting by crane or shall be properly palletized for movement with forklift trucks, or both.

36.5 Design Life and Life-Cycle Costs

36.5.1 End of battery life - End of battery life is that point in time when the BESS can no longer meet the power and/or energy discharge requirements of this Specification due to age or non-repairable malfunction of the battery subsystem, and/or non-replaceable components. When the system is no longer able to provide these requirements, the system has reached its end of life. Battery End of life shall be not less than 10 years from the date of Commissioning.

36.5.2 It shall be the responsibility of the Contractor to make periodic replacements/replenishments of unit batteries, if and when required, up to the End of Battery Life as described above. Outage time as a result of replacement

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will also be counted as an "Accountable BESS Outage" for the purpose of computing BESS Availability.

36.6 Reliability, Availability, and Operability of the BESS

The BESS shall be designed for high reliability, defined in the following terms:

Starting reliability: (99% starting reliability means that the unit shall start in 99 of 100 attempts)

Mean-time-to-repair- The time taken from the time of notification of a need for repair to the time of completion of repairs (that is, inclusive of time for arrival of spare parts and repair personnel at the location of the BESS)

Availability

Availability is the percentage of hours that the BESS is available during the year. The availability guarantee shall begin upon facility commissioning. Annual availability shall be calculated as follows:

$$[1 - \left(\frac{\sum Accountable\ BESS\ Outage\ duration\ in\ hours}{8760}\right)\ ] \times 100$$

Where:

Accountable BESS outages are outages caused or necessitated by the BESS equipment that result in reduced capacity or loss of essential function of the BESS. These outages may be initiated by failure of components, loss of battery capacity (to the extent that End of Battery Life is not reached), operation of protective devices, alarms, or manual action. Such outages include both forced outages due to equipment problems and scheduled outages for BESS maintenance.

Accountable BESS outage duration is the elapsed time of accountable BESS outages from the instant the BESS experiences reduced capacity or is out of service to the instant it is returned to service or full capacity. If the BESS experiences reduced capacity but is determined by the ANERT to be available for service even if the ANERT elects not to immediately return the equipment to full capacity, such time will be discounted from the outage duration.

- The Procurement specific nameplate ratings shall be as defined in Clause 37 above. The BESS shall be considered to be under an accountable outage if any of those ratings

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cannot be met. The BESS shall also be considered to be under an accountable outage if a scheduled (or required) charge cycle cannot be completed.

- The data required for assessment of the availability of the BESS shall be collected through the Plant's integrated SCADA system.

36.6.1 It shall be possible to fully remove, repair, and replace in the field any failed or poorly performing component within a day, assuming that spare parts, test equipment, and maintenance personnel are on the site. This capability shall be demonstrated in the factory acceptance test (FAT) for unit batteries and other key components.

36.6.2 The BESS shall be capable of unattended operation, with provision of remote monitoring and control.

36.7 Planned Maintenance Outage

Up to 5 weeks each year will be permitted for a planned outage to perform any required maintenance. The Contractor shall provide a guarantee for the maximum length of time required for this type of maintenance operation.

36.8 Battery Subsystem Design Requirements

36.8.1 Electrochemical Cells

Only cells that are commercially available or for which suitable (not necessarily identical) replacement cells can be supplied on short notice will be allowed. *For both premature cell failures and end-of-battery-life replacement, the Contractor shall guarantee cell availability and the length of down time (hours or days) required to replace cells.* The cells may be supplied as separate, individual units or as group of cells combined into modules. The cells shall meet the seismic requirements for the planned location of the BESS. Cell and module design shall accommodate the anticipated vibrations and shocks associated with the transportation of the BESS and shall resist deterioration due to vibrations resulting from the same. Associated hardware and paraphernalia should also be able to withstand the rigors of transportation. The transport plan shall be shared with the ANERT and approved prior to dispatch.

36.8.2 Labelling of the cells or unit batteries shall include manufacturer's name, cell type, nameplate rating, and date of manufacture, in fully legible characters. All cells shall

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be traceable to the point of origin for purpose of addressing safety issues.

36.8.3 Electrochemical Storage System

36.8.3.1 The storage system may consist of one or more-unit batteries. If the storage system consists of more than one unit battery, these may be electrically interconnected in any desirable series and parallel configuration to achieve the overall system storage and power rating requirements.

36.8.3.2 Each electrically series-connected string of unit batteries shall include a means of disconnecting the string from the rest of the system and of providing over-current protection (during a fault). The means of disconnect shall provide for a physical interruption of the string electrical circuit, which shall be visible to anyone servicing the individual unit batteries in the string and shall be capable of being locked or secured in an open position.

36.8.3.3 If the disconnect means consists of removal of a unit battery, the storage system shall be designed to allow maintenance personnel to determine that there is no current flowing in the string and provisions to ensure that the PCS is off before the unit battery is removed. Procedures for maintenance and/or field replacement of unit batteries shall neither require nor recommend removal of the unit battery without first ensuring that no current is flowing in the string circuit.

36.8.3.4 Over-current protection, whether on the ac or dc side, in paralleled unit battery strings shall be sized and coordinated so that currents from other strings do not contribute to a fault in any unit battery string.

36.8.3.5 Where appropriate, dc wiring shall be braced for available fault currents. Protection shall include a dc breaker, fuse, or other current-limiting device on the battery bus. This protection shall be coordinated with the PCS capabilities and battery string protection and shall take into account switching or other transients and the inductance/resistance (L/R) ratio at the relevant areas of the dc system. The Contractor shall produce a fault analysis and protection coordination study for the battery dc subsystem during final design. *The ANERT reserves the right to withhold permission to ship the BESS until the fault analysis has been satisfactorily completed.*

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36.8.3.6 Cells, wiring, switch gear, and all dc electrical components shall be insulated for the maximum expected voltages plus a suitable factor of safety.

36.8.3.7 The battery system shall include a system to detect and alarm excessive ground leakage current levels. Ground fault detection shall be enabled for the container or, if more than one electrical series string is installed in the container, for each series string. The detection/trip level shall be field adjustable. The Contractor shall have overall responsibility for the safety of the electrical design and installation of the battery, as well as all aspects of the BESS.

36.8.3.8 The battery system shall include a monitoring/alarm system and/or prescribed maintenance procedures to detect abnormal unit battery conditions and notify proper personnel of their occurrence.

36.8.3.9 Abnormal conditions shall include but not be limited to (1) weak unit batteries that could reasonably be expected to fail to provide rated capacity upon full discharge, (2) high- resistance or open-unit batteries, (3) high-resistance or open external unit battery connections, (4) unit batteries with temperatures exceeding operating thresholds, and (5) internally shorted unit batteries. Unit battery monitoring, whether automatic or manual, should be specified to alert the proper personnel in a timely manner that an abnormal unit battery condition exists or may exist. All alarms shall be part of the control system and shall include remote display or annunciation capability.

36.8.3.10 The unit batteries shall be racked or shall be housed in stackable modules. The unit batteries or cells shall be arranged and installed to permit easy access for equipment and personnel. The moveable units shall be arranged and installed to permit easy access for equipment and personnel to carry out unit removal and replacement activities. For all systems, it shall be possible to remove and replace a prematurely failed unit battery or cell (as appropriate), when system performance specifications cannot be met. The lengths and widths of all aisles and spaces into which personnel may enter in the field for operations and/or routine or unscheduled maintenance

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purposes, as well as egress routes from these aisles and spaces, shall conform to applicable codes and standards. All racks and metallic conductive members of stackable modules shall be grounded to earth. Racks shall meet the seismic load and road vibration requirements and shall include means to restrain cell movement during seismic events and transport. The Contractor shall furnish analyses and/or other data that show that the rack and cell designs are designed to meet all potential seismic and transport vibration requirements.

36.8.3.11 The design of all modules and racks shall specifically account for the anticipated vibrations and shocks associated with the periodic transportation of the BESS.

36.8.3.12 Cell/Battery Auxiliary Systems

The cells and battery system shall be supplied with all required and/or recommended accessories. This includes inter-cell connectors and monitoring devices for cell temperature and cell voltage, if required.

36.9 Power Conditioning System Design Requirements

36.9.1 General

36.9.1.1 The PCS is the interface between the DC battery system and the AC system and provides for charging and discharging of the battery. The PCS may consist of one or more parallel units. Paralleling may be at the DC or AC terminals. Line-commutated systems or systems that require the presence of utility voltage or current to develop an AC output are not acceptable. The PCS circuit topology shall be voltage source (that is, the PCS at its AC terminals shall appear to the grid as a voltage source rather than as a current source and, at its DC terminals, shall be capable of reversing current flow in the battery without reversing the polarity of the DC bus).

36.9.1.2 All load-carrying cables within the PCS subsystem shall have a suitable load factor of safety. The PCS shall preferably be air-cooled suitable for the site climatic conditions, with final rejection of waste heat to the ambient air. The air-handling systems shall include filtering that is adequate to keep dust from the interior of the PCS system.

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36.9.1.3 The PCS modules shall be housed inside the containerised solution, with provisions to prevent moisture condensation and to prevent the entrance of water, airborne salt or dust, rodents, insects, and/or similar materials or pests into air intake/exhaust ports.

36.9.2 **Power Conditioning System Rating**

The PCS shall be capable of delivering Real power as specified in Table-2. This rating shall be referred to in all project documentation, including this specification, as the nameplate VA rating. To account for losses in the PCS, the DC input power to the PCS will be higher than the rated PCS output power. The available DC input power will be the BESS nameplate watt rating divided by the PCS full load efficiency (as specified in the datasheet) during discharge. The PCS shall be directly accessible and modular type with multiple number of 50 kW capacity each and the system shall have provision to enhance capacity up to 200 kW, without making any major modifications.

36.9.3 Power Conditioning System Protection and Control

The PCS, in conjunction with the control system, shall be capable of completely automatic, unattended operation, including self-protection, synchronizing and paralleling with the grid, and disconnect. The control of the PCS shall be integrated with the overall BESS controls. The PCS shall include all necessary self-protective and self-diagnostic features to protect itself from damage in the event of component failure or the excursion of operating parameters beyond a safe or expected range. This includes excursions due to internal or external causes. The self-protective features shall prevent the PCS from being operated in a manner that may be unsafe or damaging. Faults due to malfunctions within the PCS, including commutation failures, shall be cleared by the PCS over-current protection device(s).

36.10 Power Conditioning System AC Interface with AC bus

36.10.1 The BESS must meet applicable harmonic current and voltage specifications in accordance with applicable standards. Harmonic suppression may be included with the PCS or at the BESS AC system level. However, the Contractor shall design the BESS electrical system to preclude unacceptable harmonic levels in

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the BESS auxiliary power system.

36.10.2 In addition to interconnection standards specified in this document, there may be specific requirements for interconnection, which need to be ascertained by the Contractor in coordination with the distribution utility at each site. The PCS transformer may be used to aid in harmonic cancellation and may include tertiary windings to supply BESS auxiliary power requirements. The transformer must be dry type. The PCS shall include provisions for disconnect on both its AC and DC terminals for maintenance work. Conductor separation must be clearly visible. The detailed maintenance procedure shall be addressed in the O&M manual.

36.10.3 Electromagnetic Interference

The PCS shall not produce electromagnetic interference (EMI) that will cause mis-operation of instrumentation, communications, or similar electronic equipment within the BESS.

36.10.4 Islanding

The PCS design shall include provisions to limit run-on and islanding as per applicable standards upon the loss of grid. This capability shall be demonstrated to the ANERT's satisfaction during the FAT.

36.11 AC System

The BESS AC system includes all switch gear, bus work, cable, connectors, transformers, and protective relaying required for connecting the BESS at the PCC. The Contractor shall design, procure, ship, and assemble on-site all ac interconnection equipment on the BESS side of the PCC. On-site assembly of Contractor supplied equipment shall be coordinated with the utility. The Contractor shall design, fabricate, ship and install all cabling required for connecting the BESS to the PCC. The BESS AC system shall include potential transformers, current transformers, and any other metering equipment so that the performance monitoring and documentation requirements of this specification can be met. Metering accuracy shall meet applicable standards.

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36.12 Protection and Control

36.12.1 The power system (PCS), AC and DC switchgear/protective devices) shall be designed to provide safe, reliable operation with minimum interruption. Reliable operation shall be supported by a sensitive and properly coordinated protection system. The protection system shall be capable of monitoring significant operating parameters and sensing all abnormal operations or fault conditions. It shall isolate the faulted circuits or components without causing damage to other circuits and components of the system. The protection system shall also provide adequate indications and/or alarms for identification of the faulted circuits, components, and abnormal conditions, allowing preventive action and rapid restoration of service.

36.12.2 The grid may have its own protective schemes at the point of common connection (PCC) that will be the responsibility of the Contractor to be fulfil.

36.12.3 Integration of the protective relaying and metering into the BESS controls shall not circumvent normal protective relaying. Protection shall not be interlocked with the position of any isolating/interrupting devices.

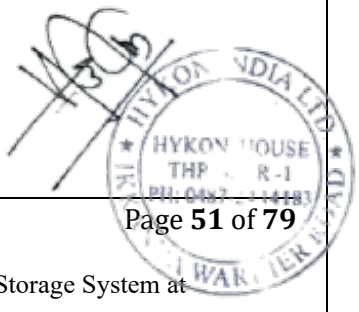
36.12.4 The BESS shall provide breaker failure protection for the primary interrupting device (that is, breaker, high-voltage interconnect, low-voltage interconnect) that is responsible for disconnecting the BESS and/or high-voltage ground sources from the distribution system.

36.12.5 The BESS shall be capable of interrupting line-to-line fault currents and line-to-ground fault currents available at the PCC and flowing in the Contractor's equipment in either direction for faults on either side of the PCC. Faults due to malfunctions within the BESS shall be cleared by the BESS protective devices.

36.12.6 The BESS must have low-voltage ride-through capabilities according to extant technical guidelines on connectivity.

36.12.7 BESS and high-voltage ground sources should be disconnected from the distribution system and the system operators must be notified if any of the following occur:

- The BESS local interconnection protection system fails
- The interrupting device fails.



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- The dc supply is lost
- The signal channel fails

The BESS interconnection protection must be capable of distinguishing between external faults on the distribution system and internal faults within the facility. The automatic reconnection scheme must be disabled for faults occurring within the facility.

The BESS shall include provisions to protect against transient voltage surges from switching, lightning, and similar causes, in accordance with applicable standards. The overall PCS design shall also limit surges on the dc bus to twice the normal maximum DC bus voltage.

36.13 Auxiliary Power

The BESS shall include an auxiliary power system (separate or same as the Solar Plant auxiliary system) derived from the utility AC bus, the PCS transformer low-side bus, PCS transformer tertiary winding, or similar means with metering. The auxiliary power system shall include all step-down transformers, breakers, fuses, motor starters, relaying, panels, enclosures, junction boxes, conduits, raceways, wiring, and similar equipment, as required for the BESS operation. The auxiliary power system shall include separate potential transformers and current transformers, so that auxiliary power consumption can be measured and electronically recorded in real time, independently of operation of the PCS or of net power flows to and from the battery. The auxiliary power system and/or control system design shall provide for whatever emergency power is necessary for an orderly system shutdown during abnormal conditions such as a loss of grid power. The auxiliary power system and/or control system design shall also provide for the capability to restart automatically after BESS shutdowns of several days.

37 CONTROL AND COMMUNICATION

37.1 Control System General Requirements

The control system shall be designed to provide for automatic, unattended operation. The control system design shall provide for local manual operation and remote operation or dispatch from a remotely located computer. The control system shall be programmable for establishing or adjusting all parameters, set points, algorithms, limits,

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and so on that are required for effective operation as described in this specification. The control system shall be designed to prevent externally supplied, control panel or local signals from causing the BESS to operate in an unsafe manner or in a manner that may damage the BESS.

37.2 Control Functions and Protocols

37.2.1 To the extent possible, all BESS control functions, and operating modes shall be in accordance with standard functionalities for smart distributed resources, as documented in the IEC 61850-90-7.

37.2.2 The communication protocol for the BESS shall be according to IEEE 1815-2010, Standard for Electric Power Communications—Distributed Network Protocol (DNP3), as further developed in DNP3 Application Note AN2011-001, DNP3 Profile for Basic Photovoltaic Generation and Storage or IEC 61850.

37.2.3 If data points and/or control functions outside the standard point definitions in DNP3 AN2011- 001/IEC 61850 are created by the Contractor, the Contractor shall maintain a systematic log of the same for the purpose of maintaining/facilitating interoperability with future standards/protocols for distributed energy resources

37.3 Additional Control System Functions

37.3.1 Shutdown/Startup/Standby

The start and stop controls shall be as per DNP3 AN2011-001 standard specifications or IEC 61850. The control system shall use these controls for an orderly and safe shutdown, even in the absence of grid power. The control system shall also use these controls for an orderly startup sequence, which shall provide for a safe system reset from any standby or operating condition so that the unit goes through a normal startup sequence in the same way it would when being powered up after loss of power or being in a shutdown state. The control system shall include provisions for a standby state (that is, BESS but not charging or discharging), which shall be the end result of a normal startup sequence. It shall also be possible to enter the standby state from any of the other operating states except connect/disconnect.

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37.3.2 Initiation of Shutdown

The control system shall initiate shutdown under the following conditions and shall remain in the shutdown state until a reset signal, either local or remote, is initiated. An appropriate alarm shall be set.

- Emergency trip switch.
- Loss of the low-voltage AC or utility grid voltage.
- An AC circuit breaker trip (either side of transformer).
- Door interlock: Initiate shutdown when the door is opened (with appropriate provision for maintenance work). Interlocks shall be self-resetting.
- Smoke/fire alarm.
- Control logic trouble.
- A DC ground fault (field-adjustable setting).
- Remote disable (no reset required).
- grid system faults (balanced and unbalanced; line-to-ground, line-to-line, and three- phase).
- Abnormal frequency
- Abnormal voltage
- Islanding condition.
- Protection or control scheme failures, including the following:
  - Failure of local interconnection protection system
  - Failure of critical breaker trip coil or interrupting device
  - Loss of DC supply

37.3.3 Reset Alarms

For all system-generated alarms, the control system shall provide for the resetting of those alarms. This function is intended for alarms that, after they are set (for example, by a fault condition, as listed above and elsewhere in this specification), must be cleared by operator intervention to allow normal operation to be restored.

37.3.4 Modify Storage Settings

The control system shall provide for modification of various set points and fixed operation/control settings associated with the various control functions.

37.3.5 Event/History Logging

The control system shall provide for the automatic logging of the following information:

- All errors or failures
- All startup and shutdown actions

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- All control actions
- All responses to control actions
- All limit violations, including returns within limits

37.3.6 Status Reporting

The control system shall provide for reading and reporting of various BESS-supplied status information in accordance with the data collection and reporting requirements specified in this technical specification.

37.3.7 Time Synchronization

The control system shall provide for synchronization of its real-time clock with a standard time source.

37.3.8 Change Operational Mode

The control system shall support the mechanisms inherent in DNP3 AN2011-001 for activating/deactivating control functions. The control functions are expected to be executed by command from a remote host but may also be scheduled according to the DNP3 standard.

37.3.9 Perform Self Diagnostics

The control system shall provide for self-diagnostic functions.

37.4 Control System Hardware Requirements

All local control and monitoring system components shall be housed in appropriate controlled environment enclosures at a visible position of the container and shall be in conjunction with Solar Plant SCADA system.

37.5 Control System Self-Protection and Self-Diagnostic Features

37.5.1 The BESS shall include appropriate self-protective and self-diagnostic features to protect itself and the battery from damage in the event of BESS component failure or from parameters beyond the BESS's safe operating range due to internal or external causes. The self-protective features shall not allow local or remote signals to cause the BESS to be operated in a manner that may be unsafe or damaging to the BESS. All protective operations resulting in a shutdown shall be carried out in an orderly and safe manner, even in the absence of utility

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power.

37.5.2 Temperature sensors shall be incorporated in critical components within the BESS. The BESS shall alarm and go to standby/fault mode when an over-temperature condition is detected.

37.5.3 The BESS shall alarm upon detection of a DC ground fault. The alarm trip level shall be field adjustable.

37.5.4 Door interlock switches shall be provided for all BESS container doors. The BESS shall alarm and go to shutdown mode when an BESS door is opened. Doors shall be fitted with provisions for external locks.

37.5.5 The BESS shall alarm and go to shutdown mode upon detection of smoke.

37.5.6 Surge-protection devices shall be provided at the input and output terminals of the BESS.

37.6 Control Panel

- The BESS shall include a LCD touch display of Minimum10', which is easily accessible, on or within the BESS container. As a minimum, the following operator controls shall be located on the control panel:
- Trip/reset for the BESS AC circuit breaker or contactor.
- Trip/reset for DC circuit breaker(s)/contactor(s).
- PCS on/off.
- Reset toggle or push button. When reset is initiated, the control system shall resume control and proceed to the appropriate operating mode.
- Reset cut-out selector switch to disable remote or local reset signals.
- A selector switch to manually set the operating state (that is, the shutdown, disconnect, or operate state) and to have the control system set the operating state automatically.
- A selector switch to manually set the operating mode and to have the control system set the operating mode automatically.
- The control panel or console shall also include meters, indicators, and displays.

37.7 Performance Monitoring and Data Acquisition

37.7.1 The BESS shall include a (Data Acquisition System) DAS to provide continuous

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monitoring and display of key operational parameters, as well as permanent archival of all measured parameters. The DAS shall include sensors, transducers, wiring, signal isolation and conditioning circuitry, and data acquisition and analysis hardware and software as required to perform the functions described in this section. The DAS shall be of standard commercial manufacture and shall use hardened components suitable for operation in the climatic conditions prevailing at site.

37.7.2 The DAS shall measure operational data, as described in this Clause, and shall record all data points to fixed and removable non-volatile memory. The DAS shall be capable of making all monitored data and events available through the DNP3 / IEC 61850 communication interface and shall permit display of current values and recent historical trends on a local screen for all recorded points. In addition, the DAS shall provide panel meter displays of certain operational parameters, as prescribed below.

37.7.3 Provision of monitoring and event data via the communication interface shall adhere to DNP3 AN2011-001 / IEC 61850 to the extent possible and capture at least the following data points:

- Frequency at the AC bus
- AC real power
- Power factor
- Real energy delivered
- Real energy received
- Auxiliary power
- Auxiliary energy
- DC power
- DC voltage
- DC current
- Phase A voltage
- Phase A angle
- Phase B voltage
- Phase B angle
- Phase C voltage
- Phase C angle
- Battery state of charge
- Battery string currents

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- Battery temperature

37.7.4 Digital displays, on each battery bank, shall be no less than 1 in. (2.54 cm) high and shall update at least once per second. The DAS shall be integrated with the Solar PV SCADA described elsewhere in this Technical Specification either as addendum or within an overall Energy Management System Interface. The DAS shall, at a minimum, provide remote data inquiry from personal computer- based platforms and data file export capabilities in ASCII format on independent media (such as a universal serial bus drive) that are readable on personal computer-based systems.

37.7.5 The DAS shall continuously measure or calculate the data points identified in 40.7.2 and shall make them available via the communication network as specified. All measured parameters shall also be permanently archived in all modes of operation. For continuously varying quantities, the Contractor shall propose for ANERT's review and approval an approach to data archiving that is suitable for each quantity measured. The final approach will be decided during product design.

37.7.6 The DAS shall provide unsolicited message capability for reporting critical alarms. The Contractor and the ANERT will agree on a list of alarms that are reported the instant they are detected. However, a minimum of following parameters shall be displayed on BESS local control panel, console, or SCADA computer:

- Main temperature Alarm (on system temperature exceeding a predetermined threshold)
- Smoke/fire Alarm (on system detection of smoke/fire)
- DC leakage current (battery leakage current to ground exceeding a predetermined threshold)
- Breaker status (connect/disconnect switch)
- AC voltage OK (system ac voltage exceeding a predetermined threshold)
- Battery temperature alarm (battery temperature exceeding a predetermined threshold)
- Synchronization error shutdown
- PCS fault
- Weak Unit Battery Alarm
- AC system fault

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- Control logic problem (problem with the BESS control logic)
- DC fuse blown
- Container door open (BESS container door opening)

37.7.7 The BESS shall include provisions for determining and storing in non-volatile memory the sequence of abnormal events, trips, and/or alarms that cause the BESS to go the disconnect or shutdown state. It is preferable that this function be implemented separately from the normal operations data acquisition function of the DAS so that failures in the latter (hardware/software failures or power interruptions) will not prevent the permanent logging of abnormal event sequences. The BESS shall include provisions to transmit, at a minimum, the data displayed on the panel meters and the alarm/status indicators to the remote computer.

38 GROUNDING

A suitable equipment grounding system shall be designed and installed for the BESS. This system shall be designed to be tied to an existing site grounding system. The system also shall be adequate for the detection and clearing of ground faults. All exposed non-current-carrying metal parts shall be solidly grounded. Particular attention shall be given to prevention of corrosion at the connection of dissimilar materials such as aluminium and steel.

39 WIRING

39.1 All wiring shall be continuous for each wiring run; splices are not acceptable.

39.2 Wiring that may be exposed to mechanical damage shall be placed in conduit or armoured.

39.3 Wires shall have identifying labels or markings on both ends. The labels or markings shall be permanent and durable. Stick-on labels will not be allowed. All field wiring between separate equipment items supplied by the Contractor shall be color-coded according to appropriate standards.

39.4 In general, and where practicable, control and instrumentation wiring shall be separated from power and high voltage wiring by use of separate compartments

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or enclosures or by use of separate wireways and appropriate barrier strips within a common enclosure.

39.5 BESS and PCS control and instrumentation system wiring shall be bundled, laced, and otherwise laid in an orderly manner. Wires shall be of sufficient length to preclude mechanical stress on terminals. Wiring around hinged panels or doors shall be extra flexible and shall include loops to prevent mechanical stress or fatigue on the wires.

39.6 Insulation and jackets shall be flame retardant and self-extinguishing.

39.7 Wiring to terminal blocks shall be arranged as marked on wiring diagrams. Terminal groupings shall be in accordance with external circuit requirements.

39.8 Raceway and cable systems shall not block access to equipment by personnel. There shall be no exposed current-carrying or voltage-bearing parts.

40 CIVIL/STRUCTURAL

40.1 General Requirements

40.1.1 Soil bearing stresses shall not exceed the allowable stresses for the soil parameters, as determined by the Contractor. A minimum safety factor of 1.5 shall be provided against uplift, sliding, and overturning loads. Soil stresses shall be calculated using unfactored loads.

40.1.2 All structures and foundation designs must include suitable evidence to show that their design is commensurate with a minimum of 25-year life.

40.1.3 Unless specifically stated otherwise, the design of all structures, equipment, and foundations shall be based on applicable portions of IS codes, these specifications, and industry standards.

40.1.4 All components shall be painted, coated, or otherwise protected in a manner commensurate with at least 25-year design life. Particular attention shall be given to prevention of corrosion at the connections between dissimilar materials such as aluminium and steel, and steel and concrete.

40.1.5 All structures and foundations shall be designed to resist dead, live, wind, and seismic loads.

40.2 Requirements for Contractor Installation

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40.2.1 The Contractor shall be responsible for obtaining all required permits and ensuring that all inspections by local authorities are completed as required.

40.2.2 Calculations based on applicable standards shall be supplied to show that the design of the entire BESS will withstand wind speed and/or gusts and other loads specific to the site and that the design meets all applicable structural and transportation codes.

40.2.3 Excavation spoils shall be disposed of as directed by the ANERT.

40.2.4 All reinforced concrete work shall be in accordance with relevant Indian Standards. All other materials and installation requirements shall be subject to ANERT approval.

41 MECHANICAL

41.1 All exposed surfaces of ferrous parts shall be thoroughly cleaned, primed, and painted or otherwise suitably protected to survive outdoor conditions for at least 25-year design life of the system.

41.2 Outdoor enclosures shall be weatherproof and capable of surviving intact under the site environmental conditions specified. Outdoor enclosures shall be equipped to prevent condensation.

41.3 Components mounted inside enclosures shall be clearly identified with suitable permanent designations that also shall serve to identify the items on drawings provided.

41.4 The site temperatures and the effect of temperature on component life shall be considered in developing the thermal design for all components, including the battery and PCS. Irrespective of the heat-removal system design the final rejection of all waste heat from the BESS shall be to the ambient air. Air-handling systems shall include filters to prevent dust intrusion into the BESS.

41.5 The BESS shall include an HVAC or ventilation system designed to maintain battery temperatures at levels acceptable to the Contractor's normal battery warranty conditions, conducive to acceptable battery life, and as required to maintain battery capacity for all seasons/climatic conditions at the site. The air handling/distribution system shall be designed to promote temperature

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uniformity within the battery.

42 OTHER DESIGN REQUIREMENTS

42.1 Noise Levels

The Contractor shall provide for and maintain noise mitigation devices like Noise mufflers at site, if required.

42.2 Fire Protection

The Contractor shall design and install a fire protection system that conforms to good engineering practice. The fire protection system design and associated alarms shall take into account that the BESS will be unattended. If required by the type of fire protection system provided, the Contractor shall calculate and take into account the heat content of the battery cell materials in designing an appropriate fire protection system. Separate fire protection systems may be used in the battery, PCS, and control areas.

42.3 Toxic Materials

If any toxic substance can be emitted from the equipment during a failure, fire, or emergency or protective operation, description of the toxic nature of the substances as well as treatment for exposure to it shall be included in the O&M manual. Their treatment and disposal shall be in accordance with the New Hazardous Waste Management Rules 2016 notified by the Government of India.

42.4 Spare Parts and Equipment

The Contractor shall evaluate the design with regard to expected failure rates, modes, and effects; overall BESS reliability; and planned mode of servicing. Based on this evaluation, the Contractor shall recommend and furnish an initial complement of spare parts that are not readily available. For example, these spare parts may include spare unit batteries and a small rectifier to maintain the unit batteries, as well as fuses, printed circuit boards, and switching devices (gate turnoff thyristors [GTOs], silicon-controlled rectifiers [SCRs], insulated gate bipolar transistors [IGBTs], and so on).

43 MAINTENANCE AND REPAIR

43.1 The Contractor shall supply all labour, equipment, and materials needed to

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maintain the BESS performance and safe operation, including all maintenance required to satisfy the warranty terms and conditions.

43.2 The Contractor shall list all maintenance activities to be carried out under the maintenance contract. For each maintenance item, the list shall include a description of the item, the expected frequency (maintenance interval), the time required to perform the maintenance, any anticipated parts replacement, and any potential problems in carrying out the maintenance.

44 FACTORY ACCEPTANCE TESTING OF BESS

44.1 The Contractor shall develop and submit to the ANERT for its review and approval a comprehensive FAT plan that shall demonstrate that the BESS will meet the requirements of the specification. The ANERT shall have the right to request reasonable changes to the test plan.

44.2 Where full-scale testing of larger systems at the factory may be difficult or impossible due to the large system, the FAT shall be carried out at a subsystem or module level and shall consist of tests of 100% of the subsystems or modules that comprise the complete BESS, to the extent possible. In the FAT plan, the Contractor shall clearly state what is being tested and shall fully explain any features or functions of the fully assembled BESS that would not be fully tested in the reduced-scale testing proposed. In such a case, the SAT plan shall further describe how the tests that could not be carried out in the factory will instead be carried out at the site.

44.3 After the Contractor determines that the BESS is fully operational, the Contractor shall conduct a FAT, witnessed by the ANERT and/or the ANERT's representative. The FAT shall consist of the Contractor demonstrating to the ANERT that the BESS is fully operational and performs as specified. This includes but is not limited to the following:

- Visual inspection of all provided equipment, including dimensions and overall design.
- Verification of proper mechanical construction such as electrical connection torques.

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- Verification of sensors, metering, and alarms.
- Verification of all control functions, including remote control and monitoring, and communications interfaces.
- Verification of BESS performance at full and partial power and energy ratings.
- Verification of maintenance and replacement features for unit batteries and other key components.
- Verification of compliance with specifications.

44.4 During the FAT, the BESS shall meet the following:

- Be operated and function as specified and designed in all the operating states, use cases, and duty cycles specified herein
- Meet the power and energy requirements specified herein
- Be demonstrated to meet the safety and response to catastrophic failure requirements specified herein
- Have the efficiencies, response capabilities, and other features specified herein and/or proposed by the Contractor

44.5 Operation of all control, protective relaying, and instrumentation circuits shall be demonstrated by direct test, if feasible, or by simulating operating states for all parameters that cannot be directly tested. Automatic, local (control console), and remote operation of the controls shall be demonstrated. ANERT's site. If this is not possible for the full BESS at the manufacturing facility, independent laboratory certification of operation of critical components and subsystems in the battery, PCS, and control systems shall be submitted at the time of the FAT. The Contractor shall submit to the ANERT for approval, 90 days before the FAT, a list of components and subsystems for which independent lab testing certification will be sought.

44.6 The Contractor shall perform any and all system modifications required during start-up and testing. The testing may be suspended as a result of a BESS malfunction and resumed only on rectification of problem items. Such suspension and resumption will occur at the sole discretion of the ANERT.

44.7 The BESS will not be accepted for shipment until all FATs have been successfully completed. In addition, the ANERT will verify that all provisions of the contract

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have been met, including verification of all required submittals, any spare parts delivery, and any required system modifications.

45 COMMISSIONING AND FUNCTIONAL GUARANTEE TEST PROCEDURE

45.1 The Contractor shall develop and submit to the ANERT for its review and approval a comprehensive SAT plan that shall demonstrate to the ANERT that the BESS will perform as specified at the ANERT's site. The ANERT shall have the right to request reasonable changes to the test plan.

45.2 The Contractor shall develop and perform SAT procedures to ensure that the BESS will perform as designed and that the system meets the performance criteria specified elsewhere in these specifications. The SAT plan shall include procedures to test operating scenarios described in the specification. These procedures may involve special requirements and/or witnessing by the local independent system operator. To the extent achievable, all use cases and operating modes described in the specification shall be tested.

45.3 After the Contractor has determined that the BESS is fully operational, the Contractor shall conduct the SAT, witnessed by the ANERT and/or the ANERT's representative. The tests shall include, as a minimum, the following:

- Verification of sensors, metering, and alarms
- Verification of all control functions, including automatic, local, and remote control
- Verification that the performance criteria in the specification can be met or exceeded
- Demonstration of all of the intended uses
- Demonstration of interface protection circuits and functions and control interfaces

45.4 Tests shall demonstrate that the BESS capabilities, efficiencies, response, and features are as proposed by the Contractor.

45.5 Testing shall include, as a minimum, measurement of harmonic content and power factor at full and partial power levels for both charge and discharge.

45.6 Operation of all control, protective relaying, and instrumentation circuits shall be demonstrated by direct test, if feasible, or by simulating operating states for all

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parameters that cannot be directly tested. Automatic, local, and remote operation shall be demonstrated.

45.7 The SAT shall also specifically address discovery of problems or failures that may have occurred during or as a result of shipment.

45.8 The Contractor shall perform any required modifications and repairs identified by the testing, before acceptance by the ANERT.

45.9 The ANERT will not accept the BESS for commissioning until all acceptance tests have been successfully completed and all provisions of the contract have been met.

45.10 Functional Guarantee - Actual Operating Experience

Since it may not be possible, due to system constraints, to test all facets of the BESS function as part of the performance verification tests specified in the preceding sections the actual operating experience of the BESS during the performance guarantee period after initial startup shall be deemed an extension of the performance verification tests. The performance guarantee period shall not be construed as a substitute for the warranty requirements, as specified in the subsequent Clause. Actual operating experience will be documented through Contractor-furnished records, and other system monitoring equipment and associated BESS performance. Documented failure or malfunctions of any BESS component during the performance guarantee period shall be deemed a failure of the system commissioning test. The Contractor shall, at no cost to the ANERT, make the necessary repairs, replacements, modifications, or adjustments to prevent the same failure or malfunction from occurring again. The replacement of certain BESS components in response to a system failure may necessitate, at the discretion of the ANERT, the duplication of certain performance verification tests, which shall be performed at the Contractor's expense.

46 WARRANTY

46.1 The Contractor shall provide a warranty for the entire BESS and its constituent equipment.

46.2 At a minimum, the Contractor shall provide an unconditional, 7 (Seven) -year parts and labour warranty on all BESS equipment except battery (unit or racks). An

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additional 3-year AMC must be provided by the bidder for the whole unit and the rate for the same is to be quoted separately. For the battery storage, 10-year warranty is to provided and the warranty shall cover parts warranty including battery nominal capacity ratings in order to meet the End of battery Life condition described in this specification.

46.3 Warranty replacement shall be required for individual unit batteries that degrade in performance to the point at which the BESS cannot meet the requirements specified in this specification up to the End of Battery Life and/or for unit batteries that materially degrade the availability, reliability, safety, or functionality of the BESS.

46.4 The warranty shall guarantee the availability of battery replacements delivered to the site within 2 weeks of notification during the battery warranty period. This period, shall, however, not be considered part of the Accountable Outage period for assessing BESS availability.

46.5 Additional warranty requirements are as follows:

- The warranty shall specify the terms and conditions of the warranty, including operating conditions requirements, procedures that must be followed, and all maintenance requirements. The warranty terms shall be easy to understand and shall be clearly stated.
- The warranty shall provide an explicit statement as to the warranted cycle life and the warranted calendar life of the battery.
- The warranty shall include a simple and easy to understand proration formula, if any, to be used in crediting the ANERT for unused life or capacity of equipment replaced or repaired.
- The warranty shall specify guaranteed battery replacement costs. The ANERT shall be provided the option to secure the guaranteed replacement cost at the time of the initial supply agreement.
- The warranty shall specify the scope of service associated with software updates.
- The warranty shall specify the scope of service included in replacement or repair of the equipment.
- The warranty shall specify all labour, materials, shipping charges, and other

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ANERT expenses not included in the warranty.

- The warranty shall specify the estimated time to complete the repairs/replacement required to restore the BESS to the warranted performance level. The time shall be given as the number of working days from the time of ANERT's notice to the Contractor that the BESS has failed to meet the performance requirements.

47 DOCUMENTATION AND SUBMITTALS

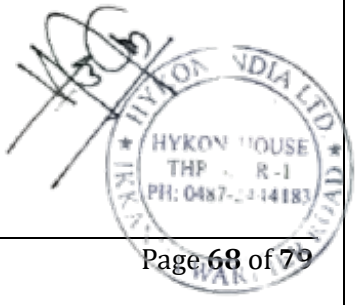
a. The Contractor shall furnish complete documentation that will be used for determination of contract compliance, as well as O&M of the BESS.

b. Review and acceptance of submittals shall not encumber the ANERT or the KSEBL with responsibility for the adequacy or safety of the Contractor's design.

c. Titles shall clearly indicate the function of the document, the ANERT and location of the facility.

d. At a minimum, Contractor's documentation shall consist of the following:

- Construction and installation drawings
- Construction materials submittal
- Equipment drawings and specifications
- Operation and maintenance manual
- Maintenance schedule
- Critical path method project schedule
- Master test plan and procedures
- Quality assurance manual
- Software documentation
- Study reports
- Test reports
- Training manual



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FORMAT FOR COVERING LETTER

(This letter to be submitted on the official letter head of the bidder, signed by the authorised signatory.)

Sir,

I/We hereby e-tender to render the services under annexed terms and conditions of contract, the whole of the articles referred to and described in the attached specification and quantity decided by the Agency for New & Renewable Energy Research and Technology (ANERT), at the rates quoted against each item.

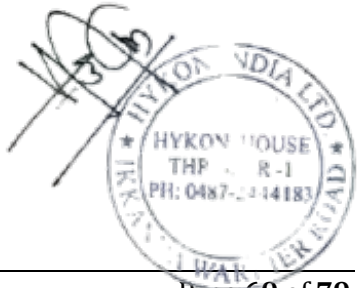
I am/We are remitting herewith the required amount of Rs. ..... towards the registration Fee by electronic payment vide transaction No ..... dtd.....

Yours faithfully,

Place:
Date:

Signature
Name
Designation

(Office Seal)



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ANNEXURE A – SUMMARY OF BID QUALIFICATION REQUIREMENTS

(To be filled in by the bidder in Letter Head)

1.	Name of the applicant and address with email, phone etc.	
2.	Main area of Business	
3.	Registered Office in Kerala	
4.	Details of Power of Attorney	
5.	Proof for Experience	

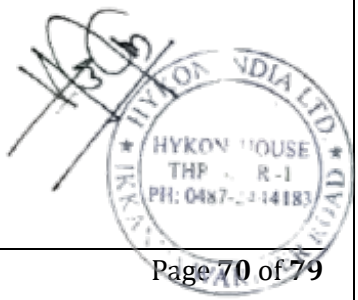
Documentary evidence for the bid qualification requirements are submitted along with this document and the details furnished above are true and correct.

Signature
of authorised signatory

Name
Designation

Date:

(Office seal)



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ANNEXURE B – AGREEMENT

(To be provided on Rs.200 Non-Judicial Kerala Stamp paper)

Subject: Selection of Consultant for Setting up the Project Management Unit (PMU) for Kerala Green Hydrogen Mission

With reference to the RFP Document for the captioned Project, I/we, I …….. (Name, Designation) authorised signatory of …….. (Name and full address of the bidder) having examined all relevant documents and understood their contents hereby undertake that the Proposal is unconditional and unqualified.

1. I/We confirm that I/we have examined the terms and conditions published in the EOI and accordingly submitting the Application. The proposal is unconditional and unqualified.
2. All information provided in the Proposal is true and correct and all documents accompanying such Proposal are true copies of their respective originals.
3. This statement is made for the express purpose of appointment Providing PMU services in terms of providing Consultancy and Technical Services
4. I/We shall make available to ANERT any additional information it may deem necessary or require for supplementing or authenticating the Proposal.
5. I/We acknowledge the right of the ANERT to reject our application without assigning any reason or otherwise and hereby waive our right to challenge the same on any account whatsoever.
6. I/We certify that in the last three years, I/we have neither failed to perform on any contract, as evidenced by imposition of a penalty by an arbitral or judicial Court or a judicial pronouncement or arbitration award against us, nor have been expelled from any project or contract nor have had any contract terminated for breach on our part.
7. I/We declare that:

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1. I/We have examined and have no reservations to the EOI Documents, including any Addendum thereto, issued by the ANERT;
2. I/We do not have any conflict of interest in accordance with provisions of the EOI Document;
3. I/We have not directly or indirectly or through an agent engaged or indulged in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice, as defined in the EOI document, in respect of any tender or request for proposal issued by or any agreement entered into with the ANERT or any other public sector enterprise or any Government, Central or State; and
4. I/We hereby certify that we have taken steps to ensure that in conformity with the provisions of this EOI, no person acting for us or on our behalf will engage in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice.

8. I / We understand that you may cancel the Selection Process at any time and that ANERT is neither bound to accept any Proposal that you may receive nor to select the Consultant, without incurring any liability to the Applicants in accordance with the EOI document.
9. I / We certify that in regard to matters other than security and integrity of the country, we or any of our Associates have not been convicted by a Court of Law or indicted or adverse orders passed by a regulatory authority which would cast a doubt on our ability to undertake the Consultancy for the Project or which relates to a grave offence that outrages the moral sense of the community.
10. I / We further certify that in regard to matters relating to security and integrity of the country, we have not been charge-sheeted by any agency of the Government or convicted by a Court of Law for any offence committed by us or by any of our Associates.
11. I / We hereby irrevocably waive any right or remedy which we may have at any stage at law or howsoever otherwise arising to challenge or question any decision taken by the ANERT (and/ or the Government of Kerala / India) in connection

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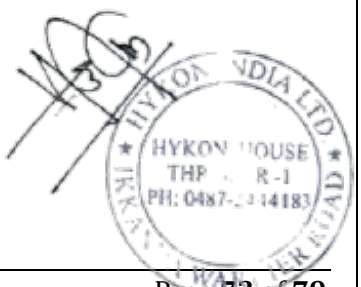
with the selection of Consultant or in connection with the Selection Process itself in respect of the above mentioned Project.

12. I / We agree and understand that the proposal is subject to the provisions of the EOI document. In no case, shall I/we have any claim or right of whatsoever nature if the Consultancy for the Project is not awarded to me/us or our proposal is not opened or rejected.
13. I / We agree to keep this offer valid for (120) days from the date of opening of technical bid.
14. I/We have studied EOI and all other documents carefully. We understand that we shall have no claim, right or title arising out of any documents or information provided to us by the ANERT or in respect of any matter arising out of or concerning or relating to the Selection Process including the award of Consultancy.
15. The Technical Proposals and Financial Proposals are being submitted in separate Covers available in the etenders portal.
16. I/We agree and undertake to abide by all the terms and conditions of the EOI Document. In witness thereof, I/we submit this Proposal under and in accordance with the terms of the EOI Document.

Signed by Sri	Signed by Sri . . . . .
(Date)	(Date) . . . .
in the presence of witnesses	in the presence of witnesses
1.	1.
2.	2.



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ANNEXURE C – POWER OF ATTORNEY

(On Stamp Paper of requisite Stamp value)

Know all men by these presents, we, ... (name of Firm and address of the registered office) do hereby constitute,.....nominate, appoint and authorise Mr / Ms..... son/daughter/wife and presently residing at ....., who is presently employed with us and holding the position of.....as our true and lawful attorney (Hereinafter referred to as the —Authorized Representative) to do in our name and on our behalf, all such acts, deeds and things as are necessary or required in connection with or incidental to submission of our Proposal for and selection as the Consultant for _____

including but not limited to signing and submission of all applications, proposals and other documents and writings, participating in pre-bid and other conferences and providing information/ responses to the ANERT, representing us in all matters before the ANERT, signing and execution of all contracts and undertakings consequent to acceptance of our proposal and generally dealing with the Authority in all matters in connection with or relating to or arising out of our Proposal for the said Project and/or upon award thereof to us till the entering into of the Agreement with the ANERT.

AND, we do hereby agree to ratify and confirm all acts, deeds and things lawfully done or caused to be done by our said Authorised Representative pursuant to and in exercise of the powers conferred by this Power of Attorney and that all acts, deeds and things done by our said Authorised Representative in exercise of the powers hereby conferred shall and shall always be deemed to have been done by us.

IN WITNESS WHEREOF WE, ... THE ABOVE - NAMED AUTHORISED REPRESENTATIVE HAVE EXECUTED THIS POWER OF ATTORNEY ON THIS DAY OF ....., 2023

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For

(Signature, name, designation and address)

Witnesses:

1.

2.

Notarized

Accepted (Signature, name, designation and address of the Attorney)

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ANNEXURE D – DECLARATION BY THE BIDDER

e-EoI Notification No: ....., dtd …….. for Re-Invitation of Expression of Interest (EoI) for the Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram

To

The CEO

ANERT

We, the undersigned, declare that:

1. We have examined and have no reservations to the Bidding Document, including Addenda No.: ..... (if any)
2. We offer to supply in conformity with the Bidding Document and in accordance with the delivery schedule
3. Our Bid shall be valid for a period of 4 months from the date fixed as deadline for the submission of EoIs in accordance with the Bidding Document, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;
4. If our Bid is accepted, we commit to submit a Security Deposit in the amount of 3 percent of the Contract Price for the due performance of the Contract;
5. We are not participating, as Bidders, in more than one Bid in this bidding process;
6. Our firm, its affiliates or subsidiaries, including any subcontractors or suppliers for any part of the Contract, has not been declared ineligible by the ANERT or Government of Kerala;
7. We understand that this Bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal Contract is prepared and executed.
8. Our firm has obtained the certifications from MNRE or NABL approved Test laboratories that the goods and services are satisfying the technical criteria specified in the bid.

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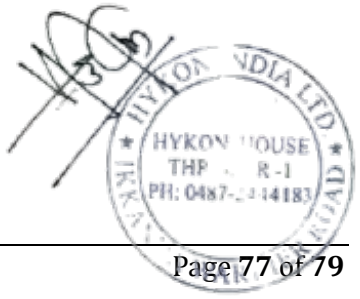
Signature

Date

Name



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ANNEXURE E – DECLARATION OF RELATIONSHIP WITH ANERT EMPLOYEE

(to be signed and submitted by the bidder along with the bid)

EoI Notification No.: ……..

Re-Invitation of Expression of Interest (EoI) for the Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram

To

The CEO

ANERT

Name of the ANERT employee with Designation:

Name of the bidder related to the employee:

This is to put on record that Shri/Smt …….. currently working as …….. in ANERT is related to ……., who is the bidder in the bid. We are aware of the Anti-corruption policy of ANERT and will observe the highest standards during the execution of contract and shall retain from corrupt, fraudulent, collusive or coercive practices on competing for the contract.

Signature

Date

Name

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ANNEXURE F – UNDERTAKING FOR NO BLACKLISTING & NO BANNING

(To be provided on Rs.200 Non-Judicial Stamp paper. In Case of JV the following format is to be provided by Each Member of the Joint Venture on their respective letterhead, signed by respective authorized Signatory along with Authorized Signatory for which POA is attached with Bid))

Undertaking for No Blacklisting & No Banning

To

The CEO
ANERT

Sub: Re-Invitation of Expression of Interest (EoI) for the Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram

I / We hereby declare that presently our Company/Limited Liability Partnership/ Partnership Firm/ Sole Proprietorship is having unblemished record and is not declared ineligible for corrupt/fraudulent practices by any State/Central Government/PSU on the date of Bid Submission.

I / We further declare that presently our Company/Limited Liability Partnership/ Partnership Firm/ Sole Proprietorship is not blacklisted and not declared ineligible for reasons other than corrupt/fraudulent practices by any State/Central Government/PSU on the date of Bid Submission.

If this declaration is found to be incorrect then without prejudice to any other action that may be taken, our security may be forfeited in full and the EoI if any to the extent accepted may be cancelled.

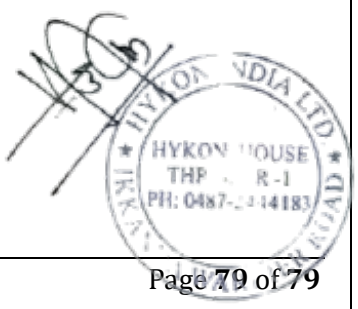
(Signature & Seal of Authorized Signatory for which POA attached)

Name of Authorized Signatory:

Designation:

Date:

Place:



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ANNEXURE G – CERTIFICATE OF FINANCIAL QUALIFICATION

(On Letterhead of the respective entity for which the below details are provided.)

Financial Qualification Certificate

(Rupees in Crores)

S/N	Financial parameters	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23
1.	**Net Worth**					
a)	Paid up Capital					
b)	Free Reserves and Surplus*					
c)	Misc expenses to the extent not written off					
	Net Worth (a+b-c)					
2.	**Annual Turnover ****					

** Free Reserve and Surplus shall be Exclusive of Revaluation Reserve, written back of Depreciation Provision and Amalgamation.*

*** Annual total Income/ turnover as incorporated in the Profit and Loss Account excluding non-recurring income, i.e., sale of fixed asset etc.*

It is certified that all the figures are based on audited accounts read with auditors report and Notes to Accounts etc.

(Signature & Seal of Authorized Signatory

Name of Authorized Signatory:

Designation:

Date:

Place:

Certifying Chartered Accountant:

Name of Firm:

UDIN No:

Date:

Place:

Note:

1. *In addition to above certificate from Chartered Accountant, Bidder is required to submit Firm's Annual Audit Report, Balance sheet, Profit & Loss and Income Tax Returns / CA certificate for last Five years i.e., F.Y: 2017-18, 2018-19, 2019-20, 2020-21 & 2021-22.*

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FOR ALL
YOUR POWER NEEDS

POM
Systems & Services Pvt. Ltd.

COVERING LETTER

Sir,

I/We hereby e-tender to render the services under annexed terms and conditions of contract, the whole of the articles referred to and described in the attached specification and quantity decided by the Agency for New & Renewable Energy Research and Technology (ANERT), at the rates quoted against each item.

I am/We are remitting herewith the required amount of Rs. NIL towards the registration Fee by electronic payment vide transaction No None.

Thanks, and Regards
For, POM Systems & Services Pvt. Ltd.,
Balasankar Menon KG (General Manager)
Email: gm@pompower.in

POM POWER

POM SYSTESMS & SERVICES PVT. LTD. BENGALURU

s

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FOR ALL
YOUR POWER NEEDS

POM Systems & Services Pvt. Ltd.

Tender ID: 2024_ANERT_664557_1

ANNEXURE A – SUMMARY OF BID QUALIFICATION REQUIREMENTS

1.	Name of the applicant and address with email, phone etc.	**POM Systems and Services Private Limited** **Brand Name: POM POWER** No 75, 6th Main, 3rd Phase, Peenya Industrial Area, Bangalore : 560058 Email : gm@pompower.in Phone : 7907241109
2.	Main area of Business	Online UPS, Inverters, Solar Energy systems, BESS, GRES, etc.,
3.	Registered Office in Kerala	TC 20/1361(1), G Floor, Amal Plaza, Pathirappally Ward, Opposite Civil Station Compound, Kudapanakunnu PO, Thiruvananthapuram : 695043
4.	Details of Power of Attorney	Please find Enclosed
5.	Proof for Experience	Please find Enclosed

Documentary evidence for the bid qualification requirements is submitted along with this document and the details furnished above are true and correct.

Date: 05.03.2024

Thanks, and Regards
For, POM Systems & Services Pvt. Ltd.,
Balasankar Menon KG (General Manager)
Email: gm@pompower.in

POM SYSTEMS & SERVICES PVT. LTD. BENGALURU

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കേരളം केरल KERALA

DA 595812

ANNEXURE B – AGREEMENT

Subject: "Expression of Interest (EoI) for the Selection of Agency for Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram",

With reference to the RFP Document for the captioned Project, I/we, I **Balasankar Menon KG, General Manager** authorised signatory of M/s **POM Systems & Services Pvt. Ltd.,** (Brand Name: **POM POWER**) Having registered office at No-75, 6th Main 3rd Phase, Peenya Industrial Area, Karnataka, Bengaluru-560058. having examined all relevant documents and understood their contents hereby undertake that the Proposal is unconditional and unqualified.

1. I/We confirm that I/we have examined the terms and conditions published in theEOI and accordingly submitting the Application. The proposal is unconditional and unqualified.
2. All information provided in the Proposal is true and correct and all documents accompanying such Proposal are true copies of their respective originals.

No. 60612
1/3/24

KILIYALLOOR MANI
THIRUVANANTHAPURAM VENDOR

PRINCIPAL SUB TREASURY

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3. This statement is made for the express purpose of appointment Providing PMU services in terms of providing Consultancy and Technical Services
4. I/We shall make available to ANERT any additional information it may deem necessary or require for supplementing or authenticating the Proposal.
5. I/We acknowledge the right of the ANERT to reject our application without assigning any reason or otherwise and hereby waive our right to challenge the same on any account whatsoever.
6. I/We certify that in the last three years, I/we have neither failed to perform on any contract, as evidenced by imposition of a penalty by an arbitral or judicial Court or a judicial pronouncement or arbitration award against us, nor have beenexpelled from any project or contract nor have had any contract terminated for breach on our part.

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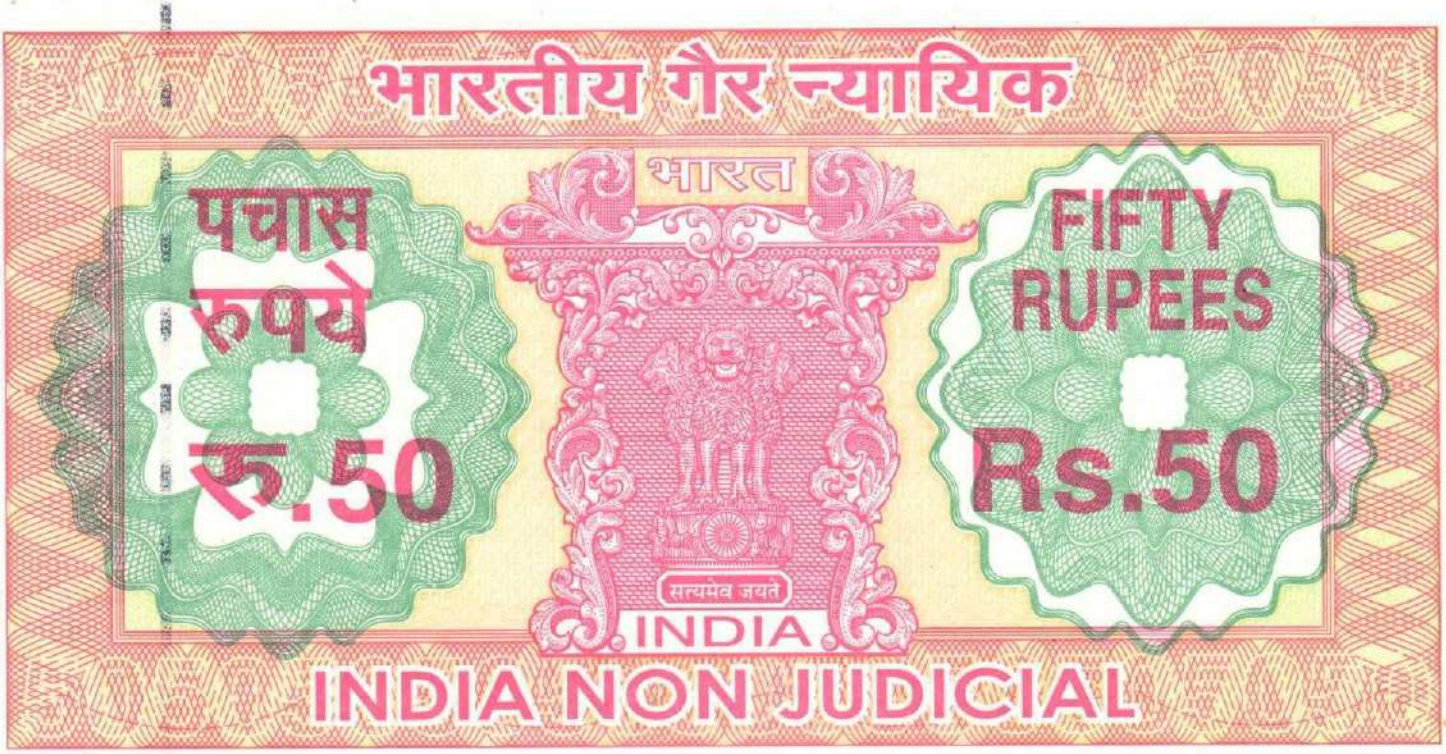

കേരളം केरल KERALA

DA 595813

1. I/We declare that I/We have examined and have no reservations to the EOI Documents, including any Addendum thereto, issued by the ANERT;
2. I/We do not have any conflict of interest in accordance with provisions of theEOI Document;
3. I/We have not directly or indirectly or through an agent engaged or indulgedin any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice, as defined in the EOI document, in respect ofany tender or request for proposal issued by or any agreement entered into with the ANERT or any other public sector enterprise or any Government, Central or State; and

No. 60613
1/3/24

KILIYALLOOR MANI
PALAYAM VENDOR

PRINCIPAL SUB TREASURY

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4. I/We hereby certify that we have taken steps to ensure that in conformity with the provisions of this EOI, no person acting for us or on our behalf will engage in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice.

5. I / We understand that you may cancel the Selection Process at any time and thatANERT is neither bound to accept any Proposal that you may receive nor to select the Consultant, without incurring any liability to the Applicants in accordance with the EOI document.

6. I / We certify that in regard to matters other than security and integrity of the country, we or any of our Associates have not been convicted by a Court of Law orindicted or adverse orders passed by a regulatory authority which would cast a doubt on our ability to undertake the Consultancy for the Project or which relatesto a grave offence that outrages the moral sense of the community.

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DA 595814

10. I / We further certify that in regard to matters relating to security and integrity ofthe country, we have not been charge-sheeted by any agency of the Government or convicted by a Court of Law for any offence committed by us or by any of our Associates.

11. I / We hereby irrevocably waive any right or remedy which we may have at any stage at law or howsoever otherwise arising to challenge or question any decision taken by the ANERT (and/ or the Government of Kerala / India) in connection with the selection of Consultant or in connection with the Selection Process itself in respect of the above mentioned Project.

No. 60614

KILIYALLOOR MANI
KALAYAMI VENDOR

PRINCIPAL SUB TREASURY

POM SYSTEMS AND SERVICES

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12. I / We agree and understand that the proposal is subject to the provisions of the EOI document. In no case, shall I/we have any claim or right of whatsoever natureif the Consultancy for the Project is not awarded to me/us or our proposal is notopened or rejected.
13. I / We agree to keep this offer valid for (120) days from the date of opening of technical bid.
14. I/We have studied EOI and all other documents carefully. We understand that weshall have no claim, right or title arising out of any documents or information provided to us by the ANERT or in respect of any matter arising out of orconcerning or relating to the Selection Process including the award of Consultancy.
15. The Technical Proposals and Financial Proposals are being submitted in separateCovers available in the etenders portal.

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കേരളം केरल KERALA

DA 595815

16. I/We agree and undertake to abide by all the terms and conditions of the EOI Document. In witness thereof, I/we submit this Proposal under and in accordancewith the terms of the EOI Document.

Signed by Sri .....

(Date) .....

in the presence of witnesses

1.

2.

Signed by Sri .....

(Date) .....

in the presence of witnesses

1.

2.

No: 60615

KILIYALLOOR MANI
PALAYAM VENDOR

PRINCIPAL SUB TREASURY
Date

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प्रारूप० आई० आर०

Form I. R.

निगमन का प्रमाण-पत्र

CERTIFICATE OF INCORPORATION

ता०.....का से०.....

No. 08/..27199.....of 2000.....

मैं एतद्द्वारा प्रमाणित करता हूँ कि आज.....

.....

.....

कम्पनी अधिनियम (1956 का 1) के अधीन निगमित की गई है और यह कम्पनी परिसीमित है ।

I hereby certify that POM SYSTEMS & SERVICES PRIVATE LIMITED XXX XXX

XXX XXX XXX

is this day incorporated under the Companies Act, 1956 (No. 1 of 1956) and that the Company is Limited.

मेरे हस्ताक्षर से आज ता०.....को दिया गया ।

Given under my hand at BANGALORE this FIFTH day of JUNE Two Thousand

(B.M. ANAND)
कम्पनियों का रजिस्ट्रार
कर्नाटक, बेंगलूर
Registrar of Companies
KARNATAKA, BANGALORE

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(Amended)

सत्यमेव जयते

Government of India

Form GST REG-06

[See Rule 10(1)]

Registration Certificate

Registration Number :29AACCP0728K1Z9

1.	Legal Name	POM SYSTEMS & SERVICES PRIVATE LIMITED			
2.	Trade Name, if any	POM SYSTEMS AND SERVICES PVT LTD			
3.	Constitution of Business	Private Limited Company			
4.	Address of Principal Place of Business	No.75, POM SYSTEMS AND SERVICES PVT LTD, 6th Main 3rd Phase, Peenya Industrial Area, Bengaluru (Bangalore) Urban, Karnataka,			
5.	Date of Liability	01/07/2017			
6.	Date of Validity	From	20/09/2017	To	NA
7.	Type of Registration	Regular			
8.	Particulars of Approving Authority				
		Signature			
Name					
Designation					
Office					
Date of issue of Certificate		14/06/2018			
Note: The registration certificate is required to be prominently displayed at all places of Business/Office(s) in the State.					

This is a system generated digitally signed Registration Certificate issued based on the deemed approval of application on

File No. ANERT-TECH/41/2024-PE1(RTS) (Computer No. 7540)

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आयकर विभाग
INCOME TAX DEPARTMENT

भारत सरकार
GOVT. OF INDIA

स्थायी लेखा संख्या कार्ड
Permanent Account Number Card

AACCP0728K

नाम / Name
POM SYSTEMS & SERVICES PRIVATE LIMITED

निगमन/गठन की तारीख
Date of Incorporation / Formation
05/06/2000

31122017

1603

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POM Systems & Services Pvt. Ltd.

ANNEXURE D – DECLARATION BY THE BIDDER

e-EoI Notification No: **ANERT-TECH/41/2024-PE1(RTS)** dtd 27.2.2024 for Expression of Interest (EoI) for the Selection of Agency for Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram

To
The CEO
ANERT

We, the undersigned, declare that:

1. We have examined and have no reservations to the Bidding Document, including Addenda No. (if any)
2. We offer to supply in conformity with the Bidding Document and in accordance with the delivery schedule
3. Our Bid shall be valid for a period of 4 months from the date fixed as deadline for the submission of EoIs in accordance with the Bidding Document, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;
4. If our Bid is accepted, we commit to submit a Security Deposit in the amount of 3 percent of the Contract Price for the due performance of the Contract;
5. We are not participating, as Bidders, in more than one Bid in this bidding process;
6. Our firm, its affiliates or subsidiaries, including any subcontractors or suppliers forany part of the Contract, has not been declared ineligible by the ANERT or Government of Kerala;
7. We understand that this Bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract betweenus, until a formal Contract is prepared and executed.
8. Our firm has obtained the certifications from MNRE or NABL approved Test laboratories that the goods and services are satisfying the technical criteria specified in the bid.

Thanks, and Regards
For, POM Systems & Services Pvt. Ltd.,
Balasankar Menon KG (General Manager)
Email: gm@pompower.in

POM SYSTEMS & SERVICES PVT. LTD. BENGALURU

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POM Systems & Services Pvt. Ltd.

ANNEXURE E – DECLARATION OF RELATIONSHIP WITH ANERT EMPLOYEE

EoI Notification No.: **ANERT-TECH/41/2024-PE1(RTS)**

Expression of Interest (EoI) for the Selection of Agency for Pilot Implementation ofBattery Energy Storage System at ANERT HQ, Thiruvananthapuram

To
The CEO
ANERT

Name of the ANERT employee with Designation: **NIL**

Name of the bidder related to the employee: **NA**

This is to put on record that Shri/Smt **NONE** currently working as **NONE** in ANERT is related to, who is the bidder in the bid. We are aware of the Anti-corruption policy of ANERT and will observe the highest standards during the execution of contract and shall retain from corrupt, fraudulent, collusive or coercive practices on competing for the contract.

Date: 05.03.2024

Thanks, and Regards
For, POM Systems & Services Pvt. Ltd.,
Balasankar Menon KG (General Manager)
Email: gm@pompower.in

POM SYSTEMS & SERVICES PVT. LTD. BENGALURU

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भारतीय गैर न्यायिक

भारत

पचास रुपये रु.50

FIFTY RUPEES Rs.50

सत्यमेव जयते

INDIA

INDIA NON JUDICIAL

കേരളം केरल KERALA

CZ 150824

ANNEXURE F – UNDERTAKING FOR NO BLACKLISTING & NO BANNING

Undertaking for No Blacklisting & No Banning

To

The CEO
ANERT

Sub: Expression of Interest (EoI) for the Selection of Agency for Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram

I / We hereby declare that presently our Company/Limited Liability Partnership/Partnership Firm/ Sole Proprietorship is having unblemished record and is not declared ineligible for corrupt/fraudulent practices by any State/Central Government/PSU on thedate of Bid Submission.

I / We further declare that presently our Company/Limited Liability Partnership/ Partnership Firm/ Sole Proprietorship is not blacklisted and not declared ineligible for reasons other than corrupt/fraudulent practices by any State/Central Government/PSU on the date of Bid Submission.

No. 23138 Pom Systems

PRINCIPAL ST EAST FORT
22 FEB 2024

SINDHU LS

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भारतीय गैर न्यायिक

भारत

पचास रुपये रु.50

FIFTY RUPEES Rs.50

सत्यमेव जयते

INDIA

INDIA NON JUDICIAL

കേരളം केरल KERALA

CZ 150825

If this declaration is found to be incorrect then without prejudice to any other action that may be taken, our security may be forfeited in full and the EoI if any to the extent accepted may be cancelled.

Date: 05.03.2024

Thanks, and Regards

For, POM Systems & Services Pvt. Ltd.,

Balasankar Menon KG (General Manager)

Email: gm@pompower.in

No. 23139 Pom Systems

SINDHU LLS

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CA V.K. Sudhakar Shetty
B.Sc., F. C. A

V. K. S. SHETTY & CO.,
CHARTERED ACCOUNTANTS

Form D

FINANCIAL INFORMATION

1. Financial Analysis – Financial Details are to be furnished for the Last Five Years duly certified by the Chartered Accountant as submitted by the Applicant to the Income Tax Department. The Bidder should give Information strictly as the Format given below:

(Rs. in Lakhs)

Sl. No.	Particulars	Financial Year				
		2018-19	2019-20	2020-21	2021-22	2022-23
1	Gross Annual Turn Over	428.49	375.03	515.56	659.74	655.74
2	Turn-Over on Works	428.49	375.03	515.56	659.74	655.74
3	Profits/Loss after Taxes (Consolidated)	9.11	8.94	7.79	62.86	11.60
4	Profits/Loss after Taxes (Standalone)	9.11	8.94	7.79	62.86	11.60
5	The bidder should give information strictly in above format					

2. Financial Arrangements for carrying out the Proposed Work:

Date : 30/10/2023
Place : Bangalore

Certified By
For V. K. S. Shetty and Co.,
Chartered Accountants

Sudhakar Shetty V. K.
Proprietor
Firm Regn. No: 005302S
Membership No: 029676
UDIN: 23029676BGWMUP1105

V.K.S. SHETTY & CO. ★ Chartered Accountants ★ Bangalore-86 Ph: 23193645

Signature(s) of Bidders(s)

Note: The Contractor should upload Copy of Abridged Balance Sheet along with Profit and Loss Account Statement of the Firm for the Last Three Financial Years.

No.55, 1st Floor, 10th Cross, Mahalakshmipuram, 2nd Stage, West of Chord Road, (Near Rajajinagar Metro Station) Bangalore-560086
Tel: +91-80-23193645 / 46, +91-96631 99001 (Off) 98455 97123, 76761 55586 (Per)
Email : ca.vksshetty@gmail.com, vksshettyandco@gmail.com / Website : www.vksshettyandco.in
GSTIN : 29AEOPS9245M1ZD

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CA V.K. Sudhakar Shetty
B.Sc., F. C. A

V. K. S. SHETTY & CO.,
CHARTERED ACCOUNTANTS

Certificate by Chartered Accountant on letterhead

This is to certify that **M/s POM Systems and Services Private Limited** (hereinafter referred to as 'enterprise') having PAN Number **AACCP0728K** and UDYAM Registration Number **UDYAM-KR-03-0076695** registered office **at No 75, 6th A Main, 3rd Phase, Peenya Industrial Area, Bangalore: 560058** is falling under the category **Small** under MSMED A c t 2006. (Copy of UDYAM Registration Certificate to be enclosed).

The said classification of **Small** is arrived at based on the Notifications / guidelines / clarifications issued under Micro, Small and Medium Enterprises Development Act, 2006 including the notification S.O.2119 (E) dated 26th June 2020.

The Investment of the enterprise in Plant and Machinery or Equipment as at 31st March 2023 as per Clause 4 of the Notification is 37.49 (Rupees in Lakhs).

The turnover of the Enterprise for the period ending 31st March 2023 as per Clause 5 of the Notification is 655.74 (Rupees in Lakhs).

Date : 04/01/2024

Certified By
For V. K. S. Shetty and Co.,
Chartered Accountants

Sudhakar Shetty V. K.
Proprietor
Firm Regn. No: 005302S
Membership No: 029676
UDIN: 24029676BKAHTW2990

V.K.S. SHETTY & CO. Chartered Accountants
Bangalore-86
Ph: 23193645

No.55, 1st Floor, 10th Cross, Mahalakshmipuram, 2nd Stage, West of Chord Road, (Near Rajajinagar Metro Station) Bangalore-560086
Tel: +91-80-23193645 / 46, +91-96631 99003 (Off) 98455 97123, 76761 55586 (Per)
Email : ca.vksshetty@gmail.com, vksshettyandco@gmail.com / Website : www.vksshettyandco.in
GSTIN : 29AEOPS9245M1ZD

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CERTIFICATE

This is to Certify that the Management System of

POM Systems & Services Pvt. Ltd.

No-75, 6th Main, 3rd Phase, Peenya Industrial Area,
Bengaluru-560058, India

has been audited and found to comply with the requirements of:

ISO 9001:2015
(Quality Management System)

For the Scope of activities described below:

Manufacturing, Supply and Post Sales Service of Energy Storage Systems, Data Center Infrastructure Products, UPS Systems, Solar Inverters, Solar Street Lights, Fast Chargers-EV, DC Power Supplies, Frequency Converters, Multifunctional Power Conversion Systems, Rack Mounted Power Conversion Systems, Innovative Lithium Battery Systems, Servo Controlled Voltage Stabilizers & Ultra Isolation Transformers, Engineering, Procurement & commissioning of Solar Power plants, Procurement and Supply of Solar Modules

Certificate No.: IN231005027

Date of initial registration	*Date of this Certificate*	*Recertification Due*
05 October 2023	*05 October 2023*	*04 October 2026*

Validity of this certificate is subject to successful completion of surveillance audit on or before due date, in case surveillance audit not conducted this certificate shall be suspended/cancelled.

Director

For verification and updated information concerning the present certificate visit to www.lmscert.uk/www.lmscert.com
This certificate is property of LMS Assessments Limited and remains valid subject to satisfactory surveillance audits and shall be returned immediately when demanded.

Accreditation

LMS Assessments Limited
Bartle House, Oxford Court, Manchester,
M2 3WQ(United Kingdom)
Phone : +44-7904664589
Visit :- www.lmscert.uk/www.lmscert.com
E-mail :- info@lmscert.uk
(Company Regd. No. 11029176 Registered in England and Wales)

1610

LMS/EGAC/F109Q/19/REV00

भारत सरकार
Government of India
सूक्ष्म, लघु एवं मध्यम उद्यम मंत्रालय
Ministry of Micro, Small and Medium Enterprises

सूक्ष्म, लघु एवं मध्यम उद्यम
MICRO, SMALL & MEDIUM ENTERPRISES

UDYAM REGISTRATION CERTIFICATE

UDYAM REGISTRATION NUMBER — **UDYAM-KR-03-0076695**

NAME OF ENTERPRISE — **M/S POM SYSTEMS AND SERVICES PRIVATE LIMITED**

TYPE OF ENTERPRISE *

SNo.	Classification Year	Enterprise Type	Classification Date
1	2023-24	Small	09/05/2023
2	2022-23	Micro	26/06/2022
3	2021-22	Micro	17/06/2021

MAJOR ACTIVITY — **MANUFACTURING**

SOCIAL CATEGORY OF ENTREPRENEUR — **GENERAL**

NAME OF UNIT(S)

S.No.	Udyog Aadhaar Memorandum	Unit(s) Name
1	KR03D0022344	POM SYSTEMS AND SERVICES PVT LTD

OFFICAL ADDRESS OF ENTERPRISE

Flat/Door/Block No.	NO.75	Name of Premises/ Building	.
Village/Town	PEENYA INDUSTRIAL AREA	Block	3RD PHASE
Road/Street/Lane	6TH MAIN ROAD	City	BANGALORE
State	KARNATAKA	District	BENGALURU (URBAN) , Pin 560058
Mobile	9844034106	Email:	info@pompower.in

DATE OF INCORPORATION / REGISTRATION OF ENTERPRISE — **05/06/2000**

DATE OF COMMENCEMENT OF PRODUCTION/BUSINESS — **21/04/2022**

NATIONAL INDUSTRY CLASSIFICATION CODE(S)

SNo.	NIC 2 Digit	NIC 4 Digit	NIC 5 Digit	Activity
1	27 - Manufacture of electrical equipment	2790 - Manufacture of other electrical equipment	27900 - Manufacture of other electrical equipment	Manufacturing
2	33 - Repair and installation of machinery and equipment	3313 - Repair of electronic and optical equipment	33131 - Repair and maintenance of measuring, testing, navigating and	Manufacturing

1611

			control equipment of group 265	
3	35 - Electricity, gas, steam and air conditioning supply	3510 - Electric power generation, transmission and distribution	35105 - Electric power generation using solar energy	Manufacturing
4	26 - Manufacture of computer, electronic and optical products	2620 - Manufacture of computers and peripheral equipment	26209 - Manufacture of computers and peripheral equipment n.e.c.	Manufacturing
5	26 - Manufacture of computer, electronic and optical products	2640 - Manufacture of consumer electronics	26409 - Manufacture of other electronic consumer goods n.e.c. (this includes non- television video camera)	Manufacturing
6	46 - Wholesale trade, except of motor vehicles and motorcycles	4652 - Wholesale of electronic and telecommunications equipment and parts	46529 - Wholesale of other electronic equipments and parts thereof	Trading

DATE OF UDYAM REGISTRATION **17/06/2021**

* **In case of graduation (upward/reverse) of status of an enterprise, the benefit of the Government Schemes will be availed as per the provisions of Notification No. S.O. 2119(E) dated 26.06.2020 issued by the M/o MSME.**

Disclaimer: This is computer generated statement, no signature required. Printed from https://udyamregistration.gov.in & Date of printing:- 05/12/2023

For any assistance, you may contact:

1. District Industries Centre: **BANGALORE (URBAN) (KARNATAKA)**

2. MSME-DFO: **BANGALORE (KARNATAKA)**

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Government of Karnataka

Rs. 500

e-Stamp

Certificate No.	:	IN-KA14618851235661W
Certificate Issued Date	:	28-May-2024 10:57 AM
Account Reference	:	NONACC (FI)/ kaksfcl08/ BANGALORE5/ KA-RJ
Unique Doc. Reference	:	SUBIN-KAKAKSFCL0886808704505947W
Purchased by	:	POM SYSTEMS AND SERVICES PRIVATE LIMITED
Description of Document	:	Article 41(h) Power of Attorney - in any other case
Property Description	:	POWER OF ATTORNEY
Consideration Price (Rs.)	:	0 (Zero)
First Party	:	POM SYSTEMS AND SERVICES PRIVATE LIMITED
Second Party	:	ANERT
Stamp Duty Paid By	:	POM SYSTEMS AND SERVICES PRIVATE LIMITED
Stamp Duty Amount(Rs.)	:	500 (Five Hundred only)

For SPANDANA CREDIT SOUHARDA
SAHAKARI NIYAMITHA

Authorised Signatory

Please write or type below this line

Power of Attorney

Know all men by these presents, we, M/s **POM Systems and Services Pvt. Ltd.**, (Brand Name: POM POWER) having registered office at **No-75, 6th Main, 3rd Phase, Peenya Industrial Area, Bengaluru-560058**. do hereby constitute, nominate, appoint and authorise **Mr. KG Balasankar Menon** (Employee) and presently residing at **4D, Souparnika Regal, Kallayam, Tiruvananthapuram 695043.**, who is presently employed with us and holding the position of General Manager as our true and lawful attorney

NOTARY ★ GOVERNMENT OF INDIA ★ M. DEVARAJA M.A. LLB BANGALORE Reg No. 8716/2011

POM SYSTEMS & SERVICES PVT. LTD. BANGALORE - 58.

Statutory Alert:
1. The authenticity of this Stamp certificate should be verified at 'www.shcilestamp.com' or using e-Stamp Mobile App of Stock Holding. Any discrepancy in the details on this Certificate and as available on the website / Mobile App renders it invalid.
2. The onus of checking the legitimacy is on the users of the certificate.
3. For any discrepancy please inform the Competent Authority.

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(Hereinafter referred to as the —Authorized Representative) to do in our name and on our behalf, all such acts, deeds and things as are necessary or required in connection withor incidental to submission of our Proposal against Tender **Ref. No.: ANERT-TECH/41/2024-PE1(RTS)** ***Re-Invitation of Expression of Interest (EoI) forthe Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram***

including but not limited to signing and submission of all applications, proposals and other documents and writings, participating in pre-bid and other conferences and providing information/ responses to the ANERT, representing us in all matters before theANERT, signing and execution of all contracts and undertakings consequent to acceptanceof our proposal and generally dealing with the Authority in all matters in connection with or relating to or arising out of our Proposal for the said Project and/or upon award thereofto us till the entering into of the Agreement with the ANERT.

AND, we do hereby agree to ratify and confirm all acts, deeds and things lawfully done or caused to be done by our said Authorised Representative pursuant to and in exercise of the powers conferred by this Power of Attorney and that all acts, deeds and things done by our said Authorised Representative in exercise of the powers hereby conferred shall and shall always be deemed to have been done by us.

IN WITNESS WHEREOF WE, **POM Systems and Services Pvt. Ltd.**, THE ABOVE - NAMED Mr. KG Balasankar Menon-General Manager

REPRESENTATIVE HAVE EXECUTED THIS POWER OF ATTORNEY ON THIS DAY 27 MAY OF 2024

For, POM Systems and Services Pvt. Ltd.,

I.Bhima Rao

Managing Director

POM SYSTEMS & SERVICES PVT. LTD. BANGALORE-58.

Witnesses:

1.

2. (Vinod Kumar)

T. Rajeshekar

(T. RAJESHEKAR)

NOTARY ★ INDIA ★ GOVERNMENT OF

M. DEVARAJA M.A. LLB BANGALORE Reg. No. 8716/2011

EXECUTION ADMITTED BEFORE ME

M. DEVARAJA M.A, LLB
ADVOCATE & NOTARY
Shop No. 5, 14th Cross,
Near Peenya Sub-Registrar Office,
Peenya 2nd Stage, Bangalore-58

28 MAY 2024

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(Amended)

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Government of India

Form GST REG-06

[See Rule 10(1)]

Registration Certificate

Registration Number :29AACCP0728K1Z9

1.	**Legal Name**	POM SYSTEMS & SERVICES PRIVATE LIMITED			
2.	**Trade Name, if any**	POM SYSTEMS AND SERVICES PVT LTD			
3.	**Additional trade names, if any**				
4.	**Constitution of Business**	Private Limited Company			
5.	**Address of Principal Place of Business**	No.75, POM SYSTEMS AND SERVICES PVT LTD, 6th Main 3rd Phase, Peenya Industrial Area, Bengaluru Urban, Karnataka, 560058			
6.	**Date of Liability**	01/07/2017			
7.	**Date of Validity**	From	01/07/2017	To	Not Applicable
8.	**Type of Registration**	Regular			
9.	**Particulars of Approving**	Centre Goods and Services Tax Act, 2017			

Signature

Name	CHITRA V
Designation	Superintendent
Jurisdictional Office	LGSTO 075 - Bengaluru
Date of issue of Certificate	31/07/2023

Note: The registration certificate is required to be prominently displayed at all places of Business/Office(s) in the State.

This is a system generated digitally signed Registration Certificate issued based on the approval of application granted on 31/07/2023 by the jurisdictional authority.

Goods and Services Tax

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Annexure A

सत्यमेव जयते

Goods and Services Tax Identification Number: 29AACCP0728K1Z9

Details of Additional Place of Business(s)

Legal Name	POM SYSTEMS & SERVICES PRIVATE LIMITED
Trade Name, if any	POM SYSTEMS AND SERVICES PVT LTD
Additional trade names, if any	

Total Number of Additional Places of Business(s) in the State **0**

Goods and Services Tax

SINCE 2000

THE QUALITY CHOICE
FOR ALL YOUR POWER NEEDS

PAM POWER
www.pompower.in

GRID & RENEWABLE BASED
ENERGY STORAGE SOLUTIONS

- IIntelligent multi energy sources management integrating Li - on Battery Bank and MPCS
- Compact size, light weight, quick built, on-site parameter and feature setting possible
- Convenient operation, least maintenance, long life
- Peak-shaving, micro-grid building, emergency mobile battery energy support
- Time-of-Day (ToD), energy source prioritization, Grid energy tariff eco-system participation
- Improving power factor, reducing three-phase imbalance, reduce voltage and current harmonics

POM SYSTEMS & SERVICES PVT. LTD.
#75, 6th Main, 3rd Phase,
Peenya Industrial Area,
Bangalore - 560 058.
Ph : 080-28372296

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Fully containerized intelligent Battery Energy Storage system complete with Power Conversion System (PCS), choice of AC-DC or DC-DC conversion, fire protection, isolation transformer, MPPT chargers, optional AMF panels and high-speed STS.

Power Management System (PMS) for on-site programming and optional Energy Management System (EMS) for remote data acquisition and management

GRES synchronizes multiple power sources and can be configured to participate in grid arbitration. Feature rich GRES has Grid connected or off-grid mode, Static reactive power compensation, harmonic suppression, intelligent energy source selection, Time-of-Day (ToD) charging-discharging, peak-shaving, frequency and voltage regulation, emergency mobile battery back-up response.

PCS

Bidirectional AC/DC converter can realize the bidirectional conversion from DC to AC. It can not Only convert AC to DC to charge battery, but also converts DC to AC to supply power to load or feed back to power grid

Battery System

The system mainly consists of safe, efficient and long - life lithium iron phosphate cells, which are connected in series to from battery modules and multiple modules are connected in series to form Battery clusters.

Battery Management System

BMS

The core components of the system can effectively protect the battery from overcharge, overdischarge and over-current. At the same time, the balanced management of cells can ensure the Safe, reliable and efficient operation of the whole system.

Power Management System

System operation data monitoring, operation strategy management, historical data record, system status record etc.

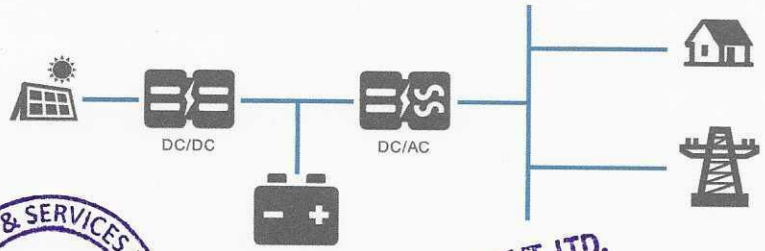
Enclosure

Protection degree IP54

Air Conditioning

Air Conditioning (HVAC) system is configured to maintain an optimal temperature to maximise energy system, operational life and efficiency.

System Topology



Applicable model:

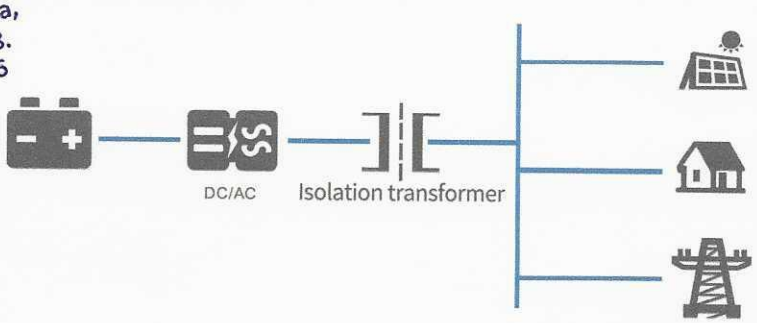
GRES-75-50/GRES-150-100/GRES-225-150
GRES-300-200

POM SYSTEMS & SERVICES PVT. LTD. BANGALORE - 58.

POM SYSTEMS & SERVICES PVT. LTD.
#75, 6th Main , 3rd Phase,
Peenya Industrial Area,
Bangalore - 560 058.
Ph : 080-28372296

Applicable model:

GRES-1075-500/GRES-645-300



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GRES CONTAINER SOLUTIONS

GRES -75-50

Battery Capacity:
75kwh

PCS Capacity:
50kw

Dimension:
1680*1502*1700
(W*D*H)mm

GRES -150-100

Battery Capacity:
150kwh

PCS Capacity:
100kw

Dimension:
1680*2264*1700
(W*D*H)mm

GRES -225-150

Battery Capacity:
225kwh

PCS Capacity:
150kw

Dimension:
1680*3026*1700
(W*D*H)mm

GRES -300-200

Battery Capacity:
300kwh

PCS Capacity:
200kw

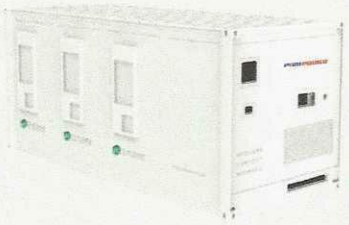
Dimension:
1680*3788*1700
(W*D*H)mm

GRES -645-300

Battery Capacity:
645kwh

PCS Capacity:
300kw

Dimension:
3000*2438*2591
(W*D*H)mm

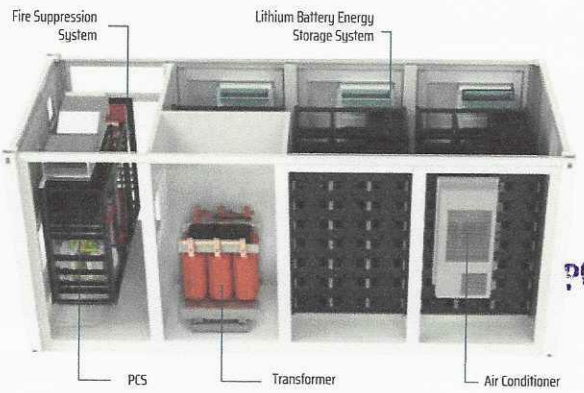


GRES -1075-500

Battery Capacity:
1075kwh

PCS Capacity:
500kw

Dimension:
6058*2438*2591
(W*D*H)mm



POM SYSTEMS & SERVICES PVT. LTD. BANGALORE - 58.

POM SYSTEMS & SERVICES PVT. LTD.
#75, 6th Main , 3rd Phase,
Peenya Industrial Area,
Bangalore - 560 058.
Ph : 080-28372296

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GRES DC Bus System Specifications

Model	GRES -75-50	GRES -150-100	GRES -225-150	GRES -300-200
PV paramters				
MPPT voltage range	DC220V - DC700V			
MPPT full power volt range	DC370V - DC700V			
MPPT channel Qty	0 - 2 (optional)			
Max current per channel	135A			
AC parameters(On grid)				
Rated output power	50kw	100kw	150kw	200kw
Rated grid voltage	3W+N+PE, 380V/400V			
Voltage range	-15% To +10%			
Rated frequency	50 Hz/60Hz			
Frequency range	± 2Hz			
Output current harmonic	≤ 3%(Rated power)			
Power factor	-0.9 to +0.9			
Overload capacity	105% : continuous operation: (105% -120%): 10min: 120%):stop operation			
AC parameters(Off grid)				
Rated output power	50kw	100kw	150kw	200kw
Rated voltage	3W+N+PE, 380V/400V			
Output voltage harmonics	≤ 3%(Linear Full Load)			
Rated frequency	50 Hz/60Hz			
Overload capacity	105% : continuous operation: (105% -120%): 10min: 120%):stop operation			
Battery				
Battery type	LFP			
Energy of each module	5.12kwh			
Module Qty	15	30	45	60
Total power	76.8kwh	153kwh	230kwh	307.2kwh
Running time	1.5(Optional by changing module qty)			
Life cycle	4000 cycles (0.5C@25℃ charging & discharging @100DOD, EOL80%)			
Basic parameters				
Dimension W*D*H	1680*1502*1700mm	1680*2264*1700mm	1680*3026*1700mm	1680*3026*1700mm
Weight	1395kg	2470kg	3545kg	4620kg
Isolation	No			
On-Off grid switching	STS			
Protection	Outdoor IP54			
Working Temperature	-20° C to 50° C(>45 C derating)			
Relative humidity	0% RH to 95% RH, No condensation			
Cooling	Electrcal cabin: Intelligent air cooling; Battery cabin : Air conditioner;			
Max working altitude	4000m(>2000m derating)			
Display	Touch Screen			
Communication	RS485 CAN LAN			
Communication protocol	Modbus-RTU, Modbus-TCP, CAN2.08			

POM SYSTEMS & SERVICES PVT. LTD. BANGALORE - 58

POM SYSTEMS & SERVICES PVT. LTD.
#75, 6th Main , 3rd Phase,
Peenya Industrial Area,
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Ph : 080-28372296

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GRES AC Bus System Specifications

Model	GRES -645-300	GRES -1075-500
PV Paramters		
Max input power	200kw	400kw
Rated current	303A	606A
Rated input voltage	3W+N+PE, 380V/400V	
Rated frequency	50 Hz/60Hz	
AC parameters(On grid)		
Rated output power	300kw	500kw
Rated grid voltage	3W+N+PE, 380V/400V	
Voltage range	–15% To +10%	
Rated frequency	50 Hz/60Hz	
Frequency range	± 2Hz	
Output current harmonics	≤ 3%(Rated power)	
Power factor	–0.9 to +0.9	
Overload capacity	105% : continuous operation: (105% -120%): 10min: 120%):stop operation	
AC parameters(Off grid)		
Rated output power	300 kw/500kw	
Rated voltage	(3W+N+PE), 380V/400V	
Output voltage harmonics	≤ 3%(Linear Full Load)	
Rated frequency	50 Hz/60Hz	
Overload capacity	105% : continuous operation: (105% -120%): 10min: 120%):stop operation	
Battery		
Battery type	LFP	
Energy of each rack	215.04Kwh	
Rack qty	3	5
Total power	645.12Kwh	1075.2Kwh
Running time	2h(Optional by changing module qty)	
Life cycle	6000 cycles (0.5C@25 °C charging & discharging @100DOD, EOL80%)	
Protection		
DC switch	YES	
AC switch	YES	
Grid monitoring	YES	
Surge protection	YES	
Basic Parameters		
Dimension (W*D*H)	3000*2438*2591mm	6058*2438*2591mm
Weight	10000kg	16000kg
Isolation	Isolation transformer(built-in)	
On off grid switching	STS	
Protection	Outdoor IP54	
Working temperature	-20 °C to 55 °C	
Relative humidity	0% RH to 95% RH, No condensation	
Cooling	Electrcal cabin: Intelligent air cooling; Battery cabin : Air conditioner;	
Max working altitude	4000m(>2000m derating)	
Display	Touch Screen	
Communication	RS485 CAN LAN	
Communication protocol	Modbus-RTU, Modbus-TCP, CAN2.08	

POM SYSTEMS & SERVICES PVT. LTD. BANGALORE - 58.

POM SYSTEMS & SERVICES PVT. LTD.
#75, 6th Main, 3rd Phase,
Peenya Industrial Area,
Bangalore - 560 058.
Ph : 080-28372296

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POM SYSTEMS & SERVICES PVT. LTD. BANGALORE - 58.

POM SYSTEMS & SERVICES PVT. LTD.
#75, 6th Main , 3rd Phase,
Peenya Industrial Area,
Bangalore - 560 058.
Ph : 080-28372296

PAM POWER

PAM SYSTEMS & SERVICES PVT.LTD.
Unit No: D1, 1st Floor, SOLUS, Jain Heights
1st A Cross, J C Road, Bangalore - 560002.
FACTORY & HEADOFFICE
No. 75, 6th Main, 3rd Phase, Peenya Indl. Area, Bangalore - 560 058
9844 03 41 06, 9902 27 24 99 pompower@pompower.in

NEW DELHI
912, 9th Floor, Mercantile House,
15, Kasturba Gandhi Marg,
New Delhi- 110 001

HYDERABAD
No:64-9/2 and 6-4-9/2/A
Bholakpur, Secunderabad,
Hyderabad-500080

BELGAUM
Ground Floor, Shop No: S-03, CTS No. 424/A,B,C,D,
R.C.C Building, Amantran Anant Square, Tilakavadi,
Near Congress Well, Belagavi, Karnataka- 590006

MANGALORE
Shop No: 3-28/11 House, Malemar Road,
Kottara Chowki, Mangaluru,
Dakshina Kannada, Karnataka- 575006

TRIVANDRUM
T C 20/1361 (1), G Floor, Amal Plaza, Pathirappally Ward,
Opposite Civil Station Compound, Kudapanakunnu P O,
Thiruvananthapuram-695043

MAKE IN INDIA | MSME

ISO 9001:2015
(Quality Management System)

KOLKATA, MUMBAI, CHENNAI, AHMEDABAD, VIZAG, RANCHI, BHOPAL, BHUBANESHWAR, JAIPUR, LUCKNOW, NAGPUR, PATNA
PUNE, RAIPUR, VIJAYAWADA, VISAKHAPATNAM, GUWAHATI, HUBLI, INDORE, CHANDIGARH, COIMBATORE, COCHIN, CALICUT

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Power Management System
Front Panel Display

Front panel 10 " touch screen details

1623

User settable configurations and BESS data det

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BMS Monitoring

Reactive Current Details

Front panel display Temperature, HVAC, Fire

PV Output Details

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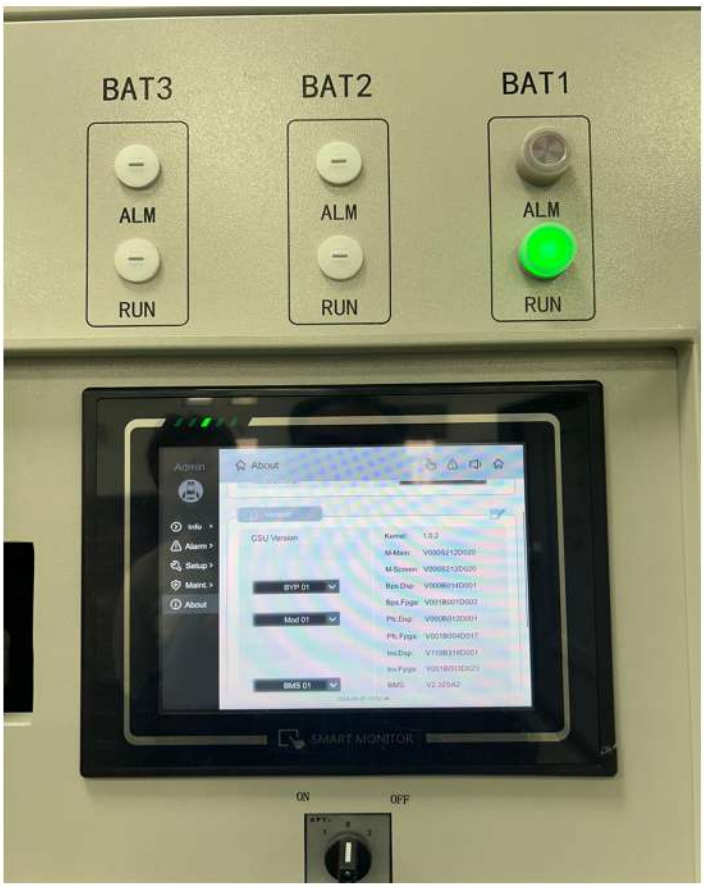
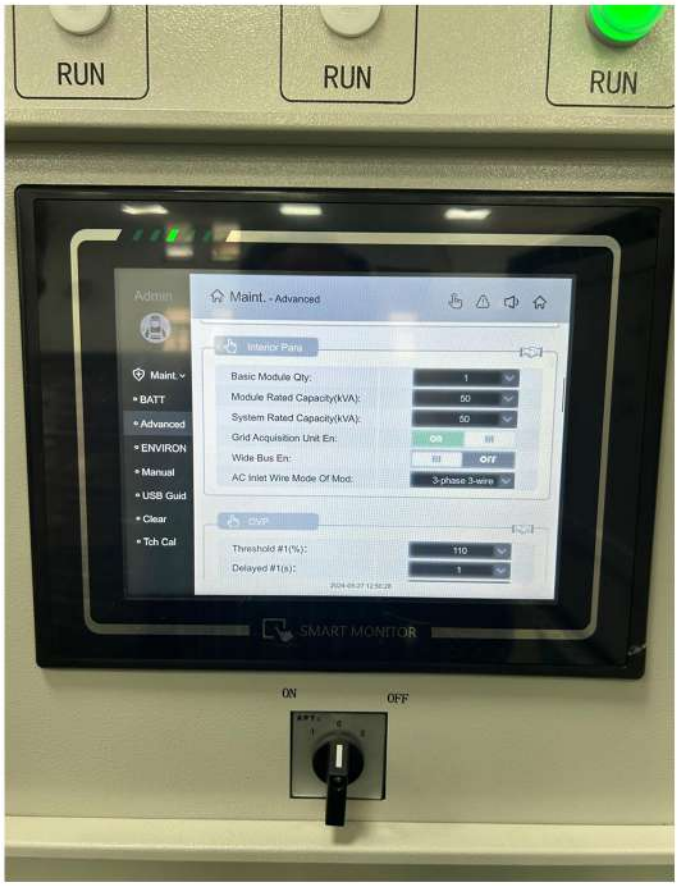
PV charge and discharge details

Battery details



System software versions



PCS details

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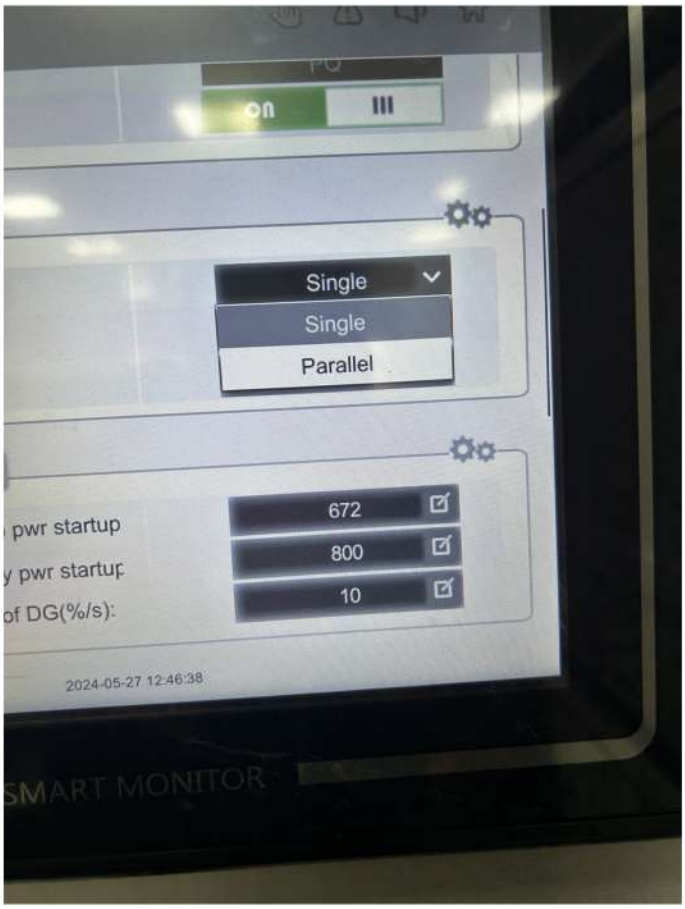
Battery bank configurations

Advanced Maintenance



Parallel Options of PCS

Battery Synchronization with DG

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PCS User Friendly Paralleling

400V AC Built in Isolation Transformer

Grid Details

TOD Peak Shaving Setting

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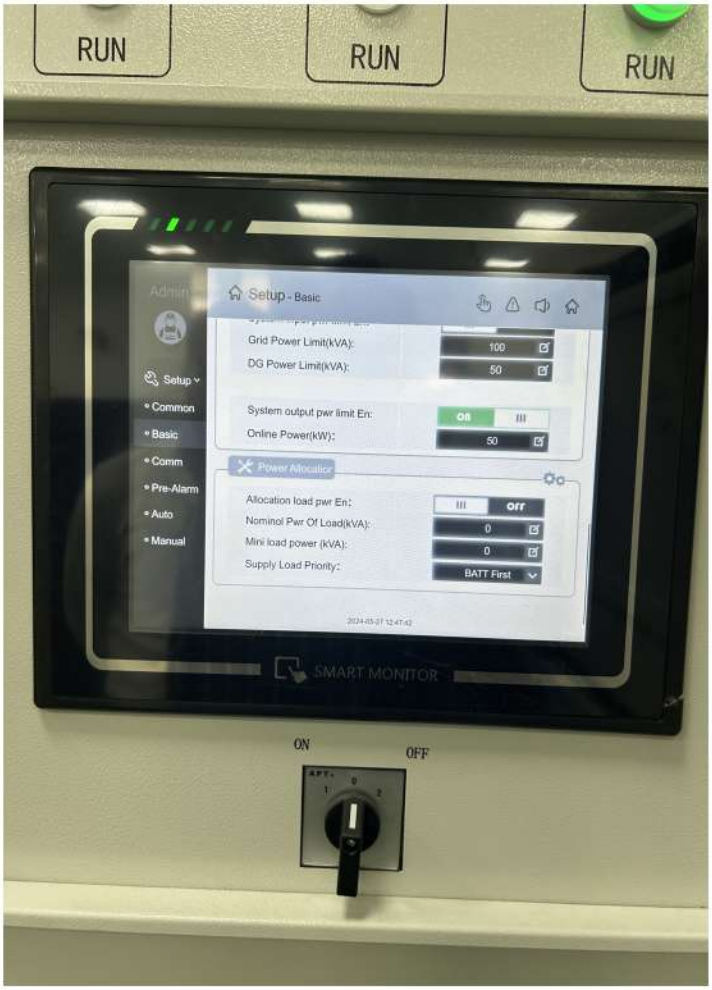
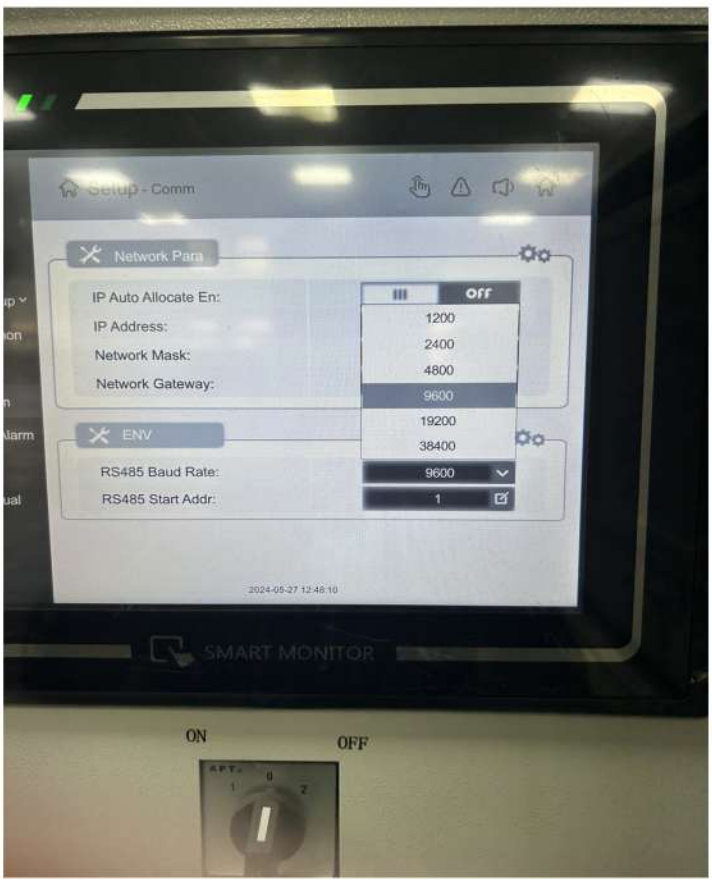


Source Priority Setting

Event Logging



User Friendly IP Allocations

USB Connectivity for Advance

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PCS Maintenance

Environmental Sensor

Advanced Interior & Output Parameters

Advanced Grid Parameters

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T2 POM.pdf

CERTIFICATE

No. 4Z240228.SCUU095

Test Report / Technical Construction File no. ZTL-2024022303E/ZTL-2024022304S

Certificate's Holder:	Sicon Chat Union Electric Co., Ltd. Bldg.14&15, No.319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, Hebei, China (050035)
Manufacturer:	Sicon Chat Union Electric Co., Ltd. Building No. 9, 10 Haihedao, HI-TECH Industrial Park, Shijiazhuang City, Hebei Province 050035, China
Certification ECM Mark	Type Approved
Product:	Integrated energy storage system
Brand name:	SCU先控
Model(s):	GRES-150-100, GRES-2150-1000, GRES-1075-500, GRES-645-300, GRES-215-100, GRES-300-200, GRES-225-150, GRES-75-50
Verification to:	Standard: *(see the following annex)* related to CE Directive(s): 2014/35/EU (Low Voltage) 2014/30/EU (Electromagnetic Compatibility)

Remark:
The manufacturer has voluntarily decided to submit its documents concerning the above-mentioned product for verification. Ente Certificazione Macchine confirms that the documentation made available and immediately returned to it, as containing sensitive data, meets the essential requirements of the above-mentioned directive/standard. The verification activity carried out exclusively concerned the technical documentation and no verification was carried out on the product. This document cannot replace the EC Declaration of Conformity. This document was issued in accordance with regulation RGVOL01 published on the website of www.entecerma.it and concerning voluntary certifications with a non-notified procedure.

Issuance date: 28 February 2024

Expiry date: 27 February 2029

For online check:

Approver
Ente Certificazione Macchine
Legal Representative
Luca Bedonni

Ente Certificazione Macchine Srl
Via Ca' Bella, 243 – Loc. Castello di Serravalle – 40053 Valsamoggia (BO) - ITALY
☎ +39 051 6705141 🖷 +39 051 6705156 ✉ info@entecerma.it 🌐 www.entecerma.it

Certificate – Сертификат – 證明書 – Certificat – 증명서 – شهادة

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Annex I

No. 4Z240228.SCUU095

Test Report / Technical Construction File no. ZTL-2024022303E/ZTL-2024022304S

Standard:

EN IEC 62477-1:2023, EN IEC 61000-6-4:2019,
EN IEC 61000-3-2:2019+A1:2021,
EN 61000-3-3:2013+A1:2019+A2:2021+AC:2022-01, EN IEC 61000-6-2:2019

Certificate – Сертификат – 證明書 – Certificat – 증명서 – شهادة

Ente Certificazione Macchine Srl
Via Ca' Bella, 243 – Loc. Castello di Serravalle – 40053 Valsamoggia (BO) - ITALY
☎ +39 051 6705141 🖷 +39 051 6705156 ✉ info@entecerma.it 🌐 www.entecerma.it

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ZERTIFIKAT ◆ CERTIFICATE ◆ 認證證書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

Product Service

C E R T I F I C A T E

No. B 003660 0011 Rev. 00

Holder of Certificate: **JIANGSU HIGHSTAR BATTERY MANUFACTURING CO., LTD**
No.306, Heping Road (S)
226200 Qidong City, Jiangsu
PEOPLE'S REPUBLIC OF CHINA

Certification Mark:

Product: **Batteries (Rechargeable Li-ion Cell)**

The product was tested on a voluntary basis and complies with the essential requirements. The certification mark shown above can be affixed on the product. It is not permitted to alter the certification mark in any way. In addition, the certification holder must not transfer the certificate to third parties. This certificate is valid until the listed date, unless it is cancelled earlier.
All applicable requirements of the testing and certification regulations of TÜV SÜD Group have to be complied. For details see: www.tuvsud.com/ps-cert

Test report no.: 64280236063501

Valid until: 2028-11-29

Date, 2023-12-06

(Harry Zhang)

1632

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TÜV SÜD Product Service GmbH • Certification Body • Ridlerstraße 65 • 80339 Munich • Germany
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ZERTIFIKAT ◆ CERTIFICATE ◆ 認證證書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

Product Service

C E R T I F I C A T E

No. B 003660 0011 Rev. 00

Model(s): **IFpP40130220-100**

Brand Name: **HIGHSTAR**

Parameters:

Nominal voltage:	3.2Vd.c.
Rated capacity:	100Ah

Tested according to: IEC 62619:2017

1633

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Sicon Chat Union Electric Co., Ltd.
Add: Bldg.14 & 15, No.319 Xiangjiang Street, High-Tech Zone, Shijiazhuang, China
Email: enquiry@scupower.com
Tel:86-311-85903762 Fax:86-311-85903718 Post: 050035

To whom-so-ever it may concern

We M/s. Sicon Chat Union Electric Co. ltd, Bldg: 14 & 15, No.319, Xiangjiang Street, Hi-tech Zone, Shijiazhuang, 050035, China, Manufacturer of EV Chargers, Modular UPS, PCS, Modular Energy Storage System with Lithium Batteries in Containers have global supplied Energy Storage Containers. Our Partners M/s.POM Systems and Services Pvt. Ltd is the Important Distributor and Service Provider of SCU in India.

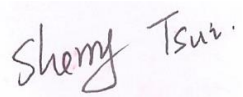
The following Individuals are trained at our Factory during the month of December 2023, from M/s. POM Systems and Services Pvt. Ltd, 75, 6th Main, 3rd Phase, Peenya Industrial Area, Bangalore 560058 India. They are the only Authorized Engineers who has been trained and permitted to install our list of Products, at present, in India.

1. Mr. Sudhindra
2. Mr. Ramesh
3. Mr. Vasanthan
4. Mr. Sreejith

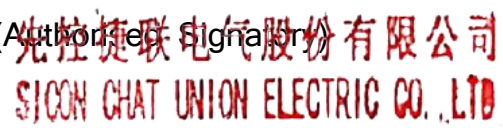
We are committed to support them for the entire Design, Supply, Installation and Commission of the entire products manufactured by us, supplied in India during the warranty and AMC period.

Best Regards,

Sherry Tsui
Sales Manager



(Authorised Signatory)



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Sicon Chat Union Electric Co., Ltd.
Add: Bldg.14 & 15, No.319 Xiangjiang Street, High-Tech Zone, Shijiazhuang, China
Email: enquiry@scupower.com
Tel:86-311-85903762 Fax:86-311-85903718 Post: 050035

29th February 2024

To,
The CEO,
ANERT,
Trivandrum

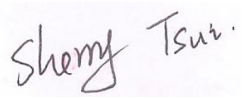
Ref. No. ANERT-TECH/41/2024-PE-1 (RTS)

We refer your tender and confirm here with, that we have installed Battery Energy Storage System, as per your specifications in a factory environment at Bangalore, and it's running successfully for the last two months.

You may requested to visit the premises and inspect all parameters with immediate effect.

Best regards,

Sherry Tsui
Sales Manager



Authorised Signatory
Sicon Chat Union Electric Co. Ltd

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SOLAR SYSTEMS
Inspiration for green family living

PLOT NO 41A, INDUSTRIAL PARK, SARPAVARAM, KAKINADA-533005
PH: 0884-2361069 / 9440573389.
E-mail: solarsystemsindia@yahoo.com

COVERING LETTER

Sir,

I/We M/s **Solar Systems** hereby e-tender to render the services under annexed terms and conditions

of contract, the whole of the articles referred to and described in the attached specification and quantity decided by the Agency for New & Renewable Energy Research and Technology (ANERT), at the rates quoted against each item.

I am/We are remitting herewith the required amount of Rs**. NIL** towards the registration Fee by electronic payment vide transaction No **NIL**

Yours Faithfully

For SOLAR SYSTEMS
Authorised Signatory

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SOLAR SYSTEMS
Inspiration for green family living

PLOT NO 41A, INDUSTRIAL PARK, SARPAVARAM, KAKINADA-533005
PH : 0884-2361069 / 9440573389.
E-mail: solarsystemsindia@yahoo.com

ANNEXURE A – SUMMARY OF BID QUALIFICATION REQUIREMENTS

1.	Name of the applicant and address with email, phone etc.	Solar Systems Plot No 41A, Industrial Park, Sarpavaram, Kakinada : 533005 Email : solarsystemsindia@yahoo.com Phone : 9440573389
2.	Main area of Business	Solar Inverters, Solar Energy systems, BESS
3.	Registered Office in Kerala	Perumal Pullampada Pallippad P.O Paripadi, Alappuzha District, Kerala-690512 Ph. +91 9035325159
4.	Details of Power of Attorney	Mr. AVVV Prasad – Manager Residing at 4-91/1 Velalapudi Kakinada
5.	Proof for Experience	Please find the Enclosed

Documentary evidence for the bid qualification requirements are submitted along withthis document and the details furnished above are true and correct.

Date: 07.03.2024

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കേരളം केरल KERALA

CZ 150828

ANNEXURE B – AGREEMENT

Subject: "Expression of Interest (EoI) for the Selection of Agency for Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram",

With reference to the RFP Document for the captioned Project, I/we,I **AVVV Prasad, Sr. Manager** authorised signatory of M/s **Solar Systems** Having registered office at **No-41/A, I.D.A. SARPAVARAM, KAKINADA, EAST GODAVARI, Andhra Pradesh -533005**. having examined all relevant documents and understood their contents hereby undertake that the Proposal is unconditional and unqualified.

1. I/We confirm that I/we have examined the terms and conditions published in theEOI and accordingly submitting the Application. The proposal is unconditional and unqualified.
2. All information provided in the Proposal is true and correct and all documents accompanying such Proposal are true copies of their respective originals.

No. 23142

Solar Systems

SINDHU.S

22 FEB 2024

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കേരളം केरल KERALA

CZ 150829

1. I/We declare that I/We have examined and have no reservations to the EOI Documents, including any Addendum thereto, issued by the ANERT;
2. I/We do not have any conflict of interest in accordance with provisions of theEOI Document;
3. I/We have not directly or indirectly or through an agent engaged or indulgedin any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice, as defined in the EOI document, in respect ofany tender or request for proposal issued by or any agreement entered into with the ANERT or any other public sector enterprise or any Government, Central or State; and

Rlo 23143 Solar Systems

22 FEB 2024

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കേരളം केरल KERALA

CZ 150830

10. I / We further certify that in regard to matters relating to security and integrity ofthe country, we have not been charge-sheeted by any agency of the Government or convicted by a Court of Law for any offence committed by us or by any of our Associates.

11. I / We hereby irrevocably waive any right or remedy which we may have at any stage at law or howsoever otherwise arising to challenge or question any decision taken by the ANERT (and/ or the Government of Kerala / India) in connection with the selection of Consultant or in connection with the Selection Process itself in respect of the above mentioned Project.

No. 23144 Solar Systems

22 FEB 2024

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കേരളം केरल KERALA

CZ 150831

16. I/We agree and undertake to abide by all the terms and conditions of the EOI Document. In witness thereof, I/we submit this Proposal under and in accordancewith the terms of the EOI Document.

Signed by Sri .....
..

(Date) .....

in the presence of witnesses

1.

2.

Signed by Sri .....
.

(Date) .....

in the presence of witnesses

1.

2.

No. 3145 Solar Systems
27/8/2024 Ealanad

22 FEB 2024

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Phone No:
Sold To/Issued To:
A VVV Prasad
For Whom/ID Proof:
Self

भारत INDIA
INDIA NON JUDICIAL
S VENKATA RAO
D.NO.3-1-48
MAIN ROAD
KAKINADA
533001
ANDHRA PRADESH

MAR-05-2024 18:16:27
₹ 0000100/-
ZERO ZERO ZERO ZERO ONE ZERO ZERO
Agreement
38153731709662587326-00108070
3815373 17/2021

ANNEXURE C – POWER OF ATTORNEY

(On Stamp Paper of requisite Stamp value)

Know all men by these presents, we, M/s Solar Systems (name of Firm and address of the registered office) do hereby constitute,.....nominate, appoint and authorise Mr / Ms. A VVV Prasad son/daughter/wife / Husband and presently residing at 4-91/1 Vakalapudi Kakinada, who is presently employed with us and holding the position of Sr. Manager as our true and lawful attorney (Hereinafter referred to as the —Authorized Representative) to do in our name and on our behalf, all such acts, deeds and things as are necessary or required in connection with or incidental to submission of our Proposal for and selection as the Consultant for

including but not limited to signing and submission of all applications, proposals and other documents and writings, participating in pre-bid and other conferences and providing information/ responses to the ANERT, representing us in all matters before the ANERT, signing and execution of all contracts and undertakings consequent to acceptance of our proposal and generally dealing with the Authority in all matters in connection with or relating to or arising out of our Proposal for the said Project and/or upon award thereof to us till the entering into of the Agreement with the ANERT.

AND, we do hereby agree to ratify and confirm all acts, deeds and things lawfully done or caused to be done by our said Authorised Representative pursuant to and in exercise of the powers conferred by this Power of Attorney and that all acts, deeds and things done by our said Authorised Representative in exercise of the powers hereby conferred shall and shall always be deemed to have been done by us.

IN WITNESS WHEREOF WE, M/s Solar Systems THE ABOVE - NAMED AUTHORISED REPRESENTATIVE HAVE EXECUTED THIS POWER OF ATTORNEY ON THIS DAY OF 05-03-, 2024

P. Sesha Rao 5/3/2024.

NOTARY
PILLI SESHA RAO M.A., B.L.
KAKINADA A.P
Appointed
Regd. No.

ATTESTED

PILLI SESHA RAO, M.A. B.L
ADVOCATE-NOTARY
D.No. 6-83, DUGGUDURU,
Kajuluru Mandal, E.G. Dt., A.P.
Approved by Govt. of A
Ref. G.O.Ms. No.2747 (77) Dated 26
Renewed Notary License Valid upto 25-..
Cell : 9949147926

For

(Signature, name, designation and address) Witnesses:

1. K [illegible] (PRASAD)
2. K. Srinu (Srinu)

Notarized

Accepted (Signature, name, designation and address of the Attorney)

NOTARY PILLI SESHA RAO M.A., B.L. KAKINADA Appointed by Govt. A.P Regd. No. 2747 (77) NOTARIAL GOVT. OF A.P.

ATTESTED P. Sesha Rao 5/3/2024
PILLI SESHA RAO, M.A. B.L.
ADVOCATE-NOTARY
D.No. 6-83, DUGGUDURU,
Kajuluru Mandal,E.G. Dt., A.P.
Approved by Govt. of A.P.
Ref. G.O.Ms. No.2747 (77) Dated 2[illegible]
Renewed Notary License Valid upto 25.
Cell : 9949147926

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सत्यमेव जयते

Government of India

Form GST REG-06

[See Rule 10(1)]

Registration Certificate

Registration Number : 37AVSPB0729L1Z9

1.	**Legal Name**	RAMA DEVI BOLLA			
2.	**Trade Name, if any**	SOLAR SYSTEMS			
3.	**Constitution of Business**	Proprietorship			
4.	**Address of Principal Place of Business**	PLOT NO 41/A, I.D.A,SARPAVARAM, KAKINADA, East Godavari, Andhra Pradesh, 533005			
5.	**Date of Liability**	01/07/2017			
6.	**Period of Validity**	From	01/07/2017	To	NA
7.	**Type of Registration**	Regular			
8.	**Particulars of Approving Authority**				
Signature		Signature Not Verified Digitally signed by DS GOODS AND SERVICES TAX NETWORK 1 Date: 2018.07.17 02:38:02 IST			
Name					
Designation					
Jurisdictional Office					
9. Date of issue of Certificate		17/07/2018			
Note: The registration certificate is required to be prominently displayed at all places of business in the State.					

This is a system generated digitally signed Registration Certificate issued based on the deemed approval of application on 01/07/2017 .

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Annexure A

GSTIN	37AVSPB0729L1Z9
Legal Name	RAMA DEVI BOLLA
Trade Name, if any	SOLAR SYSTEMS

Details of Additional Places of Business

Total Number of Additional Places of Business in the State	0

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Annexure B

GSTIN	37AVSPB0729L1Z9
Legal Name	RAMA DEVI BOLLA
Trade Name, if any	SOLAR SYSTEMS

Details of Proprietor

1

Name	RAMA DEVI BOLLA
Designation/Status	PROPRIETOR
Resident of State	Andhra Pradesh

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ఆంధ్రప్రదేశ్ నూతన మరియు పునరుద్ధరణీయ ఇంధన వనరుల అభివృద్ధి సంస్థ లి.
New & Renewable Energy Development Corporation of Andhra Pradesh Ltd.
NREDCAP
Clean Energy for Sustainability
(A State Government Company - ISO 9001:2015 Certified)

Ref: NREDCAP/SE/SPVSSL/EAST GODAVARI/07/2021-22 **Date: 31.03.2022**

To
M/s. Solar Systems,
Plot No: 41A, Industrial park,
Sarpavaram, Kakinada – 533 005.

Email :solarsystemsindia@yahoo.com
M : 09440573389

Sir,

Sub: Supply & Installation of 94 nos of 18W LED based Solar Street Lighting Systems in East Godavari District – Placing of work order – Reg.

Ref: Lr no: NREDCAP/KKD/SSL/4/2021-22/393, dt: 31.03.2022 of PD, Kakinada.

*****

We are pleased to place work order for supply & installation of 94 Nos of 18W LED based solar street lighting systems at different remote locations in East Godavari District as mentioned in the **Annexure - A** and the details are as follows:

S.No	Description	Qty (Nos)	Unit Rate (Rs)	Total Value (Rs)
01	Supply, Installation and Commissioning of 18W LED based Solar Street Lighting System with the following components including installation and transportation charges on Turnkey basis.(Remote areas) i) 100Wp SPV Module ii) 18W LED based luminaire iii) 12.8V, 24 Ah Lithium Ferro Phosphate (LiFePO4) Battery Bank iv) 6 mtrs length GI Pole v) Civil foundation vi) Other Electrical & Electronic items **Autonomy:** 3 days or 36 operating hours per permissible discharge. **Warranty:** SPV Modules – 25 years, Battery – 5 years Total System – 5 years	94	22,240.00	20,90,560.00
02	Add GST @ 12% on 70% of item no: 01	**94**	**1,868.16**	**1,75,607.04**
03	Add GST @ 18% on 30% of item no: 01	**94**	**1,200.96**	**1,12,890.24**
04	**Grand Total**	**94**	**25,309.12**	**23,79,057.28**

(Rupees Twenty three lakhs seventy nine thousand fifty seven and twenty eight paisa only)

You are requested to supply and install the above systems to the beneficiary under prior intimation to O/o Project Director, NREDCAP, Kakinada, East Godavari District on or **before 30.04.2022** as per enclosed terms and conditions.

Yours faithfully,
Sd/-
VC & Managing Director

Encl: Annexure-A, Terms & Conditions
Copy to the Manager (F&A), NREDCAP, Tadepalli for information.
Copy to the Project Director, NREDCAP, East Godavari District for information.

// FBO //

Project Director (SE)

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Annexure - A

Location details for installation of 94 Nos of 18W LED based Solar Street Lighting Systems

S.No	Name of the Beneficiary Organization	Name of the Location to be installed	No of Systems (Nos)
1	The Project Officer, ITDA, Rampachodavaram, East Godavari District.	Bhimavaram (V), Maredumilli (M)	15
		Arjuna Lova (V), Maredumilli (M)	15
		Ivvampalli (V), Maredumilli (M)	15
		P M Kota(V), Maredumilli (M)	30
		Mulasalapalem (V), Y Ramavaram (M)	10
		Boddapalli (V), Y Ramavaram (M)	09
Total			**94 Nos**

Sd/-
VC & Managing Director

// FBO //

Project Director (SE)

File No. ANERT-TECH/41/2024-PE1(RTS) (Computer No. 7540)

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NREDCAP: TADEPALLI

TERMS & CONDITIONS:

1. The supply & installation of solar street lighting systems are to be made as per the specifications given in the work order. The work shall be executed in consultation with our District Manager concerned on or before **30.04.2022.**
2. Please engrave the SPV Module numbers and Battery numbers on the backside of the PV Modules with permanent marker with Bold letters which can be visible from the downside of the installed Solar Street Lighting Systems.
3. The Solar PV modules shall be warranted for a minimum period of 25 years from the date of completion of installation and the PV module should have crystalline silicon solar cells and must have a certificate of testing conforming to IEC 61215 Edition II / BIS 14286 from an NABL or IECQ accredited laboratory.
4. The solar street lighting systems including Battery shall be warranted for a period of 05 years from the date of installation.
5. The Prices indicated in the work order are inclusive of taxes, transportation and installation & commissioning.
6. The materials shall be supplied at the sites specified as detailed in the given enclosure **Annexure-A** and breakages/damages under transit will be at suppliers risk and responsibility. The solar street lighting system should be tested by the supplier at factory site before dispatch to the consignee. In case, found any variations/deviations at a later stage and the systems/ materials are to be replaced at the cost of supplier.
7. The supplier has to inform to the concerned MPDOs/Panchayat Secretaries of villages & Officials of NREDCAP, Kakinada before installation of the solar street lights and also furnish the acquittances certified by the respective MPDOs/Panchayat Secretaries after completion of the work.
8. Payment will be made after supply & installation of solar street lighting systems on submission of certified bills by raising GST invoice in favour of VC&MD, NREDCAP and on submission of Installation, commissioning and Handing over certificate in the prescribed format & on receipt of funds from concerned Beneficiary / Organization (Installation, commissioning and Handing over certificate Formats Enclosed).
9. Payment will be released as follows:
   i) 72% of the Invoice amount will be released on submission of the certified bills and other documents in the prescribed formats.
   ii) 25% of the Invoice amount will be released on receipt of payment from Project Officer, ITDA, Rampachodavaram, East Godavari District.
   iii) Balance 03% of the invoice amount will be made against Bank guarantee or after completion of five (05) years of guarantee / warranty period for the system.
10. The delivery challan and invoice shall be raised as per GST ACT w.e.f. 01.07.2017 and followed by further amendments.
11. The user's manual and warranty / guarantee cards are to be provided to the end user for proper maintenance under copy to the concerned District Manager, NREDCAP for record purpose.
12. Periodical Status on supply & installation of solar street lighting systems at the site may please be intimated to concerned District Manager, NREDCAP, concerned.
13. For the delayed installation beyond the stipulated period, penalty @1% on the cost of the systems per week will be levied subject to the maximum of 5%. For valid reasons, if the supplier is not able to supply the systems within the time prescribed, the VC & Managing Director, NREDCAP, on receipt of representation from the supplier prior to due date, may grant extension of time. If the work is not completed within 30 days beyond scheduled date, the entire work will be cancelled.
14. The VC&MD, NREDCAP may relax any of the conditions mentioned above for any valid reasons.
15. The decision of Vice-Chairman & Managing Director, NREDCAP is the final and binding.

Sd/-
VC & Managing Director

// FBO //

Project Director (SE)

File No. ANERT-TECH/41/2024-PE1(RTS) (Computer No. 7540)

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New & Renewable Energy Development Corporation of Andhra Pradesh Ltd.
NREDCAP
Clean Energy for Sustainability
(A State Government Company - ISO 9001:2015 Certified)

Ref: NREDCAP/SE/SPVSSL/EAST GODAVARI/07/2021-22 **Date: 31.03.2022**

To
M/s. Solar Systems,
Plot No: 41A, Industrial park,
Sarpavaram, Kakinada – 533 005.

Email :solarsystemsindia@yahoo.com
M : 09440573389

Sir,

Sub: Supply & Installation of 94 nos of 18W LED based Solar Street Lighting Systems in East Godavari District – Placing of work order – Reg.

Ref: Lr no: NREDCAP/KKD/SSL/4/2021-22/393, dt: 31.03.2022 of PD, Kakinada.

*****

We are pleased to place work order for supply & installation of 94 Nos of 18W LED based solar street lighting systems at different remote locations in East Godavari District as mentioned in the **Annexure - A** and the details are as follows:

S.No	Description	Qty (Nos)	Unit Rate (Rs)	Total Value (Rs)
01	Supply, Installation and Commissioning of 18W LED based Solar Street Lighting System with the following components including installation and transportation charges on Turnkey basis.(Remote areas) i) 100Wp SPV Module ii) 18W LED based luminaire iii) 12.8V, 24 Ah Lithium Ferro Phosphate (LiFePO4) Battery Bank iv) 6 mtrs length GI Pole v) Civil foundation vi) Other Electrical & Electronic items **Autonomy:** 3 days or 36 operating hours per permissible discharge. **Warranty:** SPV Modules – 25 years, Battery – 5 years Total System – 5 years	94	22,240.00	20,90,560.00
02	Add GST @ 12% on 70% of item no: 01	**94**	**1,868.16**	**1,75,607.04**
03	Add GST @ 18% on 30% of item no: 01	**94**	**1,200.96**	**1,12,890.24**
04	**Grand Total**	**94**	**25,309.12**	**23,79,057.28**

(Rupees Twenty three lakhs seventy nine thousand fifty seven and twenty eight paisa only)

You are requested to supply and install the above systems to the beneficiary under prior intimation to O/o Project Director, NREDCAP, Kakinada, East Godavari District on or **before 30.04.2022** as per enclosed terms and conditions.

Yours faithfully,
Sd/-
VC & Managing Director

Encl: Annexure-A, Terms & Conditions
Copy to the Manager (F&A), NREDCAP, Tadepalli for information.
Copy to the Project Director, NREDCAP, East Godavari District for information.

// FBO //

Project Director (SE)

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Annexure - A

Location details for installation of 94 Nos of 18W LED based Solar Street Lighting Systems

S.No	Name of the Beneficiary Organization	Name of the Location to be installed	No of Systems (Nos)
1	The Project Officer, ITDA, Rampachodavaram, East Godavari District.	Bhimavaram (V), Maredumilli (M)	15
		Arjuna Lova (V), Maredumilli (M)	15
		Ivvampalli (V), Maredumilli (M)	15
		P M Kota(V), Maredumilli (M)	30
		Mulasalapalem (V), Y Ramavaram (M)	10
		Boddapalli (V), Y Ramavaram (M)	09
Total			**94 Nos**

Sd/-
VC & Managing Director

// FBO //

Project Director (SE)

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NREDCAP: TADEPALLI

TERMS & CONDITIONS:

1. The supply & installation of solar street lighting systems are to be made as per the specifications given in the work order. The work shall be executed in consultation with our District Manager concerned on or before **30.04.2022.**
2. Please engrave the SPV Module numbers and Battery numbers on the backside of the PV Modules with permanent marker with Bold letters which can be visible from the downside of the installed Solar Street Lighting Systems.
3. The Solar PV modules shall be warranted for a minimum period of 25 years from the date of completion of installation and the PV module should have crystalline silicon solar cells and must have a certificate of testing conforming to IEC 61215 Edition II / BIS 14286 from an NABL or IECQ accredited laboratory.
4. The solar street lighting systems including Battery shall be warranted for a period of 05 years from the date of installation.
5. The Prices indicated in the work order are inclusive of taxes, transportation and installation & commissioning.
6. The materials shall be supplied at the sites specified as detailed in the given enclosure **Annexure-A** and breakages/damages under transit will be at suppliers risk and responsibility. The solar street lighting system should be tested by the supplier at factory site before dispatch to the consignee. In case, found any variations/deviations at a later stage and the systems/ materials are to be replaced at the cost of supplier.
7. The supplier has to inform to the concerned MPDOs/Panchayat Secretaries of villages & Officials of NREDCAP, Kakinada before installation of the solar street lights and also furnish the acquittances certified by the respective MPDOs/Panchayat Secretaries after completion of the work.
8. Payment will be made after supply & installation of solar street lighting systems on submission of certified bills by raising GST invoice in favour of VC&MD, NREDCAP and on submission of Installation, commissioning and Handing over certificate in the prescribed format & on receipt of funds from concerned Beneficiary / Organization (Installation, commissioning and Handing over certificate Formats Enclosed).
9. Payment will be released as follows:
   i) 72% of the Invoice amount will be released on submission of the certified bills and other documents in the prescribed formats.
   ii) 25% of the Invoice amount will be released on receipt of payment from Project Officer, ITDA, Rampachodavaram, East Godavari District.
   iii) Balance 03% of the invoice amount will be made against Bank guarantee or after completion of five (05) years of guarantee / warranty period for the system.
10. The delivery challan and invoice shall be raised as per GST ACT w.e.f. 01.07.2017 and followed by further amendments.
11. The user's manual and warranty / guarantee cards are to be provided to the end user for proper maintenance under copy to the concerned District Manager, NREDCAP for record purpose.
12. Periodical Status on supply & installation of solar street lighting systems at the site may please be intimated to concerned District Manager, NREDCAP, concerned.
13. For the delayed installation beyond the stipulated period, penalty @1% on the cost of the systems per week will be levied subject to the maximum of 5%. For valid reasons, if the supplier is not able to supply the systems within the time prescribed, the VC & Managing Director, NREDCAP, on receipt of representation from the supplier prior to due date, may grant extension of time. If the work is not completed within 30 days beyond scheduled date, the entire work will be cancelled.
14. The VC&MD, NREDCAP may relax any of the conditions mentioned above for any valid reasons.
15. The decision of Vice-Chairman & Managing Director, NREDCAP is the final and binding.

Sd/-
VC & Managing Director

// FBO //

Project Director (SE)

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New & Renewable Energy Development Corporation of Andhra Pradesh Ltd.
(A State Government Company - ISO 9001:2015 Certified)
Regd.Office : # 12-464/5/1, River Oaks Apartment, CSR Kalyana Mandapam Road,
Tadepalli, Guntur District. Andhra Pradesh - 522 501, India.
Tel : 08645 797162 / 797163 E-mail : info@nredcap.in Website : www.nredcap.in

Ref: NREDCAP/SE/SPVPS/Issue of Experience Certificate/121/2018-19 Dt: 17 -01-2019

TO WHOM SO EVER IT MAY CONCERN

This is to certify that M/s Solar Systems, Kakinada have supplied and installed 775 nos of 5 HP Solar P V Pump Sets with RMS facility for Agriculture purpose in the state of Andhra Pradesh as detailed below during the years 2015-16 to 2018-19 as on 10-01-2019. The systems are working satisfactory.

S. No	Year	No. of Pumpsets installed		Expenditure on work (Rs in Lakhs)
		3 HP	5 HP	
1	2015-16	0	181	862.50
2	2016-17	0	122	526.43
3	2017-18	0	283	883.55
4	2018-19	0	189	609.76
	Total	**0**	**775**	**2882.24**

This certificate is issued as per the request made by the Supplier.

For New & Renewable Energy
Development Corporation of A.P. Ltd.

General Manager
General Manager

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NREDCAP
Clean Energy for Sustainability

ఆంధ్రప్రదేశ్ నూతన మరియు పునరుద్ధరణీయ ఇంధన వనరుల అభివృద్ధి సంస్థ లి.
New & Renewable Energy Development Corporation of Andhra Pradesh Ltd.
(A State Government Company - ISO 9001:2015 Certified)

Ref: NREDCAP/SE/SSL/KKD/03/2022-23 **Date: 14.06.2022**

TO WHOM SO EVER IT MAY CONCERN

This is to certify that M/s. Solar Systems has supplied & installed 437 nos of LED based Solar Street Lighting Systems at various locations in the State of Andhra Pradesh during the years 2021-22 & 2022-23 against our work orders with a financial value of Rs. 1,08,08,636.29 (Rupees One crore eight lakhs eight thousand six hundred thirty six and twenty nine paisa only). The systems are working satisfactorily. The details are given below.

S.No	Year	District	Qty (Nos)	Capacity	Value (Rs)
1	2021-22	East Godavari	363	18W	81,12,672.23
		East Godavari	10	120W (2 X 60W)	11,97,900.00
		Visakhapatnam	20	18W	4,84,788.00
		Vizianagaram	14	18W	2,86,094.06
2	2022-23	Kakinada	30	18W	7,27,182.00
Total			**437**		**1,08,08,636.29**

This certificate is issued on the request made by the suppiier.

General Manager

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SOLAR SYSTEMS
Inspiration for green family living
PLOT NO 41A, INDUSTRIAL PARK, SARPAVARAM, KAKINADA-533005
PH : 0884-2361069 / 9440573389.
E-mail: solarsystemsindia@yahoo.com

ANNEXURE D – DECLARATION BY THE BIDDER

e-EoI Notification No: **ANERT-TECH/41/2024-PE1(RTS)** dtd 27.2.2024 for Expression of Interest (EoI) for the Selection of Agency for Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram

To
The CEO
ANERT

We, the undersigned, declare that:

1. We have examined and have no reservations to the Bidding Document, including Addenda No. (if any)
2. We offer to supply in conformity with the Bidding Document and in accordance with the delivery schedule
3. Our Bid shall be valid for a period of 4 months from the date fixed as deadline for the submission of EoIs in accordance with the Bidding Document, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;
4. If our Bid is accepted, we commit to submit a Security Deposit in the amount of 3 percent of the Contract Price for the due performance of the Contract;
5. We are not participating, as Bidders, in more than one Bid in this bidding process;
6. Our firm, its affiliates or subsidiaries, including any subcontractors or suppliers for any part of the Contract, has not been declared ineligible by the ANERT or Government of Kerala;
7. We understand that this Bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal Contract is prepared and executed.
8. Our firm has obtained the certifications from MNRE or NABL approved Test laboratories that the goods and services are satisfying the technical criteria specified in the bid.

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SOLAR SYSTEMS
Inspiration for green family living

PLOT NO 41A, INDUSTRIAL PARK, SARPAVARAM, KAKINADA-533005
PH : 0884-2361069 / 9440573389.
E-mail: solarsystemsindia@yahoo.com

ANNEXURE E – DECLARATION OF RELATIONSHIP WITH ANERT EMPLOYEE

EoI Notification No.: ANERT-TECH/41/2024-PE1(RTS)

Expression of Interest (EoI) for the Selection of Agency for Pilot Implementation ofBattery Energy Storage System at ANERT HQ, Thiruvananthapuram

To

The CEO
ANERT

Name of the ANERT employee with Designation: **NONE**

Name of the bidder related to the employee: **NONE**

This is to put on record that Shri/Smt **NONE**
currently working as **N O N E** in ANERT is related to, who is the bidder in the bid. We are aware of the Anti-corruption policy of ANERT and will observe the highest standards during the execution of contract and shall retain from corrupt, fraudulent, collusive or coercive practices on competing for the contract.

Date: 07.03.2024

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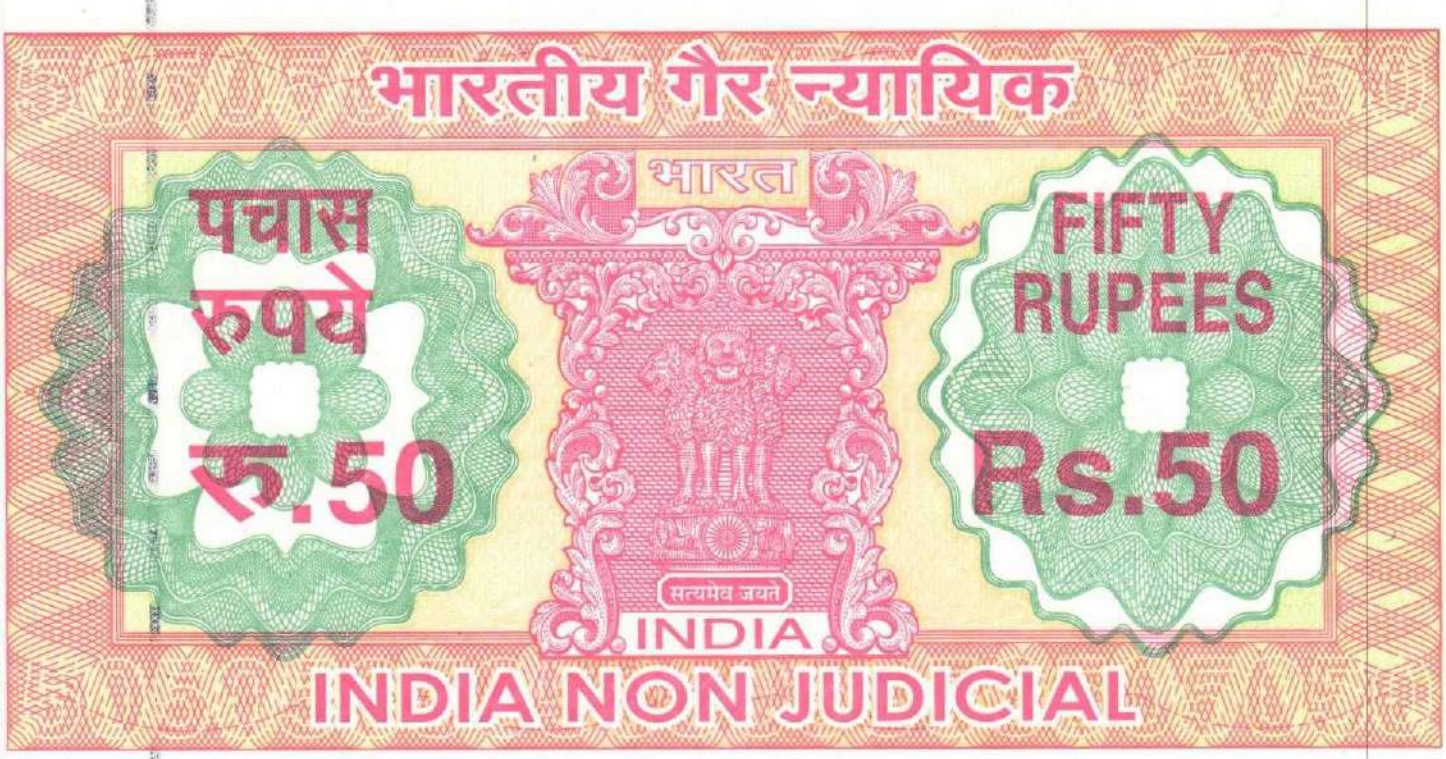

കേരളം केरल KERALA

DA 595817

ANNEXURE F – UNDERTAKING FOR NO BLACKLISTING & NO BANNING

Undertaking for No Blacklisting & No Banning

To

The CEO
ANERT

Sub: Expression of Interest (EoI) for the Selection of Agency for Pilot Implementation of Battery Energy Storage System at ANERT HQ, Thiruvananthapuram

I / We hereby declare that presently our Company/Limited Liability Partnership/Partnership Firm/ Sole Proprietorship is having unblemished record and is not declared ineligible for corrupt/fraudulent practices by any State/Central Government/PSU on thedate of Bid Submission.

I / We further declare that presently our Company/Limited Liability Partnership/ Partnership Firm/ Sole Proprietorship is not blacklisted and not declared ineligible for reasons other than corrupt/fraudulent practices by any State/Central Government/PSU on the date of Bid Submission.

SOLAR SYSTEMS ★ KAKINADA, AP - 533 005 ★

No. 60617
11/2/24
SOLAR SYSTEMS

PRINCIPAL SUB REGISTRAR

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DA 595819

If this declaration is found to be incorrect then without prejudice to any other action that may be taken, our security may be forfeited in full and the EoI if any to the extent accepted may be cancelled.

Date: 07.03.2024

SOLAR SYSTEMS ★ KAKI 533 005 ★

No. 60619
1/3/24

SOLAR SYSTEMS

KILIYALLOOR MANI
KOLAYAM VENDOR

PRINCIPAL SUB TREA...

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INDIAN INCOME TAX RETURN ACKNOWLEDGEMENT

[Where the data of the Return of Income in Form ITR-1 (SAHAJ), ITR-2, ITR-3, ITR-4 , ITR-5, ITR-6,ITR-7 transmitted electronically with digital signature]

Assessment Year 2018-19

PERSONAL INFORMATION AND THE DATE OF ELECTRONIC TRANSMISSION

Name			PAN
BOLLA RAMA DEVI			AVSPB0729L
Flat/Door/Block No	Name Of Premises/Building/Village		Form No. which has been electronically transmitted: ITR-3
Plot No. 41A	Sarpavaram		
Road/Street/Post Office	Area/Locality		
	Industrial Park		Status: Individual
Town/City/District	State	Pin/ZipCode	Aadhaar Number/Enrollment ID
KAKINADA	ANDHRA PRADESH	533005	XXXX XXXX 6733

Designation of AO(Ward/Circle): KAKINADA WARD 2 | Original or Revised: ORIGINAL

E-filing Acknowledgement Number: 370289601311018 | Date(DD/MM/YYYY): 31-10-2018

COMPUTATION OF INCOME AND TAX THEREON

1	Gross total income				1	3878767
2	Deductions under Chapter-VI-A				2	76995
3	Total Income				3	3801770
3a	Current Year loss, if any				3a	0
4	Net tax payable				4	981622
5	Interest and Fee Payable				5	2178
6	Total tax, interest and Fee payable				6	983800
7	Taxes Paid	a	Advance Tax	7a = 0		
		b	TDS	7b = 964874		
		c	TCS	7c = 0		
		d	Self Assessment Tax	7d = 18930		
		e	Total Taxes Paid (7a+7b+7c +7d)		7e	983804
8	Tax Payable (6-7e)				8	0
9	Refund (7e-6)				9	0
10	Exempt Income	Agriculture			10	
		Others				

This return has been digitally signed by BOLLA RAMA DEVI in the capacity of Self

having PAN AVSPB0729L from IP Address 157.48.117.113 on 31-10-2018 at KAKINADA

Dsc Sl No & issuer 249639842885958193 6CN=SafeScrypt sub-CA for RCAI Class 2 2014,OU=Sub-CA,O=Sify Technologies Limited,C=IN

DO NOT SEND THIS ACKNOWLEDGEMENT TO CPC, BENGALURU

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A.Y. 2018-2019

Name : BOLLA RAMA DEVI
Father's Name : Surya Satyanarayana
Address : Plot No. 41A
Sarpavaram
Industrial Park, KAKINADA - 533 005

Previous Year : 2017-2018
PAN : AVSPB 0729 L
Ward/Circle : KAKINADA WARD 2
Status : Individual
Date of Birth : 21-May-1981
Aadhaar No. : 3961 4545 6733

Resident

Statement of Income

		Rs.	Rs.	Rs.
■ Profits and gains of Business or Profession				
Business-1				
Net Profit Before Tax as per P & L a/c			38,78,767	
Total income of Business and Profession			38,78,767	
Income chargeable under the head "Business and Profession"				38,78,767
				38,78,767
■ Gross Total Income				
Deductions under Chapter VI-A				
Investment u/s 80C, CCC, CCD				
Life insurance premium		56,995		
Tuition fees		20,000		
Deduction subject to ceiling u/s 80CCE				76,995
				38,01,772
■ Total Income				
Agricultural Income	1	0		
Total income rounded off u/s 288A				38,01,770
Tax on total income				9,53,031
Add: Education cess				28,591
Tax with cess				9,81,622
Net Tax				9,81,622
TDS	2		9,64,874	
Total prepaid taxes				9,64,874
Balance Tax				16,748
Interest u/s 234A			167	
Interest u/s 234B			1,169	
Interest u/s 234C			842	2,178
Net tax payable				18,926
Self-assessment tax paid	3			18,930
■ Balance tax payable				0

Schedule 1

Agricultural Income

Amount

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Gross Receipts	0
Net income	0

Schedule 2

TDS as per Form 16A

Deductor, TAN & Certificate No.	TDS deducted	TDS claimed in current year	Gross Receipts as per 26AS
Eastern Power Distribution Company Of Ap Limited, TAN- VPNE00240C	6,42,780	6,42,780	3,21,39,000
New And Renewable Energy Development Corporation Of Andhra Pradesh Limited, TAN- HYDN01369E	3,913	3,913	3,38,191
Senior Accounts Officer B And R Apspdcl Tirupati, TAN- VPNS10781B	2,87,270	2,87,270	1,43,63,638
Syndicate Bank - Main Branch Kakinada, TAN- VPNS03602E	24,413	24,413	1,22,066
Syndicate Bank-vakalapudi, TAN- VPNS02408A	6,498	6,498	32,491
Total	9,64,874	9,64,874	4,69,95,386

Schedule 3

Self Assessment tax paid

Name of the Bank and BSR Code	Date of deposit	Challan Sl.no.	Challan Amount
Syndicate Bank - 0331906	31-Oct-18	02021	18,930

Bank A/c: SYNDICATE BANK 32501250002078 IFSC: SYNB0003258

Date : 31-Oct-2018

Place : KAKINADA

[BOLLA RAMA DEVI]

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SOLAR SYSTEMS -2017-18

KAKINADA

Profit & Loss A/c

1-Apr-2017 to 31-Mar-2018

Particulars	1-Apr-2017 to 31-Mar-2018		Particulars	1-Apr-2017 to 31-Mar-2018	
Opening Stock		19,50,000.00	**Sales Accounts**		9,21,48,102.70
Closing Stock	*19,50,000.00*		Closing Stock		
			Closing Stock		
Purchase Accounts		7,65,66,894.62			
Gross Profit c/o		*1,36,31,208.08*			
		9,21,48,102.70			9,21,48,102.70
Indirect Expenses		99,30,031.25	Gross Profit b/f		*1,36,31,208.08*
Labour Charges	*38,25,640.00*		**Indirect Incomes**		1,77,590.01
General Maintenance	*44,690.60*		*Interest on Fdr*	*1,54,557.00*	
Interest on Loans	*9,49,644.19*		*Interest on R D*	*14,973.66*	
Salaries & Staff Welfare	*39,28,990.00*		*Interest on Sb/a.C*	*8,059.35*	
Taxes & Licences	*3,04,054.00*				
Bank Charges	*36,490.38*				
Electricity Charges	*21,200.08*				
Material Insurance	*2,25,703.00*				
Office Rent	*52,800.00*				
Printing & Stationary	*2,260.00*				
Transportation Charges	*3,16,189.00*				
Travelling Expenses	*2,22,370.00*				
Nett Profit		*38,78,766.84*			
Total		1,38,08,798.09	**Total**		1,38,08,798.09

For **K.P.G. & Co**
Chartered Accountants

P. Mallikharjuna Sastry
(P. Mallikharjuna Sastry)
Partner M. no. 215023
Firm Reg No. 012136S

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SOLAR SYSTEMS -2017-18

KAKINADA

Balance Sheet

1-Apr-2017 to 31-Mar-2018

Liabilities	as at 31-Mar-2018		Assets	as at 31-Mar-2018	
Capital Account		**1,57,10,560.79**	**Fixed Assets**		**96,88,052.00**
Loans (Liability)		**1,69,48,721.52**	**Investments**		**25,60,174.46**
Bank OD A/c	*89,55,619.67*		**Current Assets**		**5,48,16,728.31**
Secured Loans	*30,31,101.85*		Deposits (Asset)	*75,59,628.20*	
Unsecured Loans	*49,62,000.00*		Loans & Advances (Asset)	*9,55,035.00*	
Current Liabilities		**3,44,05,672.46**	Sundry Debtors	*4,37,45,566.40*	
Sundry Creditors	*3,44,05,672.46*		Cash-in-hand	*3,88,722.25*	
Profit & Loss A/c			Bank Accounts	*7,98,027.06*	
Opening Balance			*Gst Refund*	*4,04,875.40*	
Current Period	*38,78,766.84*		*TDS RECEIVABLE 2017-18*	*9,64,874.00*	
Less: Transferred	*38,78,766.84*				
Total		**6,70,64,954.77**	**Total**		**6,70,64,954.77**

For K.P.G. & Co
Chartered Accountants
P. Mall Sah
(P, Mallikharjuna ~~Sastry~~)
Partner M. no. 215023
Firm Reg No. 012136S

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SOLAR SYSTEMS -2017-18

KAKINADA

Bank OD A/c

Group Summary

1-Apr-2017 to 31-Mar-2018

	Closing Balance	
	Debit	Credit
Syndicate Bank -2078 (OD)		89,55,619.67
Grand Total		**89,55,619.67**

K.P.G. & Co. Chartered Accountants KAKINADA

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SOLAR SYSTEMS -2017-18

KAKINADA

Secured Loans

Group Summary

1-Apr-2017 to 31-Mar-2018

	Closing Balance	
	Debit	Credit
Gold Loan-1652		5,000.00
Lic Housing Lone-12571		13,44,361.88
Syndicate Bank - 573		16,37,057.43
Syndicate Bank T.Loan -0099		44,682.54
Grand Total		**30,31,101.85**

K.P.G. & CO. KAKINADA Chartered Accountants

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SOLAR SYSTEMS -2017-18
KAKINADA

Bank Accounts
Group Summary
1-Apr-2017 to 31-Mar-2018

	Closing Balance	
	Debit	Credit
Syndicate Bank-00045	47,371.26	
Syndicate Bank - 453	2,33,643.03	
Syndicate Bank -475	5,17,012.77	
Grand Total	**7,98,027.06**	

K.P.G. & Co. * Chartered Accountants * KAKINADA

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FORM NO. 3CB

[See rule 6G(1)(b)]

Audit report under section 44AB of the Income-tax Act, 1961 in the case of a person referred to in clause (b) of sub-rule (1) of rule 6G

1. We have examined the balance sheet as at 31st March 2018 and the Profit and loss account for the period beginning from 01/04/2017 to ending on 31/03/2018 attached herewith, of BOLLA RAMA DEVI Plot No. 41A, Sarpavaram, Industrial Park, , KAKINADA, ANDHRA PRADESH, 533005 AVSPB0729L.

2. We certify that the balance sheet and the Profit and loss account are in agreement with the books of account maintained at the head office at KAKINADA, and 0 branches.

3. (a) We report the following observations/comments/discrepancies/inconsistencies; if any:

(b) Subject to above,-

(A) We have obtained all the information and explanations which, to the best of Our knowledge and belief, were necessary for the purposes of the audit.

(B) In Our opinion, proper books of account have been kept by the head office and branches of the assessee so far as appears from Our knowledge and belief, were necessary for the examination of the books.

(C) In Our opinion and to the best of Our information and according to the explanations given to Us the said accounts, read with notes thereon, if any, give a true and fair view:-

(i) in the case of the balance sheet, of the state of the affairs of the assessee as at 31st March, 2018 ;and

(ii) in the case of the Profit and loss account of the Profit of the assessee for the year ended on that date.

4. The statement of particulars required to be furnished under section 44AB is annexed herewith in Form No. 3CD.

5. In Our opinion and to the best of Our information and according to explanations given to Us the particulars given in the said Form No. 3CD and the Annexure thereto are true and correct subject to following observations/qualifications, if any:-

Sl No.	Qualification Type	Observations/Qualifications
1		Confirmation balances of Sundry Debtors and Creditors as on 31/3/2018 were not produced for my verification
2		I have not physically Verified the cash balance and stock as on 31/03/2018 and i have placed reliance on the certificate given by the management in this regard
3		GST Returns for the finanacial year 2017-18 were not produced for my verification

Place KAKINADA
Date 31/10/2018

Name P MALLIKHARJUNA SASTRY
Membership Number 215028
FRN (Firm Registration Number) 012136S
Address 8-5-5, GANDHINAGAR, , KAKINADA, ANDHRA PRADESH, 533003

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FORM NO. 3CD

[See rule 6G(2)]

Statement of particulars required to be furnished under section 44AB of the Income-tax Act, 1961

1	Name of the assessee	BOLLA RAMA DEVI
2	Address	Plot No. 41A, Sarpavaram, , Industrial Park, , KAKINADA, ANDHRA PRADESH, 533005
3	Permanent Account Number (PAN)	AVSPB0729L
4	Whether the assessee is liable to pay indirect tax like excise duty, service tax, sales tax, goods and services tax,customs duty,etc. if yes, please furnish the registration number or,GST number or any other identification number allotted for the same	Yes

Sl No.	Type	Registration Number
1	Sales VAT/Tax ANDHRA PRADESH	37660989415

5	Status	Individual
6	Previous year from	01/04/2017 to 31/03/2018
7	Assessment Year	2018-19
8	Indicate the relevant clause of section 44AB under which the audit has been conducted	

Sl No.	Relevant clause of section 44AB under which the audit has been conducted
1	Clause 44AB(a)-Total sales/turnover/gross receipts of business exceeding specified limits

9 a If firm or Association of Persons, indicate names of partners/members and their profit sharing ratios. In case of AOP, whether shares of members are indeterminate or unknown ?

Name	Profit Sharing Ratio (%)
Nil	

9 b If there is any change in the partners or members or in their profit sharing ratio since the last date of the preceding year, the particulars of such change.

Date of change	Name of Partner/Member	Type of change	Old profit sharing ratio	New profit Sharing Ratio	Remarks

10 a Nature of business or profession (if more than one business or profession is carried on during the previous year, nature of every business or profession).

Sector	Sub Sector	Code
WHOLESALE AND RETAIL TRADE	Retail sale of other products n.e.c	09028
MANUFACTURING	Other manufacturing n.e.c.	04097

10 b If there is any change in the nature of business or profession, the particulars of such change — No

Business	Sector	SubSector	Code
Nil			

11 a Whether books of accounts are prescribed under section 44AA, if yes, list of books so prescribed — No

Books prescribed

11 b List of books of account maintained and the address at which the books of accounts are kept. (In case books of account are maintained in a computer system, mention the books of account generated by such computer system. If the books of accounts are not kept at one location, please furnish the addresses of locations along with the details of books of accounts maintained at each location.) Same as 11(a) above

Books maintained	Address Line 1	Address Line 2	City or Town or District	State	PinCode
Bank book	Plot No. 41A,Sarpavaram,,Industrial Park		KAKINADA	ANDHRA PRADESH	533005
Cash book	Plot No. 41A,Sarpavaram,,Industrial Park		KAKINADA	ANDHRA PRADESH	533005
Journal	Plot No. 41A,Sarpavaram,,Industrial Park		KAKINADA	ANDHRA PRADESH	533005
Ledger	Plot No. 41A,Sarpavaram,,Industrial Park		KAKINADA	ANDHRA PRADESH	533005
Purchase register	Plot No. 41A,Sarpavaram,,Industrial Park		KAKINADA	ANDHRA PRADESH	533005
Sales register	Plot No. 41A,Sarpavaram,,Industrial Park		KAKINADA	ANDHRA PRADESH	533005

11 c List of books of account and nature of relevant documents examined. Same as 11(b) above

Books Examined
Bank book

Cash book	
Journal	
Ledger	
Purchase register	
Sales register	

12	Whether the profit and loss account includes any profits and gains assessable on presumptive basis, if yes, indicate the amount and the relevant section (44AD, 44AE, 44AF, 44B, 44BB, 44BBA, 44BBBB, Chapter XII-G, First Schedule or any other relevant section).		**No**

Section	Amount
Nil	

13	a	Method of accounting employed in the previous year	**Mercantile system**
13	b	Whether there has been any change in the method of accounting employed vis-a-vis the method employed in the immediately preceding previous year.	**No**
13	c	If answer to (b) above is in the affirmative, give details of such change , and the effect thereof on the profit or loss.	
13	d	Whether any adjustment is required to be made to the profits or loss for complying with the provisions of income computation and disclosure standards notified under section 145(2).	**No**
13	e	If answer to (d) above is in the affirmative, give details of such adjustments.	

Particulars	Increase in profit(Rs.)	Decrease in profit(Rs.)

ICDS	Increase in profit(Rs.)	Decrease in profit(Rs.)	Net effect(Rs.)
Total			

13	f	Disclosure as per ICDS.	

ICDS	Disclosure
ICDS I - Accounting Policies	**No Prescribed Changes were found**
ICDS II - Valuation of Inventories	**No Prescribed Changes were found**
ICDS IV - Revenue Recognition	**No Prescribed Changes were found**

14	a	Method of valuation of closing stock employed in the previous year.	**Lower of cost or net realisable value [Section 145A]**
14	b	In case of deviation from the method of valuation prescribed under section 145A, and the effect thereof on the profit or loss, please furnish:	**No**

Particulars	Increase in profit(Rs.)	Decrease in profit(Rs.)

15 Give the following particulars of the capital asset converted into stock-in-trade

(a) Description of capital asset	(b) Date of acquisition	(c) Cost of acquisition	(d) Amount at which the asset is converted into stock-in trade
Nil			

16 Amounts not credited to the profit and loss account, being:-

16 a The items falling within the scope of section 28

Description	Amount
Nil	

16 b The proforma credits, drawbacks, refund of duty of customs or excise or service tax, or refund of sales tax or value added tax, where such credits, drawbacks or refund are admitted as due by the authorities concerned

Description	Amount

16 c Escalation claims accepted during the previous year

Description	Amount
Nil	

16 d Any other item of income

Description	Amount
Nil	

16 e Capital receipt, if any

Description	Amount
Nil	

17 Where any land or building or both is transferred during the previous year for a consideration less than value adopted or assessed or assessable by any authority of a State Government referred to in section 43CA or 50C, please furnish:

Details of property	Address Line 1	Address Line 2	City/Town	State	Pincode	Consideration received or accrued	Value adopted or assessed or assessable

18 Particulars of depreciation allowable as per the Income-tax Act, 1961 in respect of each asset or block of assets, as the case may be, in the:-

Description of Block of Assets	Rate of depreciation (In Percentage)	Opening WDV (A)	Additions				Deductions (C)	Depreciation Allowable (D)	Written Down Value at the end of the year (A+B-C-D)
			Purchase Value (1)	MOD-VAT (2)	Change in Rate of Ex-	Subsidy/ Grant (4)	Total Value of Purchases			

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Class of Assets						change (3)		(B) (1+2+3+4)			

Nil

*** For Addition and Deduction Details refer Addition and Deduction Detail Tables At the End of the Page**

19 Amounts admissible under sections :

S.No	Section	Amount debited to profit and loss account	Amounts admissible as per the provisions of the Income-tax Act, 1961 and also fulfils the conditions, if any specified under the relevant 14provisions of Income-tax Act, 1961 or Income-tax Rules,1962 or any other guidelines, circular, etc., issued in this behalf.

Nil

20 a Any sum paid to an employee as bonus or commission for services rendered, where such sum was otherwise payable to him as profits or dividend. [Section 36(1)(ii)]

Description	Amount

20 b Details of contributions received from employees for various funds as referred to in section 36(1)(va):

Nature of fund	Sum received from employees	Due date for payment	The actual amount paid	The actual date of payment to the concerned authorities

Nil

21 a Please furnish the details of amounts debited to the profit and loss account, being in the nature of capital, personal, advertisement expenditure etc

Capital expenditure

Particulars	Amount in Rs.

Personal expenditure

Particulars	Amount in Rs.

Advertisement expenditure in any souvenir, brochure, tract, pamphlet or the like published by a political party

Particulars	Amount in Rs.

Expenditure incurred at clubs being entrance fees and subscriptions

Particulars	Amount in Rs.

Expenditure incurred at clubs being cost for club services and facilities used.

Particulars	Amount in Rs.

Expenditure by way of penalty or fine for violation of any law for the time being force

Particulars	Amount in Rs.

Expenditure by way of any other penalty or fine not covered above

Particulars	Amount in Rs.

Expenditure incurred for any purpose which is an offence or which is prohibited by law

Particulars	Amount in Rs.

(b) Amounts inadmissible under section 40(a):-

(i) as payment to non-resident referred to in sub-clause (i)

(A) Details of payment on which tax is not deducted:

Date of payment	Amount of payment	Nature of payment	Name of the payee	PAN of the payee,if avaliable	Address Line 1	Address Line 2	City or Town or District	Pincode

(B) Details of payment on which tax has been deducted but has not been paid during the previous year or in the subsequent year before the expiry of time prescribed under section200(1)

Date of payment	Amount of payment	Nature of payment	Name of the payee	PAN of the payee,if avaliable	Address Line 1	Address Line 2	City or Town or District	Pincode	Amount of tax deducted

(ii) as payment referred to in sub-clause (ia)

(A) Details of payment on which tax is not deducted:

Date of payment	Amount of payment	Nature of payment	Name of the payee	PAN of the payee,if avaliable	Address Line 1	Address Line 2	City or Town or District	Pincode

(B) Details of payment on which tax has been deducted but has not been paid on or before the due date specified in sub- section (1) of section 139.

Date of payment	Amount of payment	Nature of payment	Name of the payer	PAN of the payee,if avaliable	Address Line 1	Address Line 2	City or Town or District	Pincode	Amount of tax deducted	Amount out of (VI) deposited, if any

(iii) as payment referred to in sub-clause (ib)

(A) Details of payment on which levy is not deducted:

	Date of payment	Amount of payment	Nature of payment	Name of the payee	PAN of the payee,if avaliable	Address Line 1	Address Line 2	City or Town or District	Pincode

(B) Details of payment on which levy has been deducted but has not been paid on or before the due date specified in sub- section (1) of section 139.

	Date of payment	Amount of payment	Nature of payment	Name of the payer	PAN of the payee,if avaliable	Address Line 1	Address Line 2	City or Town or District	Pincode	Amount of levy deducted	Amount out of (VI) deposited, if any

(iv) fringe benefit tax under sub-clause (ic)	
(v) wealth tax under sub-clause (iia)	
(vi) royalty, license fee, service fee etc. under sub-clause (iib).	

(vii) salary payable outside India/to a non resident without TDS etc. under sub-clause (iii).

	Date of payment	Amount of payment	Name of the payee	PAN of the payee,if avaliable	Address Line 1	Address Line 2	City	Pincode

(viii) payment to PF /other fund etc. under sub-clause (iv)	
(ix) tax paid by employer for perquisites under sub-clause (v)	

(c) Amounts debited to profit and loss account being, interest, salary, bonus, commission or remuneration inadmissible under section 40(b)/40(ba) and computation thereof;

	Particulars	Section	Amount debited to P/L A/C	Amount Admissible	Amount Inadmissible	Remarks

(d) Disallowance/deemed income under section 40A(3):

	(A) On the basis of the examination of books of account and other relevant documents/evidence, whether the expenditure covered under section 40A(3) read with rule 6DD were made by account payee cheque drawn on a bank or account payee bank draft. If not, please furnish the details:	Yes

	Date Of Payment	Nature Of Payment	Amount in Rs	Name of the payee	Permanent Account Number of the payee, if available

	(B) On the basis of the examination of books of account and other relevant documents/evidence, whether the payment referred to in section 40A(3A) read with rule 6DD were made by account payee cheque drawn on a bank or account payee bank draft If not, please furnish the details of amount deemed to be the profits and gains of business or profession under section 40A(3A)	Yes

	Date Of Payment	Nature Of Payment	Amount in Rs	Name of the payee	Permanent Account Number of the payee, if available

(e) Provision for payment of gratuity not allowable under section 40A(7)	0
(f) Any sum paid by the assessee as an employer not allowable under section 40A(9)	0

(g) Particulars of any liability of a contingent nature

	Nature Of Liability	Amount in Rs.

(h) Amount of deduction inadmissible in terms of section 14A in respect of the expenditure incurred in relation to income which does not form part of the total income

	Nature Of Liability	Amount in Rs.

(i) Amount inadmissible under the proviso to section 36(1)(iii)		
22	Amount of interest inadmissible under section 23 of the Micro, Small and Medium Enterprises Development Act, 2006	0

23 Particulars of any payment made to persons specified under section 40A(2)(b).

	Name of Related Person	PAN of Related Person	Relation	Nature of trasaction	Payment Made(Amount)

24 Amounts deemed to be profits and gains under section 32AC or 32AD or 33AB or 33AC or 33ABA.

	Section	Description	Amount
	Nil		

25 Any amount of profit chargeable to tax under section 41 and computation thereof.

	Name of Person	Amount of income	Section	Description of Transaction	Computation if any
	Nil				

26 (i)(A) In respect of any sum referred to in clause (a),(c),(d),(e),(f) or (g) of section 43B the liability for which:-

26 (i)(A)(a) pre-existed on the first day of the previous year but was not allowed in the assessment of any preceding previous year and was :-

	Paid during the previous year		
	Section	Nature of liability	Amount
	Nil		

26	(i)(A)(b)	Not paid during the previous year

	Section	Nature of liability	Amount
	Nil		

26 (i)B was incurred in the previous year and was

26 (i)(B)(a) Paid on or before the due date for furnishing the return of income of the previous year under section 139(1)

	Section	Nature of liability	Amount
	Nil		

26 (i)(B)(b) not paid on or before the aforesaid date

	Section	Nature of liability	Amount
	Nil		

(State whether sales tax, goods & service Tax, customs duty, excise duty or any other indirect tax, levy, cess, impost, etc., is passed through the profit and loss account.)	**No**	

27 a Amount of Central Value Added Tax Credits/ Input Tax Credit(ITC) availed of or utilised during the previous year and its treatment in profit and loss account and treatment of outstanding Central Value Added Tax Credits/ Input Tax Credit(ITC) in accounts — **No**

CENVAT/ITC	Amount	Treatment in Profit and Loss/Accounts
Opening Balance		
Credit Availed		
Credit Utilized		
Closing/Outstanding Balance		

27 b Particulars of income or expenditure of prior period credited or debited to the profit and loss account :-

Type	Particulars	Amount	Prior period to which itrelates(Year in yyyy-yyformat)
Nil			

28 Whether during the previous year the assessee has received any property, being share of a company not being a company in which the public are substantially interested, without consideration or for inadequate consideration as referred to in section 56(2)(viia)

Name of the person from which shares received	PAN of the person, if available	Name of the company from which shares received	CIN of the company	No. of Shares Received	Amount of consideration paid	Fair Market value of the shares
Nil						

29 Whether during the previous year the assessee received any consideration for issue of shares which exceeds the fair market value of the shares as referred to in section 56(2)(viib). If yes, please furnish the details of the same

Name of the person from whom consideration received for issue of shares	PAN of the person, if available	No. of Shares	Amount of consideration received	Fair Market value of the shares
Nil				

A(a) Whether any amount is to be included as income chargeable under the head Income from other sources as referred to in clause (ix) of sub-section (2) of section 56? (b) If yes, please furnish the following details: — **No**

Sl No.	Nature of Income	Amount
Nil		

B(a) Whether any amount is to be included as income chargeable under the head Income from other sources as referred to in clause (x) of sub-section (2) of section 56?(Yes/No) (b) If yes, please furnish the following details: — **No**

Sl No.	Nature of Income	Amount
Nil		

30 Details of any amount borrowed on hundi or any amount due thereon (including interest on the amount borrowed) repaid,otherwise than through an account payee cheque,(Section 69D) — **No**

Name of the person from whom amount borrowed or repaid on hundi	PAN of the person, if available	Address Line 1	Address Line 2	City or Town or District	State	Pincode	Amount borrowed	Date of Borrowing	Amount due including interest	Amount repaid	Date of Repayment
Nil											

A(a) Whether primary adjustment to transfer price, as referred to in sub-section (1) of section 92CE, has been made during the previous year. — **No**

(b) If yes, please furnish the following details

Sl No.	Under which clause of sub-section (1) of section 92CE primary adjustment is made ?	Amount (in Rs.) of primary adjustment	Whether the excess money available with the associated enterprise is required to be repatriated to India as per the provisions of sub-section (2) of section 92CE.	If yes, whether the excess money has been repatriated within the prescribed time.	If no, the amount (in Rs.) of imputed interest income on such excess money which has not been repatriated within the prescribed time	Expected date of repatriation of money
Nil						

B(a)	Whether the assessee has incurred expenditure during the previous year by way of interest or of similar nature exceeding one crore rupees as referred to in sub-section (1) of section 94B.	No

(b) If yes, please furnish the following details

Sl No.	Amount (in Rs.) of expenditure by way of interest or of similar nature incurred	Earnings before interest, tax, depreciation and amortization (EBITDA) during the previous year (in Rs.)	Amount (in Rs.) of expenditure by way of interest or of similar nature as per (i) above which exceeds 30% of EBITDA as per (ii) above.	Details of interest expenditure brought forward as per sub-section (4) of section 94B.		Details of interest expenditure carried forward as per sub-section (4) of section 94B:	
				Assessment Year	Amount (in Rs.)	Assessment Year	Amount (in Rs.)
Nil							

C(a)	Whether the assessee has entered into an impermissible avoidance arrangement, as referred to in section 96, during the previous year.(This Clause is applicable from 1st April,2019).	

(b) If yes, please furnish the following details

Sl No.	Nature of the impermissible avoidance arrangement	Amount (in Rs.) of tax benefit in the previous year arising, in aggregate, to all the parties to the arrangement
Nil		

31 a Particulars of each loan or deposit in an amount exceeding the limit specified in section 269SS taken or accepted during the previous year :-

S.No	Name of the lender or depositor	Address of the lender or depositor	Permanent Account Number(if available with the assessee) of the lender or the depositor	Amount of loan or deposit taken or accepted	Whether the loan or deposit was squared up during the previous year	Maximum amount outstanding in the account at any time during the previous year	Whether the loan or deposit was taken or accepted by cheque or bank draft or use of electronic clearing system through a bank account.	In case the loan or deposit was taken or accepted by cheque or bank draft, whether the same was taken or accepted by an account payee cheque or an account payee bank draft.
Nil								

31 b Particulars of each specified sum in an amount exceeding the limit specified in section 269SS taken or accepted during the previous year:-

S.No.	Name of the person from whom specified sum is received	Address of the person from whom specified sum is received	Permanent Account Number (if available with the assessee) of the person from whom specified sum is received	Amount of specified sum taken or accepted	Whether the specified sum was taken or accepted by cheque or bank draft or use of electronic clearing system through a bank account	In case the specified sum was taken or accepted by cheque or bank draft, whether the same was taken or accepted by an account payee cheque or an account payee bank draft.
Nil						

(Particulars at (a) and (b) need not be given in the case of a Government company, a banking company or a corporation established by a Central, State or Provincial Act.)

31 b(a) Particulars of each receipt in an amount exceeding the limit specified in section 269ST, in aggregate from a person in a day or in respect of a single transaction or in respect of transactions relating to one event or occasion from a person, during the previous year, where such receipt is otherwise than by a cheque or bank draft or use of electronic clearing system through a bank account

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		S.No.	Name of the Payer	Address of the Payer	Permanent Account Number (if available with the assessee) of the Payer	Nature of transaction	Amount of receipt	Date Of receipt
		Nil						
31	b(b)	Particulars of each receipt in an amount exceeding the limit specified in section 269ST, in aggregate from a person in a day or in respect of a single transaction or in respect of transactions relating to one event or occasion from a person, received by a cheque or bank draft, not being an account payee cheque or an account payee bank draft, during the previous year :-						
		S.No.	Name of the Payer	Address of the Payer	Permanent Account Number (if available with the assessee) of the Payer	Amount of receipt		
		Nil						
31	b(c)	Particulars of each payment made in an amount exceeding the limit specified in section 269ST, in aggregate to a person in a day or in respect of a single transaction or in respect of transactions relating to one event or occasion to a person, otherwise than by a cheque or bank draft or use of electronic clearing system through a bank account during the previous year						
		S.No.	Name of the Payer	Address of the Payer	Permanent Account Number (if available with the assessee) of the Payer	Nature of transaction	Amount of Payment	Date Of Payment
		Nil						
31	b(d)	Particulars of each payment in an amount exceeding the limit specified in section 269ST, in aggregate to a person in a day or in respect of a single transaction or in respect of transactions relating to one event or occasion to a person, made by a cheque or bank draft, not being an account payee cheque or an account payee bank draft, during the previous year						
		S.No.	Name of the Payee	Address of the Payee	Permanent Account Number (if available with the assessee) of the Payee	Amount of Payment		
		Nil **(Particulars at (ba), (bb), (bc) and (bd) need not be given in the case of receipt by or payment to a Government company, a banking Company, a post office savings bank, a cooperative bank or in the case of transactions referred to in section 269SS or in the case of persons referred to in Notification No. S.O. 2065(E) dated 3rd July, 2017)"**						
31	c	Particulars of each repayment of loan or deposit or any specified advance in an amount exceeding the limit specified in section 269T made during the previous year :-						
		S.No.	Name of the payee	Address of the payee	Permanent Account Number(if available with the assessee)of the payee	Amount of the repayment	Maximum amount outstanding in the account at any time during the previous year	Whether the repayment was made by cheque or bank draft or use of electronic clearing system through a bank account.	In case the repayment was made by cheque or bank draft, whether the same was repaid by an account payee cheque or an account payee bank draft.
		Nil							
31	d	Particulars of repayment of loan or deposit or any specified advance in an amount exceeding the limit specified in section 269T received otherwise than by a cheque or bank draft or use of electronic clearing system through a bank account during the previous year:—						
		S.No	Name of the lender, or depositor or person from whom specified advance is received	Address of the lender, or depositor or person from whom specified advance is received	Permanent Account Number (if available with the assessee)of the lender, or depositor or person from whom specified advance is received	Amount of repayment of loan or deposit or any specified advance received otherwise than by a cheque or bank draft or use of electronic clearing system through a bank account during the previous year			
		Nil							

K.P.G. & Co. Chartered Accountants KARNATAKA

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31	e	Particulars of repayment of loan or deposit or any specified advance in an amount exceeding the limit specified in section 269T received by a cheque or bank draft which is not an account payee cheque or account payee bank draft during the previous year:—

S.No	Name of the lender, or depositor or person from whom specified advance is received	Address of the lender, or depositor or person from whom specified advance is received	Permanent Account Number (if available with the assessee)of the lender, or depositor or person from whom specified advance is received	Amount of repayment of loan or deposit or any specified advance received otherwise than by a cheque or bank draft or use of electronic clearing system through a bank account during the previous year
Nil				

Note: (Particulars at (c), (d) and (e) need not be given in the case of a repayment of any loan or deposit or any specified advance taken or accepted from Government, Government company, banking company or a corporation established by a Central, State or Provincial Act)

32	a	Details of brought forward loss or depreciation allowance, in the following manner, to extent available

S.No	Assessment Year	Nature of loss/allowance	Amount as returned	Amount as assessed	Order U/S and Date	Remarks
Nil						

32	b	Whether a change in shareholding of the company has taken place in the previous year due to which the losses incurred prior to the previous year cannot be allowed to be carried forward in terms of section 79.	**Not Applicable**
32	c	Whether the assessee has incurred any speculation loss referred to in section 73 during the previous year.	**No**
		If yes, please furnish the details below	
32	d	Whether the assessee has incurred any loss referred to in section 73A in respect of any specified business during the previous year	**No**
		If yes, please furnish details of the same	
32	e	In case of a company, please state that whether the company is deemed to be carrying on a speculation business as referred in explanation to section 73	
		If yes, please furnish the details of speculation loss if any incurred during the previous year	
33		Section-wise details of deductions, if any admissible under Chapter VIA or Chapter III (Section 10A, Section 10AA)	**Yes**

S.No	Section	Amount
1	80C	76995

34	a	Whether the assessee is required to deduct or collect tax as per the provisions of Chapter XVII-B or Chapter XVII-BB, if yes please furnish	**No**

S.No	Tax deduction and collection Account Number (TAN)	Section	Nature of payment	Total amount of payment or receipt of the nature specified in column (3)	Total amount on which tax was required to be deducted or collected out of (4)	Total amount on which tax was deducted or collected at specified rate out of (5)	Amount of tax deducted or collected out of (6)	Total amount on which tax was deducted or collected at less than specified rate out of (7)	Amount of tax deducted or collected on (8)	Amount of tax deducted or collected not deposited to the credit of the Central Government out of (6) and (8)
Nil										

34	b	Whether the assessee is required to furnish the statement of tax deducted or tax collected. If yes ,please furnish the details:	**No**

S.No	Tax deduction and collection Account Number (TAN)	Type of Form	Due date for furnishing	Date of furnishing, if furnished	Whether the statement of tax deducted or collected contains information about all details/transactions which are required to be reported.	If not, please furnish list of details/ transactions which are not reported.
Nil						

34	c	Whether the assessee is liable to pay interest under section 201(1A) or section 206C(7).If yes, please furnish	**Not Applicabl**

S.No	Tax deduction and collection Account Number (TAN)	Amount of interest under section 201(1A)/206C(7) is payable	Amount	Dates of payment
Nil				

35 a In the case of a trading concern, give quantitative details of prinicipal items of goods traded

S.No	Item Name	Unit	Opening stock	Purchases during the previous year	Sales during the previous year	Closing stock	Shortage/ excess, if any
Nil							

35 b In the case of a manufacturing concern, give quantitative details of the principal items of raw materials, finished products and by-products :-

35 bA Raw materials :

S.No	Item Name	Unit	Opening stock	Purchases during the previous year	Consumption during the previous year	Sales during the previous year	Closing stock	*Yield of finished products	*Percentage of yield	Shortage/ excess, if any
Nil										

35 bB Finished products :

S.No	Item Name	Unit	Opening stock	Purchases during the previous year	Quantity manufactured during the previous year	Sales during the previous year	Closing stock	Shortage/ excess, if any
Nil								

35 bC By products :

S.No	Item Name	Unit	Opening stock	Purchases during the previous year	Quantity manufactured during the previous year	Sales during the previous year	Closing stock	Shortage/ excess, if any
Nil								

36 In the case of a domestic company, details of tax on distributed profits under section 115-O in the following forms :-

S.No	(a) Total amount of distributed profits	(b) Amount of reduction as referred to in section 115-O(1A)(i)	(c) Amount of reduction as referred to in section 115-O(1A)(ii)	(d) Total tax paid thereon	(e) Total tax paid thereon	
					Amount	Dates of payment
Nil						

A(a) Whether the assessee has received any amount in the nature of dividend as referred to in sub-clause (e) of clause (22) of section 2.If yes, please furnish the following details:- **No**

Sl No.	Amount received (in Rs.)	Date of receipt
Nil		

37 Whether any cost audit was carried out **Not Applicabl**

If yes, give the details, if any, of disqualification or disagreement on any matter/item/value/quantity as may be reported/identified by the cost auditor

38 Whether any audit was conducted under the Central Excise Act, 1944 **Not Applicabl**

If yes, give the details, if any, of disqualification or disagreement on any matter/item/value/quantity as may be reported/identified by the auditor

39 Whether any audit was conducted under section 72A of the Finance Act,1994 in relation to valuation of taxable services as may be reported/identified by the auditor **Not Applicabl**

If yes, give the details, if any, of disqualification or disagreement on any matter/item/value/quantity as may be reported/identified by the auditor

40 Details regarding turnover, gross profit, etc., for the previous year and preceding previous year:

Sl No	Particulars	Previous Year	Preceding previous Year

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a	Total turnover of the assessee		92148103			73519752	
b	Gross profit / Turnover		92148103	%		73519752	%
c	Net profit / Turnover	3878767	92148103	4.21%	4380092	73519752	5.96%
d	Stock-in-Trade / Turnover		92148103	%	1950000	73519752	2.65%
e	Material consumed/ Finished goods produced			%			%

(The details required to be furnished for principal items of goods traded or manufactured or services rendered)

41 Please furnish the details of demand raised or refund issued during the previous year under any tax laws other than Income-tax Act, 1961 and Wealth tax Act, 1957 alongwith details of relevant proceedings

Financial year to which demand/ refund relates to	Name of other Tax law	Type (Demand raised/Refund received)	Date of demand raised/refund received	Amount	Remarks
Nil					

42 Whether the assessee is required to furnish statement in Form No.61 or Form No. 61A or Form No. 61B? If yes, please furnish — **No**

Sl No.	Income-tax Department Reporting Entity Identification Number	Type of Form	Due date for furnishing	Date of furnishing, if furnished	Whether the Form contains information about all details/ transactions which are required to be reported.	If not, please furnish list of the details/ transactions which are not reported.
Nil						

43 (a)Whether the assessee or its parent entity or alternate reporting entity is liable to furnish the report as referred to in sub-section (2) of section 286 — **No**

Sl No.	Whether report has been furnished by the assessee or its parent entity or an alternate reporting entity	Name of parent entity	Name of alternate reporting entity (if applicable)	Date of furnishing of report
Nil				

A(c) If Not due , please enter expected date of furnishing the report

44 Break-up of total expenditure of entities registered or not registered under the GST:(This Clause is applicable from 1st April,2019)

Sl No.	Total amount of Expenditure incurred during the year	Expenditure in respect of entities registered under GST				Expenditure relating to entities not registered under GST
		Relating to goods or services exempt from GST	Relating to entities falling under composition scheme	Relating to other registered entities	Total payment to registered entities	
Nil						

Place **KAKINADA**
Date **31/10/2018**

Name **P MALLIKHARJUNA SASTRY**
Membership Number **215025**
FRN (Firm Registration Number) **012136S**
Address **8-5-5, GANDHI NAGAR, , KAKINADA, ANDHRA PRADESH, 533003,**

Form Filing Details	
Revision/Original	Original

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Addition Details(From Point No. 18)								
Description of Block of Assets	Sl.No.	Date of Purchase	Date put to use	Amount	Adjustment on account of			Total Amount
					MODVAT	Exchange Rate Change	Subsidy Grant	

Deduction Details(From Point No. 18)				
Description of Block of Assets	Sl.No.	Date of Sale etc.	Amount	

K.P.G. & Co. KAKINADA Chartered Accountants

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INDIAN INCOME TAX RETURN ACKNOWLEDGEMENT

[Where the data of the Return of Income in Form ITR-1 (SAHAJ), ITR-2, ITR-3, ITR-4 , ITR-5, ITR-6,ITR-7 filed and verified electronically]

Assessment Year 2019-20

PERSONAL INFORMATION AND THE ACKNOWLEDGEMENT NUMBER

Name			PAN
BOLLA RAMA DEVI			AVSPB0729L
Flat/Door/Block No	**Name Of Premises/Building/Village**		**Form Number.** ITR-3
Plot No. 41A	Sarpavaram		
Road/Street/Post Office	**Area/Locality**		
	Industrial Park		**Status** Individual
Town/City/District	**State**	**Pin/ZipCode**	**Filed u/s**
KAKINADA	ANDHRA PRADESH	533005	139(1)-On or before due date

Assessing Officer Details (Ward/Circle) CIRCLE 1,KAKINADA

e-filing Acknowledgement Number 237963811311019

COMPUTATION OF INCOME AND TAX THEREON

1	Gross total income				1	2245431
2	Total Deductions under Chapter-VI-A				2	200000
3	Total Income				3	2045430
3a	Deemed Total Income under AMT/MAT				3a	2045430
3b	Current Year loss, if any				3b	0
4	Net tax payable				4	443174
5	Interest and Fee Payable				5	14450
6	Total tax, interest and Fee payable				6	457624
7	Taxes Paid	a Advance Tax	7a	200000		
		b TDS	7b	184719		
		c TCS	7c	10903		
		d Self Assessment Tax	7d	62000		
		e Total Taxes Paid (7a+7b+7c +7d)			7e	457622
8	Tax Payable (6-7e)				8	0
9	Refund (7e-6)				9	0
10	Exempt Income	Agriculture			10	
		Others				

Income Tax Return submitted electronically on **31-10-2019 10:54:32** from IP address **175.101.144.139** and verified by **BOLLA RAMA DEVI** having PAN **AVSPB0729L** on **31-10-2019 10:54:32** from IP address **175.101.144.139** using **Digital Signature Certificate (DSC)**

DSC details: **249639842885958193 6CN=SafeScrypt sub-CA for RCAI Class 2 2014,OU=Sub-CA,O=Sify Technologies Limited,C=IN**

DO NOT SEND THIS ACKNOWLEDGEMENT TO CPC, BENGALURU

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A.Y. 2019-2020

Name : BOLLA RAMA DEVI
Father's Name : Surya Satyanarayana
Address : Plot No. 41A
Sarpavaram
Industrial Park, KAKINADA - 533 005

Previous Year : 2018-2019
PAN : AVSPB 0729 L
Status : Individual
Date of Birth : 21-May-1981
Aadhaar No. : 3961 4545 6733

Resident

Statement of Income

		Rs.	Rs.	Rs.
■ **Income from House Property**				
Self occupied property: 1	1			
Gross annual value u/s 23(2)(a)			NIL	
Less:Interest on borrowed capital u/s 24(b)			1,12,614	
Income from self occupied property			-1,12,614	
Let-out properties				
Property-1: 1, Tenant - Murali	2			
Description			Amount	
Rents received			72,000	
Gross annual value			72,000	
Less: Municipal taxes			NIL	
Net annual value			72,000	
Less: Standard deduction u/s 24(a)		21,600		
Interest on borrowed capital u/s 24(b)		1,27,500	1,49,100	
Net Income from Property-1			-77,100	
Income chargeable under the head "House Property"				-1,89,714
■ **Profits and gains of Business or Profession**				
Business-1				
Net Profit Before Tax as per P & L a/c			24,35,145	
Add: Inadmissible expenses & Income not included				
Depreciation debited to P & L a/c			7,73,111	
			32,08,256	
Less: Deductible expenditure & income to be excluded				
Incomes considered separately	3		2,21,972	
Adjusted Profit of Business-1			29,86,284	
Total income of Business and Profession			29,86,284	
Less: Depreciation as per IT Act	9		7,73,111	
Income chargeable under the head "Business and Profession"				22,13,173
■ **Income from other sources**				
Interest income	4		2,21,972	
Income chargeable under the head "other sources"				2,21,972

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■ **Gross Total Income**				22,45,431
Deductions under Chapter VI-A				
80G - Donations	5		50,000	
Investment u/s 80C, CCC, CCD				
Life insurance premium		18,675		
Housing loan repayment		2,49,000		
Deduction subject to ceiling u/s 80CCE			1,50,000	2,00,000
■ **Total Income**				20,45,431
Total income rounded off u/s 288A				20,45,430
Tax on total income				4,26,129
Add: Cess				17,045
Tax with cess				4,43,174
Net Tax				4,43,174
TDS	6		1,95,622	
Advance Tax	7		2,00,000	
Total prepaid taxes				3,95,622
Balance Tax				47,552
Interest u/s 234A			630	
Interest u/s 234B			3,325	
Interest u/s 234C			10,495	14,450
Net tax payable				62,002
Self-assessment tax paid	8			62,000
■ **Balance tax payable**				0

Schedule 1

Details of the property

1, KAKINADA, EAST GODAVARI-533002, Andhra pradesh

Owner	Self
Assessee's share in the property (%)	100

Schedule 2

Details of property - for filling ITR

1, Kakinada, East Godavari-533001, Andhra pradesh

Name	PAN of Tenant	TAN of Tenant	Section
Murali			
Owner	Self		
Assessee's share in the property (%)	100		

Schedule 3

	Amount

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Income considered under other heads	
Interest received	2,21,972
Grand total	2,21,972

Schedule 4

Interest income (other than NSC/KVP interest)

Name of the Bank	Interest
Interest on Time Deposits	
State Bank of India	2,21,972

Schedule 5

80G-Donations

	subject to ceiling	
Donations with 100% deduction		
Cm Relief Fund, PAN-GGGGG 0000 G, Kakinada	30,000	
Cyclone Relief Fund, PAN-GGGGG 0000 G, Kakinada	20,000	
Total	50,000	
Qualifying Amount	50,000	
Deductible amount -100%	50,000	
Total deduction		50,000
Total Income for qualifying limit	20,95,431	

Schedule 6

TDS as per Form 16A

Deductor, TAN	TDS deducted	TDS claimed in current year	Gross receipt offered
Eastern Power Distribution Company Of Ap Limited, TAN-VPNE00240C	1,37,368	1,37,368	68,68,400
New And Renewable Energy Development Corporation Of Andhra Pradesh Limited, TAN- HYDN01369E	575	575	28,620
Sree Veera Venkata Satyanarayana Swamy Devasthanam, TAN- VPNS02146E	2,382	2,382	2,38,094
Syndicate Bank - Main Branch Kakinada, TAN- VPNS03602E	40,948	40,948	2,04,742
Syndicate Bank-vakalapudi, TAN- VPNS02408A	3,446	3,446	17,230
Total	1,84,719	1,84,719	73,57,086

Tax collected at source

Collector & TAN	TCS collected	TCS claimed in current year	Expenditure as per 26AS
Varun Motors Private Limited, TAN- VPNV00142C	10,903	10,903	10,90,290
Grand Total	1,95,622	1,95,622	73,57,086

Schedule 7

Advance tax paid

Name of the Bank and BSR Code	Date of deposit	Challan Sl.no.	Amount
Syndicate Bank-0331906	15-Mar-19	02765	2,00,000

Schedule 8

Self Assessment tax paid

Name of the Bank and BSR Code	Date of deposit	Challan Sl.no.	Amount paid
Syndicate Bank - 0331906	30-Oct-19	00005	62,000

Bank A/c: SYNDICATE BANK 32501250002078 IFSC: SYNB0003258

Date : 31-Oct-2019

Place : KAKINADA

[BOLLA RAMA DEVI]

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BOLLA RAMA DEVI

CONSOLIDATED PROFIT AND LOSS ACCOUNT FOR THE YEAR ENDING 31.3.2019

PARTICULARS	AMOUNT	AMOUNT	PARTICULARS	AMOUNT	AMOUNT
PURCHASE			**SALES**		
Solar System	90026304		Solar System	102055809	
SMART Automation	16315006	106341310	SMART Automation	16541494	118597303
			CLOSING STOCK		
			Solar System	2000000	
			SMART Automation	207600	2207600
Gross Profit		14463593			
		120804903			**120804903**
			Gross Profit		14463593
EXPENSES					
Audit Fee		22000	Interest Received		335013
Bank Charges		128758			
Car Maintenance		22000			
Depreciation		773111			
Electrical Charges		67570			
Fabrication Works		162810			
H/W & Electrical Material		319899			
Interest on Loans		704809			
Meterial Insurance		175086			
Office Maintenance		295012			
Office Rent		50300			
Salaries & Wages		8688965			
Taxes&Licences		126238			
Transportation Charges		529417			
Traveling Charges		297487			
Net profit		2435145			
		14798607			**14798607**

For K.P.G. & Co
Chartered Accountants
P. Mall Sastry
(P. Mallikharjuna Sastry)
Partner M. no. 215023
Firm Reg No. 012136S

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BOLLA RAMA DEVI
CONSOLIDATED BALANCE SHEET AS ON 31.3.2019

LIA BILITIES		AMOUNT	ASSETS	AMOUNT
CAPITAL ACCOUNT			FIXED ASSTS	19133432
Bolla Rama Devi Capital	15710561			
Add: Profit	2435145		INVESTMENTS	1230987
	18145706			
Less: Drawings	1678822	16466884	**CURRENT ASSETS**	
			Closing Stock	2207600
LOANS (LIABILITY)			Deposits (Asset)	7549360
Bank OD A/c	13128203		Loans & Advances (Asset)	380972
Secured Loans	2567349		Sundry Debtors	9046901
Unsecured Loans	2707000	18402551	Cash-in-hand	612030
			Bank Accounts	534621
CURRENT LIABILITES			Advance Tax	200000
Sundry Creditors		7273609	Gst Refund 2018-19	1051520
			TCS Receiveble 2018-19	10903
			TDS Receiveble 2018-19	184719
		42143045		**42143045**

For K.P.G. & Co
Chartered Accountants
P. Mallikharjuna Sastry
(P, Mallikharjuna Sastry)
Partner M. no. 215023
Firm Reg No. 012136S

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FORM NO. 3CB

[See rule 6G(1)(b)]

Audit report under section 44AB of the Income-tax Act, 1961 in the case of a person referred to in clause (b) of sub-rule (1) of rule 6G

1. We have examined the balance sheet as at 31st March 2019 and the Profit and loss account for the period beginning from 01/04/2018 to ending on 31/03/2019 attached herewith, of BOLLA RAMA DEVI Plot No. 41A, Sarpavaram, Industrial Park, , KAKINADA, ANDHRA PRADESH, 533005 AVSPB0729L,

2. We certify that the balance sheet and the Profit and loss account are in agreement with the books of account maintained at the head office at KAKINADA, and 0 branches.

3. (a) We report the following observations/comments/discrepancies/inconsistencies; if any:

(b) Subject to above,-

(A) We have obtained all the information and explanations which, to the best of Our knowledge and belief, were necessary for the purposes of the audit.

(B) In Our opinion, proper books of account have been kept by the head office and branches of the assessee so far as appears from Our knowledge and belief, were necessary for the examination of the books.

(C) In Our opinion and to the best of Our information and according to the explanations given to Us the said accounts, read with notes thereon, if any, give a true and fair view:-

(i) in the case of the balance sheet, of the state of the affairs of the assessee as at 31st March, 2019 ;and

(ii) in the case of the Profit and loss account of the Profit of the assessee for the year ended on that date.

4. The statement of particulars required to be furnished under section 44AB is annexed herewith in Form No. 3CD.

5.In Our opinion and to the best of Our information and according to explanations given to Us the particulars given in the said Form No. 3CD and the Annexure thereto are true and correct subject to following observations/qualifications, if any:-

Sl No.	Qualification Type	Observations/Qualifications
1	Others.	I have not Pysically verified the Cash Balances & Closing Stock as on 31st march 2018
2	Others.	Confirmation of balances with Sundry and Trade Debtors, Sundry Creditors and Unsecured Loans were not produced form my verification.
3	Others.	Some expenses were not covered by Vouchers

Place KAKINADA
Date 31/10/2019

Name P MALLIKARJUNA SASTRY
Membership Number 215023
FRN (Firm Registration Number) 012136S
Address D.No.8-5-5, Beside Andhra Bank, Opp Venkateswara Swamy Temple,Gandhi Nagar , , KAKINADA, ANDHRA PRADESH, 533004

P. Mallikarjuna Sastry

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FORM NO. 3CD

[See rule 6G(2)]

Statement of particulars required to be furnished under section 44AB of the Income-tax Act, 1961

1	Name of the assessee	**BOLLA RAMA DEVI**
2	Address	**Plot No. 41A, Sarpavaram, , Industrial Park, , KAKINADA, ANDHRA PRADESH, 533005**
3	Permanent Account Number (PAN)	**AVSPB0729L**
4	Whether the assessee is liable to pay indirect tax like excise duty, service tax, sales tax, goods and services tax,customs duty,etc. if yes, please furnish the registration number or,GST number or any other identification number allotted for the same	**Yes**

Sl No.	Type	Registration Number
1	**Sales VAT/Tax ANDHRA PRADESH**	**37660989415**
2	**Goods and Services Tax ANDHRA PRADESH**	**37 AVSPB0729L 1Z9**
3	**Goods and Services Tax ANDHRA PRADESH**	**37 AVSPB0729L 2Z8**

5	Status	**Individual**
6	Previous year from	**01/04/2018 to 31/03/2019**
7	Assessment Year	**2019-20**
8	Indicate the relevant clause of section 44AB under which the audit has been conducted	

Sl No.	Relevant clause of section 44AB under which the audit has been conducted
1	**Clause 44AB(a)-Total sales/turnover/gross receipts of business exceeding specified limits**

9 a If firm or Association of Persons, indicate names of partners/members and their profit sharing ratios. In case of AOP, whether shares of members are indeterminate or unknown ?

Name	Profit Sharing Ratio (%)
Nil	

9 b If there is any change in the partners or members or in their profit sharing ratio since the last date of the preceding year, the particulars of such change.

Date of change	Name of Partner/Member	Type of change	Old profit sharing ratio	New profit Sharing Ratio	Remarks

10 a Nature of business or profession (if more than one business or profession is carried on during the previous year, nature of every business or profession).

Sector	Sub Sector	Code
WHOLESALE AND RETAIL TRADE	**Retail sale of other products n.e.c**	**09028**
MANUFACTURING	**Other manufacturing n.e.c.**	**04097**

10 b If there is any change in the nature of business or profession, the particulars of such change **No**

Business	Sector	SubSector	Code
Nil			

11 a Whether books of accounts are prescribed under section 44AA, if yes, list of books so prescribed **No**

Books prescribed

11 b List of books of account maintained and the address at which the books of accounts are kept. (In case books of account are maintained in a computer system, mention the books of account generated by such computer system. If the books of accounts are not kept at one location, please furnish the addresses of locations along with the details of books of accounts maintained at each location.) Same as 11(a) above

Books maintained	Address Line 1	Address Line 2	City or Town or District	State	PinCode
Bank book	**Plot No. 41A, Sarpavaram, Industrial Park**		**KAKINADA**	**ANDHRA PRADESH**	**533005**
Cash book	**Plot No. 41A, Sarpavaram, Industrial Park**		**KAKINADA**	**ANDHRA PRADESH**	**533005**
Journal	**Plot No. 41A, Sarpavaram, Industrial Park**		**KAKINADA**	**ANDHRA PRADESH**	**533005**
Ledger	**Plot No. 41A, Sarpavaram, Industrial Park**		**KAKINADA**	**ANDHRA PRADESH**	**533005**
Purchase register	**Plot No. 41A, Sarpavaram, Industrial Park**		**KAKINADA**	**ANDHRA PRADESH**	**533005**
Sales register	**Plot No. 41A, Sarpavaram, Industrial Park**		**KAKINADA**	**ANDHRA PRADESH**	**533005**

11 c List of books of account and nature of relevant documents examined. Same as 11(b) above

	Books Examined		
	Bank book		
	Cash book		
	Journal		
	Ledger		
	Purchase register		
	Sales register		
12	Whether the profit and loss account includes any profits and gains assessable on presumptive basis, if yes, indicate the amount and the relevant section (44AD, 44AE, 44AF, 44B, 44BB, 44BBA, 44BBB, Chapter XII-G, First Schedule or any other relevant section).		**No**
	Section		Amount
	Nil		
13 a	Method of accounting employed in the previous year	**Mercantile system**	
13 b	Whether there has been any change in the method of accounting employed vis-a-vis the method employed in the immediately preceding previous year.		**No**
13 c	If answer to (b) above is in the affirmative, give details of such change , and the effect thereof on the profit or loss.		
	Particulars	Increase in profit(Rs.)	Decrease in profit(Rs.)
13 d	Whether any adjustment is required to be made to the profits or loss for complying with the provisions of income computation and disclosure standards notified under section 145(2).		**No**
13 e	If answer to (d) above is in the affirmative, give details of such adjustments.		
	ICDS	Increase in profit(Rs.)	Decrease in profit(Rs.) / Net effect(Rs.)
	Total		
13 f	Disclosure as per ICDS.		
	ICDS	Disclosure	
	ICDS I - Accounting Policies	**Going Concern, consistency and Accrual are followed. ICDS I was Complied with**	
	ICDS IV - Revenue Recognition	**Revenue is recognized as and when sales is made and entered in the books of account. ICDS IV was complied with**	
	ICDS V - Tangible Fixed Assets	**Tangible fixed assets are whom at cost of acquisition less depreciation. ICDS IV was complied with**	
14 a	Method of valuation of closing stock employed in the previous year.		**Lower of cost or net realisable value [Section 145A]**
14 b	In case of deviation from the method of valuation prescribed under section 145A, and the effect thereof on the profit or loss, please furnish:		**No**
	Particulars	Increase in profit(Rs.)	Decrease in profit(Rs.)
15	Give the following particulars of the capital asset converted into stock-in-trade		
	(a) Description of capital asset	(b) Date of acquisition	(c) Cost of acquisition / (d) Amount at which the asset is converted into stock-in trade
	Nil		
16	Amounts not credited to the profit and loss account, being:-		
16 a	The items falling within the scope of section 28		
	Description		Amount
	Nil		
16 b	The proforma credits, drawbacks, refund of duty of customs or excise or service tax, or refund of sales tax or value added tax, where such credits, drawbacks or refund are admitted as due by the authorities concerned		
	Description		Amount
16 c	Escalation claims accepted during the previous year		
	Description		Amount
	Nil		
16 d	Any other item of income		
	Description		Amount
	Nil		
16 e	Capital receipt, if any		
	Description		Amount
	Nil		

17 Where any land or building or both is transferred during the previous year for a consideration less than value adopted or assessed or assessable by any authority of a State Government referred to in section 43CA or 50C, please furnish:

Details of property	Address Line 1	Address Line 2	City/Town	State	Pincode	Consideration received or accrued	Value adopted or assessed or assessable

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18 Particulars of depreciation allowable as per the Income-tax Act, 1961 in respect of each asset or block of assets, as the case may be, in the:-

Description of Block of Assets/ Class of Assets	Rate of depreciation (In Percentage)	Opening WDV (A)	Additions					Deductions (C)	Depreciation Allowable (D)	Written Down Value at the end of the year (A+B-C-D)
			Purchase Value (1)	MOD-VAT (2)	Change in Rate of Exchange (3)	Subsidy/ Grant (4)	Total Value of Purchases (B) (1+2+3+4)			
Building @ 10%	**10%**	**0**	**7029940**	**0**	**0**	**0**	**7029940**	**0**	**634633**	**6395307**
Plant & Machinery @ 15%	**15%**	**0**	**1467554**	**0**	**0**	**0**	**1467554**	**0**	**124767**	**1342787**
Plant & Machinery @ 40%	**40%**	**0**	**35654**	**0**	**0**	**0**	**35654**	**0**	**13711**	**21943**

*** For Addition and Deduction Details refer Addition and Deduction Detail Tables At the End of the Page**

19 Amounts admissible under sections :

S.No	Section	Amount debited to profit and loss account	Amounts admissible as per the provisions of the Income-tax Act, 1961 and also fulfils the conditions, if any specified under the relevant 14provisions of Income-tax Act, 1961 or Income-tax Rules,1962 or any other guidelines, circular, etc., issued in this behalf.
Nil			

20 a Any sum paid to an employee as bonus or commission for services rendered, where such sum was otherwise payable to him as profits or dividend. [Section 36(1)(ii)]

Description	Amount

20 b Details of contributions received from employees for various funds as referred to in section 36(1)(va):

Nature of fund	Sum received from employees	Due date for payment	The actual amount paid	The actual date of payment to the concerned authorities
Nil				

21 a Please furnish the details of amounts debited to the profit and loss account, being in the nature of capital, personal, advertisement expenditure etc

Capital expenditure

Particulars	Amount in Rs.

Personal expenditure

Particulars	Amount in Rs.

Advertisement expenditure in any souvenir, brochure, tract, pamphlet or the like published by a political party

Particulars	Amount in Rs.

Expenditure incurred at clubs being entrance fees and subscriptions

Particulars	Amount in Rs.

Expenditure incurred at clubs being cost for club services and facilities used.

Particulars	Amount in Rs.

Expenditure by way of penalty or fine for violation of any law for the time being force

Particulars	Amount in Rs.

Expenditure by way of any other penalty or fine not covered above

Particulars	Amount in Rs.

Expenditure incurred for any purpose which is an offence or which is prohibited by law

Particulars	Amount in Rs.

(b) Amounts inadmissible under section 40(a):-

(i) as payment to non-resident referred to in sub-clause (i)

(A) Details of payment on which tax is not deducted:

Date of payment	Amount of payment	Nature of payment	Name of the payee	PAN of the payee,if avaliable	Address Line 1	Address Line 2	City or Town or District	Pincode

(B) Details of payment on which tax has been deducted but has not been paid during the previous year or in the subsequent year before the expiry of time prescribed under section200(1)

Date of payment	Amount of payment	Nature of payment	Name of the payee	PAN of the payee,if avaliable	Address Line 1	Address Line 2	City or Town or District	Pincode	Amount of tax deducted

(ii) as payment referred to in sub-clause (ia)

(A) Details of payment on which tax is not deducted:

	Date of payment	Amount of payment	Nature of payment	Name of the payee	PAN of the payee,if avaliable	Address Line 1	Address Line 2	City or Town or District	Pincode

(B) Details of payment on which tax has been deducted but has not been paid on or before the due date specified in sub- section (1) of section 139.

	Date of payment	Amount of payment	Nature of payment	Name of the payer	PAN of the payee,if avaliable	Address Line 1	Address Line 2	City or Town or District	Pincode	Amount of tax deducted	Amount out of (VI) deposited, if any

(iii) as payment referred to in sub-clause (ib)

(A) Details of payment on which levy is not deducted:

	Date of payment	Amount of payment	Nature of payment	Name of the payee	PAN of the payee,if avaliable	Address Line 1	Address Line 2	City or Town or District	Pincode

(B) Details of payment on which levy has been deducted but has not been paid on or before the due date specified in sub- section (1) of section 139.

	Date of payment	Amount of payment	Nature of payment	Name of the payer	PAN of the payee,if avaliable	Address Line 1	Address Line 2	City or Town or District	Pincode	Amount of levy deducted	Amount out of (VI) deposited, if any

(iv) fringe benefit tax under sub-clause (ic)

(v) wealth tax under sub-clause (iia)

(vi) royalty, license fee, service fee etc. under sub-clause (iib).

(vii) salary payable outside India/to a non resident without TDS etc. under sub-clause (iii).

	Date of payment	Amount of payment	Name of the payee	PAN of the payee,if avaliable	Address Line 1	Address Line 2	City	Pincode

(viii) payment to PF /other fund etc. under sub-clause (iv)

(ix) tax paid by employer for perquisites under sub-clause (v)

(c) Amounts debited to profit and loss account being, interest, salary, bonus, commission or remuneration inadmissible under section 40(b)/40(ba) and computation thereof;

	Particulars	Section	Amount debited to P/L A/C	Amount Admissible	Amount Inadmissible	Remarks

(d) Disallowance/deemed income under section 40A(3):

(A) On the basis of the examination of books of account and other relevant documents/evidence, whether the expenditure covered under section 40A(3) read with rule 6DD were made by account payee cheque drawn on a bank or account payee bank draft. If not, please furnish the details: **Yes**

	Date Of Payment	Nature Of Payment	Amount in Rs	Name of the payee	Permanent Account Number of the payee, if available

(B) On the basis of the examination of books of account and other relevant documents/evidence, whether the payment referred to in section 40A(3A) read with rule 6DD were made by account payee cheque drawn on a bank or account payee bank draft If not, please furnish the details of amount deemed to be the profits and gains of business or profession under section 40A(3A) **Yes**

	Date Of Payment	Nature Of Payment	Amount in Rs	Name of the payee	Permanent Account Number of the payee, if available

(e) Provision for payment of gratuity not allowable under section 40A(7) **0**

(f) Any sum paid by the assessee as an employer not allowable under section 40A(9) **0**

(g) Particulars of any liability of a contingent nature

	Nature Of Liability	Amount in Rs.

(h) Amount of deduction inadmissible in terms of section 14A in respect of the expenditure incurred in relation to income which does not form part of the total income

	Nature Of Liability	Amount in Rs.

(i) Amount inadmissible under the proviso to section 36(1)(iii)

22 Amount of interest inadmissible under section 23 of the Micro, Small and Medium Enterprises Development Act, 2006 **0**

23 Particulars of any payment made to persons specified under section 40A(2)(b).

Name of Related Person	PAN of Related Person	Relation	Nature of trasaction	Payment Made(Amount)

24 Amounts deemed to be profits and gains under section 32AC or 32AD or 33AB or 33AC or 33ABA.

	Section	Description	Amount
	Nil		

25 Any amount of profit chargeable to tax under section 41 and computation thereof.

Name of Person	Amount of income	Section	Description of Transaction	Computation if any
Nil				

26 (i)* In respect of any sum referred to in clause (a),(c),(d),(e),(f) or (g) of section 43B the liability for which:-

26 (i)A pre-existed on the first day of the previous year but was not allowed in the assessment of any preceding previous year and was :-

26 (i)(A)(a) Paid during the previous year

Section	Nature of liability	Amount
Nil		

26 (i)(A)(b) Not paid during the previous year

Section	Nature of liability	Amount
Nil		

26 (i)B was incurred in the previous year and was

26 (i)(B)(a) Paid on or before the due date for furnishing the return of income of the previous year under section 139(1)

Section	Nature of liability	Amount
Nil		

26 (i)(B)(b) not paid on or before the aforesaid date

Section	Nature of liability	Amount
Nil		

(State whether sales tax, goods & service Tax, customs duty, excise duty or any other indirect tax, levy, cess, impost, etc., is passed through the profit and loss account.)	No	

27 a Amount of Central Value Added Tax Credits/ Input Tax Credit(ITC) availed of or utilised during the previous year and its treatment in profit and loss account and treatment of outstanding Central Value Added Tax Credits/ Input Tax Credit(ITC) in accounts — **No**

CENVAT/ITC	Amount	Treatment in Profit and Loss/Accounts
Opening Balance		
Credit Availed		
Credit Utilized		
Closing/Outstanding Balance		

27 b Particulars of income or expenditure of prior period credited or debited to the profit and loss account :-

Type	Particulars	Amount	Prior period to which itrelates(Year in yyyy-yyformat)
Nil			

28 Whether during the previous year the assessee has received any property, being share of a company not being a company in which the public are substantially interested, without consideration or for inadequate consideration as referred to in section 56(2)(viia)

Name of the person from which shares received	PAN of the person, if available	Name of the company from which shares received	CIN of the company	No. of Shares Received	Amount of consideration paid	Fair Market value of the shares
Nil						

29 Whether during the previous year the assessee received any consideration for issue of shares which exceeds the fair market value of the shares as referred to in section 56(2)(viib). If yes, please furnish the details of the same

Name of the person from whom consideration received for issue of shares	PAN of the person, if available	No. of Shares	Amount of consideration received	Fair Market value of the shares
Nil				

A(a) Whether any amount is to be included as income chargeable under the head Income from other sources as referred to in clause (ix) of sub-section (2) of section 56? (b) If yes, please furnish the following details: — **No**

Sl No.	Nature of Income	Amount
Nil		

B(a) Whether any amount is to be included as income chargeable under the head Income from other sources as referred to in clause (x) of sub-section (2) of section 56?(Yes/No) (b) If yes, please furnish the following details: — **No**

Sl No.	Nature of Income	Amount
Nil		

30 Details of any amount borrowed on hundi or any amount due thereon (including interest on the amount borrowed) repaid otherwise than through an account payee cheque,(Section 69D) — **No**

Name of the person from whom amount borrowed or repaid on hundi	PAN of the person, if available	Address Line 1	Address Line 2	City or Town or District	State	Pincode	Amount borrowed	Date of Borrowing	Amount due including interest	Amount repaid	Date of Repayment
Nil											

A(a)	Whether primary adjustment to transfer price, as referred to in sub-section (1) of section 92CE, has been made during the previous year.	No
	(b) If yes, please furnish the following details	

Sl No.	Under which clause of sub-section (1) of section 92CE primary adjustment is made ?	Amount (in Rs.) of primary adjustment	Whether the excess money available with the associated enterprise is required to be repatriated to India as per the provisions of sub-section (2) of section 92CE.	If yes, whether the excess money has been repatriated within the prescribed time.	If no, the amount (in Rs.) of imputed interest income on such excess money which has not been repatriated within the prescribed time	Expected date of repatriation of money
Nil						

B(a)	Whether the assessee has incurred expenditure during the previous year by way of interest or of similar nature exceeding one crore rupees as referred to in sub-section (1) of section 94B.	No
	(b) If yes, please furnish the following details	

Sl No.	Amount (in Rs.) of expenditure by way of interest or of similar nature incurred	Earnings before interest, tax, depreciation and amortization (EBITDA) during the previous year (in Rs.)	Amount (in Rs.) of expenditure by way of interest or of similar nature as per (i) above which exceeds 30% of EBITDA as per (ii) above.	Details of interest expenditure brought forward as per sub-section (4) of section 94B.		Details of interest expenditure carried forward as per sub-section (4) of section 94B:	
				Assessment Year	Amount (in Rs.)	Assessment Year	Amount (in Rs.)
Nil							

C(a)	Whether the assessee has entered into an impermissible avoidance arrangement, as referred to in section 96, during the previous year.(This Clause is kept in abeyance till 31st March, 2020).	
	(b) If yes, please furnish the following details	

Sl No.	Nature of the impermissible avoidance arrangement	Amount (in Rs.) of tax benefit in the previous year arising, in aggregate, to all the parties to the arrangement
Nil		

31 a Particulars of each loan or deposit in an amount exceeding the limit specified in section 269SS taken or accepted during the previous year :-

S.No	Name of the lender or depositor	Address of the lender or depositor	Permanent Account Number(if available with the assessee) of the lender or the depositor	Amount of loan or deposit taken or accepted	Whether the loan or deposit was squared up during the previous year	Maximum amount outstanding in the account at any time during the previous year	Whether the loan or deposit was taken or accepted by cheque or bank draft or use of electronic clearing system through a bank account.	In case the loan or deposit was taken or accepted by cheque or bank draft, whether the same was taken or accepted by an account payee cheque or an account payee bank draft.
Nil								

31 b Particulars of each specified sum in an amount exceeding the limit specified in section 269SS taken or accepted during the previous year:-

S.No.	Name of the person from whom specified sum is received	Address of the person from whom specified sum is received	Permanent Account Number (if available with the assessee) of	Amount of specified sum taken or accepted	Whether the specified sum was taken or accepted by cheque or bank draft or use	In case the specified sum was taken or accepted by cheque or bank draft, whether the same was taken

					the person from whom specified sum is received		of electronic clearing system through a bank account	or accepted by an account payee cheque or an account payee bank draft.

Nil

(Particulars at (a) and (b) need not be given in the case of a Government company, a banking company or a corporation established by a Central, State or Provincial Act.)

31 b(a) Particulars of each receipt in an amount exceeding the limit specified in section 269ST, in aggregate from a person in a day or in respect of a single transaction or in respect of transactions relating to one event or occasion from a person, during the previous year, where such receipt is otherwise than by a cheque or bank draft or use of electronic clearing system through a bank account

S.No.	Name of the Payer	Address of the Payer	Permanent Account Number (if available with the assessee) of the Payer	Nature of transaction	Amount of receipt	Date Of receipt

Nil

31 b(b) Particulars of each receipt in an amount exceeding the limit specified in section 269ST, in aggregate from a person in a day or in respect of a single transaction or in respect of transactions relating to one event or occasion from a person, received by a cheque or bank draft, not being an account payee cheque or an account payee bank draft, during the previous year :-

S.No.	Name of the Payer	Address of the Payer	Permanent Account Number (if available with the assessee) of the Payer	Amount of receipt

Nil

31 b(c) Particulars of each payment made in an amount exceeding the limit specified in section 269ST, in aggregate to a person in a day or in respect of a single transaction or in respect of transactions relating to one event or occasion to a person, otherwise than by a cheque or bank draft or use of electronic clearing system through a bank account during the previous year

S.No.	Name of the Payer	Address of the Payer	Permanent Account Number (if available with the assessee) of the Payer	Nature of transaction	Amount of Payment	Date Of Payment

Nil

31 b(d) Particulars of each payment in an amount exceeding the limit specified in section 269ST, in aggregate to a person in a day or in respect of a single transaction or in respect of transactions relating to one event or occasion to a person, made by a cheque or bank draft, not being an account payee cheque or an account payee bank draft, during the previous year

S.No.	Name of the Payee	Address of the Payee	Permanent Account Number (if available with the assessee) of the Payee	Amount of Payment

Nil

(Particulars at (ba), (bb), (bc) and (bd) need not be given in the case of receipt by or payment to a Government company, a banking Company, a post office savings bank, a cooperative bank or in the case of transactions referred to in section 269SS or in the case of persons referred to in Notification No. S.O. 2065(E) dated 3rd July, 2017)"

31 c Particulars of each repayment of loan or deposit or any specified advance in an amount exceeding the limit specified in section 269T made during the previous year :-

S.No.	Name of the payee	Address of the payee	Permanent Account Number(if available with the assessee)of the payee	Amount of the repayment	Maximum amount outstanding in the account at any time during the previous year	Whether the repayment was made by cheque or bank draft or use of electronic clearing system through a bank account.	In case the repayment was made by cheque or bank draft, whether the same was repaid by an account payee cheque or an account payee bank draft.

Nil

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31	d	Particulars of repayment of loan or deposit or any specified advance in an amount exceeding the limit specified in section 269T received otherwise than by a cheque or bank draft or use of electronic clearing system through a bank account during the previous year:—					
		S.No	Name of the lender, or depositor or person from whom specified advance is received	Address of the lender, or depositor or person from whom specified advance is received	Permanent Account Number (if available with the assessee)of the lender, or depositor or person from whom specified advance is received	Amount of repayment of loan or deposit or any specified advance received otherwise than by a cheque or bank draft or use of electronic clearing system through a bank account during the previous year	
		Nil					
31	e	Particulars of repayment of loan or deposit or any specified advance in an amount exceeding the limit specified in section 269T received by a cheque or bank draft which is not an account payee cheque or account payee bank draft during the previous year:—					
		S.No	Name of the lender, or depositor or person from whom specified advance is received	Address of the lender, or depositor or person from whom specified advance is received	Permanent Account Number (if available with the assessee)of the lender, or depositor or person from whom specified advance is received	Amount of repayment of loan or deposit or any specified advance received otherwise than by a cheque or bank draft or use of electronic clearing system through a bank account during the previous year	
		Nil					
Note: (Particulars at (c), (d) and (e) need not be given in the case of a repayment of any loan or deposit or any specified advance taken or accepted from Government, Government company, banking company or a corporation established by a Central, State or Provincial Act)							
32	a	Details of brought forward loss or depreciation allowance, in the following manner, to extent available					
		S.No	Assessment Year	Nature of loss/allowance	Amount as returned	Amount as assessed	Order U/S and Date	Remarks
		Nil						
32	b	Whether a change in shareholding of the company has taken place in the previous year due to which the losses incurred prior to the previous year cannot be allowed to be carried forward in terms of section 79.					**Not Applicable**
32	c	Whether the assessee has incurred any speculation loss referred to in section 73 during the previous year.					**No**
		If yes, please furnish the details below					
32	d	Whether the assessee has incurred any loss referred to in section 73A in respect of any specified business during the previous year					**No**
		If yes, please furnish details of the same					
32	e	In case of a company, please state that whether the company is deemed to be carrying on a speculation business as referred in explanation to section 73					
		If yes, please furnish the details of speculation loss if any incurred during the previous year					
33		Section-wise details of deductions, if any admissible under Chapter VIA or Chapter III (Section 10A, Section 10AA)					**Yes**
	S.No	Section	Amount				
	1	80C					150000
	2	80G					50000
34	a	Whether the assessee is required to deduct or collect tax as per the provisions of Chapter XVII-B or Chapter XVII-BB, if yes please furnish					**No**

S.No	Tax deduction and collection Account Number (TAN)	Section	Nature of payment	Total amount of payment or receipt of the nature specified in column (3)	Total amount on which tax was required to be deducted or collected out of (4)	Total amount on which tax was deducted or collected at specified rate out of (5)	Amount of tax deducted or collected out of (6)	Total amount on which tax was deducted or collected at less than specified	Amount of tax deducted or collected on (8)	Amount of tax deducted or collected not deposited to the credit of the Central Government

										rate out of (7)		out of (6) and (8)
		Nil										

34	b	Whether the assessee is required to furnish the statement of tax deducted or tax collected. If yes ,please furnish the details:	No

S.No	Tax deduction and collection Account Number (TAN)	Type of Form	Due date for furnishing	Date of furnishing, if furnished	Whether the statement of tax deducted or collected contains information about all details/transactions which are required to be reported.	If not, please furnish list of details/ transactions which are not reported.
Nil						

34	c	Whether the assessee is liable to pay interest under section 201(1A) or section 206C(7).If yes, please furnish	Not Applicable

S.No	Tax deduction and collection Account Number (TAN)	Amount of interest under section 201(1A)/206C(7) is payable	Amount	Dates of payment
Nil				

35	a	In the case of a trading concern, give quantitative details of prinicipal items of goods traded

S.No	Item Name	Unit	Opening stock	Purchas-es during the previous year	Sales during the previous year	Closing stock	Shortage/ excess, if any
Nil							

35	b	In the case of a manufacturing concern, give quantitative details of the principal items of raw materials, finished products and by-products :-
35	bA	Raw materials :

S.No	Item Name	Unit	Opening stock	Purchases during the previous year	Consumpti-on during the previous year	Sales during the previous year	Closing stock	*Yield of finished products	*Percent-age of yield	Shortage/ excess, if any
Nil										

35	bB	Finished products :

S.No	Item Name	Unit	Opening stock	Purchases during the previous year	Quantity manufactur-ed during the previous year	Sales during the previous year	Closing stock	Shortage/ excess, if any
Nil								

35	bC	By products :

S.No	Item Name	Unit	Opening stock	Purchases during the previous year	Quantity manufactur-ed during the previous year	Sales during the previous year	Closing stock	Shortage/ excess, if any
Nil								

36	In the case of a domestic company, details of tax on distributed profits under section 115-O in the following forms :-

S.No	(a) Total amount of distributed profits	(b) Amount of reduction as referred to in section 115-O(1A)(i)	(c) Amount of reduction as referred to in section 115-O(1A)(ii)	(d) Total tax paid thereon	(e) Total tax paid thereon	
					Amount	Dates of payment
Nil						

A(a)	Whether the assessee has received any amount in the nature of dividend as referred to in sub-clause (e) of clause (22) of section 2.If yes, please furnish the following details:-	No

Sl No.	Amount received (in Rs.)	Date of receipt
Nil		

37	Whether any cost audit was carried out	Not Applicable

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	If yes, give the details, if any, of disqualification or disagreement on any matter/item/value/quantity as may be reported/identified by the cost auditor	
38	Whether any audit was conducted under the Central Excise Act, 1944	Not Applicable
	If yes, give the details, if any, of disqualification or disagreement on any matter/item/value/quantity as may be reported/identified by the auditor	
39	Whether any audit was conducted under section 72A of the Finance Act,1994 in relation to valuation of taxable services as may be reported/identified by the auditor	Not Applicable
	If yes, give the details, if any, of disqualification or disagreement on any matter/item/value/quantity as may be reported/identified by the auditor	

40 Details regarding turnover, gross profit, etc., for the previous year and preceding previous year:

Sl No	Particulars	Previous Year			Preceding previous Year		
a	Total turnover of the assessee		118597303			92148103	
b	Gross profit / Turnover	14463593	118597303	12.2%	92148103		%
c	Net profit / Turnover	2435145	118597303	2.05%	3878767	92148103	4.21%
d	Stock-in-Trade / Turnover	2207600	118597303	1.86%	92148103		%
e	Material consumed/ Finished goods produced			%			%

(The details required to be furnished for principal items of goods traded or manufactured or services rendered)

41 Please furnish the details of demand raised or refund issued during the previous year under any tax laws other than Income-tax Act, 1961 and Wealth tax Act, 1957 alongwith details of relevant proceedings

Financial year to which demand/ refund relates to	Name of other Tax law	Type (Demand raised/Refund received)	Date of demand raised/refund received	Amount	Remarks
Nil					

42 Whether the assessee is required to furnish statement in Form No.61 or Form No. 61A or Form No. 61B? If yes, please furnish — **No**

Sl No.	Income-tax Department Reporting Entity Identification Number	Type of Form	Due date for furnishing	Date of furnishing, if furnished	Whether the Form contains information about all details/ transactions which are required to be reported.	If not, please furnish list of the details/ transactions which are not reported.
Nil						

43 (a)Whether the assessee or its parent entity or alternate reporting entity is liable to furnish the report as referred to in sub-section (2) of section 286 — **No**

Sl No.	Whether report has been furnished by the assessee or its parent entity or an alternate reporting entity	Name of parent entity	Name of alternate reporting entity (if applicable)	Date of furnishing of report
Nil				

A(c) If Not due , please enter expected date of furnishing the report

44 Break-up of total expenditure of entities registered or not registered under the GST:(This Clause is kept in abeyance till 31st March, 2020)

Sl No	Total amount of Expenditure incurred during the year	Expenditure in respect of entities registered under GST				Expenditure relating to entities not registered under GST
		Relating to goods or services exempt from GST	Relating to entities falling under composition scheme	Relating to other registered entities	Total payment to registered entities	
Nil						

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Place	KAKINADA	Name	P MALLIKARJUNA SASTRY
Date	31/10/2019	Membership Number	215023
		FRN (Firm Registration Number)	012136S
		Address	D.No.8-5-5, Beside Andhra Bank, Opp Venkateswara Swamy Temple,Gandhi Nagar , , KAKINADA, ANDHRA PRADESH, 533004,

Form Filing Details	
Revision/Original	Original

Addition Details(From Point No. 18)

Description of Block of Assets	Sl.No.	Date of Purchase	Date put to use	Amount	Adjustment on account of			Total Amount
					MODVAT	Exchange Rate Change	Subsidy Grant	
Building @ 10%	1	01/04/2018	01/04/2018	5662727				5662727
	2	30/10/2018	30/10/2018	1367213				1367213
Total of Building @ 10%								7029940
Plant & Machinery @ 15%	1	10/10/2018	10/10/2018	18180				18180
	2	27/08/2018	27/08/2018	129911				129911
	3	28/02/2019	28/02/2019	13690				13690
	4	19/05/2018	19/05/2018	66100				66100
	5	10/01/2019	10/01/2019	108275				108275
	6	22/11/2018	22/11/2018	1131398				1131398
Total of Plant & Machinery @ 15%								1467554
Plant & Machinery @ 40%	1	22/08/2018	22/08/2018	32900				32900
	2	19/10/2018	19/10/2018	2754				2754
Total of Plant & Machinery @ 40%								35654

Deduction Details(From Point No. 18)

Description of Block of Assets	Sl.No.	Date of Sale etc.	Amount
Building @ 10%			
Total of Building @ 10%			0
Plant & Machinery @ 15%			
Total of Plant & Machinery @ 15%			0
Plant & Machinery @ 40%			
Total of Plant & Machinery @ 40%			0

INDIAN INCOME TAX RETURN ACKNOWLEDGEMENT

[Where the data of the Return of Income in Form ITR-1 (SAHAJ), ITR-2, ITR-3, ITR-4(SUGAM), ITR-5, ITR-6, ITR-7 filed and verified]

(Please see Rule 12 of the Income-tax Rules, 1962)

Assessment Year 2020-21

PAN	AVSPB0729L		
Name	BOLLA RAMA DEVI		
Address	Plot No. 41A, Sarpavaram, , Industrial Park, KAKINADA, ANDHRA PRADESH, 533005		
Status	Individual	**Form Number**	ITR-3
Filed u/s	139(1)-On or before due date	**e-Filing Acknowledgement Number**	175659421100121

Taxable Income and Tax details	**Current Year business loss, if any**	1	0
	Total Income		885090
	Book Profit under MAT, where applicable	2	0
	Adjusted Total Income under AMT, where applicable	3	885090
	Net tax payable	4	93099
	Interest and Fee Payable	5	9890
	Total tax, interest and Fee payable	6	102989
	Taxes Paid	7	102993
	(+)Tax Payable /(-)Refundable (6-7)	8	(
Dividend Distribution Tax details	**Dividend Tax Payable**	9	(
	Interest Payable	10	(
	Total Dividend tax and interest payable	11	(
	Taxes Paid	12	(
	(+)Tax Payable /(-)Refundable (11-12)	13	
Accreted Income & Tax Detail	**Accreted Income as per section 115TD**	14	
	Additional Tax payable u/s 115TD	15	
	Interest payable u/s 115TE	16	
	Additional Tax and interest payable	17	
	Tax and interest paid	18	
	(+)Tax Payable /(-)Refundable (17-18)	19	

Income Tax Return submitted electronically on **10-01-2021 12:56:26** from IP address **175.101.156.41** and verified by

BOLLA RAMA DEVI usin

having PAN **AVSPB0729L** on **10-01-2021 12:56:26** from IP address **175.101.156.41**

Digital Signature Certificate (DSC).

DSC details: **20355943CN=e-Mudhra Sub CA for Class 2 Individual 2014,OU=Certifying Authority,O=eMudhra Consumer Services Limited,C=IN**

DO NOT SEND THIS ACKNOWLEDGEMENT TO CPC, BENGALURU

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A.Y. 2020-2021

Name : BOLLA RAMA DEVI
Father's Name : Surya Satyanarayana
Address : Plot No. 41A
Sarpavaram
Industrial Park, KAKINADA - 533 005

Previous Year : 2019-2020
PAN : AVSPB 0729 L

Status : Individual
Date of Birth : 21-May-1981
Aadhaar No. : 3961 4545 6733

Resident

Statement of Income

		Rs.	Rs.	Rs.
■ Income from House Property				
Self occupied property				
Property-1: 1	1			
Gross annual value u/s 23(2)(a)			NIL	
Less:Interest on borrowed capital u/s 24(b)			1,00,731	
Income from self occupied property			-1,00,731	
Let-out properties				
Property-1: 1, Tenant - Murali	2			
Description			Amount	
Rents received			72,000	
Gross annual value			72,000	
Less: Municipal taxes			NIL	
Net annual value			72,000	
Less: Standard deduction u/s 24(a)			21,600	
Net Income from Property-1			50,400	
Income chargeable under the head "House Property"				-50,331
■ Profits and gains of Business or Profession				
Business-1				
Net Profit Before Tax as per P & L a/c			10,85,421	
Add: Inadmissible expenses & Income not included				
Depreciation debited to P & L a/c			8,55,002	
			19,40,423	
Less: Deductible expenditure & income to be excluded				
Incomes considered separately	3		1,99,266	
Adjusted Profit of Business-1			17,41,157	
Total income of Business and Profession			17,41,157	
Less: Depreciation as per IT Act	8		8,55,002	
Income chargeable under the head "Business and Profession"				8,86,155
■ Income from other sources				
Interest income	4		1,99,266	
Income chargeable under the head "other sources"				1,99,266
■ Gross Total Income				10,35,090

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Deductions under Chapter VI-A				
Investment u/s 80C, CCC, CCD		1,80,141		
Housing loan repayment				1,50,000
Deduction subject to ceiling u/s 80CCE				
Deduction in respect of payments from 01-Apr-20 to 31-Jul-20 (For Sch.DI)	5	0		
				8,85,090
■ **Total Income**				89,518
Tax on total income				3,581
Add: Cess				93,099
Tax with cess				93,099
Net Tax	6		27,393	
TDS				27,393
Total prepaid taxes				65,706
Balance Tax			6,570	
Interest u/s 234B			3,320	9,890
Interest u/s 234C				75,596
Net tax payable				75,600
Self-assessment tax paid	7			0
■ **Balance tax payable**				

Schedule 1

Details of the property

1, KAKINADA, EAST GODAVARI-533002, Andhra pradesh

Details of Owner	Self
Owner	100
Assessee's share in the property (%)	

Schedule 2

Details of property

1, Kakinada, East Godavari-533001, Andhra pradesh

Details of the Tenant	PAN / Aadhaar No.	TAN	Section
Name			
Murali			
Details of Owner	Self		
Owner	100		
Assessee's share in the property (%)			

Schedule 3

	Amount
Income considered under other heads	1,99,266
Interest received	1,99,266
Grand total	

Schedule 4

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Interest income (other than NSC/KVP interest)

Name of the Bank	Interest
Interest on Time Deposits	
Syndicate Bank	1,13,690
Sb	85,576
Total	1,99,266

Schedule 5

Schedule 6

TDS as per Form 16A

Deductor, TAN	TDS deducted	TDS claimed in current year	Gross receipt offered
Executive Engineer A P S Police Housing Corporation Limited Kadapa, TAN- HYDE00900E	4,655	4,655	2,32,728
Syndicate Bank - Main Branch Kakinada, TAN- VPNS03602E	22,738	22,738	1,13,690
Total	27,393	27,393	3,46,418

Schedule 7

Self Assessment tax paid

Name of the Bank and BSR Code	Date of deposit	Challan Sl.no.	Amount paid
Syndicate Bank - 0331906	02-Jan-21	00410	75,600

Bank A/c: SYNDICATE BANK 32501250002078 IFSC: SYNB0003258

Date : 10-Jan-2021

Place : KAKINADA

[BOLLA RAMA DEVI]

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BOLLA RAMA DEVI

CONSOLIDATED PROFIT & LOSS ACCOUNT FOR THE YEAR ENDING 31.03.2020

Particulars	AMOUNT	AMOUNT	Particulars	AMOUNT	AMOUNT
Opening Stock		22,07,600	**Sales Accounts**		4,10,50,626
Opening stock	22,07,600		*Solar system*	3,94,96,546	
Purchase Accounts		1,95,61,712	*SMART Automation*	15,54,080	
Solar system	1,91,41,125				
SMART Automation	4,20,587		**Closing Stock**		8,75,670
			Closing Stock	8,75,670	
Gross Profit		2,01,56,984			
		4,19,26,296			4,19,26,296
		1,92,70,828	***Gross Profit b/f***		***2,01,56,984***
Indirect Expenses			**Indirect Incomes**		1,99,266
Interest on Loans	15,32,347		*Interest Received*	1,99,266	
Salaries & wages	1,38,54,170				
Taxes&Licences	1,77,708				
Bank Charges	1,15,617				
Depriciation	8,55,002				
Electricity Charges	1,00,789				
Garden Maintenence	96,000				
Meterial Insurance	1,19,533				
Office Maintenance	3,26,670				
Office Rent	50,300				
Repairs Maintainence	5,95,613				
Sadar	40,926				
Telephone Charges	10,875				
Transportation Charges	5,29,954				
Traveling Charges	3,36,954				
Vehicle Maintance	5,28,370				
Nett Profit		***10,85,421***			
Total		**2,03,56,249**	**Total**		**2,03,56,249**

For K.P.G. & Co
Chartered Accountants
P. Mallikharjuna Sastry)
(P, Mallikharjuna Sastry)
Partner M. no. 215023
Firm Reg No. 012136S

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BOLLA RAMA DEVI

CONSOLIDATED BALANCE SHEET AS ON 31.03.2020

Liabilities	AMOUNT	AMOUNT	Assets	AMOUNT	AMOUNT
Capital Account		1,80,47,728	**Fixed Assets**		1,83,48,780
B. RAMA DEVI (Capital)	*1,80,47,728*				
			Investments		12,94,587
Loans (Liability)		3,55,14,478			
Bank OD A/c	*2,03,81,587*		**Current Assets**		3,43,48,839
Secured Loans	*32,94,492*		Closing Stock	*8,75,670*	
Unsecured Loans	*1,18,38,399*		Deposits (Asset)	*36,88,917*	
			Sundry Debtors	*2,87,24,004*	
Current Liabilities		4,30,000	Cash-in-hand	*8,80,535*	
Advances	*1,50,000*		Bank Accounts	*1,46,032*	
Salaries Payble	*2,80,000*		Gst	*6,289*	
			Tds Receiveble 2019-20	*27,393*	
Total		5,39,92,206	**Total**		5,39,92,206

For K.P.G. & Co
Chartered Accountants

P. Mallikharjuna Sastry
(P, Mallikharjuna Sastry)
Partner M. no. 215023
Firm Reg No. 012136S

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FORM NO. 3CB
[See rule 6G(1)(b)]
Audit report under section 44AB of the Income-tax Act, 1961 in the case of a person referred to in clause (b) of sub-rule (1) of rule 6G

1. **We** have examined the balance sheet as at 31st March **2020** and the **Profit and loss account** for the period beginning from **01/04/2019** to ending on **31/03/2020** attached herewith, of **BOLLA RAMA DEVI** **Plot No. 41A, Sarpavaram, Industrial Park, , KAKINADA, ANDHRA PRADESH, 533005** **AVSPB0729L,**

2. **We** certify that the balance sheet and the **Profit and loss account** are in agreement with the books of account maintained at the head office at **KAKINADA,** and **0** branches.

3. (a) **We** report the following observations/comments/discrepancies/inconsistencies; if any:

(b) Subject to above,-

(A) **We** have obtained all the information and explanations which, to the best of **Our** knowledge and belief, were necessary for the purposes of the audit.
(B) In **Our** opinion, proper books of account have been kept by the head office and branches of the assessee so far as appears from **Our** knowledge and belief, were necessary for the examination of the books.
(C) In **Our** opinion and to the best of **Our** information and according to the explanations given to **Us** the said accounts, read with notes thereon, if any, give a true and fair view:-
(i) in the case of the balance sheet, of the state of the affairs of the assessee as at 31st March, **2020** ;and
(ii) in the case of the **Profit and loss account** of the **Profit** of the assessee for the year ended on that date.

4. The statement of particulars required to be furnished under section 44AB is annexed herewith in Form No. 3CD.

5.In **Our** opinion and to the best of **Our** information and according to explanations given to **Us** the particulars given in the said Form No. 3CD and the Annexure thereto are true and correct subject to following observations/qualifications, if any:-

Sl No.	Qualification Type	Observations/Qualifications
1	Valuation of closing stock is not possible.	I have not Pysically verified the Cash Balances & Closing Stock as on 31st march 2020
2	Others.	Confirmation of balances with Sundry and Trade Debtors, Sundry Creditors and Unsecured Loans were not produced form my verification.
3	Others.	Some expenses were not covered by Vouchers

Place **KAKINADA**
Date **10/01/2021**

Name **P MALLIKARJUNA SASTRY**
Membership Number **215023**
FRN (Firm Registration Number) **012136S**
Address **D.No.8-5-5, Beside Andhra Bank, Opp Venkateswara Swamy Temple,Gandhi Nagar , , KAKINADA, ANDHRA PRADESH, 533004**

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FORM NO. 3CD

[See rule 6G(2)]

Statement of particulars required to be furnished under section 44AB of the Income-tax Act, 1961

1	Name of the assessee	**BOLLA RAMA DEVI**
2	Address	**Plot No. 41A, Sarpavaram, , Industrial Park, , KAKINADA, ANDHRA PRADESH, 533005**
3	Permanent Account Number (PAN)	**AVSPB0729L**
4	Whether the assessee is liable to pay indirect tax like excise duty, service tax, sales tax, goods and services tax,customs duty,etc. if yes, please furnish the registration number or,GST number or any other identification number allotted for the same	**Yes**

Sl No.	Type	Registration Number
1	**Sales VAT/Tax ANDHRA PRADESH**	**37660989415**
2	**Goods and Services Tax ANDHRA PRADESH**	**37 AVSPB0729L 1Z9**
3	**Goods and Services Tax ANDHRA PRADESH**	**37 AVSPB0729L 2Z8**

5	Status	**Individual**
6	Previous year from	**01/04/2019 to 31/03/2020**
7	Assessment Year	**2020-21**
8	Indicate the relevant clause of section 44AB under which the audit has been conducted	

Sl No.	Relevant clause of section 44AB under which the audit has been conducted
1	**Clause 44AB(a)-Total sales/turnover/gross receipts of business exceeding specified limits**

8	a	Whether the assessee has opted for taxation under section 115BA/115BAA/115BAB	
		Section under which option exercised	
9	a	If firm or Association of Persons, indicate names of partners/members and their profit sharing ratios. In case of AOP, whether shares of members are indeterminate or unknown ?	

Name	Profit Sharing Ratio (%)
Nil	

9	b	If there is any change in the partners or members or in their profit sharing ratio since the last date of the preceding year, the particulars of such change.	

Date of change	Name of Partner/Member	Type of change	Old profit sharing ratio	New profit Sharing Ratio	Remarks

10	a	Nature of business or profession (if more than one business or profession is carried on during the previous year, nature of every business or profession).	

Sector	Sub Sector	Code
WHOLESALE AND RETAIL TRADE	**Retail sale of other products n.e.c**	**09028**
MANUFACTURING	**Other manufacturing n.e.c.**	**04097**

10	b	If there is any change in the nature of business or profession, the particulars of such change	**No**

Business	Sector	SubSector	Code
Nil			

11	a	Whether books of accounts are prescribed under section 44AA, if yes, list of books so prescribed	**No**

Books prescribed

11	b	List of books of account maintained and the address at which the books of accounts are kept. (In case books of account are maintained in a computer system, mention the books of account generated by such computer system. If the books of accounts are not kept at one location, please furnish the addresses of locations along with the details of books of accounts maintained at each location.) Same as 11(a) above	

Books maintained	Address Line 1	Address Line 2	City or Town or District	State	PinCode
Bank book	**Plot No. 41A, Sarpavaram, Industrial Park**		**KAKINADA**	**ANDHRA PRADESH**	**533005**
Cash book	**Plot No. 41A, Sarpavaram, Industrial Park**		**KAKINADA**	**ANDHRA PRADESH**	**533005**
Journal	**Plot No. 41A, Sarpavaram, Industrial Park**		**KAKINADA**	**ANDHRA PRADESH**	**533005**
Ledger	**Plot No. 41A, Sarpavaram, Industrial Park**		**KAKINADA**	**ANDHRA PRADESH**	**533005**
Purchase register	**Plot No. 41A, Sarpavaram, Industrial Park**		**KAKINADA**	**ANDHRA PRADESH**	**533005**

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Sales register	Plot No. 41A, Sarpavaram, Industrial Park		KAKINADA	ANDHRA PRADESH	533005	

11	c	List of books of account and nature of relevant documents examined. Same as 11(b) above			
	Books Examined				
	Bank book				
	Cash book				
	Journal				
	Ledger				
	Purchase register				
	Sales register				
12		Whether the profit and loss account includes any profits and gains assessable on presumptive basis, if yes, indicate the amount and the relevant section (44AD, 44AE, 44AF, 44B, 44BB, 44BBA, 44BBB, Chapter XII-G, First Schedule or any other relevant section).			**No**
	Section				Amount
	Nil				
13	a	Method of accounting employed in the previous year	**Mercantile system**		
13	b	Whether there has been any change in the method of accounting employed vis-a-vis the method employed in the immediately preceding previous year.			**No**
13	c	If answer to (b) above is in the affirmative, give details of such change , and the effect thereof on the profit or loss.			
	Particulars			Increase in profit(Rs.)	Decrease in profit(Rs.)
13	d	Whether any adjustment is required to be made to the profits or loss for complying with the provisions of income computation and disclosure standards notified under section 145(2).			**No**
13	e	If answer to (d) above is in the affirmative, give details of such adjustments.			
	ICDS		Increase in profit(Rs.)	Decrease in profit(Rs.)	Net effect(Rs.)
	Total				
13	f	Disclosure as per ICDS.			
	ICDS		Disclosure		
	ICDS I - Accounting Policies		**Going Concern, consistency and Accrual are followed. ICDS I was Complied with**		
	ICDS IV - Revenue Recognition		**Revenue is recognized as and when sales is made and entered in the books of account. ICDS IV was complied with**		
	ICDS V - Tangible Fixed Assets		**Tangible fixed assets are whom at cost of acquisition less depreciation. ICDS IV was complied with**		
14	a	Method of valuation of closing stock employed in the previous year.			**Lower of cost or net realisable value [Section 145A]**
14	b	In case of deviation from the method of valuation prescribed under section 145A, and the effect thereof on the profit or loss, please furnish:			**No**
	Particulars			Increase in profit(Rs.)	Decrease in profit(Rs.)
15		Give the following particulars of the capital asset converted into stock-in-trade			
	(a) Description of capital asset		(b) Date of acquisition	(c) Cost of acquisition	(d) Amount at which the asset is converted into stock-in trade
	Nil				
16		Amounts not credited to the profit and loss account, being:-			
16	a	The items falling within the scope of section 28			
	Description				Amount
	Nil				
16	b	The proforma credits, drawbacks, refund of duty of customs or excise or service tax, or refund of sales tax or value added tax, where such credits, drawbacks or refund are admitted as due by the authorities concerned			
	Description				Amount
16	c	Escalation claims accepted during the previous year			
	Description				Amount
	Nil				
16	d	Any other item of income			
	Description				Amount
	Nil				
16	e	Capital receipt, if any			
	Description				Amount
	Nil				
17		Where any land or building or both is transferred during the previous year for a consideration less than value adopted assessed or assessable by any authority of a State Government referred to in section 43CA or 50C, please furnish:			

Details of property	Address Line 1	Address Line 2	City/Town	State	Pincode	Consideration received or accrued	Value adopted or assessed assessable

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18 Particulars of depreciation allowable as per the Income-tax Act, 1961 in respect of each asset or block of assets, as the case may be, in the:-

Description of Block of Assets/ Class of Assets	Rate of depreciation (In Percentage)	Opening WDV (A)	Adjustment to WDV u/s 115BA	Adjustment written down value	Additions					Deductions(C)	Depreciation Allowable (D)	Written Down Value at the end of the year (A+B-C-D)
					Purchase Value (1)	MOD-VAT (2)	Change in Rate of Exchange (3)	Subsidy/ Grant (4)	Total Value of Purchases (B) (1+2+3+4)			
Building @ 10%	10%	6395307		6395307	0	0	0	0	0	0	639531	5755776
Plant & Machinery @ 15%	15%	1342787		1342787	70350	0	0	0	70350	0	206694	1206443
Plant & Machinery @ 40%	40%	21943		21943	0	0	0	0	0	0	8777	13166

*** For Addition and Deduction Details refer Addition and Deduction Detail Tables At the End of the Page**

19 Amounts admissible under sections :

S.No	Section	Amount debited to profit and loss account	Amounts admissible as per the provisions of the Income-tax Act, 1961 and also fulfils the conditions, if any specified under the relevant 14provisions of Income-tax Act, 1961 or Income-tax Rules,1962 or any other guidelines, circular, etc., issued in this behalf.

Nil

20 a Any sum paid to an employee as bonus or commission for services rendered, where such sum was otherwise payable to him as profits or dividend. [Section 36(1)(ii)]

Description	Amount

20 b Details of contributions received from employees for various funds as referred to in section 36(1)(va):

Nature of fund	Sum received from employees	Due date for payment	The actual amount paid	The actual date of payment to the concerned authorities

Nil

21 a Please furnish the details of amounts debited to the profit and loss account, being in the nature of capital, personal, advertisement expenditure etc

Capital expenditure

Particulars	Amount in Rs.

Personal expenditure

Particulars	Amount in Rs.

Advertisement expenditure in any souvenir, brochure, tract, pamphlet or the like published by a political party

Particulars	Amount in Rs.

Expenditure incurred at clubs being entrance fees and subscriptions

Particulars	Amount in Rs.

Expenditure incurred at clubs being cost for club services and facilities used.

Particulars	Amount in Rs.

Expenditure by way of penalty or fine for violation of any law for the time being force

Particulars	Amount in Rs.

Expenditure by way of any other penalty or fine not covered above

Particulars	Amount in Rs.

Expenditure incurred for any purpose which is an offence or which is prohibited by law

Particulars	Amount in Rs.

(b) Amounts inadmissible under section 40(a):-

(i) as payment to non-resident referred to in sub-clause (i)

(A) Details of payment on which tax is not deducted:

Date of payment	Amount of payment	Nature of payment	Name of the payee	PAN of the payee,if avaliable	Address Line 1	Address Line 2	City or Town or District	Pincode

(B) Details of payment on which tax has been deducted but has not been paid during the previous year or in the subsequent yea before the expiry of time prescribed under section200(1)

Date of payment	Amount of payment	Nature of payment	Name of the payee	PAN of the payee,if avaliable	Address Line 1	Address Line 2	City or Town or District	Pincode	Amount of tax deducted

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(ii) as payment referred to in sub-clause (ia)

(A) Details of payment on which tax is not deducted:

Date of payment	Amount of payment	Nature of payment	Name of the payee	PAN of the payee,if avaliable	Address Line 1	Address Line 2	City or Town or District	Pincode

(B) Details of payment on which tax has been deducted but has not been paid on or before the due date specified in sub- section (1) of section 139.

Date of payment	Amount of payment	Nature of payment	Name of the payer	PAN of the payee,if avaliable	Address Line 1	Address Line 2	City or Town or District	Pincode	Amount of tax deducted	Amount out of (VI) deposited, if any

(iii) as payment referred to in sub-clause (ib)

(A) Details of payment on which levy is not deducted:

Date of payment	Amount of payment	Nature of payment	Name of the payee	PAN of the payee,if avaliable	Address Line 1	Address Line 2	City or Town or District	Pincode

(B) Details of payment on which levy has been deducted but has not been paid on or before the due date specified in sub- section (1) of section 139.

Date of payment	Amount of payment	Nature of payment	Name of the payer	PAN of the payee,if avaliable	Address Line 1	Address Line 2	City or Town or District	Pincode	Amount of levy deducted	Amount out of (VI) deposited, if any

(iv) fringe benefit tax under sub-clause (ic)

(v) wealth tax under sub-clause (iia)

(vi) royalty, license fee, service fee etc. under sub-clause (iib).

(vii) salary payable outside India/to a non resident without TDS etc. under sub-clause (iii).

Date of payment	Amount of payment	Name of the payee	PAN of the payee,if avaliable	Address Line 1	Address Line 2	City	Pincode

(viii) payment to PF /other fund etc. under sub-clause (iv)

(ix) tax paid by employer for perquisites under sub-clause (v)

(c) Amounts debited to profit and loss account being, interest, salary, bonus, commission or remuneration inadmissible under section 40(b)/40(ba) and computation thereof;

Particulars	Section	Amount debited to P/L A/C	Amount Admissible	Amount Inadmissible	Remarks

(d) Disallowance/deemed income under section 40A(3):

(A) On the basis of the examination of books of account and other relevant documents/evidence, whether the expenditure covered under section 40A(3) read with rule 6DD were made by account payee cheque drawn on a bank or account payee bank draft. If not, please furnish the details: **Yes**

Date Of Payment	Nature Of Payment	Amount in Rs	Name of the payee	Permanent Account Number of the payee, if available

(B) On the basis of the examination of books of account and other relevant documents/evidence, whether the payment referred to in section 40A(3A) read with rule 6DD were made by account payee cheque drawn on a bank or account payee bank draft If not, please furnish the details of amount deemed to be the profits and gains of business or profession under section 40A(3A) **Yes**

Date Of Payment	Nature Of Payment	Amount in Rs	Name of the payee	Permanent Account Number of the payee, if available

(e) Provision for payment of gratuity not allowable under section 40A(7) **0**

(f) Any sum paid by the assessee as an employer not allowable under section 40A(9) **0**

(g) Particulars of any liability of a contingent nature

Nature Of Liability	Amount in Rs.

(h) Amount of deduction inadmissible in terms of section 14A in respect of the expenditure incurred in relation to income which does not form part of the total income

Nature Of Liability	Amount in Rs.

(i) Amount inadmissible under the proviso to section 36(1)(iii)

22 Amount of interest inadmissible under section 23 of the Micro, Small and Medium Enterprises Development Act, 2006 **0**

23 Particulars of any payment made to persons specified under section 40A(2)(b).

	Name of Related Person	PAN of Related Person	Relation	Nature of trasaction	Payment Made(Amount)

24	Amounts deemed to be profits and gains under section 32AC or 32AD or 33AB or 33AC or 33ABA.		
	Section	Description	Amount
	Nil		

25	Any amount of profit chargeable to tax under section 41 and computation thereof.				
	Name of Person	Amount of income	Section	Description of Transaction	Computation if any
	Nil				

26	(i)*	In respect of any sum referred to in clause (a),(c),(d),(e),(f) or (g) of section 43B the liability for which:-
26	(i)A	pre-existed on the first day of the previous year but was not allowed in the assessment of any preceding previous year and was :-

26	(i)(A)(a)	Paid during the previous year		
	Section		Nature of liability	Amount
	Nil			

26	(i)(A)(b)	Not paid during the previous year		
	Section		Nature of liability	Amount
	Nil			

26	(i)B	was incurred in the previous year and was

26	(i)(B)(a)	Paid on or before the due date for furnishing the return of income of the previous year under section 139(1)		
	Section		Nature of liability	Amount
	Nil			

26	(i)(B)(b)	not paid on or before the aforesaid date		
	Section		Nature of liability	Amount
	Nil			

(State whether sales tax, goods & service Tax, customs duty, excise duty or any other indirect tax, levy, cess, impost, etc., is passed through the profit and loss account.)	No	

27	a	Amount of Central Value Added Tax Credits/ Input Tax Credit(ITC) availed of or utilised during the previous year and its treatment in profit and loss account and treatment of outstanding Central Value Added Tax Credits/ Input Tax Credit(ITC) in accounts	No

CENVAT/ITC	Amount	Treatment in Profit and Loss/Accounts
Opening Balance		
Credit Availed		
Credit Utilized		
Closing/Outstanding Balance		

27	b	Particulars of income or expenditure of prior period credited or debited to the profit and loss account :-			
	Type	Particulars	Amount	Prior period to which itrelates(Year in yyyy-yyformat)	
	Nil				

28	Whether during the previous year the assessee has received any property, being share of a company not being a company in which the public are substantially interested, without consideration or for inadequate consideration as referred to in section 56(2)(viia)	

Name of the person from which shares received	PAN of the person, if available	Name of the company from which shares received	CIN of the company	No. of Shares Received	Amount of consideration paid	Fair Marke value of th shares
Nil						

29	Whether during the previous year the assessee received any consideration for issue of shares which exceeds the fair market value of the shares as referred to in section 56(2)(viib). If yes, please furnish the details of the same	

Name of the person from whom consideration received for issue of shares	PAN of the person, if available	No. of Shares	Amount of consideration received	Fair Market value of the shares
Nil				

A(a)	Whether any amount is to be included as income chargeable under the head Income from other sources as referred to in clause (ix) of sub-section (2) of section 56? (b) If yes, please furnish the following details:		No
Sl No.	Nature of Income		Amount
Nil			

B(a)	Whether any amount is to be included as income chargeable under the head Income from other sources as referred to in clause (x) of sub-section (2) of section 56?(Yes/No) (b) If yes, please furnish the following details:		No
Sl No.	Nature of Income		Amount

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Nil

30	Details of any amount borrowed on hundi or any amount due thereon (including interest on the amount borrowed) repaid,otherwise than through an account payee cheque,(Section 69D)	No

Name of the person from whom amount borrowed or repaid on hundi	PAN of the person, if available	Address Line 1	Address Line 2	City or Town or District	State	Pincode	Amount borrowed	Date of Borrowing	Amount due including interest	Amount repaid	Date of Repayment

Nil

A(a)	Whether primary adjustment to transfer price, as referred to in sub-section (1) of section 92CE, has been made during the previous year.	No

(b) If yes, please furnish the following details

Sl No.	Under which clause of sub-section (1) of section 92CE primary adjustment is made ?	Amount (in Rs.) of primary adjustment	Whether the excess money available with the associated enterprise is required to be repatriated to India as per the provisions of sub-section (2) of section 92CE.	If yes, whether the excess money has been repatriated within the prescribed time.	If no, the amount (in Rs.) of imputed interest income on such excess money which has not been repatriated within the prescribed time	Expected date of repatriation of money

Nil

B(a)	Whether the assessee has incurred expenditure during the previous year by way of interest or of similar nature exceeding one crore rupees as referred to in sub-section (1) of section 94B.	No

(b) If yes, please furnish the following details

Sl No.	Amount (in Rs.) of expenditure by way of interest or of similar nature incurred	Earnings before interest, tax, depreciation and amortization (EBITDA) during the previous year (in Rs.)	Amount (in Rs.) of expenditure by way of interest or of similar nature as per (i) above which exceeds 30% of EBITDA as per (ii) above.	Details of interest expenditure brought forward as per sub-section (4) of section 94B.		Details of interest expenditure carried forward as per sub-section (4) of section 94B:	
				Assessment Year	Amount (in Rs.)	Assessment Year	Amount (in Rs.)

Nil

C(a)	Whether the assessee has entered into an impermissible avoidance arrangement, as referred to in section 96, during the previous year.(This Clause is kept in abeyance till 31st March, 2021)	

(b) If yes, please furnish the following details

Sl No.	Nature of the impermissible avoidance arrangement	Amount (in Rs.) of tax benefit in the previous year arising, in aggregate, to all the parties to the arrangement

Nil

31	a	Particulars of each loan or deposit in an amount exceeding the limit specified in section 269SS taken or accepted during the previous year :-

S.No	Name of the lender or depositor	Address of the lender or depositor	Permanent Account Number(if available with the assessee) of the lender or the depositor	Amount of loan or deposit taken or accepted	Whether the loan or deposit was squared up during the previous year	Maximum amount outstanding in the account at any time during the previous year	Whether the loan or deposit was taken or accepted by cheque or bank draft or use of electronic clearing system through a bank account.	In case the loan or deposit was taken or accepted by cheque or bank draft, whether the same was taken or accepted by an account payee cheque or an account payee bank draft.

Nil

31	b	Particulars of each specified sum in an amount exceeding the limit specified in section 269SS taken or accepted during the previous year:-

S.No.	Name of the person from whom specified sum is received	Address of the person from whom specified sum is received	Permanent Account Number (if available	Amount of specified sum taken	Whether the specified sum was taken or accepted by	In case the specified sum was taken or accepted by cheque or bank

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					with the assessee) of the person from whom specified sum is received	or accepted	cheque or bank draft or use of electronic clearing system through a bank account	draft, whether the same was taken or accepted by an account payee cheque or an account payee bank draft.

Nil

(Particulars at (a) and (b) need not be given in the case of a Government company, a banking company or a corporation established by a Central, State or Provincial Act.)

31 b(a) Particulars of each receipt in an amount exceeding the limit specified in section 269ST, in aggregate from a person in a day or in respect of a single transaction or in respect of transactions relating to one event or occasion from a person, during the previous year, where such receipt is otherwise than by a cheque or bank draft or use of electronic clearing system through a bank account

S.No.	Name of the Payer	Address of the Payer	Permanent Account Number (if available with the assessee) of the Payer	Nature of transaction	Amount of receipt	Date Of receipt

Nil

31 b(b) Particulars of each receipt in an amount exceeding the limit specified in section 269ST, in aggregate from a person in a day or in respect of a single transaction or in respect of transactions relating to one event or occasion from a person, received by a cheque or bank draft, not being an account payee cheque or an account payee bank draft, during the previous year :-

S.No.	Name of the Payer	Address of the Payer	Permanent Account Number (if available with the assessee) of the Payer	Amount of receipt

Nil

31 b(c) Particulars of each payment made in an amount exceeding the limit specified in section 269ST, in aggregate to a person in a day or in respect of a single transaction or in respect of transactions relating to one event or occasion to a person, otherwise than by a cheque or bank draft or use of electronic clearing system through a bank account during the previous year

S.No.	Name of the Payer	Address of the Payer	Permanent Account Number (if available with the assessee) of the Payer	Nature of transaction	Amount of Payment	Date Of Payment

Nil

31 b(d) Particulars of each payment in an amount exceeding the limit specified in section 269ST, in aggregate to a person in a day or in respect of a single transaction or in respect of transactions relating to one event or occasion to a person, made by a cheque or bank draft, not being an account payee cheque or an account payee bank draft, during the previous year

S.No.	Name of the Payee	Address of the Payee	Permanent Account Number (if available with the assessee) of the Payee	Amount of Payment

Nil

(Particulars at (ba), (bb), (bc) and (bd) need not be given in the case of receipt by or payment to a Government company, a banking Company, a post office savings bank, a cooperative bank or in the case of transactions referred to in section 269SS or in the case of persons referred to in Notification No. S.O. 2065(E) dated 3rd July, 2017)"

31 c Particulars of each repayment of loan or deposit or any specified advance in an amount exceeding the limit specified in section 269T made during the previous year :-

S.No.	Name of the payee	Address of the payee	Permanent Account Number(if available with the assessee)of the payee	Amount of the repayment	Maximum amount outstanding in the account at any time during the previous year	Whether the repayment was made by cheque or bank draft or use of electronic clearing system through a bank account.	In case the repayment was made by cheque or bank draft, whether the same was repaid by an account payee cheque or an account payee bank draft.

		Nil

31	d	Particulars of repayment of loan or deposit or any specified advance in an amount exceeding the limit specified in section 269T received otherwise than by a cheque or bank draft or use of electronic clearing system through a bank account during the previous year:—

S.No	Name of the lender, or depositor or person from whom specified advance is received	Address of the lender, or depositor or person from whom specified advance is received	Permanent Account Number (if available with the assessee)of the lender, or depositor or person from whom specified advance is received	Amount of repayment of loan or deposit or any specified advance received otherwise than by a cheque or bank draft or use of electronic clearing system through a bank account during the previous year
Nil				

31	e	Particulars of repayment of loan or deposit or any specified advance in an amount exceeding the limit specified in section 269T received by a cheque or bank draft which is not an account payee cheque or account payee bank draft during the previous year:—

S.No	Name of the lender, or depositor or person from whom specified advance is received	Address of the lender, or depositor or person from whom specified advance is received	Permanent Account Number (if available with the assessee)of the lender, or depositor or person from whom specified advance is received	Amount of repayment of loan or deposit or any specified advance received otherwise than by a cheque or bank draft or use of electronic clearing system through a bank account during the previous year
Nil				

Note: (Particulars at (c), (d) and (e) need not be given in the case of a repayment of any loan or deposit or any specified advance taken or accepted from Government, Government company, banking company or a corporation established by a Central, State or Provincial Act)

32	a	Details of brought forward loss or depreciation allowance, in the following manner, to extent available

S.No	Assessment Year	Nature of loss/allowance	Amount as returned	All losses/ allowance not allowed under section 115BAA	Amount as adjusted by withdrawal of additional depreciation on account of opting for taxation under section 115BAA(To be filled in for assessment year 2020-21 only)	Amount as assessed	Order U/S and Date	Remarks
Nil								

32	b	Whether a change in shareholding of the company has taken place in the previous year due to which the losses incurred prior to the previous year cannot be allowed to be carried forward in terms of section 79.	**Not Applicable**
32	c	Whether the assessee has incurred any speculation loss referred to in section 73 during the previous year.	**No**
		If yes, please furnish the details below	
32	d	Whether the assessee has incurred any loss referred to in section 73A in respect of any specified business during the previous year	**No**
		If yes, please furnish details of the same	

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32	e	In case of a company, please state that whether the company is deemed to be carrying on a speculation business as referred in explanation to section 73	
		If yes, please furnish the details of speculation loss if any incurred during the previous year	
33		Section-wise details of deductions, if any admissible under Chapter VIA or Chapter III (Section 10A, Section 10AA)	**Yes**

S.No	Section	Amount
1	80C	150000

34	a	Whether the assessee is required to deduct or collect tax as per the provisions of Chapter XVII-B or Chapter XVII-BB, if yes please furnish	**No**

S.No	Tax deduction and collection Account Number (TAN)	Section	Nature of payment	Total amount of payment or receipt of the nature specified in column (3)	Total amount on which tax was required to be deducted or collected out of (4)	Total amount on which tax was deducted or collected at specified rate out of (5)	Amount of tax deducted or collected out of (6)	Total amount on which tax was deducted or collected at less than specified rate out of (7)	Amount of tax deducted or collected on (8)	Amount of tax deducted or collected not deposited to the credit of the Central Governmer out of (6) and (8)
Nil										

34	b	Whether the assessee is required to furnish the statement of tax deducted or tax collected. If yes ,please furnish the details:	**No**

S.No	Tax deduction and collection Account Number (TAN)	Type of Form	Due date for furnishing	Date of furnishing, if furnished	Whether the statement of tax deducted or collected contains information about all details/transactions which are required to be reported.	If not, please furnish list of details/ transactions which are not reported.
Nil						

34	c	Whether the assessee is liable to pay interest under section 201(1A) or section 206C(7).If yes, please furnish	**Not Applica**

S.No	Tax deduction and collection Account Number (TAN)	Amount of interest under section 201(1A)/206C(7) is payable	Amount	Dates of payment
Nil				

35	a	In the case of a trading concern, give quantitative details of prinicipal items of goods traded	

S.No	Item Name	Unit	Opening stock	Purchas-es during the previous year	Sales during the previous year	Closing stock	Shortag excess, if any
Nil							

35	b	In the case of a manufacturing concern, give quantitative details of the principal items of raw materials, finished produc and by-products :-	
35	bA	Raw materials :	

S.No	Item Name	Unit	Opening stock	Purchases during the previous year	Consumpti-on during the previous year	Sales during the previous year	Closing stock	*Yield of finished products	*Percent-age of yield	Shorta excess if any
Nil										

35	bB	Finished products :	

S.No	Item Name	Unit	Opening stock	Purchases during the previous year	Quantity manufactur-ed during the previous year	Sales during the previous year	Closing stock	Shorta excess if any
Nil								

35	bC	By products :	

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S.No	Item Name	Unit	Opening stock	Purchases during the previous year	Quantity manufactured during the previous year	Sales during the previous year	Closing stock	Shortage/ excess, if any
Nil								

36 In the case of a domestic company, details of tax on distributed profits under section 115-O in the following forms :-

S.No	(a) Total amount of distributed profits	(b) Amount of reduction as referred to in section 115-O(1A)(i)	(c) Amount of reduction as referred to in section 115-O(1A)(ii)	(d) Total tax paid thereon	(e) Total tax paid thereon	
					Amount	Dates of payment
Nil						

A(a) Whether the assessee has received any amount in the nature of dividend as referred to in sub-clause (e) of clause (22) of section 2.If yes, please furnish the following details:- **No**

Sl No.	Amount received (in Rs.)	Date of receipt
Nil		

37 Whether any cost audit was carried out **Not Applicabl**

If yes, give the details, if any, of disqualification or disagreement on any matter/item/value/quantity as may be reported/identified by the cost auditor

38 Whether any audit was conducted under the Central Excise Act, 1944 **Not Applicab**

If yes, give the details, if any, of disqualification or disagreement on any matter/item/value/quantity as may be reported/identified by the auditor

39 Whether any audit was conducted under section 72A of the Finance Act,1994 in relation to valuation of taxable services as may be reported/identified by the auditor **Not Applicab**

If yes, give the details, if any, of disqualification or disagreement on any matter/item/value/quantity as may be reported/identified by the auditor

40 Details regarding turnover, gross profit, etc., for the previous year and preceding previous year:

Sl No	Particulars	Previous Year			Preceding previous Year		
a	Total turnover of the assessee		41050626			118597303	
b	Gross profit / Turnover	20156984	41050626	49.1%	14463593	118597303	12.2%
c	Net profit / Turnover	1085421	41050626	2.64%	2435145	118597303	2.05%
d	Stock-in-Trade / Turnover	875670	41050626	2.13%	2207600	118597303	1.86%
e	Material consumed/ Finished goods produced			%			%

(The details required to be furnished for principal items of goods traded or manufactured or services rendered)

41 Please furnish the details of demand raised or refund issued during the previous year under any tax laws other than Income tax Act, 1961 and Wealth tax Act, 1957 alongwith details of relevant proceedings

Financial year to which demand/ refund relates to	Name of other Tax law	Type (Demand raised/Refund received)	Date of demand raised/refund received	Amount	Remarks
Nil					

42 Whether the assessee is required to furnish statement in Form No.61 or Form No. 61A or Form No. 61B? If yes, please furnish **No**

Sl No.	Income-tax Department Reporting Entity Identification Number	Type of Form	Due date for furnishing	Date of furnishing, if furnished	Whether the Form contains information about all details/ transactions which are required to be reported.	If not, please furnis list of the details transactions whic are not reported.
Nil						

43	(a)Whether the assessee or its parent entity or alternate reporting entity is liable to furnish the report as referred to in sub-section (2) of section 286						No
	Sl No.	Whether report has been furnished by the assessee or its parent entity or an alternate reporting entity	Name of parent entity	Name of alternate reporting entity (if applicable)	Date of furnishing of report		
	Nil						
A(c)	If Not due , please enter expected date of furnishing the report						
44	Break-up of total expenditure of entities registered or not registered under the GST:(This Clause is kept in abeyance till 31st March, 2021)						
	Sl No.	Total amount of Expenditure incurred during the year	Expenditure in respect of entities registered under GST				Expenditure relating to entities not registered under GST
			Relating to goods or services exempt from GST	Relating to entities falling under composition scheme	Relating to other registered entities	Total payment to registered entities	
	Nil						

Place KAKINADA
Date 10/01/2021

Name P MALLIKARJUNA SASTRY
Membership Number 215023
FRN (Firm Registration Number) 012136S
Address D.No.8-5-5, Beside Andhra Bank, Opp Venkateswara Swamy Temple,Gandhi Nagar , , KAKINADA, ANDHRA PRADESH, 533004,

Form Filing Details	
Revision/Original	Original

Addition Details(From Point No. 18)

Description of Block of Assets	Sl.No.	Date of Purchase	Date put to use	Amount	Adjustment on account of			Total Amount
					MODVAT	Exchange Rate Change	Subsidy Grant	
Building @ 10%								0
Total of **Building @ 10%**								2560
Plant & Machinery @ 15%	1	01/11/2019	01/11/2019	2560				20000
	2	31/10/2019	31/10/2019	20000				47790
	3	30/10/2019	30/10/2019	47790				70350
Total of **Plant & Machinery @ 15%**								
Plant & Machinery @ 40%								0
Total of **Plant & Machinery @ 40%**								

Deduction Details(From Point No. 18)

Description of Block of Assets	Sl.No.	Date of Sale etc.	Amount
Building @ 10%			0
Total of **Building @ 10%**			
Plant & Machinery @ 15%			

Total of **Plant & Machinery @ 15%**	**0**
Plant & Machinery @ 40%	
Total of **Plant & Machinery @ 40%**	**0**

This form has been digitally signed by **MALLIKHARJUNA SASTRY PULLE** having PAN **ALMPP7018E** from IP Address **175.101.156.41** on **2021-01-10 12:53:26.0** .
Dsc Sl No and issuer **17828713CN=e-Mudhra Sub CA for Class 2 Individual 2014,OU=Certifying Authority,O=eMudhra Consumer Services Limited,C=IN**

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INDIAN INCOME TAX RETURN ACKNOWLEDGEMENT

Assessment Year 2021-22

[Where the data of the Return of Income in Form ITR-1 (SAHAJ), ITR-2, ITR-3, ITR-4(SUGAM), ITR-5, ITR-6, ITR-7 filed and verified]
(Please see Rule 12 of the Income-tax Rules, 1962)

PAN	AVSPB0729L		
Name	RAMA DEVI BOLLA		
Address	Plot No. 41A , Sarpavaram , Industrial Park , KAKINADA . 02-Andhra Pradesh , 91-India , 533005		
Status	Individual	Form Number	ITR-3
Filed u/s	139(1) Return filed on or before due date	e-Filing Acknowledgement Number	174741110130222

Taxable Income and Tax details		
Current Year business loss, if any	1	0
Total Income		8,91,200
Book Profit under MAT, where applicable	2	0
Adjusted Total Income under AMT, where applicable	3	8,91,200
Net tax payable	4	94,370
Interest and Fee Payable	5	0
Total tax, interest and Fee payable	6	94,370
Taxes Paid	7	1,57,162
(+)Tax Payable /(-)Refundable (6-7)	8	(-) 62,790
Distribution Tax details		
Dividend Tax Payable	9	0
Interest Payable	10	0
Total Dividend tax and interest payable	11	0
Taxes Paid	12	0
(+)Tax Payable /(-)Refundable (11-12)	13	0
Accreted Income & Detail		
Accreted Income as per section 115TD	14	0
Additional Tax payable u/s 115TD	15	0
Interest payable u/s 115TE	16	0
Additional Tax and interest payable	17	0
Tax and interest paid	18	0
(+)Tax Payable /(-)Refundable (17-18)	19	0

This return has been digitally signed by RAMA DEVI BOLLA in the capacity of Self having PAN AVSPB0729L from IP address 10.1.82.124 on 13-02-2022 10:17:52

DSC Sl. No. & Issuer 5560772 & 22093572CN=e-Mudhra Sub CA for Class 3 Individual 2014,OU=Certifying Authority,O=eMudhra Consumer Services Limited,C=IN

System Generated Barcode/QR Code

AVSPB0729L031747411101302222FB5C7D9165FA48F44F3F28D528DDE151970ABFD8

DO NOT SEND THIS ACKNOWLEDGEMENT TO CPC, BENGALURU

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A.Y. 2021-2022

Name : BOLLA RAMA DEVI
Father's Name : Surya Satyanarayana
Address : Plot No. 41A
Sarpavaram
Industrial Park, KAKINADA - 533 005

Previous Year : 2020-2021
PAN : AVSPB 0729 L
Status : Individual
Date of Birth : 21-May-1981
Aadhaar No. : 3961 4545 6733

Resident

Statement of Income

		Rs.	Rs.	Rs.
Income from House Property				
Self occupied properties				
Property-1: 1	1			
Gross annual value u/s 23(2)(a)			NIL	
Less:Interest on borrowed capital u/s 24(b)			83,441	
Income from self occupied properties			-83,441	
Income chargeable under the head "House Property"				-83,441
Profits and gains of Business or Profession				
Business-1				
Net Profit Before Tax as per P & L a/c			11,24,638	
Add: Inadmissible expenses & Income not included				
Depreciation debited to P & L a/c			7,61,810	
			18,86,448	
Less: Deductible expenditure & income to be excluded				
Incomes considered separately	2		2,72,695	
Adjusted Profit of Business-1			16,13,753	
Total income of Business and Profession			16,13,753	
Less: Depreciation as per IT Act	6		7,61,810	
Income chargeable under the head "Business and Profession"				8,51,943
Income from other sources				
Interest income	3		2,72,695	
Income chargeable under the head "other sources"				2,72,695
Gross Total Income				10,41,197
Deductions under Chapter VI-A				
Investment u/s 80C, CCC, CCD				
Housing loan repayment		1,97,431		
Deduction subject to ceiling u/s 80CCE				1,50,000
Total Income				8,91,197
Total income rounded off u/s 288A				8,91,200
Tax on total income				90,740
Add: Cess				3,630
Tax with cess				94,370

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Net Tax			94,370
TDS	4	1,27,162	
Advance Tax	5	30,000	
Total prepaid taxes			1,57,162
Refund Due			62,790

Schedule 1

Details of the property

1, KAKINADA, EAST GODAVARI-533002, Andhra pradesh

Details of Owner

Owner	Self
Assessee's share in the property (%)	100

Schedule 2

	Amount
Income considered under other heads	
Interest received	2,72,695
Grand total	2,72,695

Schedule 3

Interest income (other than NSC/KVP interest)

Name of the Bank	Interest
Interest on Time Deposits	
Canara Bank	2,70,079
Sb	1,607
Total	2,71,686
Other Interest	
Interest on gold bonds	1,009
Taxable Interest	2,72,695

Schedule 4

TDS as per Form 16A

Deductor, TAN	TDS deducted	TDS claimed in current year	Gross receipt offered
Canara Bank, TAN- HYDC10600C	13,615	13,615	85,424
New & Renewable Energy Development Corporation Of Andhra Pradesh Limited, TAN- HYDN00008B	1,10,904	1,10,904	73,93,637
Total	1,24,519	1,24,519	74,79,061

Tax collected at source

Collector & TAN	TCS collected	TCS claimed in current year	Expenditure as per 26AS
Cg Power And Industrial Solutions Limited, TAN- BPLC02783E	605	605	8,06,552
Hari Narayan Gupta, TAN- JBPH00970E	5	5	6,615

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Renewsys India Private Limited, TAN- HYDR10198G	2,033	2,033	27,10,667
Total	2,643	2,643	35,23,834
Grand Total	1,27,162	1,27,162	

Schedule 5

Advance tax paid

Canara Bank-0242465	15-Mar-21	31140	30,000

Bank A/c for Refund: CANARA BANK 32501250002078 IFSC: CNRB0013258

Date : 13-Feb-2022
Place : KAKINADA

[BOLLA RAMA DEVI]

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BOLLA RAMA DEVI
KAKINADA

Profit & Loss A/c
1-Apr-2020 to 31-Mar-2021

Particulars	1-Apr-2020 to 31-Mar-2021		Particulars	1-Apr-2020 to 31-Mar-2021	
Opening Stock		8,75,670.00	**Sales Accounts**		4,99,89,049.66
Purchase Accounts		6,47,30,347.83	Closing Stock		2,60,30,000.00
Gross Profit c/o		*1,04,13,031.83*			
		7,60,19,049.66			7,60,19,049.66
Indirect Expenses		95,61,088.73	Gross Profit b/f		*1,04,13,031.83*
Bank Interest & Charges	*22,89,037.15*		**Indirect Incomes**		2,72,694.96
Salaries & Staff Welfare	*55,80,109.32*		*Interest on Fdr*	*2,70,079.06*	
Taxes & Liscence	*58,212.00*		*Interest on Gold Bonds*	*1,009.26*	
Association Fees	*5,000.00*		*Interest on Sb*	*1,606.64*	
Computer Maintenance	*17,500.00*				
Depriciation	*7,61,810.00*				
Electricity Charges	*81,449.46*				
Insurance	*54,975.00*				
Office Maintenance	*52,094.00*				
Printing & Stationary	*4,100.00*				
Testing Charges	*3,86,450.00*				
Transportation Charges	*1,18,350.00*				
Traveling Charges	*1,18,900.80*				
Vehicle Maintance	*33,101.00*				
Nett Profit		*11,24,638.06*			
Total		1,06,85,726.79	**Total**		1,06,85,726.79

For K.P.G. & Co
Chartered Accountants
P Mallikharjuna Sastry
(P. Mallikharjuna Sastry)
Partner M. no. 215023
Firm Reg No. 012136S

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BOLLA RAMA DEVI
KAKINADA

Balance Sheet
1-Apr-2020 to 31-Mar-2021

Liabilities	as at 31-Mar-2021		Assets	as at 31-Mar-2021	
Capital Account		1,76,44,710.03	**Fixed Assets**		1,77,82,881.23
B. RAMA DEVI (Capital)	*1,76,44,710.03*				
			Investments		6,19,080.00
Loans (Liability)		3,92,87,335.73			
Bank OD A/c	*1,69,94,677.75*		**Current Assets**		5,93,07,768.37
Secured Loans	*1,03,54,259.18*		Closing Stock	*2,60,30,000.00*	
Unsecured Loans	*1,19,38,398.80*		Deposits (Asset)	*45,45,380.57*	
			Sundry Debtors	*2,58,69,955.29*	
Current Liabilities		2,07,77,683.84	Cash-in-hand	*16,88,843.20*	
Sundry Creditors	*2,07,77,683.84*		Bank Accounts	*10,15,931.31*	
			Advance Tax F.Y 2020-21	*30,000.00*	
Profit & Loss A/c			*Tcs Receivable 2020-21*	*3,139.00*	
Opening Balance			*Tds Receivable 2020-21*	*1,24,519.00*	
Current Period	*11,24,638.06*				
Less: Transferred	*11,24,638.06*				
Total		7,77,09,729.60	**Total**		7,77,09,729.60

For K.P.G. & Co
Chartered Accountants
P Mallikharjuna Sastry
(P. Mallikharjuna Sastry)
Partner M. no. 215023
Firm Reg No. 012136S

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Acknowledgement Number : 130899270050222

FORM 3CB [See rule 6G(1)(b)]

Audit report under section 44AB of the Income-tax Act, 1961, in the case of a person referred to in clause (b) of sub-rule (1) of rule 6G

1. We have examined the **balance sheet** as on 31st March 2021 , and the **profit and loss account** for the period beginning from 01-Apr-2020 to ending on 31-Mar-2021 attached herewith, of

Name	BOLLA RAMA DEVI
Address	Plot No. 41A, Sarpavaram . . . . , 02-Andhra Pradesh , 91-India , Pincode - 533005
PAN	AVSPB0729L
Aadhaar Number of the assessee, if available	396145456733

2. We certify that the balance sheet and the **profit and loss account** are in agreement with the books of account maintained at the head office at KAKINADA and 0 branches.

3. a. We report the following observations/comments/discrepancies/inconsistencies if any:

b. Subject to above,-

A. We have obtained all the information and explanations which, to the best of our knowledge and belief, were necessary for the purposes of the audit.

B. In our opinion, proper books of account have been kept by the head office and branches of the assessee so far as appears from our examination of the books.

C. In our opinion and to the best of our information and according to the explanations given to us the said accounts, read with notes thereon, if any, give a true and fair view:-

i. In the case of the balance sheet, of the state of the affairs of the assessee as at 31st March 2021 ; and

ii. In the case of the profit and loss account, of the Profit of the assessee for the year ended on that date.

4. The statement of particulars required to be furnished under section 44AB is annexed herewith in Form No. 3CD.

5. In our opinion and to the best of our information and according to the explanations given to us , the particulars given in the said Form No. 3CD are true and correct, subject to the following observations/qualifications, if any:

Sl. No.	Qualification Type	Observations/Qualifications
1	Valuation of closing stock is not possible.	Closing stock as on 31/03/2021 has not been physically verified by us.
2	Others	Confirmation from sundry debtors and creditors were not produced for my verification.
3	Others	Cash balance has not been physically verified by us.
4	Others	Some of the vouchers are not available for expenses.

Accountant Details

Name P MALLIKHARJUNA SASTRY

1724

Membership Number 215023

FRN (Firm Registration Number)	012136S
Address	Gandhinagar . . . . . 02-Andhra Pradesh , 91-India , Pincode - 533004
Date of signing Tax Audit Report	05-Feb-2022
Place	175.101.156.30
Date	05-Feb-2022

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For K.P.G. & Co
Chartered Accountants
P Mall Sastry
(P. Mallikharjuna Sastry)
Partner M. no. 215023
Firm Reg No. 012136S

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FORM 3CD [See rule 6 G(2)]

Statement of particulars required to be furnished under section 44AB of the Income-tax Act, 1961

PART - A

1. Name of the Assessee	**BOLLA RAMA DEVI**
2. Address of the Assessee	**Plot No. 41A, Sarpavaram . . . . , 02-Andhra Pradesh , 91-India , Pincode - 533005**
3. Permanent Account Number (PAN)	**AVSPB0729L**
Aadhaar Number of the assessee, if available	**396145456733**
4. Whether the assessee is liable to pay indirect tax like excise duty, service tax, sales tax, goods and services tax,customs duty,etc. if yes, please furnish the registration number or,GST number or any other identification number allotted for the same ?	**Yes**

Sl. No.	Type	Registration /Identification Number
1	Sales Tax/VAT 02-Andhra Pradesh	37660989415
2	Goods and Services Tax 02-Andhra Pradesh	37 AVSPB0729L 1Z9
3	Goods and Services Tax 02-Andhra Pradesh	37 AVSPB0729L 2Z8

5. Status	**Individual**
6. Previous year	**01-Apr-2020** to 31-Mar-2021
7. Assessment year	**2021-22**

8. Indicate the relevant clause of section 44AB under which the audit has been conducted

Sl. No.	Relevant clause of section 44AB under which the audit has been conducted
1	Clause 44AB(a)- Total sales/turnover/gross receipts of business exceeding specified limits

8(a). Whether the assessee has opted for taxation under section 115BA / 115BAA /115BAB / 115BAC /115BAD ? **No**

Section under which option exercised

PART - B

9.(a). If firm or Association of Persons, indicate names of partners/members and their profit sharing ratios. In case of AOP, whether shares of members are indeterminate or unknown?

Sl. No.	Name	Profit Sharing Ratio (%)

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(b). If there is any change in the partners or members or in their profit sharing ratio since the last date of the preceding year, the particulars of such change ?

Sl. No.	Date of change	Name of Partner/Member	Type of change	Old profit sharing ratio (%)	New profit Sharing Ratio (%)	Remarks
No records added						

10.(a). Nature of business or profession (if more than one business or profession is carried on during the previous year, nature of every business or profession).

Sl. No.	Sector	Sub Sector	Code
1	WHOLESALE AND RETAIL TRADE	Retail sale of other products n.e.c	09028
2	MANUFACTURING	Other manufacturing n.e.c.	04097

(b). If there is any change in the nature of business or profession, the particulars of such change ? **No**

Sl. No.	Business	Sector	Sub Sector	Code
No records added				

11.(a). Whether books of accounts are prescribed under section 44AA, list of books so prescribed ? **No**

Sl .No.	Books prescribed

(b). List of books of account maintained and the address at which the books of accounts are kept. (In case books of account are maintained in a computer system, mention the books of account generated by such computer system. If the books of accounts are not kept at one location, please furnish the addresses of locations along with the details of books of accounts maintained at each location.)

Same as 11(a) above

Sl. No.	Books maintained	Address Line 1	Address Line 2	City Or Town Or District	Zip Code / Pin Code	Country	State
1	Bank book	Plot No. 41A, Sarpavaram, Industrial Park		KAKINADA	533005	91-India	02-Andhra Pradesh
2	Cash book	Plot No. 41A, Sarpavaram, Industrial Park		KAKINADA	533005	91-India	02-Andhra Pradesh
3	Journal	Plot No. 41A, Sarpavaram, Industrial Park		KAKINADA	533005	91-India	02-Andhra Pradesh

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4	Ledger	Plot No. 41A, Sar pavaram , Industri al Park	KAKINADA	533005	91-India	02-Andhra Pradesh
5	Purchase re gister	Plot No. 41A, Sar pavaram , Industri al Park	KAKINADA	533005	91-India	02-Andhra Pradesh
6	Sales regist er	Plot No. 41A, Sar pavaram , Industri al Park	KAKINADA	533005	91-India	02-Andhra Pradesh

(c). List of books of account and nature of relevant documents examined.

Same as 11(b) above

Sl. No.	Books examined
1	Bank book
2	Cash book
3	Journal
4	Ledger
5	Purchase register
6	Sales register

12. Whether the profit and loss account includes any profits and gains assessable on presumptive basis, if yes, indicate the amount and the relevant section (44AD, 44ADA, 44AE, 44AF, 44B, 44BB, 44BBA, 44BBB, Chapter XII-G, First Schedule or any other relevant section.) ? **No**

Sl. No.	Section	Amount
No records added		

13.(a). Method of accounting employed in the previous year. **Mercantile system**

(b). Whether there had been any change in the method of accounting employed vis-a-vis the method employed in the immediately preceding previous year ? **No**

(c). If answer to (b) above is in the affirmative, give details of such change , and the effect thereof on the profit or loss ?

Sl. No.	Particulars	Increase in profit	Decrease in profit
		₹ 0	₹ 0

(d). Whether any adjustment is required to be made to the profits or loss for complying with the provisions of income computation and disclosure standards notified under section 145(2) ? **No**

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(e). If answer to (d) above is in the affirmative, give details of such adjustments:

Sl. No.	ICDS	Increase in profit	Decrease in profit	Net effect
		₹ 0	₹ 0	₹ 0
Total		₹ 0	₹ 0	₹ 0

(f). Disclosure as per ICDS:

Sl. NO.	ICDS	Disclosure
1	ICDS I-Accounting Policies	Fundamental Accounting Assumptions of Going Concern, Consistency and Accrual are followed
2	ICDS IV-Revenue Recognition	Revenue is recognized as and when sales is made and entered in the books of account. ICDS IV was complied w ith.
3	ICDS V-Tangible Fixed Assets	Tangible fixed assets are whom at cost of acquisition less depreciation. ICDS IV was complied with
4	ICDS II-Valuation of Inventorie s	Inventories are Valued at cost or market value whichever is less. ICDS II was complied with

14.(a). Method of valuation of closing stock employed in the previous year **Lower of Cost or Marker rate**

(b). In case of deviation from the method of valuation prescribed under section 145A, and the effect thereof on the profit or loss, please furnish N o

Sl. NO.	Particulars	Increase in profit	Decrease in profit
	No records added		

15. Give the following particulars of the capital asset converted into stock-in-trade

Sl. No.	Description of capital asset (a)	Date of acquisition (b)	Cost of acquisition (c)	Amount at which the asset is converted into stock-in trade (d)
	No records added			

16. Amounts not credited to the profit and loss account, being, -

(a). The items falling within the scope of section 28:

Sl.No.	Description	Amount
		₹ 0

(b). the proforma credits, drawbacks, refunds of duty of customs or excise or service tax or refunds of sales tax or value added tax or Goods & Services Tax where such credits, drawbacks or refunds are admitted as due by the authorities concerned;

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Sl. No.	Description	Amount
No records added		

(c) Escalation claims accepted during the previous year:

Sl. No.	Description	Amount
No records added		

(d) any other item of income:

Sl. No.	Description	Amount
No records added		

(e) Capital receipt, if any

Sl. No.	Description	Amount
No records added		

17. Where any land or building or both is transferred during the previous year for a consideration less than value adopted or assessed or assessable by any authority of a State Government referred to in section 43CA or 50C, please furnish:

Sl. No.	Details of property	Address of Property					Consideration received or accrued	Value adopted or assessed or assessable	Whether provisions of second proviso to sub-section (1) of section 43CA or fourth proviso to clause (x) of sub-section (2) of section 56 applicable ?
		Address Line 1	Address Line 2	City Or Town Or District	Zip Code / Pin Code	Country / State			
1							₹ 0	₹ 0	

18. Particulars of depreciation allowable as per the Income-tax Act, 1961 in respect of each asset or block of assets, as the case may be, in the following form:-

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Sl. No.	Description of the Block of Asset/Loss of Assets	Rate of Depreciation (%)	Opening WDV / Actual	Adjustment made to the written down value under section 115BAC/115BAD (for assessment year 2021-22 only)	Adjustment made to the written down value of intangible asset due to excluding value of goodwill of a business or profession	Adjusted written down value(A)	Purchase Value	Total Value of Purchases (B)	Deductions (C)	Other Adjustments	Depreciation Allowable (D)	Written Down Value at the end of the year(A+B-C-D)
1	Building @ 10%	10	₹ 57,55,776	₹ 0	₹ 0	₹ 57,55,776	₹ 0	₹ 0	₹ 0	₹ 0	₹ 5,75,578	₹ 51,80,198
2	Plant and Machinery @ 15%	15	₹ 12,06,443	₹ 0	₹ 0	₹ 12,06,443	₹ 0	₹ 0	₹ 0	₹ 0	₹ 1,80,966	₹ 10,25,477
3	Plant and Machinery @ 40%	40	₹ 13,166	₹ 0	₹ 0	₹ 13,166	₹ 0	₹ 0	₹ 0	₹ 0	₹ 5,266	₹ 7,900

19. Amount admissible under section-

Sl. No.	Section	Amount debited to profit and loss account	Amounts admissible as per the provisions of the Income-tax Act, 1961 and also fulfils the conditions, if any specified under the relevant provisions of Income-tax Act, 1961 or Income-tax Rules, 1962 or any other guidelines, circular, etc., issued in this behalf.

No records added

20.(a) Any sum paid to an employee as bonus or commission for services rendered, where such sum was otherwise payable to him as profits or dividend. [Section 36(1)(ii)]

Sl. No.	Description	Amount

No records added

(b). Details of contributions received from employees for various funds as referred to in section 36(1)(va):

Sl. No.	Nature of fund	Sum received from employees	Due date for payment	The actual amount paid	The actual date of payment to the concerned authorities

No records added

21.(a). Please furnish the details of amounts debited to the profit and loss account, Being in the nature of capital, personal, advertisement expenditure etc.

Capital expenditure

Sl. No.	Particulars	Amount

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₹ 0

1

Personal expenditure

Sl. No.	Particulars	Amount

No records added

Advertisement expenditure in any souvenir, brochure, tract, pamphlet or the like published by a political party

Sl. No.	Particulars	Amount

No records added

Expenditure incurred at clubs being entrance fees and subscriptions

Sl. No.	Particulars	Amount

No records added

Expenditure incurred at clubs being cost for club services and facilities used.

Sl. No.	Particulars	Amount

No records added

Expenditure by way of penalty or fine for violation of any law for the time being in force

Sl.No.	Particulars	Amount

No records added

Expenditure by way of any other penalty or fine not covered above

Sl. No.	Particulars	Amount

No records added

Expenditure incurred for any purpose which is an offence or which is prohibited by law

Sl. No.	Particulars	Amount

No records added

(b). Amounts inadmissible under section 40(a):

i. as payment to non-resident referred to in sub-clause (i)

A. Details of payment on which tax is not deducted:

Sl. No.	Date of payment	Amount	Nature of payment	Name of the payee	Permanent Account Number of the payee, if available	Aadhaar Number of the payee, if available	Address Line 1	Address Line 2	City Or Town Or District	Zip Code / Pin Code	Country	State

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1		₹ 0													

B. Details of payment on which tax has been deducted but has not been paid during the previous year or in the subsequent year before the expiry of time prescribed under section 200(1)

Sl. No.	Date of payment	Amount of payment	Nature of payment	Name of the payee	Permanent Account Number of the payee, if available	Aadhaar Number of the payee, if available	Address Line 1	Address Line 2	City Or Town Or District	Zip Code / Pin Code	Country	State	Amount of tax deducted
1		₹ 0											₹ 0

iv. as payment referred to in sub-clause (ia)

A. Details of payment on which tax is not deducted:

Sl. No.	Date of payment	Amount of payment	Nature of payment	Name of the payee	Permanent Account Number of the payee, if available	Aadhaar Number of the payee, if available	Address Line 1	Address Line 2	City Or Town Or District	Zip Code / Pin Code	Country	State
1		₹ 0										

B. Details of payment on which tax has been deducted but has not been paid on or before the due date specified in sub-section (1) of section 139.

Sl. No.	Date of payment	Amount of payment	Nature of payment	Name of the payee	Permanent Account Number of the payee, if available	Aadhaar Number of the payee, if available	Address Line 1	Address Line 2	City Or Town Or District	Zip Code / Pin Code	Country	State	Amount of tax deducted	Amount deposited out of "Amount of tax deducted"
1		₹ 0											₹ 0	₹ 0

iv. as payment referred to in sub-clause (ib)

A. Details of payment on which levy is not deducted:

Sl. No.	Date of payment	Amount of payment	Nature of payment	Name of the payee	Permanent Account Number of the payee, if available	Aadhaar Number of the payee, if available	Address Line 1	Address Line 2	City Or Town Or District	Zip Code / Pin Code	Country	State
1		₹ 0										

B. Details of payment on which levy has been deducted but has not been paid on or before the due date specified in sub-section (1) of section 139.

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Sl. No.	Date of payment	Amount of payment	Nature of payment	Name of the payee	Permanent Account Number of the payee, if available	Aadhaar Number of the payee, if available	Address Line 1	Address Line 2	City Or Town Or District	Zip Code / Pin Code	Country	State	Amount of levy deducted	Amount deposited out of "Amount of Levy deducted"
1		₹ 0											₹ 0	₹ 0

iv. Fringe benefit tax under sub-clause (ic) ₹ 0

v. Wealth tax under sub-clause (iia) ₹ 0

vi. Royalty, license fee, service fee etc. under sub-clause (iib) ₹ 0

vii. Salary payable outside India/to a non resident without TDS etc. under sub-clause (iii)

Sl. No.	Date of payment	Amount of payment	Name of the payee	Permanent Account Number of the payee, if available	Aadhaar Number of the payee, if available	Address Line 1	Address Line 2	City Or Town Or District	Zip Code / Pin Code	Country	State
1		₹ 0									

viii. Payment to PF /other fund etc. under sub-clause (iv) ₹ 0

ix. Tax paid by employer for perquisites under sub-clause (v) ₹ 0

x. Amounts debited to profit and loss account being interest, salary, bonus, commission or remuneration inadmissible under section 40(b)/40(ba) and computation thereof.

Sl. No.	Particulars	Section	Amount debited to P/L A/C	Amount admissible	Amount inadmissible	Remarks

No records added

xi. Disallowance/deemed income under section 40A(3):

A. On the basis of the examination of books of account and other relevant documents/evidence, whether the expenditure covered under section 40A(3) read with rule 6DD were made by account payee cheque drawn on a bank or account payee bank draft. Please furnish the details ? Yes

Sl. No.	Date of Payment	Nature of Payment	Amount	Name of the payee	Permanent Account Number of the payee, if available	Aadhaar Number of the payee, if available

No records added

B. On the basis of the examination of books of account and other relevant documents/evidence, whether payment referred to in section 40A(3A) read with rule 6DD were made by account payee cheque drawn on a bank or account payee bank draft, please furnish the details of amount deemed to be the profits and gains of business or profession under section 40A(3A) ? Yes

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Sl. No.	Date of Payment	Nature of Payment	Amount	Name of the payee	Permanent Account Number of the payee, if available	Aadhaar Number of the payee, if available
No records added						

(e). Provision for payment of gratuity not allowable under section 40A(7); ₹ 0

(f). Any sum paid by the assessee as an employer not allowable under section 40A(9); ₹ 0

(g). Particulars of any liability of a contingent nature:

Sl. No.	Nature of Liability	Amount
1		₹ 0

(h). Amount of deduction inadmissible in terms of section 14A in respect of the expenditure incurred in relation to income which does not form part of the total income:

Sl. No.	Particulars	Amount
No records added		

(i). Amount inadmissible under the proviso to section 36(1)(iii). ₹ 0

(j). Amount of interest inadmissible under section 23 of the Micro, Small and Medium Enterprises Development Act, 2006. ₹ 0

23. Particulars of any payments made to persons specified under section 40A(2)(b).

Sl. No.	Name of Related Person	PAN of Related Person	Aadhaar Number of the related person, if available	Relation	Nature of Transaction	Payment Made
No records added						

24. Amounts deemed to be profits and gains under section 32AC or 32AD or 33AB or 33AC or 33ABA.

Sl. No.	Section	Description	Amount
No records added			

25. Any Amount of profit chargeable to tax under section 41 and computation thereof.

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Sl. No.	Name of person	Amount of income	Section	Description of Transaction	Computation if any

No records added

26.i. In respect of any sum referred to in clause (a),(b),(c),(d),(e),(f) or (g) of section 43B, the liability for which:-

A. pre-existed on the first day of the previous year but was not allowed in the assessment of any preceding previous year and was

a. paid during the previous year;

Sl. No.	Section	Nature of liability	Amount
			₹ 0

b. not paid during the previous year;

Sl. No.	Section	Nature of liability	Amount
			₹ 0

B. was incurred in the previous year and was

a. paid on or before the due date for furnishing the return of income of the previous year under section 139(1);

Sl. No.	Section	Nature of liability	Amount
			₹ 0

b. not paid on or before the aforesaid date

Sl. No.	Section	Nature of liability	Amount
			₹ 0

State whether sales tax,goods & services Tax, customs duty, excise duty or any other indirect tax,levy,cess,impost etc.is passed through the profit and loss account ? No

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27.a. Amount of Central Value Added Tax Credits/ Input Tax Credit(ITC) availed of or utilised during the previous year and its treatment in profit and loss account and treatment of outstanding Central Value Added Tax Credits/Input Tax Credit(ITC) in accounts. No

CENVAT /ITC	Amount	Treatment in Profit & Loss/Accounts

No records added

b. Particulars of income or expenditure of prior period credited or debited to the profit and loss account.

Sl. No.	Type	Particulars	Amount	Prior period to which it relates (Year in yyyy-yy format)

No records added

28. Whether during the previous year the assessee has received any property, being share of a company not being a company in which the public are substantially interested, without consideration or for inadequate consideration as referred to in section 56(2)(viia) ?

Please furnish the details of the same

Sl. No	Name of the person from which shares received	PAN of the person, if available	Aadhaar Number of the payee, if available	Name of the company whose shares are received	CIN of the company	No. of Shares Received	Amount of consideration paid	Fair Market value of the shares

No records added

29. Whether during the previous year the assessee received any consideration for issue of shares which exceeds the fair market value of the shares as referred to in section 56(2)(viib) ?

Please furnish the details of the same

Sl. No.	Name of the person from whom consideration received for issue of shares	PAN of the person, if available	Aadhaar Number of the payee, if available	No. of shares issued	Amount of consideration received	Fair Market value of the shares

No records added

30.a. Whether any amount is to be included as income chargeable under the head 'income from other sources' as referred to in clause (ix) of sub-section (2) of section 56 ? No

b. Please furnish the following details:

Sl. No.	Nature of Income	Amount

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No records added

B.a. Whether any amount is to be included as income chargeable under the head 'income from other sources' as referred to in clause (x) of sub-section (2) of section 56 ? No

b. Please furnish the following details:

Sl. No.	Nature of income	Amount

No records added

30. Details of any amount borrowed on hundi or any amount due thereon (including interest on the amount borrowed) repaid, otherwise than through an account payee cheque. [Section 69D] No

Sl. No.	Name of the person from whom amount borrowed or repaid on hundi	PAN of the person, if available	Aadhaar Number of the person, if available	Address Line 1	Address Line 2	City Or Town Or District	Zip Code / Pin Code	Country	State	Amount borrowed	Date of borrowing	Amount due including interest	Amount repaid	Date of Repayment
1										₹ 0		₹ 0	₹ 0	

A.a. Whether Primary adjustment to transfer price, as referred to in sub-section (1) of section 92CE, has been made during the previous year ? No

b. Please furnish the following details:

Sl. No.	Under which clause of sub-section (1) of section 92CE primary adjustment is made ?	Amount of primary adjustment	Whether the excess money available with the associated enterprise is required to be repatriated to India as per the provisions of sub-section (2) of section 92CE ?	Whether the excess money has been repatriated within the prescribed time ?	The amount of imputed interest income on such excess money which has not been repatriated within the prescribed time	Expected date of repatriation of money

No records added

B.a. Whether the assessee has incurred expenditure during the previous year by way of interest or of similar nature exceeding one crore rupees as referred to in sub-section (1) of section 94B ? No

b. Please furnish the following details

Sl. No.	Amount of expenditure by way of interest or of similar nature incurred (i)	Earnings before interest, tax, depreciation and amortization (EBITDA) during the previous year (ii)	Amount of expenditure by way of interest or of similar nature as per (i) above which exceeds 30% of EBITDA as per (ii) above. (iii)	Details of interest expenditure brought forward as per sub-section (4) of section 94B. (iv)		Details of interest expenditure carried forward as per sub-section (4) of section 94B. (v)	
				Amount	Assessment Year		Amount
1	₹ 0	₹ 0	₹ 0	₹ 0			₹ 0

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30. Whether the assessee has entered into an impermissible avoidance arrangement, as referred to in section 96, during the previous year (This clause is kept in abeyance till 31st March, 2022) ? No

b. Please furnish the following details

Sl. No.	Nature of the impermissible avoidance arrangement	Amount of tax benefit in the previous year arising, in aggregate, to all the parties to the arrangement

No records added

31.a. Particulars of each loan or deposit in an amount exceeding the limit specified in section 269SS taken or accepted during the previous year :-

Sl. No.	Name of the lender or depositor	Address of the lender or depositor	Permanent Account Number (if available with the assessee) of the lender or depositor	Aadhaar Number of the lender or depositor, if available	Amount of loan or deposit taken or accepted	Whether the loan/deposit was squared up during the previous year ?	Maximum amount outstanding in the account at any time during the previous year	Whether the loan or deposit was taken or accepted by cheque or bank draft or use of electronic clearing system through a bank account ?	In case the loan or deposit was taken or accepted by cheque or bank draft, whether the same was taken or accepted by an account payee cheque or an account payee bank draft.

No records added

b. Particulars of each specified sum in an amount exceeding the limit specified in section 269SS taken or accepted during the previous year -

Sl. No.	Name of the person from whom specified sum is received	Address of the person from whom specified sum is received	Permanent Account Number (if available with the assessee) of the person from whom specified sum is received	Aadhaar Number of the person from whom specified sum is received, if available	Amount of specified sum taken or accepted	Whether the specified sum was taken or accepted by cheque or bank draft or use of electronic clearing system through a bank account ?	In case the specified sum was taken or accepted by cheque or bank draft, whether the same was taken or accepted by an account payee cheque or an account payee bank draft.

No records added

Note: Particulars at (a) and (b) need not be given in the case of a Government company, a banking company or a corporation established by a Central, State or Provincial Act.

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b.(a). Particulars of each receipt in an amount exceeding the limit specified in section 269ST, in aggregate from a person in a day or in respect of a single transaction or in respect of transactions relating to one event or occasion from a person, during the previous year, where such receipt is otherwise than by a cheque or bank draft or use of electronic clearing system through a bank account

Sl. No.	Name of the payer	Address of the payer	Permanent Account Number (if available with the assessee) of the payer	Aadhaar Number of the payer, if available	Nature of transaction	Amount of receipt	Date of receipt
No records added							

b.(b). Particulars of each receipt in an amount exceeding the limit specified in section 269ST, in aggregate from a person in a day or in respect of a single transaction or in respect of transactions relating to one event or occasion from a person, received by a cheque or bank draft, not being an account payee cheque or an account payee bank draft, during the previous year:-

Sl. No.	Name of the payer	Address of the payer	Permanent Account Number (if available with the assessee) of the payer	Aadhaar Number of the payer, if available	Amount of receipt
No records added					

b.(c). Particulars of each payment made in an amount exceeding the limit specified in section 269ST, in aggregate from a person in a day or in respect of a single transaction or in respect of transactions relating to one event or occasion to a person, otherwise than by a cheque or bank draft or use of electronic clearing system through a bank account during the previous year

Sl. No.	Name of the payee	Address of the payee	Permanent Account Number (if available with the assessee) of the payee	Aadhaar Number of the payee, if available	Nature of transaction	Amount of payment	Date of payment
No records added							

b.(d). Particulars of each payment made in an amount exceeding the limit specified in section 269ST, in aggregate from a person in a day or in respect of a single transaction or in respect of transactions relating to one event or occasion to a person, made by a cheque or bank draft, not being an account payee cheque or an account payee bank draft, during the previous year

Sl. No.	Name of the payee	Address of the payee	Permanent Account Number (if available with the assessee) of the payee	Aadhaar Number of the payee, if available	Amount of payment
No records added					

Note: Particulars at (ba), (bb), (bc) and (bd) need not be given in the case of receipt by or payment to a Government company, a banking Company, a post office savings bank, a cooperative bank or in the case of transactions referred to in section 269SS or in the case of persons referred to in Notification No. S.O. 2065(E) dated 3rd July, 2017

c. Particulars of each repayment of loan or deposit or any specified advance in an amount exceeding the limit specified in section 269T made during the previous year:-

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Sl. No.	Name of the payee	Address of the payee	Permanent Account Number (if available with the assessee) of the payee	Aadhaar Number of the payee, if available	Amount of repayment	Maximum amount outstanding in the account at any time during the previous year	Whether the repayment was made by cheque or bank draft or use of electronic clearing system through a bank account ?	In case the repayment was made by cheque or bank draft, whether the same was repaid by an account payee cheque or an account payee bank draft.

No records added

d. Particulars of repayment of loan or deposit or any specified advance in an amount exceeding the limit specified in section 269T received otherwise than by a cheque or bank draft or use of electronic clearing system through a bank account during the previous year:-

Sl. No.	Name of the payer	Address of the payer	Permanent Account Number (if available with the assessee) of the payer	Aadhaar Number of the payer, if available	Amount of repayment of loan or deposit or any specified advance received otherwise than by a cheque or bank draft or use of electronic clearing system through a bank account during the previous year

No records added

e. Particulars of repayment of loan or deposit or any specified advance in an amount exceeding the limit specified in section 269T received by a cheque or bank draft which is not an account payee cheque or account payee bank draft during the previous year:-

Sl. No.	Name of the payer	Address of the payer	Permanent Account Number (if available with the assessee) of the payer	Aadhaar Number of the payer, if available	Amount of repayment of loan or deposit or any specified advance received by a cheque or bank draft which is not an account payee cheque or account payee bank draft during the previous year

No records added

Note: Particulars at (c), (d) and (e) need not be given in the case of a repayment of any loan or deposit or specified advance taken or accepted from Government, Government company, banking company or a corporation established by a Central, State or Provincial Act

32 a. Details of brought forward loss or depreciation allowance, in the following manner, to the extent available

Sl. No.	Assessment Year	Nature of loss/allowance	Amount as returned (if the assessed loss or depreciation is less and no appeal is	All losses/allowances not allowed under section 115BAA / 115BAC / 115BAD	Amount as adjusted by withdrawal of additional depreciation on account of opting	Amount as assessed (give reference to relevant order)	Remarks

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	then take assessed)	section 115BAC/115BAD(To be filled in for assessment year 2021-22 only)	Amount	Order U/s & Date
1	₹ 0	₹ 0	₹ 0	₹ 0

b. Whether a change in share holding of the company has taken place in the previous year due to which the losses incurred prior to the previous year cannot be allowed to be carried forward in terms of section 79 ?

c. Whether the assessee has incurred any speculation loss referred to in section 73 during the previous year ? **No**

Please furnish the details of the same. **₹ 0**

d. Whether the assessee has incurred any loss referred to in section 73A in respect of any specified business during the previous year ? **No**

Please furnish the details of the same. **₹ 0**

e. In case of a company, please state that whether the company is deemed to be carrying on a speculation business as referred in explanation to section 73.

Please furnish the details of the same. **₹ 0**

33. Section-wise details of deductions, if any, admissible under Chapter VIA or Chapter III (Section 10A, Section 10AA). **Yes**

Sl. No.	Section under which deduction is claimed	Amounts admissible as per the provision of the Income-tax Act,1961 and fulfils the conditions, if any, specified under the relevant provisions of Income-tax Act, 1961 or Income-tax Rules, 1962 or any other guidelines, circular, etc, issued in this behalf.
1	80C	₹ 1,50,000

34.(a). Whether the assessee is required to deduct or collect tax as per the provisions of Chapter XVII-B or Chapter XVII-BB, please furnish ? **No**

Sl. No.	Tax deduction and collection Account Number (TAN) (1)	Section (2)	Nature of payment (3)	Total amount of payment or receipt of the nature specified in column (3) (4)	Total amount on which tax was required to be deducted or collected out of (4) (5)	Total amount on which tax was deducted or collected at specified rate out of (5) (6)	Amount of tax deducted or collected out of (6) (7)	Total amount on which tax was deducted or collected at less than specified rate out of (7) (8)	Amount of tax deducted or collected on (8) (9)	Amount of tax deducted or collected not deposited to the credit of the Central Government out of (6) and (8) (10)
				₹ 0	₹ 0	₹ 0	₹ 0	₹ 0	₹ 0	₹ 0

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(b). Whether the assessee is required to furnish the statement of tax deducted or tax collected ? No

Please furnish the details:

Sl. No.	Tax deduction and collection Account Number (TAN)	Type of Form	Due date for furnishing	Date of furnishing, if furnished	Whether the statement of tax deducted or collected contains information about all details/ transactions which are required to be reported	Please furnish list of details/transactions which are not reported.

(c). Whether the assessee is liable to pay interest under section 201(1A) or section 206C(7) ?

Please furnish:

Sl. No.	Tax deduction and collection Account Number (TAN) (1)	Amount of interest under section 201(1A)/206C(7) is payable (2)	Amount paid out of column (2) along with date of payment. (3)	
			Amount	Date of payment
		₹ 0	₹ 0	

35.(a). In the case of a trading concern, give quantitative details of principal items of goods traded;

Sl. No.	Item Name	Unit Name	Opening stock	Purchases during the pervious year	Sales during the pervious year	Closing stock	Shortage/excess, if any
1			0	0	0	0	0

(b). In the case of manufacturing concern, give quantitative details of the principal items of raw materials, finished products and by-products.

A. Raw materials:

Sl. No.	Item Name	Unit Name	Opening stock	Purchases during the pervious year	Consumption during the pervious year	Sales during the pervious year	Closing stock	Yield of finished products	Percentage of yield	Shortage/excess, if any

No records added

B. Finished products :

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Sl. No.	Item Name	Unit Name	Opening stock	Purchases during the pervious year	Quantity manufactured during the pervious year	Sales during the pervious year	Closing stock	Shortage/excess, if any
					No records added			

C. By-products

Sl. No.	Item Name	Unit Name	Opening stock	Purchases during the pervious year	Consumption during the pervious year	Sales during the pervious year	Closing stock	Shortage/excess, if any
					No records added			

36.(a). Whether the assessee has received any amount in the nature of dividend as referred to in sub-clause (e) of clause (22) of section 2 ?

Please furnish the following details:-

Sl. No.	Amount received	Date of receipt
	No records added	

37. Whether any cost audit was carried out ?

Give the details, if any, of disqualification or disagreement on any matter/item/value/quantity as may be reported/identified by the cost auditor

38. Whether any audit was conducted under the Central Excise Act, 1944 ?

Give the details, if any, of disqualification or disagreement on any matter/item/value/quantity as may be reported/identified by the auditor

39. Whether any audit was conducted under section 72A of the Finance Act, 1994 in relation to valuation of taxable services as may be reported/identified by the auditor. ?

give the details, if any, of disqualification or disagreement on any matter/item/value/quantity as may be reported/identified by the auditor.

40. Details regarding turnover, gross profit, etc., for the previous year and preceding previous year:

Sl. No.	Particulars	Previous Year	%	Preceding previous Year	%

(a)	Total turnover of the assessee	49989049			41050626		
(b)	Gross profit / Turnover	10413031	49989049	20.83	20156984	41050626	49.1
(c)	Net profit / Turnover	1124638	49989049	2.25	1085421	41050626	2.64
(d)	Stock-in-Trade / Turnover	26030000	49989049	52.07	875670	41050626	2.13
(e)	Material consumed / Finished goods produced						

41. Please furnish the details of demand raised or refund issued during the previous year under any tax laws other than Income-tax Act, 1961 and Wealth-tax Act, 1957 alongwith details of relevant proceedings.

Sl. No.	Financial year to which demand/refund relates to	Name of other Tax law	Type (Demand raised/Refund received)	Date of demand raised/refund received	Amount	Remarks

No records added

42.a. Whether the assessee is required to furnish statement in Form No. 61 or Form No. 61A or Form No. 61B ? No

b. Please furnish

Sl. No.	Income tax Department Reporting Entity Identification Number	Type of Form	Due date for furnishing	Date of furnishing, if furnished	Whether the Form contains information about all details/ furnished transactions which are required to be reported ?	Please furnish list of the details/transactions which are not reported.

No records added

43.a. Whether the assessee or its parent entity or alternate reporting entity is liable to furnish the report as referred to in sub-section (2) of section 286 ? No

b. Please furnish the following details

Date of furnishing of report

c. Please enter expected date of furnishing the report

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44. Break-up of total expenditure of entities registered or not registered under the GST (This Clause is kept in abeyance till 31st March, 2022)

Sl. No.	Total amount of Expenditure incurred during the year	Expenditure in respect of entities registered under GST				Expenditure relating to entities not registered under GST
		Relating to goods or services exempt from GST	Relating to entities falling under composition scheme	Relating to other registered entities	Total payment to registered entities	
	₹ 0	₹ 0	₹ 0	₹ 0	₹ 0	₹ 0

Accountant Details

Accountant Details

Name	P MALLIKHARJUNA SASTRY
Membership Number	215023
FRN (Firm Registration Number)	012136S
Address	Gandhinagar, , , , , 02-Andhra Pradesh, 91-India, Pincode - 533004
Place	175.101.156.30
Date	05-Feb-2022

Additions Details (From Point No.18)

Description of the Block of Assets/Class of Assets	Sl. No.	Date of Purchase	Date put to Use	Purchase Value (1)	Adjustments on Account of			Total Value of Purchases (B) (1+2+3+4)
					CENVAT (2)	Change in Rate of Exchange (3)	subsidy or grant or reimbursement, by whatever name called (4)	
Building @ 10%	No records added							

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Description of the Block of Assets/Class of Assets	Sl. No.	Date of Purchase	Date put to use	Purchase Value (1)	Adjustments on Account of			Total Value of Purchases (B) (1+2+3+4)
					CENVAT (2)	Change in Rate of Exchange (3)	subsidy or grant or reimbursement, by whatever name called (4)	
Plant and Machinery @ 15%								
No records added								

Description of the Block of Assets/Class of Assets	Sl. No.	Date of Purchase	Date put to use	Purchase Value (1)	Adjustments on Account of			Total Value of Purchases (B) (1+2+3+4)
					CENVAT (2)	Change in Rate of Exchange (3)	subsidy or grant or reimbursement, by whatever name called (4)	
Plant and Machinery @ 40%								
No records added								

Deductions Details (From Point No.18)

Description of the Block of Assets/Class of Assets	Sl. No.	Date of Sale	Amount	Whether deletions are out of purchases put to use for less than 180 days
Building @ 10%				
No records added				

Description of the Block of Assets/Class of Assets	Sl. No.	Date of Sale	Amount	Whether deletions are out of purchases put to use for less than 180 days
Plant and Machinery @ 15%				
No records added				

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Description of the Block of Assets/Class of Assets	Sl. No.	Date of Sale	Amount	Whether deletions are out of purchases put to use for less than 180 days
Plant and Machinery @ 40%				

No records added

This form has been digitally signed by MALLIKHARJUNA SASTRY PULLE having PAN ALMPP7018E from IP Address 175.101.156.30 on 05/02/2022 05:12:32 PM Dsc Sl.No and issuer 18818725CN=e-Mudhra Sub CA for Class 2 Individual 2014,C=IN,O=eMudhra Consumer Services Limited,OU=Certifying Authority

For K.P.G. & Co
Chartered Accountants
P. Mallikharjuna Sastry
(P. Mallikharjuna Sastry)
Partner M. no. 215023
Firm Reg No. 012136S

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Acknowledgement Number:583795041300922 **Date of filing:30-Sep-2022**

INDIAN INCOME TAX RETURN ACKNOWLEDGEMENT

Assessment Year 2022-23

[Where the data of the Return of Income in Form ITR-1 (SAHAJ), ITR-2, ITR-3, ITR-4(SUGAM), ITR-5, ITR-6, ITR-7 filed and verified]

(Please see Rule 12 of the Income-tax Rules, 1962)

PAN	AVSPB0729L		
Name	RAMA DEVI BOLLA		
Address	Plot No 41A , Sarpavaram , Industrial Park , KAKINADA , 02-Andhra Pradesh , 91-India , 533005		
Status	Individual	Form Number	ITR-3
Filed u/s	139(1) Return filed on or before due date	e-Filing Acknowledgement Number	583795041300922

Taxable Income and Tax details

Current Year business loss, if any	1	0
Total Income		16,47,120
Book Profit under MAT, where applicable	2	0
Adjusted Total Income under AMT, where applicable	3	0
Net tax payable	4	2,40,901
Interest and Fee Payable	5	5,548
Total tax, interest and Fee payable	6	2,46,449
Taxes Paid	7	2,50,616
(+)Tax Payable (-)Refundable (6-7)	8	(-) 4,170

Distribution Tax details

Dividend Tax Payable	9	0
Interest Payable	10	0
Total Dividend tax and interest payable	11	0
Taxes Paid	12	0
(+)Tax Payable (-)Refundable (11-12)	13	0

Accreted Income & Tax Detail

Accreted Income as per section 115TD	14	0
Additional Tax payable u/s 115TD	15	0
Interest payable u/s 115TE	16	0
Additional Tax and interest payable	17	0
Tax and interest paid	18	0
(+)Tax Payable (-)Refundable (17-18)	19	0

This return has been digitally signed by RAMA DEVI BOLLA in the capacity of Self having PAN AVSPB0729L from IP address 175.101.156.30 on 30-Sep-2022

DSC Sl. No. & Issuer 5560772 & 22093572CN=e-Mudhra Sub CA for Class 3 Individual 2014,OU=Certifying Authority,O=eMudhra Consumer Services Limited,C=IN

System Generated Barcode/QR Code

AVSPB0729L035837950413009225E4F859A8CACEA3199527B7AB4A4CE609FCBB19F

DO NOT SEND THIS ACKNOWLEDGEMENT TO CPC, BENGALURU

Ramy

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A.Y. 2022-2023

Name : BOLLA RAMA DEVI
Father's Name : Surya Satyanarayana
Address : Plot No. 41A
Sarpavaram
Industrial Park KAKINADA - 533 005

Previous Year : 2021-2022
PAN : AVSPB 0729 L

Status : Individual
Date of Birth : 21-May-1981
Aadhaar No. : 3961 4545 6733
Opted Tax u/s 115BAC

Resident

Statement of Income

		Rs.	Rs.	Rs.
■ **Income from House Property**				
Self occupied properties				
Property-1: 1	1			
Income chargeable under the head "House Property"				0
■ **Profits and gains of Business or Profession**				
Business-1				
Net Profit Before Tax as per P & L a/c			15,03,681	
Add: Inadmissible expenses & Income not included				
Depreciation debited to P & L a/c			6,75,002	
Adjusted Profit of Business-1			21,78,683	
Total income of Business and Profession			21,78,683	
Less: Depreciation as per IT Act	5		6,75,002	
Income chargeable under the head "Business and Profession"				15,03,681
■ **Income from other sources**				
Interest income	2		1,43,438	
Income chargeable under the head "other sources"				1,43,438
■ **Total Income**				16,47,119
Total income rounded off u/s 288A				16,47,120
Tax on total income				2,31,636
Add: Cess				9,265
Tax with cess				2,40,901
Net Tax				2,40,901
TDS	3		1,90,616	
Total prepaid taxes				1,90,616
Balance Tax				50,285
Interest u/s 234B			3,012	
Interest u/s 234C			2,536	5,548
Net tax payable				55,833
Self-assessment tax paid	4			60,000
■ **Refund Due**				4,170

Schedule 1

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Details of the property

1. KAKINADA EAST GODAVARI 533002 Andhra pradesh

Details of Owner

Owner	Self
Assessee's share in the property (%)	100

Schedule 2

Interest income (other than NSC/KVP interest)

Name of the Bank	Interest
Interest on Time Deposits	
Canara Bank	1,43,438

Schedule 3

TDS as per Form 16A

Deductor, TAN	TDS deducted	TDS claimed in current year	Gross receipt offered
Canara Bank Ap. TAN- HYDC09674A	14,344	14,344	1,43,438
New & Renewable Energy Development Corporation Of Andhra Pradesh Limited. TAN- HYDN00008B	1,75,211	1,75,211	98,69,444
Senior Accounts Officer B And R Apspdcl Tirupati, TAN- VPNS10781B	50	50	48,820
The Kakinada Cooperative Town Bank Limited No C750 Kakinada, TAN- VPNT00321G	831	831	83,083
Total	1,90,436	1,90,436	########

Tax collected at source

Collector & TAN	TCS collected	TCS claimed in current year	Expenditure as per 26AS
Hari Narayan Gupta. TAN- JBPH00970E	180	180	1,79,819
Grand Total	1,90,616	1,90,616	

Schedule 4

Self Assessment tax paid

Name of the Bank and BSR Code	Date of deposit	Challan Sl.no.	Amount paid
Canara Bank - 0242465	30-Sep-22	00590	60,000

Bank A/c for Refund CANARA BANK 32501250002078 IFSC: CNRB0013258

✓ Rama

[BOLLA RAMA DEVI]

Date : 30-Sep-2022

Place : KAKINADA

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BOLLA RAMADEVI
KAKINADA

Profit & Loss A/c
1-Apr-2021 to 31-Mar-2022

Particulars	1-Apr-2021 to 31-Mar-2022		Particulars	1-Apr-2021 to 31-Mar-2022	
Opening Stock		2,60,30,000.00	**Sales Accounts**		6,80,24,753.27
Closing Stock	2,60,30,000.00		Sales	6,80,24,753.27	
Purchase Accounts		4,57,01,698.52	Closing Stock		1,21,14,000.00
Purchase	4,57,01,698.52		*Closing Stock*	1,21,14,000.00	
Gross Profit c/o		*84,07,054.75*			
		8,01,38,753.27			8,01,38,753.27
Indirect Expenses		70,75,146.32	Gross Profit b/f		*84,07,054.75*
Bank Interest & Charges	26,38,096.85		**Indirect Incomes**		1,71,773.52
Elelctricity Charges	1,71,675.78		*Interest on Fdr*	1,43,483.00	
Office Maintenance	62,841.00		*Interest on Gold Bonds*	1,875.52	
Printing & Stationery	96,676.20		*Interest on R D*	22,608.00	
Repairs & Maintenance	1,54,779.83		*Interest on Sb*	3,807.00	
Salaries & Staff Welfare	25,72,714.81				
Taxes & Liscence	88,497.00				
Travelling Expenses	87,813.50				
Vehicle Maintenance	62,694.99				
Commision Paid	63,451.52				
Consultant Fee	28,600.00				
Depriciation	6,75,002.00				
Insurance	50,950.00				
NREDCAP Tender Expenses	1,82,601.00				
Transportation Charges	1,38,751.84				
Nett Profit		*15,03,681.95*			
Total		85,78,828.27	**Total**		85,78,828.27

UDIN : 22215023AZFJWU5111

For K.P.G. & Co
Chartered Accountants
P Mallikharjuna Sastry
(P. Mallikharjuna Sastry)
Partner M. no. 215023
Firm Reg No. 012136S

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BOLLA RAMADEVI
KAKINADA

Balance Sheet
1-Apr-2021 to 31-Mar-2022

Liabilities	as at 31-Mar-2022		Assets	as at 31-Mar-2022	
Capital Account		**1,90,10,843.52**	**Fixed Assets**		**1,74,72,244.23**
			Plant & Machinary	3,43,435.00	
Loans (Liability)		**3,25,36,010.82**	15% Block	2,27,328.78	
Bank OD A/c	1,55,30,789.54		A/c Purchase	1,95,451.00	
Secured Loans	68,66,752.48		Aquaguard Reviva Ro	11,601.70	
Unsecured Loans	1,01,38,468.80		Bulding Constraction	35,46,455.95	
			Cc Cameras	16,500.00	
Current Liabilities		**1,19,80,321.04**	Cell Phones	40,893.00	
Sundry Creditors	1,19,80,321.04		Computer	4,739.15	
			Electrical Cycle	20,000.00	
Profit & Loss A/c			Ertiga Smart Hybrid Zdi Car	8,71,655.45	
Opening Balance			Factory Building	46,62,178.20	
Current Period	15,03,681.95		Furniture A/c	1,36,784.00	
Less: Transferred	15,03,681.95		Hero Hf Delux-4861	59,466.00	
			Hero Hf Delux-4910	59,467.00	
			Hero Hf Delux-4925	59,467.00	
			Inverter Maintance	11,862.00	
			Land & Buildings	70,89,262.00	
			Laptop Purchase	16,799.00	
			Microwave Generator	8,999.00	
			Waaree Batery	47,790.00	
			Water Purifier	38,110.00	
			Wifi Router	4,000.00	
			Investments		**6,19,080.00**
			Gold Bonds	6,19,080.00	
			Current Assets		**4,54,35,851.15**
			Closing Stock	1,21,14,000.00	
			Deposits (Asset)	25,21,276.00	
			Loans & Advances (Asset)	7,20,400.00	
			Sundry Debtors	2,91,38,013.34	
			Cash-in-hand	4,97,086.44	
			Bank Accounts	2,53,187.94	
			Tcs	1,501.43	
			TDS Receivable 2021-22	1,90,386.00	
Total		**6,35,27,175.38**	**Total**		**6,35,27,175.38**

UDIN: 22215023AZFJWU5111

For K.P.G. & Co
Chartered Accountants
P. Malli Sastry
(P. Mallikharjuna Sastry)
Partner M. no. 215023
Firm Reg No. 012136S

Ravi

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Acknowledgement Number:339591221290923 **Date of filing : 29-Sep-2023**

INDIAN INCOME TAX RETURN ACKNOWLEDGEMENT

[Where the data of the Return of Income in Form ITR-1(SAHAJ), ITR-2, ITR-3, ITR-4(SUGAM), ITR-5, ITR-6, ITR-7 filed and verified]
(Please see Rule 12 of the Income-tax Rules, 1962)

Assessment Year 2023-24

PAN	AVSPB0729L		
Name	RAMA DEVI BOLLA		
Address	Plot No. 41A, Sarpavaram , Industrial Park , Kakinada , 02-Andhra Pradesh, 91-INDIA, 533005		
Status	Individual	Form Number	ITR-3
Filed u/s	139(1)- On or Before due date	e-Filing Acknowledgement Number	339591221290923

Taxable Income and Tax Details	Current Year business loss, if any	1	0
	Total Income	2	20,77,090
	Book Profit under MAT, where applicable	3	0
	Adjusted Total Income under AMT, where applicable	4	0
	Net tax payable	5	3,75,052
	Interest and Fee Payable	6	0
	Total tax, interest and Fee payable	7	3,75,052
	Taxes Paid	8	4,48,153
	(+) Tax Payable /(-) Refundable (7-8)	9	(-) 73,100
Accreted Income and Tax Detail	Accreted Income as per section 115TD	10	0
	Additional Tax payable u/s 115TD	11	0
	Interest payable u/s 115TE	12	0
	Additional Tax and interest payable	13	0
	Tax and interest paid	14	0
	(+) Tax Payable /(-) Refundable (13-14)	15	(+) 0

This return has been digitally signed by RAMA DEVI BOLLA in the capacity of Self having PAN AVSPB0729L from IP address 175.101.156.49 on 29-Sep-2023 13:28:18 DSC Sl.No & Issuer 5560772 & 541008805839096962 7CN=PantaSign Sub CA for DSC 2022,OU=Certifying Authority,O=Pantagon Sign Securities Pvt. Ltd.,C=IN

System Generated Barcode/QR Code

AVSPB0729L03339591221290923c0d02127b38145bd83c0d5f8d7d0a2e90a09af93

DO NOT SEND THIS ACKNOWLEDGEMENT TO CPC, BENGALURU

A.Y. 2023-2024

Name : Rama Devi Bolla
Father's Name : Surya Satyanarayana
Address : Plot No. 41A
Sarpavaram
Industrial Park, Kakinada - 533 005

P. Y. : 2022-2023
P.A.N. : AVSPB 0729 L
D.O.B. : 21-May-1981
Status : Individual

Aadhaar: 3961 4545 6733
Opted Tax u/s 115BAC

Resident

Statement of Income

	Sch.No	Rs.	Rs.	Rs.
■ Profits and gains of Business or Profession				
Business-1				
Net Profit Before Tax as per P & L a/c			20,77,088	
Less: Deductible expenditure & income to be excluded				
Incomes considered separately	1		1,48,950	
Adjusted Profit of Business-1			19,28,138	
Income chargeable under the head "Business and Profession"				19,28,138
■ Income from other sources				
Interest income	2			1,48,950
				20,77,088
■ Total Income				20,77,090
Total income rounded off u/s 288A				3,60,627
Tax on total income				14,425
Add: Cess				3,75,052
Tax with cess				4,48,153
TDS / TCS	3			73,100
■ Refund Due				

Schedule 1

	Amount
Income considered under other heads	
Interest received	1,48,950
Grand total	1,48,950

Schedule 2
Interest income (other than NSC/KVP interest)

Name of the Bank	Interest
Interest on Time Deposits	
Canara Bank	1,42,083
Interest on Savings a/c	
State Bank of India	6,867
Taxable Interest	1,48,950

D.P.R. SWAMY & ASSOCIATES CHARTERED ACCOUNTANTS KAKINADA

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Schedule 3

TDS as per Form 16A

Deductor, TAN	TDS deducted	TDS claimed in current year	Gross receipt offered
Canara Bank Ap, TAN- HYDC09674A	14,207	14,207	1,42,083
Jntu College Of Engineering, TAN- VPNJ00181G	797	797	39,864
New & Renewable Energy Development Corporation Of Andhra Pradesh Limited, TAN- HYDN00008B	3,36,850	3,36,850	1,68,42,521
Union Bank Of India Ro Vijaywada, TAN- HYDU02674A	57,147	57,147	29,29,410
Yogi Vemana University, TAN- HYDY00285F	39,152	39,152	19,57,605
Total	4,48,153	4,48,153	2,19,11,483

Bank A/c for Refund: Canara bank 32501250002078 IFSC: CNRB0013258

Date : 29-Sep-2023
Place : Kakinada

(RAMA DEVI BOLLA)

D.P.R. SWAMY & ASSOCIATES CHARTERED ACCOUNTANTS KAKINADA

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SOLAR SYSTEMS 2022-23- (From 1-Apr-2022)

Profit & Loss A/c

1-Apr-2022 to 31-Mar-2023

Particulars	1-Apr-2022 to 31-Mar-2023		Particulars	1-Apr-2022 to 31-Mar-2023	
Opening Stock		61,11,436.00	**Sales Accounts**		6,23,96,663
Closing Stock	*61,11,436.00*		Sales	*6,23,96,663.77*	
Purchase Accounts		6,11,76,359.52	Closing Stock		96,45,275
Purchase	*6,11,76,359.52*		*Closing Stock*	*96,45,275.00*	
Gross Profit c/o		***47,54,143.25***			
		7,20,41,938.77			7,20,41,938
Indirect Expenses		36,06,148.72	Gross Profit b/f		***47,54,143***
Bank Interest & Charges	*26,27,836.70*		**Indirect Incomes**		1,53,121
Salaries & Staff Welfare	*2,93,263.00*		*Income Tax Refund*	*4,170.00*	
Apiic Propriety Tax	*10,632.70*		*Interest on Fdr*	*1,42,083.41*	
Application Fee (Nredcap)	*79,500.00*		*Interest on Sb*	*6,867.76*	
Audit Fee	*20,000.00*				
Car Maintance	*10,497.00*				
Certification Charges	*61,330.00*				
Electricity Charges	*1,61,064.29*				
General Maintance	*87,955.00*				
Inspection Fee	*5,310.00*				
Internet Charges	*8,128.00*				
NSIC Registration Fee	*5,310.00*				
Office Rent	*58,800.00*				
Petrol and Disel	*16,207.07*				
Telephone Charges	*8,725.00*				
Tender Expenses	*24,700.00*				
Transportation Charges	*93,500.00*				
Traveling Charges	*33,389.96*				
Nett Profit		***13,01,115.70***			
Total		**49,07,264.42**	**Total**		**49,07,264**

D.P.R. SWAMY & ASSOCIATES CHARTERED ACCOUNTANTS KAKINADA

For M/s. D.P.R. SWAMY & ASSOCIATES
CHARTERED ACCOUNTANTS
PROPRIETOR
D.P.R. SWAMY, B.Com.,FCA
MEMBERSHIP NO. 202913

For SOLAR SYSTEMS
PROPRIETOR

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SOLAR SYSTEMS 2022-23- (From 1-Apr-2022)

KAKINADA

Balance Sheet

1-Apr-2022 to 31-Mar-2023

Liabilities	as at 31-Mar-2023		Assets	as at 31-Mar-2023	
Capital Account		**2,91,04,729.71**	**Fixed Assets**		**1,82,63,251.47**
B. RAMA DEVI (Capital)	*2,91,04,729.71*		Plant & Machinary	*10,66,942.24*	
			15% Block	*2,27,328.78*	
Loans (Liability)		**2,42,90,133.34**	*A/c Purchase*	*1,95,451.00*	
Bank OD A/c	*1,81,92,605.96*		*Aquaguard Reviva Ro*	*11,601.70*	
Secured Loans	*50,35,527.38*		*Bulding Constraction*	*35,46,455.95*	
Unsecured Loans	*10,62,000.00*		*Cc Cameras*	*16,500.00*	
			Cell Phones	*40,893.00*	
Current Liabilities		**1,19,61,291.52**	*Computer*	*4,739.15*	
Sundry Creditors	*1,19,61,291.52*		*Electrical Cycle*	*20,000.00*	
			Ertiga Smart Hybrid Zdi Car	*8,71,655.45*	
Profit & Loss A/c			*Factory Building*	*46,62,178.20*	
Opening Balance			*Furniture A/c*	*2,04,284.00*	
Current Period	*13,01,115.70*		*Hero Hf Delux-4861*	*59,466.00*	
Less: Transferred	*13,01,115.70*		*Hero Hf Delux-4910*	*59,467.00*	
			Hero Hf Delux-4925	*59,467.00*	
			Inverter Maintance	*11,862.00*	
			Land & Buildings	*70,89,262.00*	
			Laptop Purchase	*16,799.00*	
			Microwave Generator	*8,999.00*	
			Waaree Batery	*47,790.00*	
			Water Purifier	*38,110.00*	
			Wifi Router	*4,000.00*	
			Investments		**33,73,537.94**
			Gold Bonds	*6,18,142.24*	
			Rd	*80,100.00*	
			Smart Automation	*26,75,295.70*	
			Current Assets		**4,37,19,365.16**
			Closing Stock	*96,45,275.00*	
			Deposits (Asset)	*28,10,851.41*	
			Loans & Advances (Asset)	*54,39,417.97*	
			Sundry Debtors	*2,47,19,763.75*	
			Cash-in-hand	*4,44,292.90*	
			Bank Accounts	*2,12,408.13*	
			Tds Receivable 2022-23	*4,47,356.00*	
Total		**6,53,56,154.57**	**Total**		**6,53,56,154.57**

D.P.R. SWAMY & ASSOCIATES CHARTERED ACCOUNTANTS KAKINADA

For M/s. D.P.R. SWAMY & ASSOCIATES
CHARTERED ACCOUNTANTS
PROPRIETOR
D.P.R. SWAMY, B.Com.,FCA
MEMBERSHIP NO. 202913

For SOLAR SYSTEMS
PROPRIETOR

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FORM NO. 3CB

[See rule 6G(1)(b)]

Audit report under section 44AB of the Income-tax Act 1961, in the case of a person referred to in clause (b) of sub-rule (1) of rule 6G

1. We have examined the balance sheet as on, 31-Mar-2023, and the profit & loss account for the period beginning from 01-Apr-2022 to ending on 31-Mar-2023, attached herewith, of

   Rama Devi Bolla

   Plot No. 41A, Sarpavaram, Industrial Park, Apiic S.O, Kakinada, EAST GODAVARI, Andhra pradesh, 533005, India

   PAN: AVSPB0729L, Aadhaar: 396145456733

2. We certify that the balance sheet and the profit & loss account are in agreement with the books of account maintained at the head office at *Kakinada* and 1 branches.

3. (a) We report the following observations/comments/discrepancies/inconsistencies; if any: NIL

   (b) Subject to above,-

   (A) We have obtained all the information and explanations which, to the best of our knowledge and belief, were necessary for the purposes of the audit.

   (B) In our opinion, proper books of account have been kept by the head office and branches of the assessee so far as appears from our examination of the books.

   (C) In our opinion and to the best of our information and according to the explanations given to us, the said accounts, read with notes thereon, if any, give a true and fair view:-

   (i) in the case of the balance sheet, of the state of the affairs of the assessee as at 31-Mar-2023; and

   (ii) in the case of the profit & loss account of the Profit of the assessee for the year ended on that date.

4. The statement of particulars required to be furnished under section 44AB is annexed herewith in Form No. 3CD.

5. In our opinion and to the best of our information and according to explanations given to us, the particulars given in the said Form No. 3CD are true and correct subject to following observations/qualifications, if any: NIL

For Dpr Swamy & Associates

(Signature and stamp/seal of the signatory)

Place: **KAKINADA**

Date: **29-Sep-2023**

UDIN: 23202913BGXAAP5305

Name of the signatory: **DASARA PATTABHI RAMASWAMY**

Proprietor, M. No. 202913

Firm reg. No. 006485S

Full Address: 10-5-10, saty soudha aprts, ramaraopet, Kakinada (Urban), Ramaraopet S.O, KAKINADA, EAST GODAVARI, Andhra pradesh, 533004, India

D.P.R. SWAMY & ASSOCIATES CHARTERED ACCOUNTANTS KAKINADA

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FORM NO. 3CD

[See rule 6G(2)]

Statement of particulars required to be furnished under section 44AB of the Income tax Act, 1961

PART - A

1	Name of the assessee	: **Rama Devi Bolla**
2	Address	: **Plot No. 41A, Sarpavaram, Industrial Park, Apiic S.O, Kakinada, EAST GODAVARI, Andhra pradesh, 533005, India**
3	Permanent Account Number or Aadhaar Number	: **PAN: AVSPB0729L, Aadhaar: 396145456733**
4	Whether the assessee is liable to pay indirect tax like excise duty, service tax, sales tax, goods and services tax, customs duty, etc. if yes, please furnish the registration number or GST number or any other identification number allotted for the same	: **Yes, As per sch.4**
5	Status	: **INDIVIDUAL**
6	Previous year	: **01-Apr-2022** to **31-Mar-2023**
7	Assessment year	: **2023-24**
8	Indicate the relevant clause of section 44AB under which the audit has been conducted	: **44AB(a)**
8a	Whether the assessee has opted for taxation under section 115BA/115BAA/115BAB/115BAC/ 115BAD?	: **Yes - 115BAC**

PART - B

9	(a)	If firm or Association of Persons, indicate names of partners/members and their profit sharing ratios. In case of AOP, whether shares of members are indeterminate or unknown?	Not Applicable
	(b)	If there is any change in the partners or members or in their profit sharing ratio since the last date of the preceding year, the particulars of such change.	Not Applicable
10	(a)	Nature of business or profession (if more than one business or profession is carried on during the previous year, nature of every business or profession).	As per sch.10
	(b)	If there is any change in the nature of business or profession, the particulars of such change.	
11	(a)	Whether books of account are prescribed under section 44AA, if yes, list of books so prescribed.	Yes, As per sch.11a
	(b)	List of books of account maintained and the address at which the books of accounts are kept. (In case books of account are maintained in a computer system, mention the books of account generated by such computer system. If the books of accounts are not kept at one location, please furnish the addresses of locations along with the details of books of accounts maintained at each location.)	As per sch.11b
	(c)	List of books of account and nature of relevant documents examined.	As per sch.11c
12	Whether the profit and loss account includes any profits and gains assessable on presumptive basis, if yes, indicate the amount and the relevant sections (44AD, 44ADA, 44AE, 44AF, 44B, 44BB, 44BBA, 44BBB, Chapter XII-G, First Schedule or any other relevant section.)		No
13	(a)	Method of accounting employed in the previous year.	Mercantile system
	(b)	Whether there had been any change in the method of accounting employed vis-a-vis the method employed in the immediately preceding previous year.	No
	(c)	If answer to (b) above is in the affirmative, give details of such change, and	Not Applicable

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	the effect thereof on the profit or loss.		
	Serial number / Particulars / Increase in profit (Rs.) / Decrease in profit (Rs.)		
	(d) Whether any adjustment is required to be made to the profits or loss for complying with the provisions of income computation and disclosure standards notified under section 145 (2)		No
	(e) If answer to (d) above is in the affirmative, give details of such adjustments		
		Increase in profit (Rs.) / Decrease in profit (Rs.) / Net Effect (Rs.)	
	ICDS I - Accounting Policies ICDS II - Valuation of Inventories ICDS III - Construction Contracts ICDS IV - Revenue Recognition ICDS V - Tangible Fixed Assets ICDS VI - Changes in Foreign Exchange Rates ICDS VII - Governments Grants ICDS VIII – Securities ICDS IX - Borrowing Costs ICDS X - Provisions, Contingent Liabilities and Contingent Assets		Not Applicable
	(f) Disclosure as per ICDS: ICDS I - Accounting Policies ICDS II - Valuation of Inventories ICDS III - Construction Contracts ICDS IV - Revenue Recognition ICDS V - Tangible Fixed Assets ICDS VII - Governments Grants ICDS IX - Borrowing Costs ICDS X - Provisions, Contingent Liabilities and Contingent Assets		NIL
14	(a) Method of valuation of closing stock employed in the previous year.		Lower of Cost/Market rate
	(b) In case of deviation from the method of valuation prescribed under section 145A, and the effect thereof on the profit or loss, please furnish		No
	Serial number / Particulars / Increase in profit (Rs.) / Decrease in profit (Rs.)		
15	Give the following particulars of the capital asset converted into stock-in-trade: - (a) Description of capital asset; (b) Date of acquisition; (c) Cost of acquisition; (d) Amount at which the asset is converted into stock-in-trade.		NIL
16	Amounts not credited to the profit and loss account, being,-		
	(a) the items falling within the scope of section 28;		NIL
	(b) the pro forma credits, drawbacks, refund of duty of customs or excise or service tax, or refund of sales tax or value added tax, where such credits, drawbacks or refunds are admitted as due by the authorities concerned;		NIL
	(c) escalation claims accepted during the previous year;		NIL
	(d) any other item of income;		NIL
	(e) capital receipt, if any.		NIL
17	Where any land or building or both is transferred during the previous year for a consideration less than value adopted or assessed or assessable by any authority of a State Government referred to in section 43CA or 50C, please furnish		NIL
	Details of property / Consideration received or accrued / Value adopted or assessed or assessable		
18	Particulars of depreciation allowable as per the Income-tax Act, 1961 in respect of each asset or block of assets, as the case may be, in the following form :-		NIL

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	(a) Description of asset/block of assets. (b) Rate of depreciation. (c) Actual cost or written down value, as the case may be. (d) Additions/deductions during the year with dates; in the case of any addition of an asset, date put to use; including adjustments on account of— (i) Central Value Added Tax credits claimed and allowed under the Central Excise Rules,1944, in respect of assets acquired on or after 1st March, 1994, (ii) change in rate of exchange of currency, and (iii) subsidy or grant or reimbursement, by whatever name called. (e) Depreciation allowable. (f) Written down value at the end of the year.	
19	Amounts admissible under sections- a) 32AD, (b) 33AB, (c) 33ABA, (d) 35(1)(i), (e) 35(1)(ii), (f) 35(1)(iia), (g) 35(1)(iii), (h) 35(1)(iv), (i) 35(2AA), (j) 35(2AB), (k) 35ABA, (l) 35ABB, (m)35AD, (n)35CCA, (o)35CCC, (p) 35CCD, (q) 35D, (r) 35DD, (s)35DDA, (t)35E: Amount debited to profit and loss account Amounts admissible as per the provisions of the Income Tax Act, 1961 and also fulfils the conditions, if any specified under the relevant provisions of Income Tax Act, 1961 or Income Tax Rules,1962 or any other guidelines, circular, etc., issued in this behalf.	NIL
20	(a) Any sum paid to an employee as bonus or commission for services rendered, where such sum was otherwise payable to him as profits or dividend. [Section 36(1)(ii)]	NIL
	(b) Details of contributions received from employees for various funds as referred to in section 36(1)(va):	NIL

Serial number	Nature of fund	Sum received from employees	Due date for payment	The actual Amount paid	The actual date of payment to the concerned authorities

21	(a) Please furnish the details of amounts debited to the profit and loss account, being in the nature of - Capital expenditure Personal expenditure Advertisement expenditure in any souvenir, brochure, tract, pamphlet or the like, published by a political party Expenditure incurred at clubs being entrance fees and subscriptions Expenditure incurred at clubs being cost for club services and facilities used Expenditure by way of penalty or fine for violation of any law for the time being force Expenditure by way of any other penalty or fine not covered above Expenditure incurred for any purpose which is an offence or which is prohibited by law	NIL
	(b) Amounts inadmissible under section 40(a):- (i) as payment to non-resident referred to in sub-clause (i) (A) Details of payment on which tax is not deducted: (I) date of payment (II) amount of payment (III) nature of payment (IV) name and address of the payee	NIL

D.P.R. SWAMY & ASSOCIATES CHARTERED ACCOUNTANTS KAKINADA

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(B)	Details of payment on which tax has been deducted but has not been paid during the previous year or in the subsequent year before the expiry of time prescribed under section 200(1) (I) date of payment (II) amount of payment (III) nature of payment (IV) name and address of the payee (V) amount of tax deducted	NIL
(ii)	as payment referred to in sub-clause (ia)	
(A)	Details of payment on which tax is not deducted: (I) date of payment (II) amount of payment (III) nature of payment (IV) name and address of the payee	NIL
(B)	Details of payment on which tax has been deducted but has not been paid on or before the due date specified in sub- section (1) of section 139. (I) date of payment (II) amount of payment (III) nature of payment (IV) name and address of the payee (V) amount of tax deducted (VI) amount out of (V) deposited, if any	NIL
(iii)	as payment referred to in sub-clause (ib)	
(A)	Details of payment on which levy is not deducted: (I) date of payment (II) amount of payment (III) nature of payment (IV) name and address of the payee	NIL
(B)	Details of payment on which levy has been deducted but has not been paid on or before the due date specified in sub- section (1) of section 139. (I) date of payment (II) amount of payment (III) nature of payment (IV) name and address of the payer (V) amount of levy deducted (VI) amount out of (V) deposited, if any	NIL
(iv)	under sub-clause (ic) [Wherever applicable]	NIL
(v)	under sub-clause (iia)	NIL
(vi)	under sub-clause (iib)	NIL
(vii)	under sub-clause (iii) (A) date of payment (B) amount of payment (C) name and address of the payee	NIL
(viii)	under sub-clause (iv)	NIL
(ix)	under sub-clause (v)	NIL
(c)	Amounts debited to profit and loss account being, interest, salary, bonus, commission or remuneration inadmissible under section 40(b)/40(ba) and computation thereof;	Not Applicable
(d)	Disallowance/deemed income under section 40A(3):	

D.P.R. SWAMY & ASSOCIATES CHARTERED ACCOUNTANTS NAKINADA

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	(A)	On the basis of the examination of books of account and other relevant documents/evidence, whether the expenditure covered under section 40A(3) read with rule 6DD were made by account payee cheque drawn on a bank or account payee bank draft. If not, please furnish the details:	Yes

Serial number	Date of payment	Nature of payment	Amount	Name and Permanent Account Number or Aadhaar Number of the payee, if available

	(B)	On the basis of the examination of books of account and other relevant documents/evidence, whether the payment referred to in section 40A(3A) read with rule 6DD were made by account payee cheque drawn on a bank or account payee bank draft If not, please furnish the details of amount deemed to be the profits and gains of business or profession under section 40A(3A);	Yes

Serial number	Date of payment	Nature of payment	Amount	Name and Permanent Account Number or Aadhaar Number of the payee, if available

	(e)	provision for payment of gratuity not allowable under section 40A(7);	NIL
	(f)	any sum paid by the assessee as an employer not allowable under section 40A(9);	NIL
	(g)	particulars of any liability of a contingent nature;	NIL
	(h)	amount of deduction inadmissible in terms of section 14A in respect of the expenditure incurred in relation to income which does not form part of the total income;	NIL
	(i)	amount inadmissible under the proviso to section 36(1)(iii)	NIL
22		Amount of interest inadmissible under section 23 of the Micro, Small and Medium Enterprises Development Act, 2006.	NIL
23		Particulars of payments made to persons specified under section40A (2)(b).	NIL
24		Amounts deemed to be profits and gains under section 32AC or 32AD or 33AB or 33ABA or 33AC.	NIL
25		Any amount of profit chargeable to tax under section 41 and computation thereof.	NIL
26		In respect of any sum referred to in clauses (a), (b), (c), (d), (e), (f) or (g) of section 43B, the liability for which:-	NIL
	(A)	pre-existed on the first day of the previous year but was not allowed in the assessment of any preceding previous year and was	
		(a) paid during the previous year;	
		(b) not paid during the previous year.	
	(B)	Was incurred in the previous year and was	
		(a) paid on or before the due date for furnishing the return of income of the previous year under section 139(1);	
		(b) not paid on or before the aforesaid date.	
		(State whether sales tax, customs duty, excise duty or any other indirect tax, levy, cess, impost, etc., is passed through the profit and loss account.)	No
27	(a)	Amount of Central Value Added Tax credits/ Input Tax Credit(ITC) availed of or utilised during the previous year and its treatment in the profit and loss account and treatment of outstanding Central Value Added Tax credits/ Input Tax Credit(ITC) in the accounts.	NIL
	(b)	Particulars of income or expenditure of prior period credited or debited to the profit and loss account.	NIL
28		Whether during the previous year the assessee has received any property, being share of a company not being a company in which the public are substantially interested, without consideration or for inadequate consideration as referred to in section 56(2)(viia), if yes, please furnish the details of the same.	Not Applicable
29		Whether during the previous year the assessee received any consideration for issue of shares which exceeds the fair market value of the shares as referred to in section 56(2)(viib), if yes, please furnish the details of the same.	Not Applicable
29A	(a)	Whether any amount is to be included as income chargeable under the head 'Income from other sources' as referred to in section 56(2)(ix)?	No
	(b)	If yes, please furnish the following details:	

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		(i) Nature of income	
		(ii) Amount thereof	
29B	(a)	Whether any amount is to be included as income chargeable under the head 'Income from other sources' as referred to in section 56(2)(x)?	No
	(b)	If yes, please furnish the following details:	
		(i) Nature of income	
		(ii) Amount (in Rs.) thereof	
30		Details of any amount borrowed on hundi or any amount due thereon (including interest on the amount borrowed) repaid, otherwise than through an account payee cheque [Section 69D].	NIL
30A	(a)	Whether primary adjustment to transfer price, as referred to in section 92CE(1), has been made during the previous year?	No
	(b)	If yes, please furnish the following details	
		(i) Under which clause of section 92CE(1) primary adjustment is made?	
		(ii) Amount (in Rs.) of primary adjustment	
		(iii) Whether the excess money available with the associated enterprise is required to be repatriated to India as per the provisions of section 92CE(2)?	
		(iv) If yes, whether the excess money has been repatriated within the prescribed time	
		(v) If no, the amount (in Rs.) of imputed interest income on such excess money which has not been repatriated within the prescribed time	
30B	(a)	Whether the assessee has incurred expenditure during the previous year by way of interest or of similar nature exceeding one crore rupees as referred to in section 94B(1)?	Not Applicable
	(b)	If yes, please furnish the following details:	
		(i) Amount (in Rs.) of expenditure by way of interest or of similar nature incurred	
		(ii) Earnings before interest, tax, depreciation and amortization (EBITDA) during the previous year (in Rs.)	
		(iii) Amount (in Rs.) of expenditure by way of interest or of similar nature as per (i) above which exceeds 30% of EBITDA as per (ii) above	
		(iv) Details of interest expenditure brought forward as per sub-section (4) of section 94B	
		(v) Details of interest expenditure carried forward as per sub-section (4) of section 94B	
30C	(a)	Whether the assessee has entered into an impermissible avoidance arrangement, as referred to in section 96, during the previous year?	No
	(b)	If yes, please specify:-	
		(i) Nature of the impermissible avoidance arrangement:	
		(ii) Amount (in Rs.) of tax benefit in the previous year arising, in aggregate, to all the parties to the arrangement:	
31	(a)	Particulars of each loan or deposit in an amount exceeding the limit specified in section 269SS taken or accepted during the previous year:	NIL
		(i) name, address and Permanent Account Number or Aadhaar Number (if available with the assessee) of the lender or depositor;	
		(ii) amount of loan or deposit taken or accepted;	
		(iii) whether the loan or deposit was squared up during the previous year;	
		(iv) maximum amount outstanding in the account at any time during the previous year;	
		(v) whether the loan or deposit was taken or accepted by cheque or bank draft or use of electronic clearing system through a bank account;	

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	(vi) in case the loan or deposit was taken or accepted by cheque or bank draft, whether the same was taken or accepted by an account payee cheque or an account payee bank draft.	
(b)	Particulars of each specified sum in an amount exceeding the limit specified in section 269SS taken or accepted during the previous year: (i) name, address and Permanent Account Number or Aadhaar Number (if available with the assessee) of the person from whom specified sum is received; (ii) amount of specified sum taken or accepted; (iii) whether the specified sum was taken or accepted by cheque or bank draft or use of electronic clearing system through a bank account; (iv) in case the specified sum was taken or accepted by cheque or bank draft, whether the same was taken or accepted by an account payee cheque or an account payee bank draft. (Particulars at (a) and (b) need not be given in the case of a Government company, a banking company or a corporation established by the Central, State or Provincial Act.)	NIL
(ba)	Particulars of each receipt in an amount exceeding the limit specified in section 269ST, in aggregate from a person in a day or in respect of a single transaction or in respect of transactions relating to one event or occasion from a person, during the previous year, where such receipt is otherwise than by a cheque or bank draft or use of electronic clearing system through a bank account: (i) Name, address and Permanent Account Number or Aadhaar Number (if available with the assessee) of the payer; (ii) Nature of transaction; (iii) Amount of receipt (in Rs.); (iv) Date of receipt;	NIL
(bb)	Particulars of each receipt in an amount exceeding the limit specified in section 269ST, in aggregate from a person in a day or in respect of a single transaction or in respect of transactions relating to one event or occasion from a person, received by a cheque or bank draft, not being an account payee cheque or an account payee bank draft, during the previous year: (i) Name, address and Permanent Account Number or Aadhaar Number (if available with the assessee) of the payer; (ii) Amount of receipt (in Rs.);	NIL
(bc)	Particulars of each payment made in an amount exceeding the limit specified in section 269ST, in aggregate to a person in a day or in respect of a single transaction or in respect of transactions relating to one event or occasion to a person, otherwise than by a cheque or bank draft or use of electronic clearing system through a bank account during the previous year: (i) Name, address and Permanent Account Number or Aadhaar Number (if available with the assessee) of the payee; (ii) Nature of transaction; (iii) Amount of payment (in Rs.); (iv) Date of payment;	NIL
(bd)	Particulars of each payment in an amount exceeding the limit specified in section 269ST, in aggregate to a person in a day or in respect of a single transaction or in respect of transactions relating to one event or occasion to a person, made by a cheque or bank draft, not being an account payee cheque or an account payee bank draft, during the previous year: (i) Name, address and Permanent Account Number or Aadhaar Number (if available with the assessee) of the payee; (ii) Amount of payment (in Rs.);	NIL

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		(Particulars at (ba), (bb), (bc) and (bd) need not be given in the case of receipt by or payment to a Government company, a banking Company, a post office savings bank, a cooperative bank or in the case of transactions referred to in section 269SS or in the case of persons referred to in Notification No. S.O. 2065(E) dated 3rd July, 2017)	
	(c)	Particulars of each repayment of loan or deposit or any specified advance in an amount exceeding the limit specified in section 269T made during the previous year (i) name, address and Permanent Account Number or Aadhaar Number (if available with the assessee) of the payee; (ii) amount of the repayment; (iii) maximum amount outstanding in the account at any time during the previous year; (iv) whether the repayment was made by cheque or bank draft or use of electronic clearing system through a bank account; (v) in case the repayment was made by cheque or bank draft, whether the same was repaid by an account payee cheque or an account payee bank draft.	NIL
	(d)	Particulars of repayment of loan or deposit or any specified advance in an amount exceeding the limit specified in section 269T received otherwise than by a cheque or bank draft or use of electronic clearing system through a bank account during the previous year (i) name, address and Permanent Account Number or Aadhaar Number (if available with the assessee) of the payer; (ii) repayment of loan or deposit or any specified advance received otherwise than by a cheque or bank draft or use of electronic clearing system through a bank account during the previous year.	NIL
	(e)	Particulars of repayment of loan or deposit or any specified advance in an amount exceeding the limit specified in section 269T received by a cheque or bank draft which is not an account payee cheque or account payee bank draft during the previous year:— (i) name, address and Permanent Account Number or Aadhaar Number (if available with the assessee) of the payer; (ii) repayment of loan or deposit or any specified advance received by a cheque or a bank draft which is not an account payee cheque or account payee bank draft during the previous year. (Particulars at (c), (d) and (e) need not be given in the case of a repayment of any loan or deposit or any specified advance taken or accepted from the Government, Government company, banking company or a corporation established by the Central, State or Provincial Act).	NIL
32	(a)	Details of brought forward loss or depreciation allowance, in the following manner, to the extent available:	NIL

Sl No	Assessment Year	Nature of loss/allowance (in rupees)	Amount as returned (in rupees)^	All losses/ allowances not allowed under section 115BAA/115BAC/115BAD	Amount as assessed (give reference to relevant order)	Remarks

	^If the assessed depreciation is less and no appeal pending then take assessed.	
	(b) Whether a change in shareholding of the company has taken place in the previous year due to which the losses incurred prior to the previous year cannot be allowed to be carried forward in terms of section 79	Not Applicable
	(c) Whether the assessee has incurred any speculation loss referred to in section 73 during the previous year, If yes, please furnish the details of the same.	No
	(d) Whether the assessee has incurred any loss referred to in section 73A in respect of any specified business during the previous year, if yes, please furnish details of the same.	NIL
	(e) In case of a company, please state that whether the company is deemed to be carrying on a speculation business as referred in explanation to section 73, if yes, please furnish the details of speculation loss if any incurred during the previous year.	Not Applicable

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33	Section-wise details of deductions, if any, admissible under Chapter VIA or Chapter III (Section 10A, Section 10AA).		NIL
	Section under which deduction is claimed	Amounts admissible as per the provision of the Income Tax Act, 1961 and fulfils the conditions, if any, specified under the relevant provisions of Income Tax Act, 1961 or Income Tax Rules,1962 or any other guidelines, circular, etc, issued in this behalf.	
34	(a) Whether the assessee is required to deduct or collect tax as per the provisions of Chapter XVII-B or Chapter XVII-BB, if yes please furnish: 1 Tax deduction and collection Account Number (TAN) 2 Section 3 Nature of payment 4 Total amount of payment or receipt of the nature specified in column (3) 5 Total amount on which tax was required to be deducted or collected out of (4) 6 Total amount on which tax was deducted or collected at specified rate out of (5) 7 Amount of tax deducted or collected out of (6) 8 Total amount on which tax was deducted or collected at less than specified rate out of (5) 9 Amount of tax deducted or collected on (8) 10 Amount of tax deducted or collected not deposited to the credit of the Central Government out of (7) and (9)		No
	(b) Whether the assessee is required to furnish the statement of tax deducted or tax collected. If yes, please furnish the details:		No
	Tax deduction and collection Account Number (TAN) / Type of Form / Due date for furnishing / Date of furnishing, if furnished / Whether the statement of tax deducted or collected contains information about all details/transactions which are required to be reported. If not, please furnish list of details/transactions which are not reported.		
	(c) Whether the assessee is liable to pay interest under section 201(1A) or section 206C(7). If yes, please furnish:		Not Applicable
	Tax deduction and collection Account Number (TAN)	Amount of interest under section 201(1A)/206C(7) is payable	Amount paid out of column (2) along with date of payment.
35	(a) In the case of a trading concern, give quantitative details of principal items of goods traded: (i) opening Stock; (ii) purchases during the previous year; (iii) sales during the previous year; (iv) closing Stock; (v) shortage/excess, if any.		Not Applicable
	(b) In the case of manufacturing concern, give quantitative details of the principal items of raw materials, finished products and by-products: A Raw materials : (i) opening stock; (ii) Purchases during the previous year; (iii) consumption during the previous year; (iv) sales during the previous year; (v) closing stock; (vi) yield of finished products; (vii) percentage of yield; (viii) shortage/excess, if any.		Not Applicable
	B Finished products/By-products : (i) opening stock;		Not Applicable

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		(ii) purchases during the previous year; (iii) quantity manufactured during the previous year; (iv) sales during the previous year; (v) closing stock; (vi) shortage/excess, if any.	
36A	(a)	Whether the assessee has received any amount in the nature of dividend as referred to in section 2(22)(e)?	No
	(b)	If yes, please furnish the following details: (i) Amount received (in Rs.) (ii) Date of receipt	
37		Whether any cost audit was carried out, if yes, give the details, if any, of disqualification or disagreement on any matter/item/value/quantity as may be reported/identified by the cost auditor.	NA
38		Whether any audit was conducted under the Central Excise Act, 1944, if yes, give the details, if any, of disqualification or disagreement on any matter/item/value/quantity as may be reported/identified by the auditor.	NA
39		Whether any audit was conducted under section 72A of the Finance Act,1994 in relation to valuation of taxable services, if yes, give the details, if any, of disqualification or disagreement on any matter/item/value/quantity as may be reported/identified by the auditor.	NA
40		Details regarding turnover, gross profit, etc., for the previous year and preceding previous year: 1. Total turnover of the assessee 2. Gross profit/turnover 3. Net profit/turnover 4. Stock-in-trade/turnover 5. Material Consumed/finished goods produced (The details required to be furnished for principal items of goods traded or manufactured or services rendered)	As per sch.40
41		Please furnish the details of demand raised or refund issued during the previous year under any tax laws other than Income Tax Act, 1961 and Wealth tax Act, 1957 along with details of relevant proceedings.	NIL
42	(a)	Whether the assessee is required to furnish statement in Form No.61 or Form No. 61A or Form No. 61B?	No
	(b)	If yes, please furnish:	

Income-tax Department Reporting Entity Identification Number	Type of Form	Due date for furnishing	Date of furnishing, if furnished	Whether the Form contains information about all details/ transactions which are required to be reported. If not, please furnish list of the details/transactions which are not reported.

43	(a)	Whether the assessee or its parent entity or alternate reporting entity is liable to furnish the report as referred to in section 286(2)	No
	(b)	if yes, please furnish the following details:	
		(i) Whether report has been furnished by the assessee or its parent entity or an alternate reporting entity	
		(ii) Name of parent entity	
		(iii) Name of alternate reporting entity (if applicable)	
		(iv) Date of furnishing of report	
	(c)	if not due, Expected date of filing	
44		Break-up of total expenditure of entities registered or not registered under the GST:	

Particulars	Total amount of	Expenditure in respect of entities registered under GST	Expenditure relating to	
				Yes, As per Sch.44

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		Expenditure incurred during the year	Relating to goods or services exempt from GST	Relating to Entities falling under composition scheme	Relating to other registered entities	Total payment to registered entities	entities not registered under GST

For Dpr Swamy & Associates

(Signature and stamp/seal of the signatory)

Place: KAKINADA

Date: **29-Sep-2023**

Name of the signatory: **DASARA PATTABHI RAMASWAMY**

Proprietor, M. No. 202913

Firm reg. No. 006485S

Full Address : 10-5-10, saty soudha aprts, ramaraopet, Kakinada (Urban), Ramaraopet S.O, KAKINADA, EAST GODAVARI, Andhra pradesh, 533004, India

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4: Indirect tax Reg. Numbers

	Indirect Tax law details	Reg. No.
1	GST Act- Andhra Pradesh	37 AVSPB0729L 1Z9
2	GST Act- Andhra Pradesh	37 AVSPB0729L 2Z8

10: Details of business / profession

	Sector	Sub-Sector	Code	Particulars of change
1	Wholesale / Retail Trade	Retail sale of other products	09028	No Change
2	Manufacturing	Others	04097	No Change

11a: Books prescribed u/s 44 AA

1	Cash book
2	Journal
3	Ledger

11b: Books maintained

		Address
1	Bank book	Plot No. 41A, Sarpavaram, Industrial Park, Kakinada-533 005, Andhra pradesh, India
2	Cash book	-do-
3	Journal	-do-
4	Ledger	-do-
5	Purchase register	-do-
6	Sales register	-do-

11c: Books / documents examined

1	Bank book
2	Cash book
3	Journal
4	Ledger
5	Purchase register
6	Sales register
7	CASH BOOK
8	JOURNAL
9	LEDGER

40: Accounting Ratios

		Current year amount	Ratio to turnover(%)	Last year amount	Last year %
1	Total turnover of the assessee	10,30,20,969		6,80,24,753	
2	Gross profit/turnover	1,33,49,432	12.96	84,07,055	12.36
3	Net profit/turnover	20,77,088	2.02	15,03,681	2.21
4	Stock-in-trade/turnover	1,60,52,665	15.58	1,21,14,000	17.81
5	Material consumed to Finished goods		NIL		NIL
	Material consumed	NIL		NIL	
	Finished goods produced	NIL		NIL	

44: Break-up of total expenditure of entities registered or not registered under the GST:

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	Particulars	Total amount of Expenditure incurred during the year	Expenditure in respect of entities registered under GST				Expenditure relating to entities not registered under GST
			Relating to goods or services exempt from GST	Relating to Entities falling under composition scheme	Relating to other registered entities	Total payment to registered entities	
1	Purchases	9,30,60,301	NIL	NIL	9,30,60,301	9,30,60,301	NIL

For Dpr Swamy & Associates

Place: KAKINADA

Date: **29-Sep-2023**

DASARA PATTABHI RAMASWAMY
Proprietor, M. No. 202913
Firm reg. No. 006485S

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GRES DC Bus System

GRES-75-50

Battery capacity: **75kWh**

PCS capacity : **50kW**

Dimension:**1680*1502*1700** (W*D*H)mm

GRES-150-100

Battery capacity: **150kWh**

PCS capacity : **100kW**

Dimension:**1680*2264*1700** (W*D*H)mm

GRES-225-150

Battery capacity: **225kWh**

PCS capacity : **150kW**

Dimension:**1680*3026*1700**(W*D*H)mm

GRES-300-200

Battery capacity: **300kWh**

PCS capacity: **200kW**

Diemnsion:**1680*3788*1700** (W*D*H) mm

Model	GRES-75-50	GRES-150-100	GRES-225-150	GRES-300-200
PV Parameters				
MPPT voltage range	DC200V ~ DC700V			
MPPT full power Volt range	DC370V ~ DC700V			
MPPT channel Qty	0~2 (optional)			
Max current per channel	135A			
AC parameters (On-grid)				
Rated output power	50KW	100KW	150KW	200KW
Rated grid voltage	3W+N+PE, 380V/400V			
Voltage range	-15%~+10%			
Rated frequency	50Hz/60Hz			
Frequency range	±2Hz			
Output current harmonic	≤3%(Rated Power)			
Power factor	-0.9~+0.9			
Overload capacity	105%]: continuous operation; (105% ~ 120%]: 10min; 120%); stop operation			
AC parameters (Off-grid)				
Rated output power	50KW	100KW	150KW	200KW
Rated voltage	3W+N+PE, 380V/400V			
Output voltage harmonics	≤3%(Linear full load)			
Rated frequency	50Hz/60Hz			
Overload capacity	105%]: continuous operation; (105% ~ 120%]: 10min; 120%);stop operation			
Battery				
Battery type	LFP			
Energy of each module	5.12kWh			
Module qty	15	30	45	60
Total power	76.8kWh	153.6kWh	230.4kWh	307.2kWh
Running Time	1.5 (Optional by Changing module qty)			
Life cycle	4000 cycles (0.5C@25℃ charging&discharging @100%DOD, EOL80%)			
Protection				
DC switch	YES			
AC switch	YES			
Grid monitoring	YES			
Surge protection	YES			
Basic Parameters				
Dimension W*D*H	1680*1502*1700mm	1680*2264*1700mm	1680*3026*1700mm	1680*3788*1700mm
Weight	1395Kg	2470Kg	3545Kg	4620Kg
Isolation	No			
On-off-grid switching	STS			
Protection	Outdoor IP54			
Working temperature	-20 ~ 55℃(>45℃derating)			
Relative humidity	0%RH ~ 95%RH, No condensation			
Cooling	Electrical cabin: intelligent air cooling; Battery cabin: air conditioner			
Max working altitude	4000m(>2000m derating)			
Display	Touch screen			
Communication	RS485、CAN、LAN			
Communication Protocol	Modbus-RTU、Modbus-TCP、CAN2.0B			

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CERTIFICATE

No. 4Z240228.SCUU095

Test Report / Technical Construction File no. ZTL-2024022303E/ZTL-2024022304S

Certificate's Holder:	Sicon Chat Union Electric Co., Ltd. Bldg.14&15, No.319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, Hebei, China (050035)
Manufacturer:	Sicon Chat Union Electric Co., Ltd. Building No. 9, 10 Haihedao, HI-TECH Industrial Park, Shijiazhuang City, Hebei Province 050035, China
Certification ECM Mark	Type Approved
Product:	Integrated energy storage system
Brand name:	SCU先控
Model(s):	GRES-150-100, GRES-2150-1000, GRES-1075-500, GRES-645-300, GRES-215-100, GRES-300-200, GRES-225-150, GRES-75-50
Verification to:	Standard: *(see the following annex)* related to CE Directive(s): 2014/35/EU (Low Voltage) 2014/30/EU (Electromagnetic Compatibility)

Remark:
The manufacturer has voluntarily decided to submit its documents concerning the above-mentioned product for verification. Ente Certificazione Macchine confirms that the documentation made available and immediately returned to it, as containing sensitive data, meets the essential requirements of the above-mentioned directive/standard. The verification activity carried out exclusively concerned the technical documentation and no verification was carried out on the product. This document cannot replace the EC Declaration of Conformity. This document was issued in accordance with regulation RGVOL01 published on the website of www.entecerma.it and concerning voluntary certifications with a non-notified procedure.

Issuance date: 28 February 2024

Expiry date: 27 February 2029

For online check:

Approver
Ente Certificazione Macchine
Legal Representative
Luca Bedonni

Ente Certificazione Macchine Srl
Via Ca' Bella, 243 – Loc. Castello di Serravalle – 40053 Valsamoggia (BO) - ITALY
☎ +39 051 6705141 🖷 +39 051 6705156 ✉ info@entecerma.it 🌐 www.entecerma.it

Certificate – Сертификат – 證明書 – Certificat – 증명서 – شهادة

File No. ANERT-TECH/41/2024-PE1(RTS) (Computer No. 7940)
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T2 Solarsys.pdf

Annex I

No. 4Z240228.SCUU095

Test Report / Technical Construction File no. ZTL-2024022303E/ZTL-2024022304S

Standard:

EN IEC 62477-1:2023, EN IEC 61000-6-4:2019,
EN IEC 61000-3-2:2019+A1:2021,
EN 61000-3-3:2013+A1:2019+A2:2021+AC:2022-01, EN IEC 61000-6-2:2019

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Sicon Chat Union Electric Co., Ltd.
Add: Bldg.14 & 15, No.319 Xiangjiang Street, High-Tech Zone, Shijiazhuang, China
Email: enquiry@scupower.com
Tel:86-311-85903762 Fax:86-311-85903718 Post: 050035

To,

SCU/MAF/ANERT-2024-121

22.05.2024

The CEO
ANERT
THIRUVANATHAPURAM

Reference:- e-EoI Notification No: **ANERT-TECH/41/2024-PE1(RTS)** for Expression of Interest (EoI) for the Selection of Agency for Pilot Implementation of **Battery Energy Storage System** at **ANERT** HQ, Thiruvananthapuram

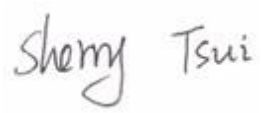
We, the undersigned, declare that:

We, **M/s. Sicon Chat Union Electric Co. Ltd** located at Blbg. 14&15th No.319, Xiangjiang Street, Hi-Tech Zone, Shijiazhuang, China manufacturers of **Energy storage Systems.**

We authorise **M/s. Solar Systems, 41 A, Industrial Park, Sarpavaram, Kakinada 533005** to participate and quote in the Tender No. **ANERT-TECH/41/2024-PE1(RTS)**

We, confirm herewith, if **M/s. Solar Systems**, awarded the contract to install and maintain the above tendered item, we will support them, to meet and maintain all the equipment, supplied vide the above Tender number during the warranty and post warranty Annual Maintenance Period.

Authorised Signatory
Sherry Tsui
Sales Manager



Authorised Signatory
Sicon Chat Union Electric Co. Ltd

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Jayakumar R <jayakumar@anert.in>

PM-KUSUM Comp.C (Tender document)

1 message

Jayakumar R <jayakumar@anert.in> 4 August 2022 at 20:12
To: CEO ANERT <ceo@anert.in>, Chief Technical Manager ANERT <ctm@anert.in>, Jayachandran Nair P <jayachandran@anert.in>, Kala KG <kala@anert.in>, Rajesh R <rajesh@anert.in>, Ajith Gopi <ajithgopi@anert.in>, Manoharan J <manoharan@anert.in>, Valsaraj P <valsaraj@anert.in>, Premkumar K <premk@anert.in>, Kamaladevi V <kamala@anert.in>, Pramod NE <pramod@anert.in>, vinay@anert.in

Sir,
Pls find the draft tender document and a meeting is scheduled to discuss this at Conference hall 3pm tomorrow.

--
JAYAKUMAR R
Joint Chief Technical Manager &
Nodal officer PM-KUSUM programme
ANERT(HQ)
Thiruvananthapuram
Kerala.695 033
0471-2338077, 2334122, 2331803, 9188119425

KUSUM Tender draft V1.docx
226K

Jayakumar R <jayakumar@anert.in>

PM-KUSUM tender document(draft)

1 message

Jayakumar R <jayakumar@anert.in> 7 August 2022 at 11:42
To: Chief Technical Manager ANERT <ctm@anert.in>, Ajith Gopi <ajithgopi@anert.in>, Premkumar K <premk@anert.in>, Kala KG <kala@anert.in>, Jayachandran Nair P <jayachandran@anert.in>, Rajesh R <rajesh@anert.in>, anert <anert033@gmail.com>, vinay@anert.in

Sir,

Based on the discussion held on 5th Aug, modified accordingly and submitted for any correction/ modification/suggestion. Your comments shout reach before 11 am tomorrow.

--
JAYAKUMAR R
Joint Chief Technical Manager &
Nodal officer PM-KUSUM programme
ANERT(HQ)
Thiruvananthapuram
Kerala.695 033
0471-2338077, 2334122, 2331803, 9188119425

KUSUM Tender final 7.8.22.docx
423K

AGENCY FOR NEW & RENEWABLE ENERGY RESEARCH AND TECHNOLOGY (ANERT)
Department of Power, Government of Kerala
Thiruvananthapuram, Kerala – 695 033;
www.anert.gov.in , projects@anert.in

E-TENDER DOCUMENT

Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos ranging from 2kW-150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala

Ref. No. ANERT-TECH/144/2022-T4

Date of Publishing of Bids	: -	10-08-2022
Last Date of Submission of Bids	: -	15-09-2022

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FORMAT FOR COVERING LETTER

(This letter to be submitted on the official letter head of the tenderer, signed by the authorised signatory.)

Sir,

I/We hereby e-tender to supply, under annexed terms and conditions of contract, the whole of the articles referred to and described in the attached specification and quantity decided by the Agency for New and Renewable Energy Research and Technology (ANERT), at the rates quoted against each item. The articles will be delivered and installed/commissioned within the time and at the place(s) specified in the schedule.

I am/We are remitting herewith the required amount of Rs. ..... towards the cost of e-tender and Earnest Money Deposit by electronic payment vide transaction No ..... dtd.....

Yours faithfully,

Place:

Date:

Signature

Name

Designation

(Office Seal)

E-TENDER NOTICE

Competitive e-tenders in two cover system with Earnest Money Deposit (EMD) and Price Bid in accordance with the ANERT approved technical specifications are invited from ***Manufacturers of Solar PV Module / Solar Pumps or its Joint venture for Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos ranging from 2kW-150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala***. The e-tender documents can be downloaded from the e-tendering website of Govt. of Kerala. Tender form will not be available in any other form.

Thiruvananthapuram CEO

10-08-2022.

TENDER ABSTRACT

Table A

Ref. No.	ANERT-TECH/144/2022-T4
Name of Work	**Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos ranging from 2kW-150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala**
Building Site and Requirements	**All over Kerala**
Download of Tender Form	http://www.etenders.kerala.gov.in
Last date of submission of Tender	15-09-2022 @ 3.00 PM
Date and Time of opening the Tender	17-09-2022 @ 11.00 AM
Estimated Tender Value	**Rs.240 Cr**
Cost of Tender form	**Rs. 15,000/- (Excluding GST)**
EMD	**Rs. 5,00000/-**
Warranty period	7 years from the date of commissioning the system.
Location of Sites	More than 80% of sites are in Thrissur, Kasaragod, Malappuram, Palakkad, Ernakulum districts.
Availability of Tender Forms	Website http://www.etenders.kerala.gov.in
Place of opening of tender	Office of CEO, ANERT Law College Road, Vikas Bhavan. PO, Thiruvananthapuram – 695 033, Kerala
Contact Details for clarifications	Shri. Jayakumar R

	Nodal Officer PM- KUSUM Scheme, ANERT +91 9188119425; jayakumar@anert.in
Thiruvananthapuram 10-08-2022.	Sd/- CEO

GENERAL TERMS AND CONDITIONS FOR E-PROCUREMENT

This e-Tender is being published for the Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos ranging from 2kW-150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala. The tender is invited in two cover system through e-procurement portal of Government of Kerala(www.etenders.kerala.gov.in). Prospective bidders willing to participate in this tender shall necessarily register themselves with above mentioned e-procurement portal.

The tender timeline is available in the critical date section of this tender published in www.etenders.kerala.gov.in

1. ONLINE BIDDER REGISTRATION PROCESS:

1.1 Bidders should have a Class III or above Digital Signature Certificate (DSC) to be procured from any Registration Authorities (RA) under the Certifying Agency of India. Details of RAs will be available on www.cca.gov.in. Once, the DSC is obtained, bidders have to register on www.etenders.kerala.gov.in website for participating in this tender. Web-site registration is a one-time process without any registration fees. However, bidders have to procure DSC at their own cost.

1.2 Bidders may contact e-Procurement support desk of Kerala State IT Mission over telephone at 0471- 2577088, 2577188, 2577388 or 0484 – 2336006, 2332262 - through email: helpetender@gmail.com/etendershelp@kerala.gov.in for assistance in this regard

2. ONLINE TENDER PROCESS:

The tender process shall consist of the following stages:

i. Downloading of tender document: Tender document will be available for free download on www.etenders.kerala.gov.in. However, tender docu-

ment fees shall be payable at the time of bid submission as stipulated in this tender document.

ii. Pre-bid meeting: (not applicable).

iii. Publishing of Corrigendum: All corrigenda shall be published on www.etenders.kerala.gov.in and shall not be available elsewhere.

iv. Bid submission: Bidders have to submit their bids along with supporting documents to support their eligibility, as required in this tender document on www.etenders.kerala.gov.in. No manual submission of bid is allowed and manual bids shall not be accepted under any circumstances.

v. In case bidder encounters any technical issues pertaining to e-Procurement system while acting on the tender, computer screen shot of the error message with date & time stamp on the web-browser along with the query shall be e-mailed by the bidder to the help desk **(helpetender-@gmail.com/ etendershelp@kerala.gov.in)**, for resolution of the problem. At the same time, problem must be intimated to the concerned Tender Inviting Authority via email.

vi. The time taken to ascertain, evaluate and suggest a solution for the problem reported by bidder may vary from case to case. Hence bidders are advised to submit the bid **at least 2 working days before the due date** and time of bid submission to avoid any last-minute issues that may come up.

vii. Opening of Bid and Bidder short-listing: The single cover bids will be opened, evaluated and shortlisted as per the eligibility. Failure to submit the required documents online will attract disqualification. Price bids of the eligible bidder's will open the same day of opening and the work will be awarded.

3. DOCUMENTS COMPRISING BID:

3.1 (a) The First Stage - Part-I Pre- Qualification cum Technical Bid with Commercial terms without Price Bid

Technical proposal shall contain the scanned copies of the following documents which every bidder has to upload:

Envelop -1 shall contain, Part-I (this document in PDF form)/scanned copies of:

i. Tender documents downloaded (signed with office seal)
ii. Summary of Bid Qualification Requirement (Annexure A)
iii. Agreement in the prescribed format (Annexure B) on Govt. of Kerala stamp paper worth Rs.200/-
iv. Copy of Registration Certificate of the bidder firm
v. Copy of GST Certificate
vi. Copy of PAN card of the authorized signatory/TAN
vii. List of credit rating done, to prove the experience in executing similar orders, as specified.
viii. Documents to prove the annual Turnover of the bidder along with a certificate from Chartered Accountant regarding net worth. (Capital + Reserves)
ix. Copy of the work orders and certification from the purchase regarding execution of the order, to prove the experience in executing similar orders, as specified
x. Bill of Material
xi. Details of the technical offer, including test certificates issued in the name of the bidder
xii. Declaration by the bidder (format as in Annexure – C)
xiii. Declaration on subsidy claim (as the prescribed format as in Annexure D)
xiv. Declaration of relationship with ANERT employee (format as in Annexure - E)

3.1 (b)The Second Stage (Financial Cover as per two cover system):

Envelop -2: shall contain the Price Schedule as per BOQ in Excel format for this tender to be downloaded from e-tender website, duly digitally signed by the tenderer/authorized signatory of the tender.

3.2 The department doesn't take any responsibility for any technical snag or failure that has taken place during document upload.

3.3 The Bidder shall complete the Price bid as per format given for download along with this tender.

Note: The blank price bid should be downloaded and saved on bidder's computer without changing file-name otherwise price bid will not get uploaded. The bidder should fill in the details in the same file and upload the same back to the website.

3.4 Fixed price: Prices quoted by the Bidder shall be fixed during the bidder's performance of the contract and not subject to variation on any account. A bid submitted with an adjustable/ variable price quotation will be treated as non - responsive and rejected.

4. TENDER DOCUMENT FEES AND EARNEST MONEY DEPOSIT (EMD)

4.1 The Bidder shall pay, a Tender document fee of Rs.15,000/- and Earnest Money Deposit or Bid Security of Rs.5,00,000/-. The Bid security is required to protect the purchaser against risk of Bidder's conduct, which would warrant the forfeiture of security.

4.2 Online Payment modes: The tender document fees can be paid in through e-Payment facility provided by the e-Procurement system. Bidders can make payment only via Internet banking facility. EMD is to be paid as FD/Bank Guarantee/Online Payment Mode.

State Bank of India Multi Option Payment System (SBI MOPS Gateway): Bidders are required to avail Internet Banking Facility in any of below banks for making tender remittances in eProcurement System.

Table 4.2

A) Internet Banking Options (Retail)			
1	Allahabad Bank	32	Kotak Mahindra Bank
2	Axis Bank	33	Lakshmi Vilas Bank
3	Andhra Bank	34	Mehsana Urban Co-op Bank
4	Bandan Bank	35	NKGSB Co-operative Bank
5	Bank of Bahrain and Kuwait	36	Oriental Bank of Commerce
6	Bank of Baroda	37	Punjab and Maharashtra Cooperative Bank
7	Bank of India	38	Punjab National Bank
8	Bank of Maharashtra	39	Punjab and Sind Bank
9	Bassein Catholic Co-operative Bank	40	RBL Bank
10	BNP Paribas	41	Saraswat Cooperative Bank
11	Canara Bank	42	Shamrao Vithal Cooperative Bank
12	Catholic Syrian Bank	43	South Indian Bank
13	Central Bank of India	44	Standard Chartered Bank
14	City Union Bank	45	State Bank of India
15	Corporation Bank	46	Syndicate Bank
16	Cosmos Bank	47	Tamilnad Mercantile Bank
17	DCB Bank	48	Tamilnadu Cooperative Bank
18	Dena Bank	49	The Kalyan Janata Sahakari Bank

19	Deutsche Bank	50	TJSB Bank
20	Dhanalaxmi Bank	51	UCO Bank
21	Federal Bank	52	Union Bank of India
22	HDFC Bank	53	United Bank of India
23	ICICI Bank	54	Vijaya Bank
24	IDBI Bank	55	YES Bank
25	Indian Bank		
26	Indian Overseas Bank		
27	IndusInd Bank		
28	Jammu & Kashmir Bank		
29	Janata Sahakari Bank		
30	Karnataka Bank		
31	Karur Vysya Bank		
B) Internet Banking Options (Corporate)			
1	Bank of Baroda	21	Laxmi Vilas Bank
2	Bank of India	22	Oriental Bank of Commerce
3	Bank of Maharashtra	23	Punjab & Maharashtra Coop Bank
4	BNP Paribas	24	Punjab & Sind Bank
5	Canara Bank	25	Punjab National Bank

6	Catholic Syrian Bank	26	RBL Bank
7	City Union Bank	27	Shamrao Vitthal Co-operative Bank
8	Corporation Bank	28	South Indian Bank
9	Cosmos Bank	29	State Bank of India
10	Deutsche Bank	30	Syndicate Bank
11	Development Credit Bank	31	UCO Bank
12	Dhanalaxmi Bank	32	Union Bank of India
13	Federal Bank	33	UPPCL
14	HDFC Bank	34	Vijaya Bank
15	ICICI Bank	35	Axis Bank
16	Indian Overseas Bank		
17	Janta Sahakari Bank		
18	Jammu & Kashmir Bank		
19	Karur Vysya Bank		
20	Kotak Bank		

During the online bid submission process, bidder shall select ***SBI MOPS*** option and submit the page, to view the ***Terms and Conditions*** page. On further submitting the same, the e-Procurement system will re-direct the bidder to

MOPS Gateway, where two options namely ***SBI*** and ***Other Banks**** will be shown. Here, Bidder may proceed as per below:

a) *SBI Account Holders* shall click ***SBI*** option to with its Net Banking Facility., where bidder can enter their internet banking credentials and transfer the Tender Fee and EMD amount.

b) *Other Bank Account Holders* may click ***Other Banks*** option to view the bank selection page. Here, bidders can select from any of the 54 Banks to proceed with its Net Banking Facility, for remitting tender payments.

**Transaction Charges for Other Banks vide SBI Letter No. LHO/TVM/AC/2016-17/47 – 1% of transaction value subject to a minimum of Rs. 50/- and maximum of Rs. 150/-*

** Bidders who are using Other Banks option under SBI MOPS Payment Gateway, are advised by SBI to make online payment 72 hours in advance before tender closing time.*

5. SUBMISSION PROCESS:

5.1 For submission of bids, all interested bidders have to register online as explained above in this document. After registration, bidders shall submit their Technical bid and financial bid online on www.etenders.kerala.gov.in along with online payment of tender document fees and EMD.

5.2 For page-by-page instructions on bid submission process, please visit www.etenders.kerala.gov.in and click "Bidders Manual Kit" link on the home page.

5.3 It is necessary to click on "Freeze bid" link/ icon to complete the process of bid submission otherwise the bid will not get submitted online and the same shall not be available for viewing/ opening during bid opening process.

6. VALIDITY

6.1 The tender offer shall be kept valid for acceptance for a period of 6 months from the date of opening of offers. The offers with lower validity period are liable for rejection.

6.2 Further, the tenderer may extend the validity of the Bids without altering the substance and prices of their Bid for further periods, if so required

7. DEVIATIONS

7.1 The offers of the Tenderers with Deviations in Commercial terms and Technical Terms of the Tender Document are liable for rejection.

8. BLACK LIST

8.1 All the intending tenderers shall agree that in the event of the documents furnished with the offer being found to be bogus or the documents contain false particulars, they shall be blacklisted for future tenders/ association with ANERT and EMD shall be forfeited against any losses incurred by ANERT.

9. BIDDER'S LOCATION

9.1 The tenderers are requested to furnish the exact location of their factories/godown with detailed postal address and pin code, telephone nos and email id .etc. in their tenders to arrange inspection by ANERT, if considered necessary.

9.2 All communication shall be made to the registered email of the bidder in the e-tendering systems and ANERT shall not be responsible for non-receipt or delay of any such communication.

10. BID QUALIFICATION REQUIREMENTS

10.1 General Requirements

10.1.1 Every tenderer should submit along with his e-tender an Earnest Money Deposit (EMD). This may be done electronically from any of the Nationalized/Schedule Banks. The EMD of the disqualified tenderers will be returned automatically through e-procurement system. The EMD of the successful tenderers may be adjusted towards the security deposit. No interest shall be paid for the earnest money deposited.

10.1.2 An agreement in Rs.200/- Kerala stamp paper as per the format given in Annexure B must be submitted along with e-tender document.

10.1.3 As per the guidelines of PM-KUSUM, only Manufacturers of PV Modules OR manufacturer of Solar Pumps OR a Joint Venture of Manufacturer of Solar Panels or manufacturer of Solar Water pumps are eligible to undertake works under the scheme.

10.1.4 The bidder should have service centres/authorised service providers in all districts of Kerala. Detailed list with address, contact details and proof has to be submitted. If the bidder does not have such facility at the time of tendering, an undertaking should be submitted along with the tender on Kerala stamp paper worth Rs. 200/- agreeing to set up such facility and intimate the same within 15 days of letter of intent. Urja Mithra service centres supported by ANERT can also be included as service centres provided the bidders make separate agreements with them.

10.1.5 Price Bid in excel format, for this tender to be downloaded from e-tender website, duly digitally signed by the tenderer/authorized signatory of the tender.

10.2 Eligibility Requirement

10.2.1 The detail of eligibility requirements is provided in the table below. The bidders are required to furnish the required supporting documents along with the Technical Bid. **Table 10.2**

S. No.	Criteria	Documents Required
1.1.	Bidder can be sole/ single bidder OR, Joint Venture (JV) of up to 2 (two) members, with one of the members as a Lead Member	In case of JV, Deed of Undertaking
1.2.	The Bidder should have any of the following legal status: a) Body incorporated in India under the Companies Act, 2013 including any amendment thereto; OR b) Body incorporated in India under the Limited Liability Partnership (LLP) Act, 2008 including any amendment thereto; OR c) Firm registered under Partnership Act, 1932 in India; OR d) Sole Proprietor In case of JV, all the members must fulfil	a) In case of Company – Copy of Registration/Incorporation Certificate b) In case of LLP – Copy of Deed of Partnership c) In case of Partnership – Copy of Deed of Partnership d) In case of Sole Proprietor – Duly notarized Undertaking from Sole proprietor

	this requirement and submit the documents as per the Tender Document.	
1.3.	The Bidder must have the required GST Registration In case of JV, all the members must fulfil this requirement.	Copy of GST registration certificate with legible GSTIN.
1.4.	The Bidder must have valid PAN Number In case of JV, all the members must fulfil this requirement.	Copy of Pan Card
1.5.	The bidder must have completed Solar Installations of at least 3 MW in India. For more clarification refer 10.3. In case of JV, all the members jointly must fulfil this requirement and submit the documents as per the Tender document.	Statutory Documents substantiating this requirement along with Documents submitted in Clause 1.2 of this Table above.
1.6.	The bidder should be having unblemished record and must not be blacklisted or declared ineligible for corrupt & fraudulent practices by "any state/ central government" department/ company / entity" as on date of bid opening. In case of JV, all the members must fulfil this requirement.	The bidder shall provide an Undertaking as per the format provided as Format A. In case of JV, all the members must submit the undertaking as per the format provided in Format A.
1.7.	The bidder must submit a Power of Attorney (POA) authorizing a person to sign the documents on behalf of the Bidder, submit technical, commercial information and attend meetings on behalf of the Bidder.	Sole Bidder to provide POA in the format as per the applicable Law. In case of JV, Undertaking by JV as per the format provided in Format B1 and POA as per the format provided in Format B2

10.3 Qualification Requirement

The details of qualification requirements are provided in the table below. The bidders are required to furnish the required supporting documents along with the Technical Bid.

Table 10.3

S. No.	Criteria	Documents Required
10.3.1	**Technical Criteria**	

S. No.	Criteria	Documents Required
	Bidder shall have experience of execution of supply, installation, and maintenance of grid connected / Off-grid Solar Photovoltaic Systems (SPV) (SPV Pumps / Rooftop SPV / Ground mounted SPV) of an aggregate capacity of 3 MW during last five financial years. The works shall have been executed under SNA/ Govt. Organization/SECI/PSUs. It is to be noted that each of the JV member should have carried out works related to installation of solar systems of min capacity of 1MW during the last five financial years. Total aggregate capacity by both members of JV should be of 3MW during last 5 financial years.	The details of projects executed during period mentioned above should be listed. Copy of work orders and a certificate issued by the SNA/ Govt. Organization/SECI/PSUs towards the satisfactory work completion to be furnished by the bidder. In absence of any one, it will not be considered for qualifying in technical bid.

S. No.	Criteria	Documents Required
1.2.	**Financial Criteria**	
1.2.1.	The Bidder should have positive net worth for at least 3 of the last five Financial Years (FY2017-18, FY2018-19, FY2019-20, FY2020-21, and FY2021-22). In case of JV, all the partners of JV shall meet this qualification.	1. Certificate fulfilling required financial criteria in the name of Bidder duly certified by Practicing Chartered Accountant as per the format

<table>
<tr>
<td>1.2.2.</td>
<td>Minimum Average Annual Turnover (MAAT) during any 3 best out of last five financial years (FY2017-18, FY2018-19, FY2019-20, FY2020-21and FY2021-22) of the bidder shall not be less than as detailed below.
The minimum financial qualification allotted for each Group defined at 12.1 of this document is seen as,

<table>
<tr><th>Group No.</th><th>Min Financial requirement for the bid (Rs.Cr)</th></tr>
<tr><td>1</td><td>10</td></tr>
<tr><td>2</td><td>2</td></tr>
</table>

In case a bidder is quoting for more than one Group, qualification requirement shall be the sum of the requirement of each Group.

In case of JV, all the partners of the JV shall meet, collectively the qualification requirement. The figures for each of the partner of the joint venture shall be added together to determine the bidder's</td>
<td>provided Format C, duly mentioning UDIN
2. Firm's Annual Audit Report, Balance sheet, Profit & Loss and Income Tax Returns / CA certificate for last Five years i.e. F.Y: FY2017-18, FY2018-19, FY2019-20, FY2020-21 and FY2021-22 and FY21-22.</td>
</tr>
</table>

	compliance with this qualifying criterion. JV shall meet the 100% requirement as in this Minimum Average Annual Turnover (MAAT) qualification"	

CONDITIONS OF CONTRACT

11. GENERAL CONDITIONS

11.1 The tenders should be submitted online at www.etenders.kerala.gov.in

11.2 The tenders should be as per the prescribed form which should be down-loaded from the e-tender website. The cost of tender forms should be paid online, and once paid will not be refunded. Tender forms are not transfer-able. Tenders that are not in the prescribed form are liable to be rejected.

11.3 Intending tenderers should submit their tenders on or before the due date and time mentioned in the tender abstract. Late tender will not be accep-ted.

11.4 The rates quoted should be only in Indian currency. Tenders in any other currency are liable to rejection. The rates quoted should be for the unit specified in the schedule attached.

11.5 The tenderer shall submit a copy of PAN card of the authorised signatory along with tender.

11.6 Tenders subject to conditions will not be considered. They are liable to be rejected on that sole ground.

11.7 The tenders will be opened on the specified day and time in the office of the CEO, ANERT in the presence of such of those tenderer's representat-ives who may be present with proper authorisation issued by the ten-derer.

11.8 Every tenderer should send along with his tender an Earnest Money De-posit. This may be paid online at the e-tenders website.

11.9 If any tenderer withdraws from his e-tender before the expiry of the period fixed for keeping the rates firm for acceptance, the earnest money if any, deposited by him, will be forfeited.

(a) The tenderer should use the components within the approved component list published by ANERT.

11.10 The final acceptance/rejection of the tenders rests entirely with CEO, ANERT who do not bind themselves to accept the lowest or any tender.

11.11 In the case of materials of technical nature, the successful tenderer should be prepared to guarantee satisfactory performance for a period of guarantee under a definite penalty. Communication of acceptance of the e-tender normally constitutes a concluded contract. Nevertheless, the successful tenderer shall also execute an agreement for the due fulfilment of the contract within the period to be specified in the letter of acceptance. The contractor shall have to pay all stamp duty, Lawyer's charges and other expenses incidental to the execution of the agreement. Failure to execute the agreement within the period specified will entail the penalties set out below:

(a) The successful tenderer shall before sign the agreement and within the period specified in the letter of acceptance of his tender, deposit a sum equivalent to 3% of the value of the contract as security for the satisfactory fulfilment of the contract less the amount of money deposited by him along with his tender. There will be no exemption for MSME's in depositing this security amount. If the successful tenderer fails to deposit the security and execute the agreement as stated above, the earnest money deposited by him will be forfeited to ANERT and contract arranged elsewhere at the defaulter's risk and any loss incurred by ANERT on account of the purchase will be recovered from the defaulter who will however not be entitled to any gain accruing thereby.

(b) In cases where a successful tenderer, after having made partial supplies fails to fulfil the contracts in full, all or any of the materials not supplied may at the discretion of the Purchasing Officer be purchased by means of another tender/quotation or by negotiation or from the next higher tenderer who had offered to supply already, and the loss if any caused to ANERT shall thereby together with such sums as may be fixed by ANERT towards damages be recovered from the defaulting tenderer.

(c) If the contractor fails to deliver all or any of the stores or perform the service within the time/period(s) specified in the contract, the purchaser shall without prejudice to its other remedies under the contract, deduct from the contract prices, as liquidated damages, a sum equivalent to 0.5 % of the delivered price of the delayed stores or unperformed services for each week of delay until actual delivery or performance, up to a maximum deduction of 10% of the contract price of the delayed stores and services. Once the maximum is reached, the purchaser may consider termination of the contract at the risk and cost of the contractor.

11.12 The Security deposit shall, subject to the conditions specified herein be returned to the contractor within three months after the expiration of the contract but in the event of any dispute arising between ANERT and the contractor, ANERT shall be entitled to deduct out of the deposits or the balance thereof, until such dispute is determined the amount of such damages, costs, charges and expenses as may be claimed. The same may also be deducted from any other sum which may be due at any time from ANERT to the contractor. In all cases where there are guarantee for the goods supplied, the security deposit will be released only after the expiry of the guarantee period.

(a) All payments to the contractors will be made in due course via NEFT only

(b) All incidental expenses incurred by ANERT for making payments outside the State in which the claim arises shall be borne by the contractor.

11.13 Payments will be made only after the supply, Installation and Commissioning of the items and certification by the competent technical personnel of ANERT.

11.14 The contractor shall not assign or make over the contract on the benefits or burdens thereof to any other person or body corporate. The contractor shall not underlet or sublet to any person or persons or body corporate the execution of the contract or any part thereof without the consent in writing of the purchasing officer who shall have absolute power to refuse such consent or to rescind such consent (if given) at any time if he is not satisfied with the manner in which the contract is being executed and no allowance or compensation shall be made to the contractor or the subcontractor upon such rescission. Provided always that if such consent be given at any time, the contractor shall not be relieved from any obligation, duty or responsibility under this contract.

11.15 In case the contractor becomes insolvent or goes into liquidation, or makes or proposes to make any assignment for the benefit of his creditors or proposes any composition with his creditors for the settlement of his debts, carries on his business or the contract under inspection or behalf of or his creditors or in case any receiving order(s) for the administration of his estate are made against him or in case the contractor shall commit any act of insolvency or in case in which under any clause or clauses any act of insolvency or in case in which under any clause(s) of this contract the contractor shall have rendered himself liable to damages amounting to the whole of his security deposits, the contract shall, thereupon, after notice given by the Purchasing Officer to the contractor, be determined and ANERT may complete the contract in such time and manner and by

such persons as ANERT shall think fit. But such determination of the contract shall be without any prejudice to any right or remedy of ANERT against the contractor or his sureties in respect of any breach of contract committed by the contractor. All expenses and damages caused to ANERT by any breach of contract by the contractor shall be paid by the contractor to ANERT and may be recovered from him under the provisions of the Revenue Recovery Act in force in the State.

11.16 In case the contractor fails to supply and deliver any of the said articles and things within the time provided for delivery of the same, or in case the contractor commits any breach of any of the covenants, stipulations and agreements herein contained, and on his part to be observed and performed, then and in any such case, it shall be lawful for ANERT (if they shall think fit to do so) to arrange for the purchase of the said articles and things from elsewhere of on behalf of ANERT by an order in writing under *the* hand of the CEO put an end to this contract and in case ANERT shall have incurred sustained or been put to any costs, damages or expenses by reason of such purchase or by reason of this contract having been so put an end to or in case any difference in price, compensation, loss, costs, damages, expenses or other moneys shall then or any time during the continuance of this contract be payable by the contractor to ANERT under and by virtue of this contract, it shall be lawful for ANERT from and out of any moneys for the time being payable or owing to the contractor from ANERT under or by virtue of this contract or otherwise to pay and reimburse to ANERT all such costs, damages and expenses they may have sustained, incurred or been put to by reason of the purchase made elsewhere or by reason of this contract having been so put an end to as aforesaid and also all such difference in price, compensation, loss, costs, damages, expenses and other moneys as shall for the time being payable by the contractor aforesaid.

11.17 Any sum of money due and payable to the contractor (including security deposit returnable to him) under this contract may be appropriated by the CEO or any other person authorised by ANERT and set off against any claim of ANERT for the payment of a sum of money arising out of or under any other contract made by the contractor with ANERT or any other person authorised by ANERT. Any sum of money due and payable to the successful tenderer or contractor from ANERT shall be adjusted against any sum of money due to ANERT from him under any other contracts.

11.18 Every notice hereby required or authorised to be given may be either given to the contractor personally or left at his residence or last known place of abode or business, or may be handed over to his agent personally, or may be addressed to the contractor by post at his usual or last known place of abode or business and if so addressed and posted, shall be deemed to have been served on the contractor on the date on which in the ordinary course of post, a letter so addressed and posted would reach his place of abode or business.

11.19 The tenderer shall undertake the installation and commissioning of the system according to the standards and specification.

11.20 No representation for enhancement of rate once accepted will be considered.

11.21 The prices quoted should be inclusive of GST and all other expenses which are or may become payable by the contractor under existing or future laws or rules of the country of origin/supply or delivery during execution of the contract.

11.22 Special conditions, if any, of the tenderers attached with the tenders will not be applicable to the contract unless they are expressly accepted in writing by the purchaser.

11.23 The tenderer should send along with this tender an agreement executed and signed in Kerala Stamp Paper of value Rs.200/-. A specimen form of agreement is given as Annexure B to this tender. Tenders without the agreement in stamped paper will be rejected outright.

11.24 Conditions in the technical document, technical specifications and special conditions of this tender document would override these general conditions, wherever applicable.

11.25 ANERT, by notice sent to the supplier, may terminate the contract, in whole or in part, at any time for its convenience. The notice of termination shall specify that termination is for ANERT's convenience, the extent to which performance of the Supplier under the contract is terminated, and the date upon which such termination becomes effective.

11.26 E-tender shall be opened at the time and date announced in the tender notice, and the price bid will be evaluated on the same day.

11.27 In case any difference or dispute arises in connection with the contract, all legal proceedings relating to the matter shall be instituted in the Court within whose jurisdiction the CEO, ANERT voluntarily resides.

11.28 The Courts situated at the place where the headquarters of ANERT is situated viz, Thiruvananthapuram alone will have jurisdiction to entertain civil suits and all other legal pertaining to this contract.

12. SPECIAL CONDITIONS

12.1 The entire quantity of 9,348 nos of systems as Groups as follows: -

Group Number	PV capacity (kW)	Nos	Total quantity
1	2	5000	9,248
	3	3000	

	5	1000	
	7	100	
	10	148	
2	30-150		100

12.2 It is mandatory for all bidders to quote in Group 1. Bidders can quote in Group 2 in addition to Group 1, but cannot be done individually.

12.3 Each bidder should submit only one (1) bid. Any bidder who submits/participates in more than one bid for the work shall be disqualified.

12.4 Price bid for the installation in SPV system inclusive of all requirements as per the document is to be quoted by the bidders and for the Group 1, the L1 for each system (2-10kW) will be considered separately. In case of Group2, prices are to be quoted in terms of Rate/kW (rates for PV capacity 30-100 kW and capacity above 100 kW shall be quoted separately).

12.5 It will be mandatory to use indigenously manufactured solar panels with indigenous solar cells and modules. Further, inverters/controllers and the Balance of System should also be manufactured indigenously. The contractor must declare the list of imported components used in the solarisation system.

12.6 If the bidder has NOT submitted the requisite EMD OR Agreement, OR if the price bid is not submitted along with the tender, such tenders will be summarily rejected.

12.7 During the tender evaluation, ANERT may seek more clarifications/details from any or all the tenderers, if felt necessary.

12.8 The price bids of the tenderers, who are technically qualified, will be opened and the L1 bidder will be awarded the work of supply and installation of items after fulfilling all the requirements.

12.9 If found essential, ANERT reserves the right, in the interest of completion of work within the time limit, to award portion/portions of the work order to next higher bidders, called for negotiation in the increasing order of their price offers, if they agree to supply at the L1 price.

12.10 L1 bidder will get priority on allotting the work order.

12.11 The tenderer should use the PV modules available in the ALMM list issued by MNRE vide order No. F.No. 283/54/2018-GRID Solar – Part (1) dtd 29/09/2021(New one) or latest issued by MNRE as specifications.

12.12 The tenderer should provide inverters meeting all the specifications stipulated in this document.

12.13 The agency can take approval for the new components except PV modules by submitting a request with relevant certificates.

12.14 For the installations in Group 2 (Higher capacity pumps)- in case of installation of additional/new transformer is required, the bidder shall install through KSEBL from their expenses. The amount shall be recouped by ANERT afterwards upon submission of the proper documents.

12.15 **The rate quoted should be all inclusive including delivery of materials at the locations to be specified including transportation, loading, unloading etc, and the cost of materials and labour for the civil works, installation and commissioning, Remote Monitoring System excluding the SIM cost, warranties, all fees for approval from KSEBL and Electrical Inspectorate, application fees, GST and all other expenses.**

12.16 **The price quotes should be inclusive of initial cost of supply, installation and commissioning and support during the warranty period of 7-years.**

12.17 The tender offer shall be kept valid for acceptance for a period of 12 months from the date of opening of bid. The offers with lower validity period are liable for rejection.

12.18 **Bidder should not apply directly to MNRE for claiming the subsidy/ incentive amount. ANERT will be responsible for claiming the subsidy/ incentive from MNRE for onward distribution to the agency once sanctioned from MNRE. Also, bidder should submit a separate declaration stating that they would not apply separately to MNRE for claiming the subsidy/ incentive for the project.**

12.19 The evaluation of the price bid will be based on the grand total of all-inclusive amount quoted excluding GST. However, the estimated cost mentioned in the Tender will be inclusive of GST.

13. SCHEDULE OF SUPPLY

13.1 The items should be delivered and installed for which work orders given as specified by ANERT, under prior intimation and supervision of ANERT for the solarisation of the existing Agricultural Pumps all over Kerala.

13.1 The Supply, Installation and Commissioning of the work allotted shall be completed within **2 months of the date of supply order.** This is the time period for handing over the system to ANERT and no time extension in this regard without valid reasons will be entertained.

13.2 The capacity of pumps to be solarised and the max allowed capacity of SPV power plant is as given below.

Pump Capacity	Capacity of PV Plant
below 2 HP	2kW

2-3 HP	2-3kW
>3-5HP	5kW
>5-7HP	7kW
>7-10HP	10kW
20 HP	30 kW
30 HP	50 kW
50 HP	75 kW
100 HP	150 kW

13.5 Supply of the main components such as SPV module, PCU and charge controller should be from the approved component list published by MNRE and ANERT websites.

13.6 Penalty for delay in supply and installation will be imposed at 0.5 % per week up to a maximum 10 %. In case of delay in supply and installation, CEO, ANERT may cancel the contract and take recourse to other action as deemed appropriate.

14. PAYMENT

14.1 No advance payment will be given. The payment will be released for each work order on completion of entire systems upon the report submitted by the respective District Engineer, ANERT.

14.2 The terms of payment shall be:

- 50% of the contract value shall be released upon the delivery of the major components at all the sites mentioned in the work order to be issued.
- 30% of the contract value shall be released on completion of installation on submitting documents such as completion reports to ANERT

- 20% of the contract value will be released after evaluating the performance of the system and upon release of funds for the project as and when it is received from MNRE.

14.3 The Performance Bank Guarantee (PBG) will be 10% of the final project cost and the PBG shall be submitted on or before the final releasing of the payment. The validity of PBG shall be rolled over every year for first seven years or till the warranty period of the last installation is completed. The rolling over or release of this PBG shall be based on the clearance of pending penalties/fines imposed by ANERT.

14.3 Income tax, contribution to workers' welfare fund and other statutory deductions shall be made from the payment as per prevailing norms.

15. SERVICE AND MAINTENANCE

15.1 Empanelled agency should have at least one service centre at each district where their system is installed. Also, there should be additional one service centre for each 500 installations per district.

15.2 The faulty system or components should be replaced/ repaired within 7 days of fault reporting.

15.3 Delay in servicing beyond 7 days of fault reporting would attract penalty at the rate Rs.25/kW/day and further actions will be initiated against the agency.

15.4 The service personnel should visit the installations at least once in 3 months for preventive maintenance even if no faults are reported. **Reports of these preventive maintenance visits and generation data should be submitted to the concerned ANERT District Offices on a quarterly basis**. The delay beyond a period of 15 days may lead to penalty as decided by CEO ANERT.

15.5 A designated Helpline (in Malayalam language) address should be indicated on the inverter/controller at suitable location easily visible to the user for reporting faults during the warranty period.

TECHNICAL SPECIFICATIONS

16. SCOPE OF THE WORK

The scope covers the Solarisation of existing Agricultural Pumps in the State under Component C of the Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyaan (PM KUSUM) scheme. This includes the Supply, Installation and Commissioning of **SPV Power Plants with Grid connectivity for solarising the following capacity of Agricultural pumps:**

Pump Capacity	Capacity of PV Plant
below 2 HP	2kW
2-3 Hp	2-3kW
>3-5HP	5kW
10HP	15 kW
20 HP	30 kW
30 HP	50 kW
50 HP	75 kW
100 HP	150 kW

All the necessary approvals from KSEBL(Electrical Utility)/Electrical Inspectorate, feasibility study, necessary civil work, Mounting of Module Structures, PV Module Installation, Inverter Installation, DC/AC Cabling and interconnections, Installation of Lightning Arresters and Earthing System as per the standards, Net Metering, arranging all the necessary inspections from KSEBL/Electrical Inspectorate/ ANERT District Office as part of Pre-Commissioning, if any, Commissioning of the PV Power Plant, are coming under the scope of the bidder.

i. Location

The proposed location for installation of the SPV modules will be on the Roof top of existing building rooftop / vacant land available with Farmers / WUAs (Water User Association) spread across the 14 Districts in the State of Kerala. Majority of the installations under Group 1 will be concentrated on 5 districts of

Kerala ie. Thrissur, Kasaragod, Malappuram, Palakkad & Ernakulum. In the case of Group 2, the installations will be on the agricultural fields (mostly paddy) in the kole wet lands of Thrissur and Ponnani.

17. DEFINITION

17.1 Solar Plant systems tendered through this document includes installation as follows

a. For GROUP 1, it shall include installations of Roof Top as well as Ground mount SPV Power plants with based on site survey.

b. For GROUP 2, the Ground mount structures are preferred to install.

17.2 Solar PV power plant system comprises of C-Si (Crystalline Silicon)/ Thin Film Solar PV modules with intelligent Inverter having MPPT technology and Anti-Islanding feature and associated power electronics, which feeds generated AC power to the Grid. Other than PV Modules and Inverter/Inverters, the system consists of Module Mounting Structures, appropriate DC and AC Cables, Array Junction Boxes (AJB) / String Combiner Boxes (SCB), AC and DC Distribution Box, Lightning Arrester, Earthing Systems, Net meter, etc.

17.3 The system should be capable for exporting the generated AC power to the Grid, whenever the Grid is available with all System Protection facilities.

18. STANDARDS AND REGULATIONS TO BE COMPLIED

18.1 The connectivity should be as per (Technical Standards for connectivity of the Distributed generation resources, Regulation, 2013).

18.2 KSERC (Grid interactive Distributed Solar Energy Systems) Regulations, 2014.

18.3 KSERC (Renewable Energy and Net Metering) Regulations, 2020

18.4 CEA Regulation 2010 has to be followed safety and Electricity supply.

18.5 Metering should be as per CEA regulation 2006.

18.6 Any amendments thereof will also be applicable.

19. SYSTEM COMPONENTS- TECHNICAL COMPLIANCE FOR SYSTEM COMPONENTS

S/ N	System Component	Capacity/ rating	Minimum Technical Compliance
1.	Solar panel	As per the requirement mentioned at each site	IS 14286 -Design Qualification and Type Approval for Crystalline Silicon Terrestrial Photovoltaic (PV) Modules
			IEC/IS61730: Part I& II;
			IS 16170: Part I
			IS/IEC 61701-Salt Mist Corrosion Testing of Photovoltaic (PV) Modules
3.	Grid Tied Inverter	As per the rating system selected	IS 16221: Part 1 &2- Safety of Power Converters for use in Photovoltaic Power Systems
			IS 16169 - Test Procedure of Islanding Prevention Measures for Utility-Interconnected Photovoltaic Inverters
5.	Cables	Max 50m in AC side and DC side as 25m.	IEC 60227 / IS 694
			IEC 60502 / IS 1554 (Pt. I & II)
7.	Switches/ Circuit Breakers/ Connectors	As required	IEC 60947 part I, II, III /
			IS 60947 Part I, II, III
			EN 50521
10.	Junction Boxes/Enclosures for Inverters and meters/ Charge Controllers	As required	IP 54 (for outdoor) or IP 65 / IP 21(for indoor) as per IEC 529
11.	Energy Meter for Recording Solar Electricity Generated		As per CEA regulations

S/ N	System Component	Capacity/ rating	Minimum Technical Compliance
12.	Two-way meter for Distribution Licensee grid connection		As per CEA regulations
13.	Electrical Grounding (Earthing)	As required	As per IS 3043
14.	Remote Monitoring System(RMS)	As required	As per MNRE requirements.

20. SPV MODULES

20.1 Only crystalline silicon cell PV modules of 335W_p or higher capacity should be used in the power plant. It is mandatory to use indigenously manufactured solar panels with indigenous solar cells and modules.

20.2 Shading correction/ bypass for optimizing array out to be incorporated in each solar module or panel level and shading optimization to be provided.

20.3 Each PV module used in any solar power project must use a RF identification tag (RFID), which must contain the following information. The RFID can be inside or outside the module laminate, but must be able to withstand harsh environmental conditions.

i. Name of the manufacturer of PV Module

ii. Name of the manufacturer of Solar cells

iii. Month and year of the manufacture (separately for solar cells and module)

iv. Country of origin (separately for solar cell and module)

v. I-V curve for the module

vi. Peak Wattage, I_m, V_m and FF for the module

vii. Unique Serial No. and Model No. of the module

viii. Date and year of obtaining IEC PV module qualification certificate

ix. Name of the test lab issuing IEC certificate

x. Other relevant information on traceability of solar cells and module as per ISO 9000 series

20.4 The following details should be provided on the module

i. Name of the manufacturer
ii. Month and year of manufacture
iii. Rated Power at STC
iv. V_{mp}, I_{mp}, V_{oc}, I_{sc}

20.5 The PV modules must qualify (enclose Test Reports/Certificates from IEC/NABL accredited laboratory) as per relevant IEC standard. The Performance of PV Modules at STC conditions must be tested and approved by one of the IEC/NABL Accredited Testing Laboratories.

20.6 PV modules used in solar power plants/ systems must be warranted for their output peak watt capacity, which should not be less than 90% at the end of 10 years and 80% at the end of 25 years.

21. POWER CONDITIONING UNIT (PCU)

Technical data sheet of the inverter proposed or the project indicating operating modes, protection, efficiency etc. should be provided by the bidder.

Common Technical Specification:

Output voltage	1 phase, 240 VAC; 3 phase, 415 VAC Inverter/ PCU should be capable of synchronise with grid voltage between 110% and 80% of the rated output. Beyond this system has to stop generating.
Over Voltage / Under Voltage trip	When Voltages reaches above 110% or below 80% respectively, with clearing time up to two seconds for reconnection.
Frequency	50 Hz. Inverter/ PCU should be capable to synchronise with grid for a variation of frequency between 50.5 Hz and 47.5 Hz. Beyond this system has to stop generating.
Over and Under frequency	High frequency at 50.5 Hz and low frequency at

Trip	47.5 Hz clearing time up to 0.2 seconds.
Continuous rating	Rated capacity of the configuration.
Nominal Power	Rated power should not be less than the rated capacity of the SPV array at STC.
Communication capability	Should have RS 485 Communication mode so as to integrate with Remote Monitoring System.
Standard conformation	IS16221(Part 1,2)
	IS16169:2014 (Procedure for Islanding prevention measures for Utility Connected PV Inverters)
Total Harmonic Distortion	Less than 5%
Operating temperature Range	-50 to 600 C
Housing cabinet	PCU to be housed in suitable switch cabinet, Within IP 21 (Indoor)/ IP 54 (Outdoor)
PCU efficiency	95% and above at full load.
Power Control	MPPT
Harmonic Current Injections	Shall not exceed the limits specified in IEEE519
Direct Current Injection	Less than 0.5 % of the full rated output at the interconnection point.
Flicker	Should be within the limits specified in IEC 61000
Synchronisation	Automatic (Built into the inverter)
Hysteresis required for reenergizing	Sixty seconds at stabilized condition.
Power Factor	The PCU power factor at the point of distribution Licensee service connection shall be 0.95 lagging or leading when operating at above 25 percent of the rated output.
Maximum time for cease to Energise in the case of formation of an unintended Island	2 Seconds

21.1 The PCU shall not produce Electromagnetic interference (EMI) which may cause malfunctioning of electronic and electrical

instruments including communication equipment, which are located within the facility in which the PCU is housed.

21.2 The PCU shall have an appropriate display on the front panel to display the instantaneous AC power output and the DC voltage, current and power input. Each of these measurement displays shall have an accuracy of 1 percent of full scale or better. The display shall be visible from outside the PCU enclosure. Operational status of the PCU, alarms, trouble indicators and AC and DC disconnect switch positions shall also be communicated by appropriate messages or indicator lights on the front of the PCU enclosure.

21.3 The PCU shall include an easily accessible emergency OFF button located at an appropriate position on the unit.

21.4 The PCU shall include ground lugs for equipment and PV array grounding.

21.5 All exposed surfaces of ferrous parts shall be thoroughly cleaned, primed, and painted or otherwise suitably protected to survive a nominal 30 years' design life of the unit.

21.6 The PCU enclosure shall be weather proof and capable of surviving climatic changes and should keep the PCU intact under all conditions in the room where it will be housed. The inverter shall be located indoor and should be either wall/ pad mounted. Moisture condensation and entry of rodents and insects shall be prevented in the PCC enclosure.

21.7 Components and circuit boards mounted inside the enclosures shall be clearly identified with appropriate permanent designations, which shall also serve to identify the items on the supplied drawings.

21.8 Maximum Power Point Tracker (MPPT) - MPPT shall be integrated in the PCU to maximize the energy drawn from the array. The MPPT should be microprocessor based to minimize the power losses.

22. ELECTRICAL SAFETY, EARTHING AND PROTECTION

22.1 Internal Faults: In built protection for internal faults including excess temperature, commutation failure, over load and cooling fan failure (if fitted) is obligatory.

22.2 Over Voltage Protection: Over Voltage Protection against atmospheric lightning discharge to the PV array is required. Protection is to be provided against voltage fluctuations in the grid itself and internal faults in the power conditioner, operational errors and switching transients.

22.3 Earth fault supervision: An integrated earth fault device shall have to be provided to detect eventual earth fault on DC side and shall send message to the supervisory system.

23. CABLING PRACTICE

23.1 Cable connections must be made using PVC Cu cables, as per BIS standards. All cable connections must be made using suitable terminations for effective contact. The PVC Cu cables must be run in GL trays with covers for protection.

24. FACTORY TESTING

24.1 PCU shall be tested prior to shipment and factory test certificate for relevant parameters should be provided with the PCU supplied. ANERT or authorised representative of ANERT may be allowed to witness the tests if required.

24.2 Factory testing shall not only be limited to measurement of phase currents, efficiencies, harmonic content and power factor, but shall also

include all other necessary tests/simulation required and requested by the Purchasers Engineers. Tests may be performed at 25, 50, 75 and 100 percent of the rated nominal power.

25. PLANT METERING/ DATA LOGGING

25.1 Net meter as per CEA standards approved by the utility as per accuracy class has to be supplied and installed.

25.2 A separate Energy Meter shall be provided at the output of PCU to record the energy generation from the solar system. (This energy meter should not be integrated with PCU). This has to calibrate and installed nearer to the Consumer meter board so that meter reader from Electrical utility could access while.

25.3 All major parameters should be available on the digital bus and logging facility for energy auditing through the internal microprocessor and can be read on the digital front panel at any time the current values, previous values for up to a month and the average values.

14. REMOTE MONITORING SYSTEM

Remote Monitoring System (RMS) should have provision to monitor and upload all parameters required by MNRE under PM KUSUM Scheme to a specified server including:

a) Solar System Performance: DC Voltage, DC current, AC output Current, Power, Drive frequency, Energy, etc.

b) RMS Performance: Device Connectivity, Data Availability, etc.

c) Geo Location: Real time latitude and longitude should be captured. This is required to ensure that system is not moved from its original location.

d) Events and Notifications: Faults related to Pump Operation, Solar generation, Controller/Drive faults like overload, dry run, short circuit, etc.

e) Consumer Management: Name, Agriculture details, Service No. Contact Details, etc.

f) Asset Management: Ratings, Serial Number, Make, Model Number of Pump, Panel and Controller, Geo Location, IMEI number (of communication module) and ICCID (of SIM).

g) Complaint and Ticket Management: Complaint management system is a part of centralized monitoring software platform – State Level Solar Energy Management Platform to be operated and maintained by the State implementing agency (SIA).

h) Consumer Mobile Application: Generation, Complaint logging, etc.

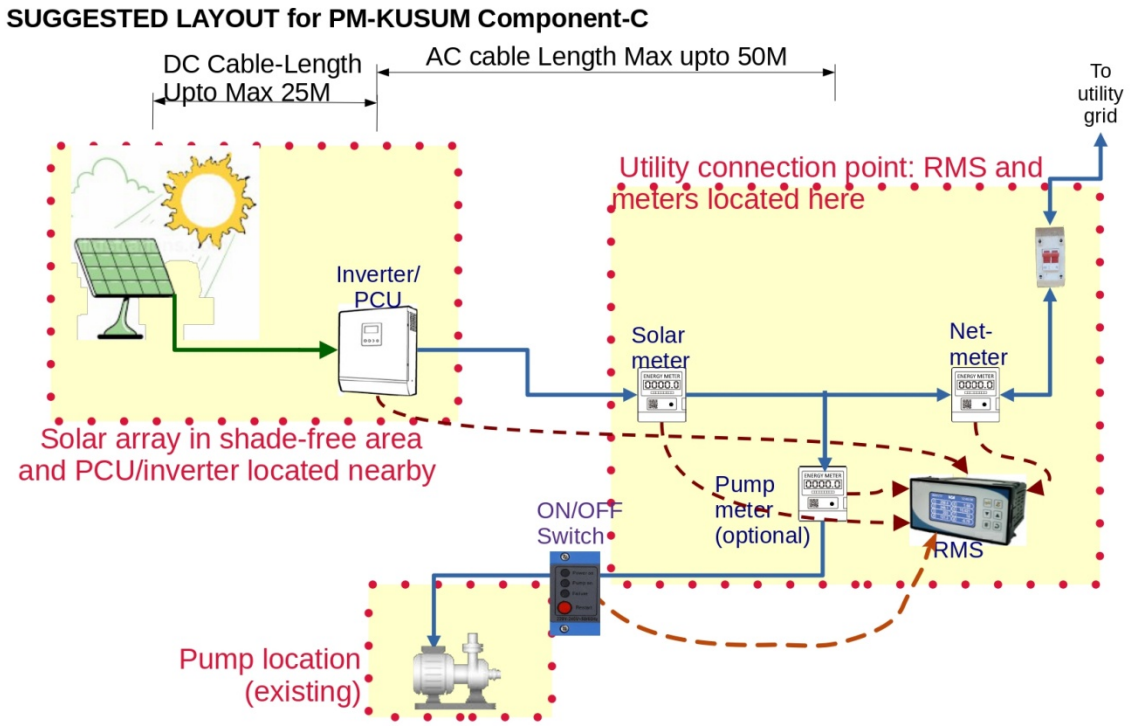
The RMS will be provided access to the interface with State Level Solar Energy Data Management platform i.e., ANERT will provide server infrastructure and shall maintain the same in the State Data Centre. The ANERT shall provide SIM card of suitable ISP having maximum Signal Strength in the respective locations. The bidder should ensure connectivity as well as pushing of data to centralized platform as mentioned in specifications.

Communication architecture should be as per following:

a) Communication Connectivity:

i. Remote monitoring system installed along with the system should be compatible with the connectivity to PCU, Controllers and meters of the system.

The proposed connectivity diagram is as follows.



ii. RMS should have provision to give remote On/Off command to pump through farmer mobile app. to save ground water.

b) Communication Modes:

i. Push Data on Event/Notification: such as pump on, pump off, protection operated, etc.

ii. Push Data Periodically: important parameters of solar pump (as mentioned above) should be pushed to central server on configurable interval. Interval should be configurable for 15 mins. However, if required, it should be possible to configure the periodic interval in multiple of 1 minute starting from 1 minute and up to 15 minutes.

Further, in case of any abnormalities or event, RMS should push on event immediately.

iii. Command on Demand: It should be possible to send commands via GSM or GPRS to RMS either to control pump operations or to update configuration

c) Communication Protocol: RMS should provide data on MQTT protocol to establish communication with thousands of systems. The message formats and details shall be as per the MNRE requirement.

d) Security:

i. Communication between RMS and Server should be secured and encrypted using TLS/SSL certificate etc.

ii. As a part of IoT protocol, Authentication and Authorization should be implemented using token/password mechanism

e) Message Format: RMS should provide data in a JSON message format as required by MNRE /ANERT.

f) Data Storage: In case of unavailability of cellular network, RMS should store data locally and on availability of network it should push data to central Server. Local data storage should be possible for at least one year in case of unavailability of cellular network.

Configuration update over the Air of multiple parameters such as IP, APN, Data logging Interval, Set Points etc. is essential. Software updating should be possible with 2G and even without the presence of SD card. Software updating process and/or failure to update software shouldn't disrupt pumping operations

15. Remote ON/OFF feature

15.1 There shall be a Remote ON/OFF Feature of pump integrated with system.

15.2 Necessary switch gear as well as communication structures should be done by the bidder so as the user can switch off/on the pump remotely.

15.3 The remote working system should be integrated with RMS.

16. ARRAY SUPPORT STRUCTURE.

16.1 Specification of module mounting structure shall be in line with specifications for SPV water pumping systems of MNRE vide Circular No. F. No. 41/3/2018-SPV Division dated17.7.2019 enclosed and any further amendment(s) issued by MNRE. However, considering the flooded scenario in Kerala the minimum height required under Group 1 category will be 100 cm and that of Group 2 will be 150cm.

16.2 Supply, installation, erection and acceptance of module mounting structure (MMS) with all necessary accessories, auxiliaries and spare part shall be in the scope of the Contractor.

16.3 The PV modules shall be mounted on fixed metallic structures having adequate

strength and appropriate design, which can withstand the load of the modules and high wind velocities as per the wind zone and IS of the location of installation.

16.4 The MMS shall be designed and constructed such that it complies with the necessary mounting requirements of PV modules in order to maintain the PV module's warranty.

16.5 MMS and its foundation shall be designed considering life span of 25 years and withstand wind speeds of 200 kmph.

16.6 Design of the MMS shall take into consideration site conditions, soil report, loading data, wind data and design standards as per latest applicable IS standard.

16.7 The structure shall be designed for simple mechanical and electrical installation. It shall support SPV modules at a given orientation and tilt, absorb and transfer the mechanical loads to the ground properly.

16.8 The Contractor shall be fully responsible for any damages caused by high wind velocity within guarantee period. The parameters of prevailing wind speed, soil conditions, load, and upward lift shall be taken care of while preparing the design and the same is required to be mentioned on design.

16.9 MMS shall be made of hot dip Galvanized steel per ASTM A123. Minimum thickness of HDGI zinc coating shall be 80 microns at any point when measured. No averaging is allowed in the measurement of coating thickness. Necessary testing provision for MMS to be made available by Contractor at site.

16.10 All bolts, nuts, panel mounting clamps fasteners shall be of stainless steel of grade SS304 and must sustain the adverse climatic conditions.

16.11 MMS shall be designed and positioned such that the PV modules are completely shadow-free solar during generation hours.

16.12 All solar panels shall be easily accessible for cleaning and the beneficiaries shall not be inclined to climb on the MMS or PV modules for cleaning the PV modules.

16.13 Junction boxes shall be mounted on the MMS such that they are easily accessible and are protected from direct sunlight and harsh weather.

16.14 Civil foundation design for MMS shall be made in accordance with the IS and prevailing soil conditions with the help of Chartered Structural Designer having substantial experience in similar work.

16.15 All the cables shall be aesthetically tied to module mounting structure.

16.16 Cutting, Welding, drilling etc. at site is not allowed for MMS. Contractor shall carry out all correction in structure (if required) at his works. If any cutting, welding, drilling is required to be done after material arrived at site then material shall be again sent for hot dip galvanization. No zinc spray shall be allowed on the MMS.

16.17 Contractor shall submit the all the quality test documents and test certificates complying with the requirement of the structure.

16.18 Contractor shall submit detailed drawings of the MMS and its civil foundations, results of design computations and stability calculations for foundations, and structural fitness of PV module mounting structures as per STADD Pro analysis. Such details shall include, but not limited to, the following;

a) Determination of true south at the site
b) Array tilt angle to the horizontal, with permitted tolerance
c) Details with drawings for fixing the modules
d) Details with drawings for fixing the junction/ terminal boxes
e) Interconnection details inside the junction/ terminal boxes
f) Structure installation details and drawings
g) Electrical grounding (earthling as per BIS specifications) and surge protections.
h) Inter-panel/ inter-row distances with allowed tolerances; and
i) Lightning protection for PV array.
j) Safety precautions to be taken

16.19 Structures shall be supplied complete with all members to be compatible for allowing easy installation at the site. Additional Structures/Frames for required for the installation of modules if any need to be provided by the bidder.

16.20 The structures shall be designed to allow easy replacement of any module.

16.21 Each structure shall have a provision to adjust its angle of inclination to the horizontal as per the site conditions. Solar module should be inclined towards south direction and installed at an angle of 10° to 15° from the horizontal.

26. SURGE PROTECTION AND EARTHING

26.1 The system should have installed with Surge Protection Device (SPD) for higher withstand of the continuous PV-DC voltage during earth fault condition. SPD shall have safe disconnection and short circuit interruption arrangements through integrated DC in-built bypass fuse (parallel) which should get tripped driving failure mode of MOV, extinguishing DC arc safely in order to protect the installation against fire hazards. The SPD should be provided in the AC Distribution Box as well.

26.2 Earthing for PV Array:

- The PV module, BOS and other components of power plants require adequate Earthing for protecting against any serious fault.
- The Earthing for array and LT power shall be made as per the provisions of IS:3043.
- Necessary provision shall be made for bolted isolating joints of each Earthing pit for periodic checking of earth resistance.
- Each String/Array and MMS of the plant shall be grounded properly. The array structure has to be connected to earth pit as per IS standards. Necessary provisions shall be made for bolted isolating joins of each earthing pit for periodic checking or earth resistance.

- The complete earthing system shall be mechanically & electrically connected to provide independent return to earth.
- For each earth pit, a necessary test point shall be provided.
- The bidder shall submit the detailed specification for the Earthing arrangements.

27. LIGHTNING PROTECTION FOR PV ARRAY

The SPV power plant should be provided with lightning and over voltage protection. The source of over voltage can be lightning or other atmospheric disturbance. The lightning conductors shall be made as per applicable Indian Standards in order to protect the entire array yard from lightning stroke.

The design and specification shall conform to **IS/IEC 62305, "Protection against lightning"** govern all lightning protection-related practices of a PV system.

27.1 The entire space occupying SPV array shall be suitably protected against lightning by deploying required number of lightning arresters. Lightning protection should be provided as per IS/ IEC 62305.

27.2 Lightning system shall comprise of air terminations, down conductors, test links, earth electrode etc. as per approved drawings.

27.3 The protection against induced high voltages shall be provided by the use of surge protection devices (SPDs) and the earthing terminal of the SPD shall be connected to the earth through the earthing system.

27.4 The EPC Contractor / Company shall submit the drawings and detailed specifications of the PV array lightning protection equipment to Employer for approval before installation of system.

28. AC DISTRIBUTION PANEL BOARD

28.1 AC Distribution Panel Board (DPB) shall control the AC power from inverter and should have necessary surge arrestors.

28.2 An ACDB panel shall be provided in between PCU and Utility grid. It shall have MCB/MCCB/ACB or circuit breaker of suitable rating for connection and disconnection of PCU from grid.

28.3 The connection between ACDB and Utility grid shall be of standard cable/ Conductor with suitable termination. It shall have provision to measure grid voltage, current and power.

28.4 The ACDB incomer shall be four (4) pole MCCB with thermal over current and earth fault releases. The incomer shall be selected at required rating.

29. DC DISTRIBUTION BOARD

29.1 DC bus/ cable which can handle the current and the voltage of inverter output safely with necessary surge arrester as per the relevant IS standards.

29.2 DC panel should be equipped with an adequate capacity indoor DC circuit breaker along with control circuit, protection relays, fuses, annunciations and remote operating and controlling facility from the main control facility.

29.3 DCDB shall have sheet from enclosure of dust and vermin proof, the busbar/ cables are to be made of copper of desired size. DCDB shall be fabricated to comply with IP 65 protection.

30. SWITCHES AND GENERAL REQUIREMENTS

30.1 Switches/ circuit breakers/ connectors meeting general requirements and safety measurements as per IS 60947 Part I, II, III and EN 50521 for AC/DC.

30.2 Junction boxes, enclosures for inverters/ charge controllers and meters shall meet IP 54 (for outdoor)/ IP 21 (for indoor) as per IEC 529.

31. AC/DC WIRING

Cabling is required for wiring from AC output of inverter/PCU to the Grid Interconnection point. It includes the DC cabling from Solar Array to AJB and from AJB to inverter input.

31.1 All cables of appropriate size to be used in the system shall have the following characteristic:

a. Shall conform to IEC 60227 / IS 694 & IEC 60502 / IS 1554 standards.
b. Temperature Range: -10 degree Celsius to +80 degree Celsius
c. Voltage rating: 660/1000V
d. Excellent resistance to heat, cold, water, oil, abrasion, UV radiation
e. Flexible

31.2 Sizes of cables between any array interconnections, array to junction boxes, junction boxes to inverter etc. shall be so selected to keep the voltage drop (power loss) of the entire solar system to the minimum (2%).

31.3 The length of exceeding 50m of AC cable from Inverter to ACDB and to the Grid connection point shall be borne by the customer.

31.4 For the DC cabling, XLPE or XLPO insulated and sheathed, UV stabilized single core flexible copper cables shall be used; Multi-core cables shall not be used.

31.5 For the AC cabling, PVC or XLPE insulated and PVC sheathed single or, multi-core flexible copper cables shall be used. However, for above 25kWp systems, XLPE insulated Aluminium cable of suitable area of cross section can be used in the AC side subject to a minimum area of cross section of 10 sq.mm. Outdoor AC cables shall have a UV -stabilized outer sheath IS/IEC 69947.

31.6 All LT XLPE cables shall conform to IS:7098 part I&II.

31.7 The total voltage drop on the cable segments from the solar PV modules to the solar grid inverter shall not exceed 2.0%

31.8 The total voltage drop on the cable segments from the solar grid inverter to the building distribution board shall not exceed 2.0%

31.9 The DC cables from the SPV module array shall run through a UV-stabilized PVC conduit pipe of adequate diameter with a minimum wall thickness of 1.5mm

31.10 Cables and wires used for the interconnection of solar PV modules shall be provided with solar PV connectors (MC4) and couplers

31.11 All cables and conduit pipes shall be clamped to the rooftop, walls, and ceilings with thermo-plastic clamps at intervals not exceeding 50cm; the minimum DC cables size shall be 4.0mm^2 copper; the minimum AC cable size shall be 4.0mm^2 copper. In three phase systems, the size of the neutral wire size shall be equal to the size of the phase wires.

31.12 Cable Marking: All cable/wires are to be marked in proper manner by good quality ferule or by other means so that the cable can be easily identified. The following colour code shall be used for cable wires

a) DC positive: red (the outer PVC sheath can be black with a red line marking
b) DC negative: black
c) AC single phase: Phase: red; Neutral: black
d) AC three phase: phases: red, yellow, blue; neutral: black
e) Earth wires: green

31.13 Cables and conduits that have to pass through walls or ceilings shall be taken through PVC pipe sleeve.

31.14 Cable conductors shall be terminated with tinned copper end ferrules to prevent fraying and breaking of individual wire strands. The termination of the DC and AC cables at the Solar Grid Inverter shall be done as per instructions of the manufacturer, which in most cases will include the use of special connectors.

31.15 All cables and connectors used for installation of solar field must be of solar grade which can withstand harsh environment conditions including high temperatures, UV radiation, rain, humidity, dirt, salt, burial and

attack by moss and microbes' for 25 years and voltages as per latest IEC standards. DC cables used from solar modules to array junction box shall solar grade copper (Cu) with XLPO insulation and rated for 1.1 kV as per relevant standards only.

31.16 Bending radii for cables shall be as per manufactures recommendations and IS: 1255.

31.17 For laying/termination of cables latest BIS/IEC Codes/ standards shall be followed.

32. NET METERING AND UTILITY INTERCONNECTION

32.1 Net metering equipment (an Import-Export Energy Meter) approved and tested by the electrical utility based on the accuracy class required for the proposed capacity of the system must be provided with the necessary data cables if required.

32.2 Net Metering and Utility Interconnection should be accomplished according the Kerala State Electricity Regulatory Commission (Grid Interactive Distributed Solar Energy Systems) Regulations 2014 Clauses (8) & (9) (Notification No. 2096/KSERC/CT/2014 dt. 10th June 2014) as well as approved by the DISCOM (KSEBL).

32.3 Meters shall be microprocessor based conforming IEC 60687 / IEC 6205211 / IEC 62053-22 / IS 14697 and solar energy meter or its display shall be placed adjacent to net energy meter.

32.4 Display parameters: LCD test, kWh import, kWh export, MD in kW export, MD in kW import, Date & Time, AC current and voltages and power factor (Cumulative kWh will be indicated continuously by default & other parameters through push-button). The solar energy meters and net energy meters should be DLMS compliant and AMR compatible.

32.5 The solar energy meters shall be provided with two ports for communication of the measured / collected data. The provided both meters shall provide an optical port for DLMS communication to RMS using separate Optical (IR) to RS 232 converter complying with hardware specifications detailed in IEC 62056-21.

32.6 The provision of the Optical (IR) to RS 232 convertor shall be the part of the SPV system and should be provided by the bidder.

32.7 The bidders shall imply Virtual/Group metering facility with KSEBL as if it is found more suitable as per the site.

33. INTER CONNECTION OF INVERTER OUTPUT WITH UTILITY GRID

33.1 The interconnection of load with inverter output should be done after obtaining permission from Electrical Inspectorate and Electrical Utility.

33.2 The plan scheme and drawing related to interconnection details should be submitted to Electrical Inspectorate through a licensed Electrical contractor with the guidance appropriate Engineering Authority.

33.3 Licensed contractor has to be engaged for preparation of plan scheme to be submitted to the Kerala State Electricity Licensing Board and necessary fee should be remitted for energisation of Solar Power Plant.

33.4 The panel board and distribution board required for AC interconnection should be done as per specification/ instruction given appropriate Engineering Authority.

33.5 All the electrical works required for the interconnection of load with inverter output should be done by the successful bidder as a part of the Solar Power Plant installation.

33.6 Bidder should visit the actual site and ensure the exact place for providing Solar Modules and Inverter etc. in presence of technical representative from the ANERT.

33.7 Net Metering Equipment shall be installed and maintained in accordance with the provisions of The Central Electricity Authority (Installation and Operation of Meters) Regulations, 2006 as amended from time to time. The Contractor shall maintain the Metering System as per metering code and CEA guidelines. The defective meter shall be immediately tested and calibrated.

33.8 The accuracy class of the Net Metering Equipment will be selected so that all levels of energy produced or taken by the Solar Power Plant will be measured accurately, and this equipment has applicable accuracy class.

33.9 Net Metering Equipment shall be microprocessor-based conforming to the relevant IEC standards with Advanced Metering Infrastructure (AMI) with RS232 cable facility.

33.10 Net Metering Equipment shall measure active energy (both import and export) and reactive energy (import) by 3 ph, 4 wire principle suitable for balanced / un-balanced 3 phase load (With KVAr, KWh, KVA measuring registers). Tri-vector based energy meter shall have an accuracy class of energy measurement of at least Class 0.2 for active energy and at least 0.5 Class for reactive energy according to IEC 60687.

33.11 Display parameters: LCD test, kWh import, kWh export, MD in kW export, MD in kW import, Date & Time, AC current and voltages and power factor (Cumulative KWH will be indicated continuously by default)

34. PERMISSION FROM KSELB/ELECTRICAL INSPECTORATE BY BIDDER

34.1 The plan scheme and drawing related to interconnection details should be submitted to Kerala State Electricity Licensing Board through a licensed Electrical Contractor with the guidance of PWD Electrical wing/A.E, L.S.G.D/appropriate Engineering Authority.

34.2 The panel board and distribution board required for AC interconnection should be done as per specification/instruction given by PWD Electrical wing/Electrical Inspectorate Authorities /A.E, L.S.G.D. /appropriate Engineering Authorities

34.3 The plant registration fee if any is to be borne by the successful bidder. Also, the application and charges for Electrical Inspectorate are also under the scope of the bidder.

34.4 If additional wiring is required for segregating the load, then that work should also be done as a part of this project implementation.

34.5 It is mandatory to obtain Energisation certificate by bidder from Electrical Inspectorate for the installations in Group 2.

34.6 It is mandatory to obtain pre scheme approval from Electrical inspectorate for the installations in Group 2.

35. WARRANTY

35.1 7years' warranty should be provided by the supplier for the system and components or part of the system must be provided as per the special conditions of the contract.

35.2 PV modules used in solar power plants/ systems must be warranted for their output peak watt capacity, which should not be less than 90 % at the end of 10 years and 80% at the end of 25 years

35.3 The Warranty Card to be supplied with the system must contain the details of the system supplied.

36. OPERATION MANUAL

36.1 An Operation, Instruction and Maintenance Manual, in English and Malayalam should be provided with the system.

36.2 The following minimum details must be provided in the manual:

a) About solar power plant – its components and expected performance.

b) About PV module

c) About electronics

d) About charging and significance of indicators

e) DO's and DON'T's

f) Clear instructions on regular maintenance and troubleshooting of solar power plant

g) Name and address of the contract person in case of non-functionality of the solar power plant.

37. BILL OF MATERIAL

37.1 The bidder should provide the bill of material mentioning the quantity of each of the item consisting in the system, along with the offer.

Table 40.1

Sl. No.	Item	Make (if any)	Model & Individual Capacity (If any)	Qty (Nos)	Rating / Capacity
1.	PV Module				
2.	PCU/Inverter				

3.	Remote Monitoring Unit				
4.	DC Cables				
5.	AC Cables				
6.	AJB/SCB				
7.	Module Mounting Structure (MMS)				
8.	ACDB				
9.	Lightning Arrester				
10.	Earthing System Details and No. of Earth pits				

38. DISPLAY BOARD

38.1 The logo of ANERT and details of the scheme as specified in the work order.

39. INSURANCE

39.1 The power plant must be insured at every stage of operation – from Material dispatch, storage, completion of installation and till 7 years after commissioning.

39.2 The insurance coverage on handing over of the system must include all conditions of **Standard Fire and Special Perils as well as burglary and house break Policy (Material Damage as well as theft)**. The insurance premium for the 7years of warranty is to be paid by the bidder. On handing over of the system, the original insurance policy is to be handed over to the authorised person at the site of installation

and a copy to ANERT District Office. The annual premium payment receipt must be handed to the authorised person at the site of installation.

40. ENGINEERING DRAWINGS

1.1 The bidder should submit and get the necessary approval of the following detailed Engineering Drawings as per the system described in 17.1 (a)&(b) of this document before execution of the project:

a. Schematic drawing showing the PV panels, Power conditioning Unit(s)/Inverter, Array Junction Boxes (AJBs)/String Combiner Boxes (SJB), AC and DC Distribution Box, Net meters, MSB etc.

b. Foundation ad structural diagram shall be approved by any of the IITs, NITs or other government universities.

c. Layout of solar PV Array

d. Single Line Diagram (SLD) with specification of all components.

e. Design document for Module Mounting Structure (MMS) including certificate showing wind speed withstanding capacity of the structure (STAAD/Equivalent).

f. Module Mounting Structure (MMS) drawing along with foundation details for the structure.

g. Sizes and specification of cables for PV Module interconnections, PV Array to Array Junction Boxes, Array Junction Boxes to Inverter, Inverter to ACDB/ Grid Connection point etc. shall be furnished.

ANNEXURE A – SUMMARY OF BID QUALIFICATION REQUIREMENTS

(To be filled in by the bidder)

1.	Name of the Applicant/Bidder						
2.	Address in full						
3.	Contact Details Mobile Land Phone Email						
4.	Name and Designation of the authorised signatory						
5.	GST Registration No.						
6.	Total number and Aggregate capacity of solar power plants installed for the last 5 Years (Off-Grid/On-Grid) *(proof to be enclosed, and flagged as Annexure)*		2017	2018	2019	2020	2021
		Number of systems:					
		Total capacity					
9.	Highest Capacity of individual PV Power Plant installed so far (With the details of Beneficiary/Institution name, Phone No, Email ID, Grama Panchayat, District, State etc.						

10.	Annual turnover of the firm during last three years (Rs.)	
11.	No. of service centres/Authorised service providers in Kerala	*(Proof or undertaking to be enclosed as Annexure)*
12.	Whether Bidder was/is de-barred by ANERT/Other State Nodal Agencies /MNRE/DISCOMs (Yes/No)?	
13.	Agreement submitted (Yes/ No)?	

Documentary evidence for the bid qualification requirements are submitted along with this document and the details furnished above are true and correct.

Signature of authorised signatory

Name

Designation

Date: (office seal)

ANNEXURE B-AGREEMENT

ARTICLES OF AGREEMENT executed on this the . . . . day of . . . . Two thousand and . . . .between the **Agency for New & Renewable Energy Research and Technology** (hereinafter referred to as **ANERT**) of the one part and Sri . . . . (Name and Address of the tenderer) hereinafter referred to as "the Bounden") of the other part.

WHEREAS in response to the Notification No. . . . . dated . . . . the bounden has submitted to ANERT a e-tender for the ***Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos ranging from 2kW-150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala*** specified therein subject to the terms and conditions contained in the said e-tender.

AND WHEREAS the bounden has furnished to ANERT a sum of Rs. . . . . .. as Earnest Money Deposit for execution of an agreement undertaking the due fulfilment of the contract in case his e-tender is accepted by ANERT. NOW THESE PRESENTS WITNESS and it is hereby mutually agreed as follows: -

In case the e-tender submitted by the bounden is accepted by ANERT and the contract for . . . . is awarded to the bounden, the bounden shall within Fifteen days of acceptance of this e-tender, execute an agreement with

ANERT incorporating all the terms and conditions under which ANERT accepts this e-tender.

In case the bounden fails to execute the agreement as aforesaid incorporating the terms and conditions governing the contract, ANERT shall have power and authority to recover from the bounden any loss or damage caused to ANERT by such breach as may be determined by ANERT by appropriating the moneys inclusive of Earnest Money deposited by the bounden and if the Earnest Money is found to be inadequate the deficit amount may be recovered from the bounden and his properties movable and immovable in the manner hereinafter contained.

All sums found due to ANERT under or by virtue of this agreement shall be recoverable from the bounden and his properties movable and immovable under the provisions of the Revenue Recovery Act for the time being in force as though such sums are arrears of land revenue and in such other manner as ANERT may deem fit.

In witness whereof Sri . . . . . (Name and Designation) for and on behalf of the Agency for Non-conventional Energy and Rural Technology and Sri . . . . . the bounden have hereunto set their hands the day and year shown against their respective signature.

Signed by Sri	Signed by Sri . . . . .
. . . . .	. . . . .
(Date)	(Date) . . . .
in the presence of witnesses	in the presence of witnesses
1.	1.
2.	2.

ANNEXURE C –DECLARATION BY THE BIDDER

e-Tender Notification No: ....., dtd …….. for Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos ranging from 2kW-150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala

To

The CEO
ANERT

We, the undersigned, declare that:

1. We have examined and have no reservations to the Bidding Document, including Addenda No.: ..... (if any)
2. We offer to supply in conformity with the Bidding Document and in accordance with the delivery schedule
3. Our Bid shall be valid for a period of 12 months from the date fixed as deadline for the submission of tenders in accordance with the Bidding Document, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;
4. If our Bid is accepted, we commit to submit a Security Deposit in the amount of 10 percent of the Contract Price for the due performance of the Contract;
5. We are not participating, as Bidders, in more than one Bid in this bidding process;
6. Our firm, its affiliates, or subsidiaries, including any subcontractors or suppliers for any part of the Contract, has not been declared ineligible by the ANERT or Government of Kerala;
7. We understand that this Bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal Contract is prepared and executed.

8. Our firm has obtained the certifications from MNRE or NABL approved Test laboratories that the goods and services are satisfying the technical criteria specified in the bid.

Signature

Date

Name

ANNEXURE D– DECLARATION ON SUBSIDY CLAIM

(to be signed and submitted by the bidder along with the bid)

Tender Notification No.: .....

Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos ranging from 2kW-150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala

To

The CEO
ANERT

I hereby declare that we will not apply directly to MNRE for claiming the subsidy for this SPV project with .....HP capacity and proposed to be installed at .....

Signature of Bidder:

Name :

Date:

Office Seal

ANNEXURE E – DECLARATION OF RELATIONSHIP WITH ANERT EMPLOYEE

(to be signed and submitted by the bidder along with the bid)

Tender Notification No.: ……
Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos ranging from 2kW-150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala

To
The CEO
ANERT

Name of the ANERT employee with Designation:

Name of the bidder related to the employee:

This is to put on record that Shri/Smt …… currently working as …… in ANERT is related to ……., who is the bidder in the bid. We are aware of the Anti-corruption policy of ANERT and will observe the highest standards during the procurement and the execution of contract and shall retain from corrupt, fraudulent, collusive or coercive practices on competing for the contract.

Signature

Name

Date

ANNEXURE F –SERVICE REPORT

(Format of Service Report to be submitted on Quarterly basis to respective District Offices)

SERVICE REPORT

Fault/ Quarterly Service

(Put ✓on the number of Periodic service & Month from the date of commissioning)

Periodic Service					Months after commissioning			
1	2	3	4		3	6	9	12
8	7	6	5		15	18	21	24
9	10	11	12		27	30	33	36
16	15	14	13		39	42	45	48
17	18	19	20		51	54	57	60
21	22	23	24		63	66	69	72
25	26	27	28		75	78	81	84

GENERAL INFORMATION			
Installation Site			
Address			
LSG			
Assembly Constituency			
District			
Service Executive Name & Contact :		Inspection Date & Time	

VISUAL INSPECTION DATA

SOLAR MODULE		
Total capacity Solar Array (kW):		
Solar Module size (Watt peak per module) Wp		
Brand of solar module :		
Model of solar module :		
Cracked glass of PV panel	☐ Yes	☐ No
White or Brown spot, bubble of air, moisture behind the glass	☐ Yes	☐ No
Junction boxes at backside loose or without cover?	☐ Yes	☐ No
Physical damage to any PV module	☐ Yes	☐ No
Check for loose cable terminations between PV modules	☐ Yes	☐ No
PV modules are properly grounded with lugs on each module	☐ Yes	☐ No
STRUCTURAL AND ROOF		
Are the modules mounted securely, and level?	☐ Yes	☐ No
Results of module hand lift test?	☐ Secure	☐ Not Secure
Are Conductors loose, touching roof surface or in contact with sharp or abrasive surfaces?	☐ Yes	☐ No
Conductor plug-and-receptacle connectors are fully engaged between junction boxes ?	☐ Yes	☐ No
Are any dissimilar metals being combined?	☐ Yes	☐ No
corrosion/evidence of rust, when encountered apply the cold galvanization spray	☐ Yes	☐ No
Check for proper earthing of structures	☐ Yes	☐ No
Check for physical damage of structures	☐ Yes	☐ No
INVERTER		

Inverter Make & Model		
Power output (kW / kVA) :		
Is the inverter located in an area which is exposed to direct sun?	☐ Yes	☐ No
Proper wire sizes ?	☐ Yes	☐ No
Check all meters and control wiring connected as per drawing	☐ Yes	☐ No
Enclosure cleaned and vacuumed out	☐ Yes	☐ No
Display and indications are working	☐ Yes	☐ No
Check for Noise levels of inverter	☐ Normal	☐ High
Check for ventilation condition (Exhaust fan is working properly or not)	☐ Yes	☐ No
Grounded ?	☐ Yes	☐ No
JUNCTION BOXES		
Check for tightness of clamps, supports, Nut-bolts used for combiner box	☐ Yes	☐ No
Check cables are secured from sharp edges	☐ Yes	☐ No
Check proper conduit fittings used and adequately tightened	☐ Yes	☐ No
Array box is Vermin and dust proof	☐ Yes	☐ No
MAIN ELECTRICAL DISTRIBUTION PANEL		
Electrical Concerns or Code Violations	☐ Yes	☐ No
Check cable terminals for burnt marks, hot spot or loose connection	☐ Yes	☐ No
Check for physical damage	☐ Yes	☐ No
REMOTE MONITORING SYSTEM		
Check whether RMS unit is functioning	☐ Yes	☐ No

SPV POWER PLANT MONITORING SHEET

Parameters under Measurement	Data	Remarks if any
GENERATION		
Current Energy Meter Reading (C)		
Previous Energy Meter Reading (P)		
Quarterly Generation (C – P) kWh		
Inverter Cumulative Generation (kWh)		
Number of days without generation (*in case of fault*)		
PV MODULES (AJB Reading using Multimeter)		
i. Watt Peak (Wp)		
ii. Voltage (V)		
iii. Current (A)		
iv. Number of Series		
v. Number of Parallel		
POWER CONDITIONING UNIT (PCU)		
i. PV Voltage (V)		
ii. PV Current (A)		
iii. PV Power (kW)		
iv. AC Voltage (R Phase)		
v. AC Voltage (Y Phase)		
vi. AC Voltage (B Phase)		
vii. Frequency (Hz)		
viii. Error log/Warning log Details		

Special Remarks (if any) Customer / Service Executive:

The above generation data are verified and the power plant is working satisfactorily. The periodic maintenance is regular and no default in inspection is noticed.

Signature with Seal

Authorised Representative of LSG

Name:

Designation:

Signature with Seal

Service Executive

Installed Agency

To be issued in Triplicate: Original to ANERT DO, copy to beneficiary& One for the installed agency

ANNEXURE G –GUARANTEED TECHNICAL PARAMETERS

PV Module			
#	**Particulars**	**Required**	**Offered**
1	PV Module Manufacture Name & Country of origin	manufacture name to be specified)	
2	PV Module type	Poly/Mono Crystalline, Mono/Poly PERC	
3	Product Code		
4	No. of PV cells per Module		
5	Total number of PV modules		
6	Max.Power, Pmp @STC	335 Wp or above	
7	Max.power tolerance (%)	Not more than 3%	
8	Max.power voltage (Vmp)@STC	To be specified	
9	Max.power current (Imp) @STC	To be specified	
10	Open circuit voltage, Voc@STC	To be specified	
11	Short circuit current, Isc@STC	To be specified	
12	Nominal voltage	To be specified	
13	Nominal Wattage	To be specified	
14	Fill Factor	Not less than 0.7	
15	Temp. coefficient of Voc (%/C)		
16	Temp. coefficient of Pmp		

PV Module			
#	Particulars	Required	Offered
	(%/C)		
17	Temperature Co-efficient of Isc (%/°C)		
18	Normal Operating Cell Temperature (NOCT) (°C)		
19	Operating Temperature (°C)		
20	Max Temperature rise of solar cells under severe working conditions over Max. Ambient Temp.	To be specified	
21	Module is suitable to operate at 500 ambient	Yes/No	
22	Cell efficiency	%	
23	Module efficiency	>=17% (Document to prove efficiency shall be furnished with the offer)	
24	Maximum System Voltage		
25	No. of By-pass Diodes		
26	Mounting arrangement for Solar Module	Fixed Arrangement	

PV Module			
#	Particulars	Required	Offered
27	Solar Module frame material	Anodized Aluminum	
28	Finish		
29	Types of Sections used		
30	Module dimensions cms (LxWxH)	To be specified	
31	PV panel Weight (kg)	To be specified	
32	Module Life (minimum)	25 years	
33	PV array area(sqm)		
34	Standards/Approvals from International Agencies	IEC 61215/IEC 61730/ IEC 61701	
35	Guaranteed output confirm	Yes	
36	Output Cables	Polarized, UV protected &Weather Proof DC rated multi-contact connector	
37	Output Terminal	PV Connectors	
38	Junction Box	Weather resistant HDPE (IP65)	

PV Module			
#	Particulars	Required	Offered
39	Construction Front, Back	High transmittance glass. Polyester Ethyl Vinyl Acetate (EVA) encapsulate	
40	Glass	Low iron tempered	
43	Copies of test certificates	IS 14286/IEC 61215,61730 part 1&2, IEC 61701	

INVERTER (To be provided for each capacity)			
#	Particulars	Required	Offered
1	Manufacturer		
2	Model name/No.		
3	Number of units		
5	Nominal AC power		
6	Nominal AC voltage		
7	Nominal AC Current		
8	AC grid Frequency range	50Hz ± 0.5%	
9	AC grid voltage range		
10	Power Factor (+ and -)		
11	Total Harmonic Distortion	As per IEEE-519 2014	
12	AC over / under voltage over / under frequency protection		
13	Max PV input power		

INVERTER (To be provided for each capacity)			
#	Particulars	Required	Offered
14	Maximum DC voltage	Less than 1000 V	
15	MPPT voltage range		
16	Maximum DC current		
17	No. of DC input ports		
18	Maximum Efficiency	as perIEC61683	
19	DC voltage ripple		
20	Ambient temperature range		
21	Humidity (non-condensing)	95%, non-condensing	
22	Degree of protection		
23	Dimensions approx. (HxWxD)		
24	Weight		
25	Protective functions AC over/under voltage, ACover/under frequency, over-temperature, AC and DC overcurrent, DC over-voltage,against Islanding		
26	Communication Interface	RS485. MPI Profi Bus/Telephone Modem/WiFi	
27	User-display standard	LCD panel with membrane Keypad	
28	Enclosure environment rating		
29	Safety and EMC		

INVERTER (To be provided for each capacity)			
#	Particulars	Required	Offered
30	Anti-islanding feature	IEEE1547/UL1741/IEC 62116	

Others				
#	Particulars	Required	Offered	
1	Remote Monitoring Unit	IIOT-Compatible	☐ Yes	☐ No
2	Cables	UV Rated	☐ Yes	☐ No
3	Junction Boxes	IP 54 or IP 65 Rated	☐ Yes	☐ No

FORMAT A –UNDERTAKING FOR NO BLACKLISTING & NO BANNING

(To be provided on Rs.200 Non-Judicial Stamp paper. In Case of JV the following format is to be provided by Each Member of the Joint Venture on their respective letterhead, signed by respective authorized Signatory along with Authorized Signatory for which POA is attached with Bid))

Undertaking for No Blacklisting & No Banning

To

The CEO
ANERT

Sub: Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos ranging from 2kW-150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala

I / We hereby declare that presently our Company/Limited Liability Partnership/ Partnership Firm/ Sole Proprietorship is having unblemished record and is not declared ineligible for corrupt/fraudulent practices by any State/Central Government/PSU on the date of Bid Submission.

I / We further declare that presently our Company/Limited Liability Partnership/ Partnership Firm/ Sole Proprietorship is not blacklisted and not declared ineligible for reasons other than corrupt/fraudulent practices by any State/Central Government/PSU on the date of Bid Submission.

If this declaration is found to be incorrect then without prejudice to any other action that may be taken, our security may be forfeited in full and the tender if any to the extent accepted may be cancelled.

(Signature & Seal of Authorized Signatory for which POA attached)

Name of Authorized Signatory:

Designation:

Date:

Place:

FORMAT B1 –UNDERTAKING BY THE JOINT VENTURE PARTNERS (IN CASE BIDDER IS JOINT VENTURE)

(On Non-Judicial Stamp Paper of Rs. 500/- attested by Notary Public/ First Class Magistrate)

Undertaking by Joint Venture

THIS JOINT DEED OF UNDERTAKING executed on this……. day of……. Two Thousand and……..... by ……., a company incorporated under the laws of …… and having its Registered Office at ..... (hereinafter called the "Party No.1" which expression shall include its successors, executors and permitted assigns) and M/s……a company incorporated under the laws of …… and having its Registered Office at

…… (hereinafter called the "Party No.2" which expression shall include its successors, executors and permitted assigns) and M/s.. .. .. a Company incorporated under the laws of …….. and having its Registered Office at ……. (hereinafter called the "Party No.3" which expression shall include its successors, executors and permitted assigns) for the purpose of making a bid and entering into a contract [hereinafter called the "Contract" {in case of award}] against the "Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9348 nos. under the PM-KUSUM scheme (Component-C) in the State of Kerala")

WHEREAS the Party No.1, Party No.2 and Party No.3 have entered into an Agreement dated.....

AND WHEREAS ANERT has invited bids as per the above-mentioned Bid Specification for the Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 500 HP under the PM-KUSUM scheme (Component-C) in the State of Kerala, under NIT No: ANERT-TECH/45/2020-PE1(RTS), details stipulated in the Tender Document issued vide: NIT No: ANERT-TECH/45/2020-PE1(RTS).

AND WHEREAS Tender Document, inter-alia stipulates that an Undertaking of two or more qualified entities as partners in a Joint Venture, meeting the requirements of Eligibility & Qualification Criteria, as applicable may bid, provided, the Joint Venture fulfills all other requirements as per the tender and in such a case, the Bid Formats shall be signed wherever applicable and as required by Tender Document either by the Authorized Signatory (appointed by a Power of Attorney executed by all partners of Joint Venture) and/or all the partners so as to legally bind all the Partners of the Joint Venture, who will be jointly and severally liable to perform the Contract and all obligations hereunder.

The above clause further states that this Undertaking shall be attached to the bid and the Performance Security will be as per the format enclosed with the Tender Document without any restrictions or liability for either party.

AND WHEREAS the bid is being submitted to ANERT vide Bid No……(Reference No: of Bid submitted by Bidder) dated ……... by Party No.1 based on this Undertaking between all the parties; under these presents and the bid in accordance with the requirements of Tender Document, has been signed by all the parties.

NOW THIS UNDERTAKING WITNESSETH AS UNDER:

In consideration of the above premises and agreements all the parties of this Deed of Undertaking do hereby declare and undertake:

1. In requirement of the award of the Contract by ANERT to the Joint Venture Partners, we, the Parties do hereby undertake that M/s…….. the Party No.1, shall act as Lead Partner and further declare and confirm that we the parties to the Joint Venture shall jointly and severally be bound unto ANERT for the successful performance of the Contract and shall be fully responsible for successful completion and performance of Scope of Work as provided in Contract in accordance with the terms and conditions specified in the Contract.
2. In case of any breach or default of the said Contract by any of the parties to the Joint Venture, the party(s) do hereby undertake to be fully

responsible for the successful performance of the Contract and to carry out all the obligations and responsibilities under the Contract in accordance with the requirements of the Contract.

3. Further, if the ANERT suffers any loss or damage on account of any breach in the Contract or any shortfall in the performance of the equipment in meeting the performances guaranteed as per the specification in terms of the Contract, the Party(s) of these presents undertake to promptly make good such loss or damages caused to the ANERT, on its demand without any demur. It shall not be necessary or obligatory for the ANERT to proceed against Lead Partner to these presents before proceeding against or dealing with the other Party(s), the ANERT can proceed against any of the parties who shall be jointly and severally liable for the performance and all other liabilities/obligations under the Contract to the ANERT.
4. The financial liability of the Parties of this Deed of Undertaking to the ANERT, as applicable, with respect to any of the claims arising out of the performance or non-performance of the obligations set forth in this Deed of Undertaking, read in conjunction with the relevant conditions of the Contract shall, however not be limited in any way so as to restrict or limit the liabilities or obligations of any of the Parties of this Deed of Undertaking.
5. It is expressly understood and agreed between the Parties to this Undertaking that the responsibilities and obligations of each of the Parties shall be as delineated in Appendix – ….. (to be suitably appended by the JV Partners along with this Undertaking in its bid) to this Deed of Undertaking. It is further undertaken by the parties that the above sharing of responsibilities and obligations shall not in any way be a limitation of joint and several responsibilities of the Parties under the Contract.
6. It is also understood that this Undertaking is provided for the purposes of undertaking joint and several liabilities of the partners to the Joint

Venture for submission of the bid and performance of the Contract and that this Undertaking shall not be deemed to give rise to any additional liabilities or obligations, in any manner or any law, on any of the Parties to this Undertaking or on the Joint Venture, other than the express provisions of the Contract.

7. This Undertaking shall be construed and interpreted in accordance with the provisions of the Contract.
8. In case of an award of a Contract, we the parties to this Deed of Undertaking do hereby agree that we shall be jointly and severally responsible for furnishing a Contract Performance Security from a bank in favour of ANERT in the currency/currencies of the Contract.
9. It is further agreed that this Deed of Undertaking shall be irrevocable and shall form an integral part of the bid and shall continue to be enforceable till the ANERT discharges the same or upon the completion of the Contract in accordance with its provisions, whichever is earlier. It shall be effective from the date first mentioned above for all purposes and intents.

IN WITNESS WHEREOF, the Parties to this Deed of Undertaking have through their authorised representatives executed these presents and affixed Common Seals of their companies, on the day, month and year first mentioned above.

Common Seal of …….

has been affixed in my/ our presence pursuant to Board of

CEO's Resolution dated …….

Name ……..

Designation …….

Signature …….

WITNESS :

For Lead Partner (Party No.-1)

For and on behalf of M/s

……..

(Signature of the authorized representative)

I. ……

II. ……

Common Seal of …….

has been affixed in my/ our presence pursuant to Board of

CEO's Resolution dated …….

Name ……..

Designation …….

Signature …….

WITNESS :

I. ……

II. ……

For Party No.-2

For and on behalf of M/s……..

(Signature of the authorized representative)

Common Seal of …….

has been affixed in my/ our presence pursuant to Board of

CEO's Resolution dated …….

Name ……..

Designation …….

Signature …….

WITNESS :

I. ……

II. ……

Note:

For Party No.-3

For and on behalf of M/s.

……..

(Signature of the authorized representative)

1. For the purpose of executing the Joint Deed of Undertaking, the non-judicial stamp papers of appropriate value shall be purchased in the name of Joint Venture.

2. The Undertaking shall be signed on all the pages by the authorised representatives of each of the partners and shall invariably be witnessed.
3. Attach the Appendix…..as mentioned in the Clause 5 of this Deed of Undertaking.

FORMAT B2 –POWER OF ATTORNEY IN FAVOUR OF AUTHORIZED SIGNATORY (IN CASE BIDDER IS JOINT VENTURE)

(On Non-Judicial Stamp Paper of Rs. 500/- attested by Notary Public / First Class Magistrate)

Power of Attorney in favour of Authorized Signatory

KNOW ALL MEN BY THESE PRESENTS THAT WE, the Partners whose details are given hereunder ..... have formed a Joint Venture under the laws of ..... and having our Registered Office(s)/Head Office(s) at ..... (hereinafter called the 'Joint Venture' which expression shall unless repugnant to the context or meaning thereof, include its successors, administrators and assigns) acting through M/s ..... being the Partner in-charge do hereby constitute, nominate and appoint M/s..... a Company incorporated under the laws of ..... and having its Registered/Head Office at ..... as our duly constituted lawful Attorney (hereinafter called "Attorney" or "Authorised Representative" or "Partner In-charge") to exercise all or any of the powers for and on behalf of the Joint Venture in regard to "Bid Specification" for the Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9348 nos. under the PM-KUSUM scheme (Component-C) in the State of Kerala", under NIT No: ANERT-TECH/45/2020-PE1(RTS) for which bids have been invited by ANERT undertake the following acts:

i. To submit proposal and participate in the aforesaid Bid Specification of ANERT on behalf of the "Joint Venture".

ii. To negotiate with ANERT the terms and conditions for award of the Contract pursuant to the aforesaid Bid and to sign the Contract with the ANERT for and on behalf of the "Joint Venture".

iii. To do any other act or submit any document related to the above.

iv. To receive, accept and execute the Contract for and on behalf of the "Joint Venture".

It is clearly understood that the Partner In-charge (Lead Partner) shall ensure performance of the Contract(s) and if one or more Partner fail to perform their respective portions of the Contract(s), the same shall be deemed to be a default by all the Partners.

It is expressly understood that this Power of Attorney shall remain valid binding and irrevocable till completion of the period to complete all the Scope of Work awarded under the terms of Bid Specification/ Contract.

The Joint Venture hereby agrees and undertakes to ratify and confirm all the whatsoever the said Attorney/Authorised Representatives/Partner in-charge quotes in the bid and negotiates with ANERT and signs the Contract with ANERT and/or proposes to act on behalf of the Joint Venture by virtue of this Power of Attorney and the same shall bind the Joint Venture as if done by itself.

IN WITNESS THEREOF the Partners Constituting the Joint Venture as aforesaid have executed these presents on this ..... day of ……..... under the Common Seal(s) of their Companies.

For and on behalf of the partners of Joint Venture

.....

.....

The Common Seal of the above Partners of the Joint Venture:

The Common Seal has been affixed there unto in the presence of:

WITNESS

1. Signature.....
   Name .....
   Designation .....
   Occupation .....
2. Signature.....
   Name .....

Designation .....

……. Occupation .....

…….

Note:

1. For the purpose of executing the Agreement, the non-judicial stamp papers of appropriate value shall be purchased in the name of Joint Venture.

2. The Agreement shall be signed on all the pages by the authorised representatives of each of the partners and shall invariably be witnessed.

FORMAT C –CERTIFICATE OF BIDDER'S FINANCIAL QUALIFICATION

(On Letterhead of the respective entity (Bidder/ Lead Member/ Other Member) for which the below details are provided. In Case of JV the following format is to be provided by Each Member of the Joint Venture separately on their respective letterhead))

Financial Qualification Certificate

In Response to NIT No:

(Rupees in Lakhs)

S/N	Financial parameters	FY17-18	FY18-19	FY19-20	FY20-21	FY 21-22
1.	**Net Worth**					
a)	Paid up Capital					
b)	Free Reserves and Surplus*					
c)	Misc expenses to the extent not written off					
	Net Worth (a+b-c)					
2.	**Annual Turnover ****					

* Free Reserve and Surplus shall be Exclusive of Revaluation Reserve, written back of Depreciation Provision and Amalgamation.

** Annual total Income/ turnover as incorporated in the Profit and Loss Account excluding non-recurring income, i.e., sale of fixed asset etc.

It is certified that all the figures are based on audited accounts read with auditors report and Notes to Accounts etc.

Name of Authorized Signatory:
Designation:

Certifying Chartered Accountant:
Name of Firm:

Date:
Place:

UDIN No:

Date:

Place:

Note:

1. In addition to above certificate from Chartered Accountant, Bidder is required to submit Firm's Annual Audit Report, Balance sheet, Profit & Loss and Income Tax Returns / CA certificate for last Five years i.e., F.Y: 2017-18, 2018-19, 2019-20, 2020-21 & 2021-22.

2. **In case of JV, the form shall also be signed by respective entity's authorized signatory along with Authorized Signatory for which POA is attached.**

AGENCY FOR NEW & RENEWWABLE ENERGY RESEARCH AND TECHNOLOGY (ANERT)

Department of Power, Government of Kerala
Thiruvananthapuram, Kerala – 695 033;
www.anert.gov.in , projects@anert.in

CORRIGENDUM

Corrigendum Type : Date

Tender ID : 2022_ANERT_504042_1

The last date for bid submission is extended till 10/10/2022 and will be opened on 11/10/2022

An online meeting for prospective bidders are scheduled on 17/09/2022 at 11 AM.

The meeting link is given below:

https://meet.google.com/ase-amfm-ghh

Thiruvananthapuram Sd/-

16-09-2022 ACTM

Gmail **Anert <anert033@gmail.com>**

Fwd: EMD Extension and Extend due date of bid submission.

3 messages

Jayakumar R <jayakumar@anert.in> 10 September 2022 at 14:07
To: Vinay <vinay.anert@kerala.gov.in>, anert <anert033@gmail.com>

---------- Forwarded message ---------
From: **OP Choudhary** <op.choudhary@reil.co.in>
Date: Sat, 10 Sep, 2022, 12:18
Subject: EMD Extension and Extend due date of bid submission.
To: <jayakumar@anert.in>

Ref :- **Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos ranging from 2kW-150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala.**

Dear Sir,

Please find the attached request letter for your kind perusal and necessary action.

--

धन्यवाद / Thanks& Regards

ओ पी चौधरी **/ OP Choudhary**
उप प्रबंधक (RE) / Dy. Manager (RE)
राजस्थान इलेक्ट्रॉनिक्स एण्ड इंस्ट्रूमेंट्स लिमिटेड / Rajasthan Electronics & Instruments Limited
(एक " मिनी रत्न " सार्वजनिक क्षेत्र का उपक्रम)/ (A "Mini Ratna" Public Sector Enterprise)
2, कनकपुरा इंडस्ट्रियल एरिया, सिरसी, रोड, जयपुर - 302012/ 2, Kanakpura Industrial Area, Sirsi, Road, JAIPUR - 302012
मोबाइल / Mobile: +91-8980034575
टेलीफोन नंबर / Telephone.No. - 0141-2470908,2470531
फैक्स नंबर / Fax No. - 0141 2470531
ईमेल/ Email: op.choudhary@reil.co.in
वेबसाइट/ Website: www.reiljp.com

उद् घोषणा/ Disclaimer:

यह जानकारी इलेक्ट्रॉनिक संदेश है और इस संदेश के लिए किसी भी संलग्नक में निहित प्राप्तकर्ता के अनन्य उपयोग के लिए इरादा कर रहे हैं और, मालिकाना गोपनीय या विशेषाधिकार प्राप्त जानकारी हो सकती है। आप इच्छित प्राप्तकर्ता नहीं हैं, तो आप, प्रसार वितरित या इस ई-मेल की नकल नहीं करनी चाहिए। इस तुरंत सूचित करें और स्थायी रूप से इस संदेश को और किसी भी संलग्नक के सभी प्रतियों को नष्ट करें। / The information contained in this electronic message and any attachments to this message are intended for the exclusive use of the addressee(s) and may contain proprietary, confidential or privileged information. If you are not the intended recipient, you should not disseminate, distribute or copy this e-mail. Please notify the sender immediately and permanently destroy all copies of this message and any attachments.

प्राप्तकर्ता इस ई-मेल और वायरस के लिए किसी भी संलग्नक जांच होनी चाहिए। कंपनी ने इस ई-मेल के माध्यम से प्रेषित किसी भी वायरस की वजह से किसी भी नुकसान के लिए उत्तरदायी नहीं है।/ The recipient should check this e-mail and any attachments for viruses. The company is not liable for any damage caused by any virus transmitted through this e-mail.

anert.pdf
59K

anert <anert033@gmail.com> 16 September 2022 at 11:11
To: op.choudhary@reil.co.in
Cc: Jayakumar R <jayakumar@anert.in>

Dear Sir/Madam,

Greetings of the day!!

We are very much happy to hear from you.

Kindly note that there will be an online meeting held on 17-09-2022 to discuss the PM KUSUM tender- ANERT-TECH/144/2022-T4.

Please make yourself convenient to attend the same to share your valuable views.

The details of the meeting may see as-

Discussion on PM KUSUM Tender

Saturday, 17 September · 11:00am – 1:00pm

Google Meet joining info

Video call link: https://meet.google.com/ase-amfm-ghh

Regards,

Arun Rajan

PM KUSUM

ANERT-Kerala.

[Quoted text hidden]

---

anert <anert033@gmail.com> 16 September 2022 at 11:41
To: op.choudhary@reil.co.in
Cc: Jayakumar R <jayakumar@anert.in>

Dear sir/madam,
Kindly note that the meeting is rescheduled to 10 AM to 11 AM the same day.
The Video call link will be the same.

Regards,
Arun Rajan
PM KUSUM
ANERT-Kerala.

[Quoted text hidden]

Gmail **Anert <anert033@gmail.com>**

Reg- Clarifications on tender clauses for the upcoming PM KUSUM Component-C by ANERT

3 messages

Anandha Krishnan <anandha.krishnan@tatapower.com> 10 September 2022 at 17:27
To: "anert033@gmail.com" <anert033@gmail.com>
Cc: "jayakumar@anert.in" <jayakumar@anert.in>, Arpit Srivastava <arpit.srivastava@tatapower.com>, Ziyad Manaprath <ziyad.manaprath@tatapower.com>, Phaniraj Chandra <phanirca@tatapower.com>, Athul P <athul.p@tatapower.com>, Sreehari M <sreehari.m@tatapower.com>, Vishal Duggal <vishal.duggal@tatapower.com>, Porwal Saket <saket@tatapower.com>, Sachidhanandan S <sachidhanandan.s@tatapower.com>, DSouza Sunil <sunildsouza@tatapower.com>, Anita Rai <anita.rai@tatapower.com>

Dear Sir,

As discussed over the phone yesterday, please find the attached sheet with the tender queries which requires clarifications from ANERT for the upcoming project. The issues were discussed among the TPSSL team and the major points were wrapped up which requires an immediate solution from ANERT.

Kindly go through the above document and please inform the appropriate day for discussing the points in person with the concerned ANERT department officials.

Thanks & Regards

Anandha Krishnan

Regional Sales Manager- Solar Pumps

Mob-7293281585

Kerala

Disclaimer:- Information contained and transmitted by this email is confidential and proprietary to The Tata Power Company Ltd. and is included for use only by the addressee. If you are not the intended recipient, you are notified that any dissemination or copying of this email or contents therein is strictly prohibited. If this message is not intended for you, then you are requested to delete this email immediately and notify the originator.

Tender Clarifications-ANERT.pdf
601K

anert <anert033@gmail.com> 16 September 2022 at 11:10
To: Anandha Krishnan <anandha.krishnan@tatapower.com>
Cc: "jayakumar@anert.in" <jayakumar@anert.in>, Arpit Srivastava <arpit.srivastava@tatapower.com>, Ziyad Manaprath <ziyad.manaprath@tatapower.com>, Phaniraj Chandra <phanirca@tatapower.com>, Athul P <athul.p@tatapower.com>, Sreehari M <sreehari.m@tatapower.com>, Vishal Duggal <vishal.duggal@tatapower.com>, Porwal Saket <saket@tatapower.com>, Sachidhanandan S <sachidhanandan.s@tatapower.com>, DSouza Sunil <sunildsouza@tatapower.com>, Anita Rai <anita.rai@tatapower.com>

Dear Sir/Madam,

Greetings of the day!!

We are very much happy to hear from you.

Kindly note that there will be an online meeting held on 17-09-2022 to discuss the PM KUSUM tender- ANERT-TECH/144/2022-T4.

Please make yourself convenient to attend the same to share your valuable views.

The details of the meeting may see as-

Discussion on PM KUSUM Tender

Saturday, 17 September · 11:00am – 1:00pm

Google Meet joining info

Video call link: https://meet.google.com/ase-amfm-ghh

Regards,

Arun Rajan

PM KUSUM

ANERT-Kerala.

On Sat, 10 Sept 2022 at 17:27, Anandha Krishnan <anandha.krishnan@tatapower.com> wrote:

> Dear Sir,
>
> As discussed over the phone yesterday, please find the attached sheet with the tender queries which requires clarifications from ANERT for the upcoming project. The issues were discussed among the TPSSL team and the major points were wrapped up which requires an immediate solution from ANERT.
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>
> Thanks & Regards
>
> Anandha Krishnan
>
> Regional Sales Manager- Solar Pumps
>
> Mob-7293281585
>
> Kerala
>
> ---
>
> Disclaimer:- Information contained and transmitted by this email is confidential and proprietary to The Tata Power Company Ltd. and is included for use only by the addressee. If you are not the intended recipient, you are notified that any dissemination or copying of this email or contents therein is strictly prohibited. If this message is not intended for you, then you are requested to delete this email immediately and notify the originator.

---

anert <anert033@gmail.com> 16 September 2022 at 11:41
To: Anandha Krishnan <anandha.krishnan@tatapower.com>

Cc: "jayakumar@anert.in" <jayakumar@anert.in>, Arpit Srivastava <arpit.srivastava@tatapower.com>, Ziyad Manaprath <ziyad.manaprath@tatapower.com>, Phaniraj Chandra <phanirca@tatapower.com>, Athul P <athul.p@tatapower.com>, Sreehari M <sreehari.m@tatapower.com>, Vishal Duggal <vishal.duggal@tatapower.com>, Porwal Saket <saket@tatapower.com>, Sachidhanandan S <sachidhanandan.s@tatapower.com>, DSouza Sunil <sunildsouza@tatapower.com>, Anita Rai <anita.rai@tatapower.com>

Dear sir/madam,
Kindly note that the meeting is rescheduled to 10 AM to 11 AM the same day.
The Video call link will be the same.

Regards,
Arun Rajan
PM KUSUM
ANERT-Kerala.

On Fri, 16 Sept 2022 at 11:10, anert <anert033@gmail.com> wrote:

> Dear Sir/Madam,
>
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>
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>
> **The details of the meeting may see as-**
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> Discussion on PM KUSUM Tender
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> Google Meet joining info
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> Video call link: https://meet.google.com/ase-amfm-ghh
>
> Regards,
>
> Arun Rajan
>
> PM KUSUM
>
> ANERT-Kerala.
>
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> >
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> > Kindly go through the above document and please inform the appropriate day for discussing the points in person with the concerned ANERT department officials.

Thanks & Regards

Anandha Krishnan

Regional Sales Manager- Solar Pumps

Mob-7293281585

Kerala

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Gmail **Anert <anert033@gmail.com>**

Word Document for Queries

1 message

Anandha Krishnan <anandha.krishnan@tatapower.com> 10 September 2022 at 17:29
To: "anert033@gmail.com" <anert033@gmail.com>

Dear Arun,

PFA word document to add the comments from your end

Thanks & Regards

Anandha Krishnan

Regional Sales Manager- Solar Pumps

Kerala

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Word- Tender Clarifications.docx
19K

Gmail **Anert <anert033@gmail.com>**

Fwd: - Clarification regarding the Financial Qualification Certificate required for tender ref. no. ANERT-TECH/144/2022-T4

3 messages

Jayakumar R <jayakumar@anert.in> 12 September 2022 at 12:22
To: anert <anert033@gmail.com>, Vinay <vinay.anert@kerala.gov.in>

---------- Forwarded message ---------
From: **VTECH ENGINEERS** <vtech.engrs@gmail.com>
Date: Mon, 12 Sept 2022 at 12:14
Subject: Re: - Clarification regarding the Financial Qualification Certificate required for tender ref. no. ANERT-TECH/144/2022-T4
To: ANERT Projects <projects@anert.in>, <jayakumar@anert.in>
Cc: Mr.Ranjit - VTech <ranjit.vtech@gmail.com>

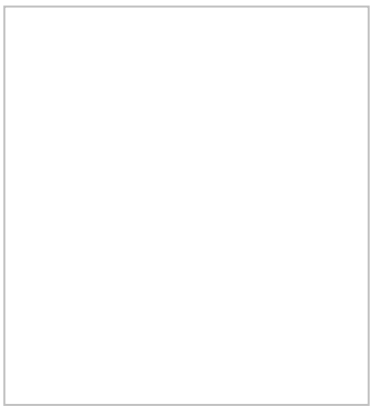
Respected Sir,

Please find the enclosed.

Thanks & Regards,

PRATIK AGRAWAL,
Director,

VTECH ENGINEERS,
#101, 1st Floor,
Thakkar Bhavan,
Handloom Market,
Nagpur - 440002
Mobile No. +919923870005, +919372032323
Email : vtech.engrs@gmail.com
Telefax : 0712-2761136

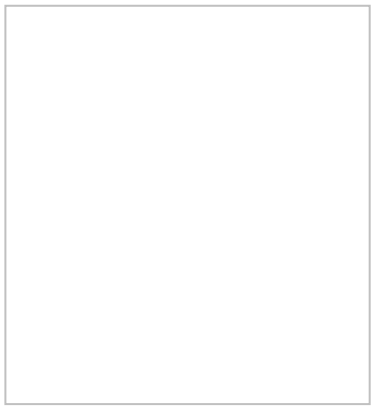


On Sat, Sep 3, 2022 at 12:03 PM VTECH ENGINEERS <vtech.engrs@gmail.com> wrote:

> Dear Sir,
>
> Please find the enclosed.
>
> Thanks & Regards,

PRATIK AGRAWAL,
Director,

VTECH ENGINEERS,
#101, 1st Floor,
Thakkar Bhavan,
Handloom Market,
Nagpur - 440002
Mobile No. +919923870005, +919372032323
Email : vtech.engrs@gmail.com
Telefax : 0712-2761136



--
JAYAKUMAR R
Joint Chief Technical Manager &
Nodal officer PM-KUSUM programme
ANERT(HQ)
Thiruvananthapuram
Kerala.695 033
0471-2338077, 2334122, 2331803, 9188119425

clarification letter (1) (2).pdf
512K

---

anert <anert033@gmail.com> 16 September 2022 at 11:08
To: vtech.engrs@gmail.com
Cc: Jayakumar R <jayakumar@anert.in>

Dear Sir/Madam,

Greetings of the day!!

We are very much happy to hear from you.

Kindly note that there will be an online meeting held on 17-09-2022 to discuss the PM KUSUM tender- ANERT-TECH/144/2022-T4.

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Saturday, 17 September · 11:00am – 1:00pm

Google Meet joining info

Video call link: https://meet.google.com/ase-amfm-ghh

Regards,

Arun Rajan

PM KUSUM

ANERT-Kerala.

On Mon, 12 Sept 2022 at 12:22, Jayakumar R <jayakumar@anert.in> wrote:

---------- Forwarded message ---------
From: **VTECH ENGINEERS** <vtech.engrs@gmail.com>
Date: Mon, 12 Sept 2022 at 12:14
Subject: Re: - Clarification regarding the Financial Qualification Certificate required for tender ref. no. ANERT-TECH/144/2022-T4
To: ANERT Projects <projects@anert.in>, <jayakumar@anert.in>
Cc: Mr.Ranjit - VTech <ranjit.vtech@gmail.com>

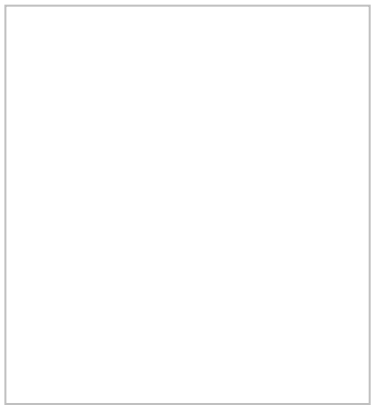
Respected Sir,

Please find the enclosed.

Thanks & Regards,

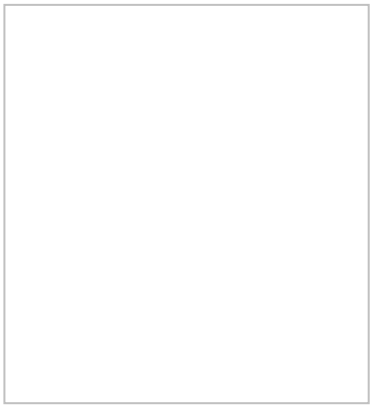
PRATIK AGRAWAL,
Director,

VTECH ENGINEERS,
#101, 1st Floor,
Thakkar Bhavan,
Handloom Market,
Nagpur - 440002
Mobile No. +919923870005, +919372032323
Email : vtech.engrs@gmail.com
Telefax : 0712-2761136



On Sat, Sep 3, 2022 at 12:03 PM VTECH ENGINEERS <vtech.engrs@gmail.com> wrote:

Dear Sir,

> Please find the enclosed.
>
> Thanks & Regards,
>
> PRATIK AGRAWAL,
> *Director,*
>
> VTECH ENGINEERS,
> #101, 1st Floor,
> Thakkar Bhavan,
> Handloom Market,
> Nagpur - 440002
> Mobile No. +919923870005, +919372032323
> Email : vtech.engrs@gmail.com
> Telefax : 0712-2761136
>
> 

--
JAYAKUMAR R
Joint Chief Technical Manager &
Nodal officer PM-KUSUM programme
ANERT(HQ)
Thiruvananthapuram
Kerala.695 033
0471-2338077, 2334122, 2331803, 9188119425

---

anert <anert033@gmail.com> 16 September 2022 at 11:41
To: vtech.engrs@gmail.com
Cc: Jayakumar R <jayakumar@anert.in>

Dear sir/madam,
Kindly note that the meeting is rescheduled to 10 AM to 11 AM the same day.
The Video call link will be the same.

Regards,
Arun Rajan
PM KUSUM
ANERT-Kerala.

On Fri, 16 Sept 2022 at 11:08, anert <anert033@gmail.com> wrote:

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Regards,

Arun Rajan

PM KUSUM

ANERT-Kerala.

On Mon, 12 Sept 2022 at 12:22, Jayakumar R <jayakumar@anert.in> wrote:

---------- Forwarded message ---------
From: **VTECH ENGINEERS** <vtech.engrs@gmail.com>
Date: Mon, 12 Sept 2022 at 12:14
Subject: Re: - Clarification regarding the Financial Qualification Certificate required for tender ref. no. ANERT-TECH/144/2022-T4
To: ANERT Projects <projects@anert.in>, <jayakumar@anert.in>
Cc: Mr.Ranjit - VTech <ranjit.vtech@gmail.com>

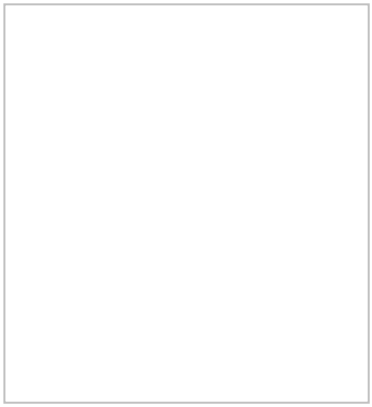
Respected Sir,

Please find the enclosed.

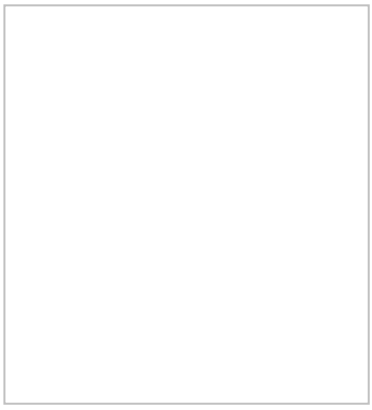
Thanks & Regards,

PRATIK AGRAWAL,
Director,

VTECH ENGINEERS,
#101, 1st Floor,
Thakkar Bhavan,
Handloom Market,
Nagpur - 440002
Mobile No. +919923870005, +919372032323
Email : vtech.engrs@gmail.com
Telefax : 0712-2761136



On Sat, Sep 3, 2022 at 12:03 PM VTECH ENGINEERS <vtech.engrs@gmail.com> wrote:

> Dear Sir,
>
> Please find the enclosed.
>
> Thanks & Regards,
>
> PRATIK AGRAWAL,
> *Director,*
>
> VTECH ENGINEERS,
> #101, 1st Floor,
> Thakkar Bhavan,
> Handloom Market,
> Nagpur - 440002
> Mobile No. +919923870005, +919372032323
> Email : vtech.engrs@gmail.com
> Telefax : 0712-2761136
>
> 

--
JAYAKUMAR R
Joint Chief Technical Manager &
Nodal officer PM-KUSUM programme
ANERT(HQ)
Thiruvananthapuram
Kerala.695 033
0471-2338077, 2334122, 2331803, 9188119425

Gmail **Anert <anert033@gmail.com>**

Fwd: Clarifications required-Ref. No. ANERT-TECH/144/2022-T4

3 messages

Jayakumar R <jayakumar@anert.in> 13 September 2022 at 10:56
To: anert <anert033@gmail.com>, Vinay <vinay.anert@kerala.gov.in>

---------- Forwarded message ---------
From: **Decky-HETTO-HYKON** <rm.ev@hykonindia.com>
Date: Tue, 13 Sept 2022 at 10:50
Subject: Clarifications required-Ref. No. ANERT-TECH/144/2022-T4
To: <jayakumar@anert.in>

Dear Sir

Greetings from Hykon !!!!

With reference to Tender Reference Number ANERT-TECH/144/2022-T4 (Tender ID 2022_ANERT_504042_1) we have the below queries:

1. Option for Free Bid
2. Execution is not possible within 1 month. Can it be extended?
3. Site details for survey with concerned person's number to be shared before placing the bid
4. Tender closing date needs to be postponed for site survey
5. Clarity in payment terms for MNRE

Awaiting clarifications on the same. Hoping to hear from you soon.

Thanks and Regards,

Hykon®
Powering the Nation

Decky John,

Asst. Manager- Sales EV

+91-7594970050

Hykon India Limited

www.hykonindia.com

--
JAYAKUMAR R
Joint Chief Technical Manager &
Nodal officer PM-KUSUM programme
ANERT(HQ)
Thiruvananthapuram
Kerala.695 033
0471-2338077, 2334122, 2331803, 9188119425

---

anert <anert033@gmail.com> 16 September 2022 at 11:08
To: rm.ev@hykonindia.com
Cc: Jayakumar R <jayakumar@anert.in>

Dear Sir/Madam,

Greetings of the day!!

We are very much happy to hear from you.

Kindly note that there will be an online meeting held on 17-09-2022 to discuss the PM KUSUM tender- ANERT-TECH/144/2022-T4.

Please make yourself convenient to attend the same to share your valuable views.

The details of the meeting may see as-

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Video call link: https://meet.google.com/ase-amfm-ghh

Regards,

Arun Rajan

PM KUSUM

ANERT-Kerala.

On Tue, 13 Sept 2022 at 13:12, anert <anert033@gmail.com> wrote:

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4. Tender closing date needs to be postponed for site survey
5. Clarity in payment terms for MNRE

Awaiting clarifications on the same. Hoping to hear from you soon.

Thanks and Regards,

Hykon®
Powering the Nation

Decky John,

Asst. Manager- Sales EV

+91-7594970050

Hykon India Limited

www.hykonindia.com

--
JAYAKUMAR R
Joint Chief Technical Manager &
Nodal officer PM-KUSUM programme
ANERT(HQ)
Thiruvananthapuram
Kerala.695 033
0471-2338077, 2334122, 2331803, 9188119425

---

anert <anert033@gmail.com> 16 September 2022 at 11:40
To: rm.ev@hykonindia.com
Cc: Jayakumar R <jayakumar@anert.in>

Dear sir/madam,
Kindly note that the meeting is rescheduled to 10 AM to 11 AM the same day.
The Video call link will be the same.

Thanks and Regards,

Decky John,

Asst. Manager- Sales EV

+91-7594970050

Hykon India Limited

www.hykonindia.com

--
JAYAKUMAR R
Joint Chief Technical Manager &
Nodal officer PM-KUSUM programme
ANERT(HQ)
Thiruvananthapuram
Kerala.695 033
0471-2338077, 2334122, 2331803, 9188119425

Gmail Anert <anert033@gmail.com>

Fwd: Reg: Requesting for Bank Guarantee Format for Tender no: ANERT TECH/144/2022 T4

3 messages

info@anert.in <info@anert.in> 13 September 2022 at 12:54
To: anert <anert033@gmail.com>

---------- Forwarded message ---------
From: **Sirius Solar Marketing** <marketing@siriussolarenergy.com>
Date: Tue, 13 Sept 2022 at 10:01
Subject: Reg: Requesting for Bank Guarantee Format for Tender no: ANERT TECH/144/2022 T4
To: <info@anert.in>
Cc: Sirius Kavitha <kavitha@siriussolarenergy.com>, Sirius Jaya Krishna <jayakrishna@siriussolarenergy.com>

Dear Team ANERT,

We M/s Sirius Solar Energy Systems Pvt ltd are interested in participating in the Tender ref no: ANERT TECH/144/2022 T4 in which the Bank Guarantee Format for EMD is missing we kindly request you to share the same for us to proceed further with the same.

Thanking you,
Yours faithfully
for Sirius Solar Energy Systems Pvt. Ltd.

Jayakrishna
(M)+91-8106843333

---

info@anert.in <info@anert.in> 13 September 2022 at 15:13
To: marketing@siriussolarenergy.com
Cc: Jayakumar R <jayakumar@anert.in>, anert <anert033@gmail.com>

On Tue, 13 Sept 2022 at 14:59, anert <anert033@gmail.com> wrote:

> Thanks for notifying us. Corrigendum will be issued with clarifications shortly.
>
> On Tue, 13 Sept 2022 at 12:54, <info@anert.in> wrote:
>
> ---------- Forwarded message ---------
> From: **Sirius Solar Marketing** <marketing@siriussolarenergy.com>
> Date: Tue, 13 Sept 2022 at 10:01
> Subject: Reg: Requesting for Bank Guarantee Format for Tender no: ANERT TECH/144/2022 T4
> To: <info@anert.in>
> Cc: Sirius Kavitha <kavitha@siriussolarenergy.com>, Sirius Jaya Krishna <jayakrishna@siriussolarenergy.com>
>
> Dear Team ANERT,
>
> We M/s Sirius Solar Energy Systems Pvt ltd are interested in participating in the Tender ref no: ANERT TECH/144/2022 T4 in which the Bank Guarantee Format for EMD is missing we kindly request you to share the same for us to proceed further with the same.
>
> Thanking you,
> Yours faithfully
> for Sirius Solar Energy Systems Pvt. Ltd.

Jayakrishna
(M)+91-8106843333

---

anert <anert033@gmail.com> 16 September 2022 at 11:00
To: info@anert.in

Dear Sir/Madam,

Greetings of the day!!

We are very much happy to hear from you.

Kindly note that there will be an online meeting held on 17-09-2022 to discuss the PM KUSUM tender- ANERT-TECH/144/2022-T4.

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Discussion on PM KUSUM Tender

Saturday, 17 September · 11:00am – 1:00pm

Google Meet joining info

Video call link: https://meet.google.com/ase-amfm-ghh

Regards,

Arun Rajan

PM KUSUM

ANERT-Kerala.

On Tue, 13 Sept 2022 at 15:13, <info@anert.in> wrote:

On Tue, 13 Sept 2022 at 14:59, anert <anert033@gmail.com> wrote:

Thanks for notifying us. Corrigendum will be issued with clarifications shortly.

On Tue, 13 Sept 2022 at 12:54, <info@anert.in> wrote:

---------- Forwarded message ---------
From: **Sirius Solar Marketing** <marketing@siriussolarenergy.com>
Date: Tue, 13 Sept 2022 at 10:01
Subject: Reg: Requesting for Bank Guarantee Format for Tender no: ANERT TECH/144/2022 T4
To: <info@anert.in>
Cc: Sirius Kavitha <kavitha@siriussolarenergy.com>, Sirius Jaya Krishna <jayakrishna@siriussolarenergy.com>

Dear Team ANERT,

We M/s Sirius Solar Energy Systems Pvt ltd are interested in participating in the Tender ref no: ANERT TECH/144/2022 T4 in which the Bank Guarantee Format for EMD is missing we kindly request you to share the same for us to proceed further with the same.

Thanking you,

> > Yours faithfully
> > for Sirius Solar Energy Systems Pvt. Ltd.
> >
> > Jayakrishna
> > (M)+91-8106843333

Gmail **Anert <anert033@gmail.com>**

Request for pre-bid meeting

3 messages

JOSE TJ <engineerproject@soura.in> 15 September 2022 at 16:33
Reply-To: engineerproject@soura.in
To: "anert033@gmail.com" <anert033@gmail.com>
Cc: jayakumar@anert.in

Ref : ANERT-TECH/144/2022-T4, Dated: 20/08/2022

Dear sir,
As per the reference tender document clause 11.11(a)(page no.18) the security deposit is mentioned as 3% of the value of contract and in Annexure C (page no.58) it is 10% of the contract price and lot of clarification required about the pricing and Remote monitoring system,etc.. So we request you to arrange a pre-bid meeting as soon as possible.

Thanking you,

Regards
Jose TJ
Soura Natural Energy Solution India Pvt. Ltd.

---

anert <anert033@gmail.com> 16 September 2022 at 10:59
To: engineerproject@soura.in
Cc: jayakumar@anert.in

Dear Sir/Madam,

Greetings of the day!!

We are very much happy to hear from you.

Kindly note that there will be an online meeting held on 17-09-2022 to discuss the PM KUSUM tender- ANERT-TECH/144/2022-T4.

Please make yourself convenient to attend the same to share your valuable views.

The details of the meeting may see as-

Discussion on PM KUSUM Tender

Saturday, 17 September · 11:00am – 1:00pm

Google Meet joining info

Video call link: https://meet.google.com/ase-amfm-ghh

Regards,

Arun Rajan

PM KUSUM

ANERT-Kerala.

On Thu, 15 Sept 2022 at 16:33, JOSE TJ <engineerproject@soura.in> wrote:

> Ref : ANERT-TECH/144/2022-T4, Dated: 20/08/2022
>
> Dear sir,
> As per the reference tender document clause 11.11(a)(page no.18) the security deposit is mentioned as 3% of the value of contract and in Annexure C (page no.58) it is 10% of the contract price and lot of clarification required about the pricing and Remote monitoring system,etc.. So we request you to arrange a pre-bid meeting as soon as possible.
>
> Thanking you,
>
> Regards
> Jose TJ
> Soura Natural Energy Solution India Pvt. Ltd.

---

anert <anert033@gmail.com> 16 September 2022 at 11:36
To: engineerproject@soura.in
Cc: jayakumar@anert.in

Dear sir/madam,
Kindly note that the meeting is rescheduled to 10 AM to 11 AM the same day.
The Video call link will be the same.

Regards,
Arun Rajan
PM KUSUM
ANERT-Kerala.

On Fri, 16 Sept 2022 at 10:59, anert <anert033@gmail.com> wrote:

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>
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അനെർട്ട്
ANERT
Agency for New and renewable Energy Research and Technology
നവീനവും പുനരുപയോഗയോഗ്യവുമായ ഊർജ്ജ ഗവേഷണങ്ങൾക്കും സാങ്കേതിക വിദ്യകൾക്കുമുള്ള ഏജൻസി
DEPARTMENT OF POWER, GOVERNMENT OF KERALA
Law College Road, PMG, Thiruvananthapuram 695033 • director@anert.in • www.anert.gov.in
Tel.: (+91-471) 2338077, 2334122, 2333124, 2331803 • Fax: (+91-471) 2329853

ADDENDUM / CORRIGENDUM

Corrigendum

Type :Technical Corrigendum - 1
Tender ID :2022_ANERT_504042_1
Tender Title :Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos ranging from 2kW-150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala

1. An additional Clause, clause # 44 – Selection Procedure is added to the original document and is included as annexure – I to this document.
2. An additional Clause, clause # 15.6 – Service and Maintenance is added to the original document and is included as annexure – III to this document.
3. The clause # 12.15 stands modified as "The rate quoted should be all inclusive including delivery of materials at the locations to be specified including transportation, loading, unloading etc, and the cost of materials and labour for the civil works, installation and commissioning, Remote Monitoring System excluding the SIM cost, warranties, all fees for approval from KSEBL and Electrical Inspectorate, application fees, GST and all other expenses. *In case of installations under Group No.2 as per tender document, additional site-specific costs if any required for structure works, pathway, ladder for access etc will be considered separately."*
4. In clause #28.1, the minimum ground clearance mentioned for module structure to be read as 90 cm for Rooftop installation and 100 cm for ground mount installation under Group 1 category and that of Group 2 will be 150cm.
5. The clause #28.5, to be read as "*MMS and its foundation shall be designed considering life span of 25 years and withstand wind speeds of 150 kmph.*"
6. The clause # 28.9 to be read as "*MMS shall be made of hot dip Galvanized steel per ASTM A123 / IS 4759. Minimum thickness of HDGI zinc coating shall be 80 microns at any point when measured. No averaging is allowed in the measurement of coating thickness. Necessary testing provision for MMS to be made available by*

Contractor at site."

7. The clause #37.5 to be read as "*It is mandatory to obtain Energisation certificate by bidder from Electrical Inspectorate for the installations of capacity above and including 10 kW.*"
8. Bidders having a MSME / NSIC / Udhyog Aadhar registration are exempted from paying Tender Fee and requisite EMD. In case of joint venture, all the bidders should meet these criteria. The format of Bank Guarantee for EMD as mentioned in the tender document is attached as annexure – II.
9. The clause #32.2 stands modified as "DC panel should be equipped with an adequate capacity indoor DC circuit breaker along with control circuit, protection relays, fuses, annunciations etc."
10. The clause #14.3 stands modified as Income tax, contribution to workers' welfare fund which will be applicable to in installation which involve civil construction work and other statutory deductions shall be made from the payment as per prevailing norms.
11. The clause # 35.1 stands modified as Net metering equipment (an Import-Export Energy Meter) approved and tested by the electrical utility based on the accuracy class required for the proposed capacity of the system must be provided with the necessary data cables if required.
12. In annexure C, clause #4 stands modified as If our Bid is accepted, we commit to submit a Security Deposit in the amount of 3 percent of the Contract Price for the due performance of the Contract.

Thiruvananthapuram Sd/-

27/09/2022 CEO ANERT

Annexure – I

44. SELECTION PROCEDURE

The bidders / JV of bidders need to get themselves graded

i. The eligibility of capacity for installation of single plant and total allocation per batch (allotment) will be based on the grading provided by the grading agency appointed by ANERT.
ii. The grading agency selected for this purpose is "ICRA Analytics Limited" Securities and Exchange Board of India (SEBI) approved Agency for "Assessing and Grading of Manufacturers / Contractors / Joint Venture of Manufacturers & integrators for submitting bids under PM KUSUM scheme – Component C Programme implemented in the state of Kerala.
iii. The grading will be done by M/s ICRA Analytics Ltd at the rates finalised by ANERT as below:

#	Rate For Undertaking Grading Services	AMOUNT (incl GST)
1	Initial Grading	23,600/-
2	Renewal of Grading post one year	9,440/-

The contact details of the ICRA Analytics Limited mentioned below and personnel dedicated for ANERT functionalities are as below:

ICRA Analytics Ltd
Infinity Benchmark, 17th Floor, Plot – G-1,
Block GP, Sector V, Salt Lake, Kolkata – 700091

Name	Contact Details	Email id

Mr. Sourav Das	+91 98307 38030	anert.grading@icraanalytics.com
Mr. Indranil Chakraborty	+91 99033 77455	

The grading certificate issued only after 20/09/2022 will be considered under the tender. The submission of this grading is a pre-requisite document and no bids without the same will not be considered.

Once the bids are opened, ANERT will evaluate all the proposals to determine whether these are complete in all respects as specified in the tender document. Evaluation of the proposals shall be done in three stages as:

i. **Level - I (Technical Evaluation):**

ANERT shall evaluate the technical bid(s) to determine whether these qualify the essential eligibility criteria, whether the bidder has submitted the EMD whether any computational errors have been made, whether all the documents have been properly signed & stamped, whether all the documents as mentioned / or required to submitted with technical bid are submitted and whether bids are completed and generally in order.

After evaluation of technical bid(s), a list of the qualifying bidder(s) shall be made. Short-listed bidder{s) shall be informed of the date, time and place of opening of financial bid(s) (online).

ii. **Level - II (Ranking of qualified Bidders & elimination):**

The financial bid(s) of Technically Qualified Bids shall be ranked in the ascending order of their respective financial bids (L1, L2, ..,Ln). The bids which have quoted the same amount shall be assigned the same rank.

If there are more than one L1 bidders quoting the same cost in Rs, tie breaking is based on the time of submission of the bid as recorded in the e-tender site. The bidder who has submitted the bid first will be the lowest bidder (L1 Bidder) and the other bidders who have quoted the L1 rates will be ranked based on the time of submission of bids as L2 bidder, L3 bidder etc. After ranking bidders who have offered L1 rates, the next lowest bidders are assigned subsequent ranks based on the same criteria.

iii. **Level – III (L1 Matching)**

Under this process, all bidders other than L1 bidder/(s) within the price bracket (L1+25% of L1) will be asked to match the L1 rate discovered. Only those bidders within the above price bracket are considered for matching with L-1 rate, and if they match with L-1 rate, then they will be selected. If total no. of bidders within the above price

bracket is less than 5, then those bidders who fall in (L1 + 30 % of L1) will also be considered for matching with the Lowest discovered rate ("L-1 Matching"). If they match, they will also be selected.

iv. **Level – IV (Allocation of works)**

ANERT will issue an order regarding the selection of bidders for each capacity and the total volume allotted to them based on the grading provided to the bidder by M/s ICRA. The rates including taxes will be included in the order and no requests for enhancement will be entertained. The L1 matched bidders are required to enter into an agreement with ANERT within 7 days from the date of issue of order.

Annexure – II

BID SECURITY BANK GUARANTEE

BG No. :
Amount :
Date :
Valid up to :

This guarantee is made on this ..... day of ..... 20..... by ..... (Complete postal address of the bank) hereinafter called 'the **Bank**', which expression shall unless repugnant to the context or meaning thereof shall include its successors and assigns.

WHEREAS the **ANERT,** having its registered office at PMG-Law College Rd, Vikas Bhavan PO, Thiruvananthapuram, Kerala, PIN – 695 033, hereinafter called as **ANERT,** which expression shall unless repugnant to the context or meaning thereof shall include its successors and assigns in having agreed to exempt .....(hereinafter called "**contractor(s)**" which expression unless repugnant to the context and meaning thereof shall include its

successors and assigns) from depositing with **ANERT,** a sum of Rs. ..... towards Security Deposit in lieu of the said **contractor(s)** having agreed to furnish a bank guarantee for the said sum of Rs. ..... as required under the terms and conditions of Tender No. ..... dated ..... (hereinafter referred as the 'bid') placed by the **ANERT.**, on the said **contractor(s)** and on specific request on the part of the said **Contractor**(s), we the **Bank** hereby unconditionally and irrevocably affirm and undertake-

On production of the Bank Guarantee for Rs..... (Rupees..... only) we, ...Bank having our Head Office at ..... (herein after referred to as "the Bank") at the request of M/s. .....(name of contractor) do hereby undertake to pay to the ANERT an amount not exceeding Rs..... (Rupees ..... only), against any loss or damage caused to or suffered or would be caused to or suffered by the ANERT by reason of any breach by the said contractor of any of the terms and conditions contained in the said agreement

We, ...Bank, do hereby undertake to pay the amount due and payable under this Guarantee without any demur, merely on a demand from the ANERT stating that the amount claimed is due by way of loss or damage caused to or would be caused to or suffered by the ANERT by reasons of breach by the said contractor of any of the terms or conditions contained in the said agreement. Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. ..... (Rupees ..... only).

This guarantee will not be discharged due to change in the constitution of the bank or the contractor/supplier.

Notwithstanding anything contained hereinbefore:

1. Our liability under this Bank Guarantee shall not exceed Rs.....(Rupees .... only)
2. This Bank Guarantee shall be valid upto .....
3. We are liable to pay the guaranteed amount or any part thereof under this Bank Guarantee amount only and only if you serve us a written claim or demand on or before.....

Dated at ..... this .... day of 2021

SIGNATURE OF THE BANK _____

SEAL OF THE BANK _____

SIGNATURE OF THE WITNESS _____

Name and Address of the Witness _____

The bank guarantee shall be issued by a bank (Nationalized/Scheduled) located in India

Annexure - III

15.6 Maintenance guidelines for various components viz. solar panels, inverter, wiring etc. are discussed below:

a. SOLAR PV PANELS

Although the cleaning frequency for the panels will vary from site to site depending on soiling, it is recommended that

a. The panels are to be cleaned at least once in every 90 days/as and when required or instructed
b. Use water and a soft sponge or cloth for cleaning.
c. Do not use detergent or any abrasive material for panel cleaning.
d. Iso-propyl alcohol may be used to remove oil or grease stains.
e. Do not spray water on the panel if the panel glass is cracked or the back side is perforated.
f. Wipe water from module as soon as possible.
g. Use proper safety belts while cleaning modules at inclined roofs etc.
h. The modules should not be cleaned when they are excessively hot. Early morning is particularly good time for module cleaning.
i. Check if there are any shade problems due to vegetation or new building. If there

are, make arrangements for removing the vegetation or moving the panels to a shade-free place.

j. Ensure that the module terminal connections are not exposed while cleaning; this poses a risk of electric shock.

k. Never use panels for any unintended use, e. g. drying clothes, chips etc.⎫ Ensure that monkeys or other animals do not damage the panels.

l. ***CABLES AND CONNECTION BOXES***

m. Check the connections for corrosion and tightness.

n. Check the connection box to make sure that the wires are tight, and the water seals are not damaged.

o. There should be no vermin inside the box.

p. Check the cable insulating sheath for cracks, breaks or burns. If the insulation is damaged, replace the wire.

q. If the wire is outside the building, use wire with weather-resistant insulation.

r. Make sure that the wire is clamped properly and that it should not rub against any sharp edges or corners.

s. If some wire needs to be changed, make sure it is of proper rating and type.

c. ***INVERTER***

a. The inverter should be installed in a clean, dry, and ventilated area.

b. Remove any excess dust in heat sinks and ventilations. This should only be done with a dry cloth or brush.

c. Check that vermin have not infested the inverter. Typical signs of this include spider webs on ventilation grills or wasps' nests in heat sinks.

d. Check functionality, e.g., automatic disconnection upon loss of grid power supply, at least once a month.

e. Verify the state of DC/AC surge arrestors, cable connections, and circuit breakers.

i. ***Inspection and Maintenance Schedule***

Component	Activity	Description
PV Module	Cleaning	• Clean PV modules with plain water or mild dishwashing detergent. • Do not use brushes, any types of solvents, abrasives, or harsh detergents.
PV Array	Inspection	• Check the PV modules and rack for any damage. • Note down location and serial number of

		damaged modules.
	Inspection	• Determine if any new objects, such as vegetation growth, are causing shading of the array and move them if possible.
	Vermin Removal	• Remove bird nests or vermin from array and rack area.
Junction Boxes	Inspection	• Inspect electrical boxes for corrosion or intrusion of water or insects. Seal boxes if required. • Check position of switches and breakers. • Check operation of all protection devices.
Wiring	Inspection	• Inspect cabling for signs of cracks, defects, lose connections, overheating, arcing, short or open circuits, and ground faults.
Inverter	Inspection Service	• Observe instantaneous operational indicators on the faceplate of the inverter to ensure that the amount of power being generated is typical of the conditions. • Inspect Inverter housing or shelter for physical maintenance, if required.
Plant	Monitoring	• Operation and Performance Monitoring
Spare Parts	Management	• Manage inventory of spare parts.

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DEPARTMENT OF POWER, GOVERNMENT OF KERALA
Law College Road, PMG, Thiruvananthapuram 695033 • director@anert.in • www.anert.gov.in
Tel.: (+91-471) 2338077, 2334122, 2333124, 2331803 • Fax: (+91-471) 2329853

ADDENDUM / CORRIGENDUM

Corrigendum Type :Technical Corrigendum - 1
Tender ID :2022_ANERT_504042_1
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27/09/2022 CEO ANERT

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The contact details of the ICRA Analytics Limited mentioned below and personnel dedicated for ANERT functionalities are as below:

ICRA Analytics Ltd
Infinity Benchmark, 17th Floor, Plot – G-1,
Block GP, Sector V, Salt Lake, Kolkata – 700091

Name	Contact Details	Email id
Mr. Sourav Das	+91 98307 38030	anert.grading@icraanalytics.com
Mr. Indranil Chakraborty	+91 99033 77455	

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Under this process, all bidders other than L1 bidder/(s) within the price bracket (L1+25% of L1) will be asked to match the L1 rate discovered. Only those bidders within the above price bracket are considered for matching with L-1 rate, and if they match with L-1 rate, then they will be selected. If total no. of bidders within the above price bracket is less than 5, then those bidders who fall in (L1 + 30 % of L1) will also be considered for matching with the Lowest discovered rate ("L-1 Matching"). If they match, they will also be selected.

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Annexure – II

BID SECURITY BANK GUARANTEE

BG No. :
Amount :
Date :
Valid up to :

This guarantee is made on this ..... day of ..... 20..... by ..... (Complete postal address of the bank) hereinafter called 'the **Bank**', which expression shall unless repugnant to the context or meaning thereof shall include its successors and assigns.

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On production of the Bank Guarantee for Rs..... (Rupees..... only) we, ...Bank having our Head Office at ..... (herein after referred to as "the Bank") at the request of M/s. .....(name of contractor) do hereby undertake to pay to the ANERT an amount not exceeding Rs..... (Rupees ..... only), against any loss or damage caused to or suffered or would be caused to or suffered by the ANERT by reason of any breach by the said contractor of any of the terms and conditions contained in the said agreement

We, ...Bank, do hereby undertake to pay the amount due and payable under this Guarantee without any demur, merely on a demand from the ANERT stating that the amount claimed is due by way of loss or damage caused to or would be caused to or suffered by the ANERT by reasons of breach by the said contractor of any of the terms or conditions contained in the said agreement. Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. ..... (Rupees ..... only).

This guarantee will not be discharged due to change in the constitution of the bank or the contractor/supplier.

Notwithstanding anything contained hereinbefore:

1. Our liability under this Bank Guarantee shall not exceed Rs.....(Rupees .... only)
2. This Bank Guarantee shall be valid upto .....
3. We are liable to pay the guaranteed amount or any part thereof under this Bank Guarantee amount only and only if you serve us a written claim or demand on or before.....

Dated at ..... this .... day of 2021

SIGNATURE OF THE BANK _____

SEAL OF THE BANK _____

SIGNATURE OF THE WITNESS _____

Name and Address of the Witness _____

The bank guarantee shall be issued by a bank (Nationalized/Scheduled) located in India

Annexure - III

15.6 Maintenance guidelines for various components viz. solar panels, inverter, wiring etc. are discussed below:

a. SOLAR PV PANELS

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h. The modules should not be cleaned when they are excessively hot. Early morning is particularly good time for module cleaning.
i. Check if there are any shade problems due to vegetation or new building. If there are, make arrangements for removing the vegetation or moving the panels to a shade-free place.
j. Ensure that the module terminal connections are not exposed while cleaning; this poses a risk of electric shock.
k. Never use panels for any unintended use, e. g. drying clothes, chips etc. ⎫ Ensure that monkeys or other animals do not damage the panels.

l. ***CABLES AND CONNECTION BOXES***
m. Check the connections for corrosion and tightness.
n. Check the connection box to make sure that the wires are tight, and the water seals are not damaged.
o. There should be no vermin inside the box.
p. Check the cable insulating sheath for cracks, breaks or burns. If the insulation is damaged, replace the wire.
q. If the wire is outside the building, use wire with weather-resistant insulation.
r. Make sure that the wire is clamped properly and that it should not rub against any sharp edges or corners.

s. If some wire needs to be changed, make sure it is of proper rating and type.

c. ***INVERTER***

a. The inverter should be installed in a clean, dry, and ventilated area.

b. Remove any excess dust in heat sinks and ventilations. This should only be done with a dry cloth or brush.

c. Check that vermin have not infested the inverter. Typical signs of this include spider webs on ventilation grills or wasps' nests in heat sinks.

d. Check functionality, e.g., automatic disconnection upon loss of grid power supply, at least once a month.

e. Verify the state of DC/AC surge arrestors, cable connections, and circuit breakers.

i. ***Inspection and Maintenance Schedule***

Component	Activity	Description
PV Module	Cleaning	• Clean PV modules with plain water or mild dishwashing detergent. • Do not use brushes, any types of solvents, abrasives, or harsh detergents.
PV Array	Inspection	• Check the PV modules and rack for any damage. • Note down location and serial number of damaged modules.
	Inspection	• Determine if any new objects, such as vegetation growth, are causing shading of the array and move them if possible.
	Vermin Removal	• Remove bird nests or vermin from array and rack area.
Junction Boxes	Inspection	• Inspect electrical boxes for corrosion or intrusion of water or insects. Seal boxes if required. • Check position of switches and breakers. • Check operation of all protection devices.
Wiring	Inspection	• Inspect cabling for signs of cracks, defects, lose connections, overheating, arcing, short or open circuits, and ground faults.
Inverter	Inspection Service	• Observe instantaneous operational indicators on the faceplate of the inverter to ensure that the amount of power being generated is typical of the conditions. • Inspect Inverter housing or shelter for physical maintenance, if required.
Plant	Monitoring	• Operation and Performance Monitoring
Spare Parts	Management	• Manage inventory of spare parts.

AGENCY FOR NEW & RENEWWABLE ENERGY RESEARCH AND TECHNOLOGY (ANERT)

Department of Power, Government of Kerala
Thiruvananthapuram, Kerala – 695 033;
www.anert.gov.in , projects@anert.in

CORRIGENDUM

Corrigendum Type	:	Technical Corrigendum - 2
Tender ID	:	2022_ANERT_504042_1
Tender Title	:	Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos ranging from 2kW-150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala

1. An additional Clause, clause # 44 was introduced vide Technical Corrigendum – 1, for Assessing and Grading of Manufacturers / Contractors / Joint Venture of Manufacturers & integrators for submitting bids under PM KUSUM scheme – Component C. It is hereby clarified that only the EPC / System Integrators are required to submit the grading from M/s ICRA and Manufacturers need not submit the grading.
2. The EPC / System Integrators are to be graded in the same pattern for Registration of Vendors for Solar Program by M/s ICRA. This grading shall be submitted in due course and is not required at the time of tender submission. The same will be called for once the tender is opened and finalised during project implementation stage.

Thiruvananthapuram Sd/-

12/10/2022

AGENCY FOR NEW & RENEWWABLE ENERGY RESEARCH AND TECHNOLOGY (ANERT)

Department of Power, Government of Kerala
Thiruvananthapuram, Kerala – 695 033;
www.anert.gov.in , projects@anert.in

CORRIGENDUM

Corrigendum Type	:	Technical Corrigendum - 3
Tender ID	:	2022_ANERT_504042_1
Tender Title	:	Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of 9,348 nos ranging from 2kW- 150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala

1. The additional costs required for cabling, structural works etc for any excess quantity other than the standard installation mentioned in the tender document is to be quoted separately in letter head and is to be uploaded in the provision provided for uploading PDF document in the finance cover.
2. The format provided for submitting the undertaking of Joint venture as Format B, stands cancelled. Bidders are requested to submit the JV agreement in Rs. 200 stamp paper, clearly mentioning the tender details and lead bidder.

Thiruvananthapuram
25/10/2022

NARENDRA NATH VELURI IFS
CHIEF EXECUTIVE OFFICER, ANERT

AGENCY FOR NEW AND RENEWABLE ENERGY RESEARCH AND TECHNOLOGY ★ ANERT TVM

AGENCY FOR NEW & RENEWWABLE ENERGY RESEARCH AND TECHNOLOGY (ANERT)

Department of Power, Government of Kerala
Thiruvananthapuram, Kerala – 695 033;
www.anert.gov.in , projects@anert.in

CORRIGENDUM

Corrigendum Type	:	Technical Corrigendum - 4
Tender ID	:	2022_ANERT_504042_1
Tender Title	:	Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of 9,348 nos ranging from 2kW- 150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala

1. The length of AC cabling mentioned in the tender document for standard installation as 50m stands reduced to 15m. The excess quantity to be considered as additional and shall be allotted separately at the unit rates finalised.
2. The additional rates mentioned in the Technical Corrigendum – 3 is to be quoted as follows:
   i. Per meter cost for DC Cable for Installations under Group 1 & 2 category
   ii. Per meter cost for AC Cabling for Installations under Group 1 category
   iii. Per meter cost for AC Cabling for Installations under Group 2 category
   iv. Cost for additional Structure for increase in height of above 1m from the standard height / kW
   v. Cost for additional Structure for increase in height of above 2m from the standard height / kW
   vi. Cost for additional Structure for Rooftop installation in slanting GI or Aluminum sheet roof / kW
   vii. Any other component required in excess to be quoted in per unit cost of that component

Thiruvananthapuram
26/10/2022

AGENCY FOR NEW AND RENEWABLE ENERGY RESEARCH AND TECHNOLOGY ★ ANERT TVM

ANERT

AGENCY FOR NEW & RENEWWABLE ENERGY RESEARCH AND TECHNOLOGY (ANERT)

Department of Power, Government of Kerala

CORRIGENDUM

Corrigendum Type	:	Technical Corrigendum - 5
Tender ID	:	2022_ANERT_504042_1
Tender Title	:	Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of 9,348 nos ranging from 2kW- 150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala

1. Additional Clauses, clause # 45 – Change in Law, Clause #46 – Force Majeure & Clause #47 – Limitation of Liability is added to the original document and is included as annexure – I to this document.
2. It is necessary to use SPV Modules with indigenously manufactured solar cells (DCR content) and shall be listed under the Approved List of Module Manufacturers (ALMM) list issued by MNRE from time to time.
3. It is necessary to use anti-theft bolts in Ground mounted installations, whereas the same need not be provided for rooftop installations, in which case easy replacement of modules are necessary.
4. In clause #28.1, the minimum ground clearance mentioned for module structure to be read as 50 cm for Rooftop installations. For rooftop installations, each panel frame structure shall be so fabricated as to be fixed on the roof top column/ wall structures/ground. The structure should be capable of withstanding a wind load of 150 km/hr after grouting and installation. The front end of the solar array must be 50 cm above the roof top. Grouting material for SPV structures shall be as per M15 (1:2:4) concrete specification.
5. The clause # 28.10 stands modified as "All bolts, nuts, panel mounting clamps fasteners shall be of stainless steel of grade SS304 / 8.8 grade HDG and must sustain the adverse climatic conditions."
6. The third point in Clause # 14.2 stands modified as " 20% of the contract value will be released as and when the funds for the project is received from MNRE for the particular installation."

Thiruvananthapuram
01/11/2022

CEO

45. CHANGE IN LAW

i. If as a result of Change in Law, the Successful bidder suffers any additional costs in the execution of the Works or in relation to the performance of its other obligations under this Agreement, the Successful bidder shall, within 15 (fifteen) days from the date it becomes reasonably aware of such addition in cost, notify ANERT with a copy to ANERT's Engineer of such additional cost due to Change in Law.

ii. If as a result of Change in Law, the Successful bidder benefits from any reduction in costs for the execution of this Agreement or in accordance with the provisions of this Agreement, either Party shall, within 15 (fifteen) days from the date it becomes reasonably aware of such reduction in cost, notify the other Party with a copy to the Authority's Engineer of such reduction in cost due to Change in Law.

iii. ANERT's Engineer shall, within 15 (fifteen) days from the date of receipt of the notice from the Successful bidder or ANERT, determine any addition or reduction to the Contract Price, as the case may be, due to the Change in Law.

46. FORCE MAJEURE

i. Notwithstanding the provisions of clauses contained in the tender document; the work awarded agency shall not be liable to forfeit
   a. Security deposit for delay and
   b. termination of contract; if he is unable to fulfill his obligation under this contract due to force majeure conditions.

ii. For purpose of this clause, "Force Majeure" means an event beyond the control of the work awarded agency and not involving the work awarded agency's fault or negligence and not foreseeable, either in its sovereign or contractual capacity. Such events may include but are not restricted to Acts of God, wars or revolutions, fires, floods, epidemics, quarantine restrictions and fright embargoes etc. Whether a "Force majeure" situation exists or not, shall be decided by ANERT and its decision shall be final and binding on the work awarded agency and all other concerned.

iii. In the event that the work awarded agency is not able to perform his obligations under this contract on account of force majeure, he will be relieved of his obligations during the force majeure period. In the event that such force majeure extends beyond six

months, ANERT has the right to terminate the contract in which case, the security deposit shall be refunded to him.

iv. If a force majeure situation arises, the work awarded agency shall notify ANERT in writing promptly, not later than 14 days from the date such situation arises. The work awarded agency shall notify ANERT not later than 3 days of cessation of force majeure conditions. After examining the cases, ANERT shall decide and grant suitable additional time for the completion of the work, if required.

47. Limitation of Liability

Except in cases of criminal negligence or wilful misconduct,

a. The Successful bidder shall not be liable to the ANERT, whether in contract, tort, or otherwise, for any indirect or consequential loss or damage, loss of use, loss of production, or loss of profits or interest costs, provided that this exclusion shall not apply to any obligation of the Successful bidder to pay liquidated damages to the ANERT

b. The aggregate liability of the Successful bidder to the ANERT, whether under the Contract, in tort or otherwise, shall not exceed the total Contract Price, provided that this limitation shall not apply to any obligation of the Successful bidder to indemnify the ANERT with respect to patent infringement

AGENCY FOR NEW & RENEWWABLE ENERGY RESEARCH AND TECHNOLOGY (ANERT)

Department of Power, Government of Kerala
Thiruvananthapuram, Kerala – 695 033;
www.anert.gov.in , projects@anert.in

CORRIGENDUM

Corrigendum Type : Date

Tender ID : 2022_ANERT_504042_1

The last date for bid submission is extended till 11/11/2022 and will be opened on 14/11/2022

Thiruvananthapuram

02-11-2022

CEO

M/s. KC KOPAR ENERGY SOLUTIONS PRIVATE LIMITED have submitted the bid for the tender vide no. ANERT-TECH/144/2022-T4- Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos ranging from 2kW-150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala.

While evaluating the technical bid you submitted against the tender mentioned above, we are seeking some clarifications on the points mentioned below in order to avoid rejection of your bid. Your reply should reach us by e-mail on or before 25th Nov.2022, 6 pm.

I. Exemption of tender fee and EMD is possible only if the firm comes under the MSME category, but no document is submitted to substantiate the claim. Need to provide the same as per Technical corrigendum 1, point no.8.

II. As per the clause in tender 10.1.3 only Manufacturers of PV Modules OR manufacturers of Solar Pumps OR a Joint Venture of Manufacturers of Solar Panels or manufacturers of Solar Water pumps are eligible to undertake works under the scheme. Provide a declaration from the manufacturer in your JV partnership as it comes under the above clause.

III. In the JV Agreement submitted, you need to define the lead member (Refer to tender clause 10.2.1-point #1.1)

IV. For the JV partner- in your case, M/s.*SWELECT Energy* Systems Limited, we need the following documents to consider as a valid Joint venture partner as-
   - Certificate incorporation/registration.
   - GST registration certificate with GSTIN.
   - Pan Card.
   - Format C (as per the FORMATS–CERTIFICATE OF BIDDER'S FINANCIAL QUALIFICATION) with valid supporting documents to consider MAAT.
   - Income Tax Returns for the last 5 financial years as specified in the tender.
   - The annual audit report, Balance sheet, Profit & loss Account for the last 5 financial years.
   - Format A- Undertaking for Non-Blacklisted record.
   - Need to declare whether the Panel &cell are indigenously manufactured (DCR Content) or not. (Refer Technical Corrigendum-5, Point#2)

V. Work orders and completion certificates for claiming the experience as per table 10.3 in the tender document need to be provided.

VI. The format C–CERTIFICATE OF BIDDER'S FINANCIAL QUALIFICATION provided is not as per the ~~document~~ format furnished in the Tender document. Hence submission is considered invalid.

VII. Need to submit Income Tax Returns for the last 5 financial years for M/s. K C Kopar Energy Solution P. Ltd. as table 10.3 point # 1.2.2 specified in the tender.

VIII. The Bill of Material is not as per the format provided in the tender clause# 40.1 and all fields in BoM shall be filled completely.

IX. Certificates substantiating the compliance mentioned in the tender document **for all models** of modules and inverters shall be included.

X. Information regarding service center should be provided as per the tender clause # 10.1.4, clause # 15.1, and annexure A point #9.

23.11.2022.
Kala. K G.
23/11/2022 Rajesh R AETM
23/11 K Premkumar, SF

M/s Sirius Solar energy solutions Pvt Ltd have submitted the bid for the tender vide no. ANERT-TECH/144/2022-T4- Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos ranging from 2kW-150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala.

While evaluating the technical bid you submitted against the tender mentioned above, we are seeking some clarifications on the points mentioned below in order to avoid rejection of your bid. Your reply should reach us by e-mail on or before 25th Nov.2022, 6 pm.

I. Exemption of tender fee and EMD is possible only if the firm comes under the MSME category, but no document is submitted to substantiate the claim. Need to provide the same as per Technical corrigendum 1 point no.8.
II. Format B2-Power of attorney need to be produced. in Rs: 200/- stamp paper
III. Bidder has to provide clarity on the work orders and completion certificate to prove 3MW installation experience as per tender, clearly specifying the date of completion (within last 5 years)
IV. The annual audit report, Balance sheet, and Profit & loss Account for the last 5 financial years need to be submitted.
V. Certificates substantiating the compliance mentioned in the tender document **for all models** of modules and inverters shall be included.
VI. Need to declare that the Panel & cell are indigenously manufactured (DCR Content) as per Technical Corrigendum-5, Point#2.

23/11/2022.
Kalc. K G.
23/11/22
Rajesh R
ACTM
23/11
K Premkumar, SF

M/s. Moopens Energy solution Pvt Ltd have submitted the bid for the tender vide no. ANERT-TECH/144/2022-T4- Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos ranging from 2kW-150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala.

While evaluating the technical bid you submitted against the tender mentioned above, we are seeking some clarifications on the points mentioned below in order to avoid rejection of your bid. Your reply should reach us by e-mail on or before 25th Nov.2022, 6 pm.

I. JV agreement needs to be provided on Rs. 200/- Kerala stamp paper.
II. Format B2-Power of attorney is needed to be produced in Rs. 200/- stamp paper.
III. Need to produce Copy of Work order and completion certificate from SECI/PSU/SNA or GOVT departments to prove eligibility of 3 MW installation experience to meet qualification criteria (Refer Table 10.3 of Tender Document)
IV. Format C needs to be submitted separately to prove the financial eligibility of both JV Partners.
V. Format A- Undertaking for Non-Blacklisted record need to be submitted separately in Rs. 200/- stamp paper to prove the financial eligibility of both JV Partners.
VI. Annexure G-GTP needs to be produced.
VII. Certificates substantiating the compliance mentioned in the tender document **for all models** of modules and inverters shall be included.
VIII. Need to declare that the Panel & cell are indigenously manufactured (DCR Content) as per Technical Corrigendum-5, Point#2.
IX. The balance sheet needs to be produced with figures in Indian Rupees (INR). In the case of JV, audit reports balance sheet and Profit loss Account of last five financial years shall be submitted for both the members.
X. Annexure D- Declaration of Subsidy claim needs to be provided.
XI. Annexure E- Declaration of Relationship with ANERT Employee needs to be submitted as per the format provided in the Tender document.

23.11.2022.

23-11-22
Rajesh R
HCTM

23/11/22
SE

M/s. INKEL Limited have submitted the bid for the tender vide no. ANERT-TECH/144/2022-T4- Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos ranging from 2kW-150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala.

While evaluating the technical bid you submitted against the tender mentioned above, we are seeking some clarifications on the points mentioned below in order to avoid rejection of your bid. Your reply should reach us by e-mail on or before 25th Nov.2022, 6 pm.

I. If the bidder is not a manufacturer, JV needs to be formed with manufacturers as per tender clause # 10.1.3.

II. Need to provide GTP & BoM as per the tender clauses.

III. Need to declare that the Panel & cell are indigenously manufactured (DCR Content) as per Technical Corrigendum-5, Point#2.

IV. Certificates substantiating the compliance mentioned in the tender document **for all models** of modules and inverters shall be included.

V. Information regarding service center should be provided as per the tender clause # 10.1.4, clause # 15.1, and annexure-A point #9.

VI. Need to provide documents mentioned below -
   - Registration / Incorporation Certificate
   - GST Certificate
   - PAN card

23.11.2022
ACTM.

Kala. K G

23/11/22
Rajesh R
ACTM

23/11/22
K Prabhakar, SF

M/s. Almiya Engineering Consultants Pvt Ltd have submitted the bid for the tender vide no. ANERT-TECH/144/2022-T4- Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos ranging from 2kW-150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala.

While evaluating the technical bid you submitted against the tender mentioned above, we are seeking some clarifications on the points mentioned below in order to avoid rejection of your bid. Your reply should reach us by e-mail on or before 25th Nov.2022, 6 pm.

I. If the firm comes under the MSME category, ~~but no~~ document ~~is~~ to be submitted to substantiate the claim. Need to provide the same as per Technical corrigendum 1 point no.8.

II. To substantiate the Pre-qualification requirement of 3MW installation experience, Work orders and completion certificates from SECI/PSU/SNA or GOVT departments need to be produced.

III. Format C needs to be submitted to prove financial eligibility.

IV. If the bidder is not a manufacturer, JV needs to be formed with manufacturers as per tender clause # 10.1.3.

V. Need to submit Format A- Undertaking for Non-Blacklisted record (by both members in case of JV) on Rs 200 stamp paper.

VI. The annual Audit report, Balance sheet, Profit & loss Account, and ITR for the last 5 Years need to be submitted. (Refer to Table 10.3)

VII. Certificates substantiating the compliance mentioned in the tender document **for all models** of modules and inverters shall be included.

VIII. Annexure B shall have a valid signature with the company seal.

IX. Annexure E- Declaration of Relationship with ANERT Employee needs to be submitted as per the format provided in the Tender document.

X. Need to provide GTP & BoM as per the tender - Annexure B and clause #41

XI. Need to declare that the Panel & cell are indigenously manufactured (DCR Content) as per Technical Corrigendum-5, Point#2.

XII. Information regarding service center should be provided as per the tender clause # 10.1.4, clause # 15.1, and annexure A point #9.

23.11.2022

Kala. K. G.

23-11-2022
Rajesh R
ACTM

23/11

K Premkumar, SF

M/s. Agrawal Renewable Energy Pvt Ltd have submitted the bid for the tender vide no. ANERT-TECH/144/2022-T4- Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos ranging from 2kW-150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala.

While evaluating the technical bid you submitted against the tender mentioned above, we are seeking some clarifications on the points mentioned below in order to avoid rejection of your bid. Your reply should reach us by e-mail on or before 25th Nov.2022, 6 pm.

I. Need to produce copy of Work order and completion certificate from SECI/PSU/SNA or GOVT departments to prove installation experience of 3 MW to meet qualification criteria (Refer Table 10.3 of Tender Document) by with
II. The PV module offered should be included in the ALMM list and shall comply the terms mentioned in Technical Corrigendum-5, Point#2.
III. Format C–Certificate of Bidder's Financial Qualification with valid supporting documents to consider MAAT.to (Refer to Table the 10.3 of Tender Document) with a valid signature and seal of Chartered Accountant.
IV. In BOM, Structure and Earthing should meet the specification in the tender.
V. Certificates substantiating the compliance mentioned in the tender document **for all models** of modules and inverters shall be included.
VI. Information regarding service center should be provided as per the tender clause # 10.1.4, clause # 15.1, and annexure A point #9.

(Jay) 23.11.2022

23.11.2022 Rajesh A ACTM

Kala. K G.

23/11 SF

M/s Suntastic Engineering Pvt.Limited have submitted the bid for the tender vide no. ANERT-TECH/144/2022-T4- Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9348nos ranging from 2kW-150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala.

While evaluating the technical bid you submitted against the tender mentioned above, we are seeking some clarifications on the points mentioned below in order to avoid rejection. Your reply should reach us by e-mail on or before 25th Nov.2022, 6 pm.

I. As per the clause in tender 10.1.3 only Manufacturers of PV Modules OR manufacturers of Solar Pumps OR a Joint Venture of Manufacturers of Solar Panels or manufacturers of Solar Water pumps are eligible to undertake works under the scheme. Provide a declaration from the manufacturer in your JV partnership as it comes under the above clause.

II. The Format C- Certificate of Bidder's Financial Qualification provided is not as per the document furnished in the Tender document. Since submission is considered invalid.

III. Suntastic Engineering Pvt.Limited, need to submit Annual Audit report, Balance sheet, and Profit and Loss Account for the financial year 2021-22. (Refer to Table 10.3 of the tender document)

IV. Certificates substantiating the compliance mentioned in the tender document **for all models** of modules and inverters shall be included.

V. Information regarding service center should be provided as per the tender clause # 10.1.4, clause # 15.1, and annexure A point #9.

VI. Format A- Undertaking for Non-Blacklisted record for both members in JV in Rs 200 stamp paper.

VII. Format C- Certificate of Bidder's Financial Qualification with valid supporting documents to consider MAAT.

VIII. For the JV partner- Navitas Green Solutions Pvt.Ltd, the following documents are required to consider them as a valid Joint venture partner -

- Certificate of incorporation/registration.
- GST registration certificate with GSTIN.
- PAN Card.
- Income Tax Returns, annual audit report, Balance sheet, Profit & loss Account for the last 5 financial years.
- Need to declare whether the Panel & cell are indigenously manufactured (DCR Content) or not. (Refer Technical Corrigendum-5, Point#2)
- Work orders and completion certificates for claiming the installation experience of 3 MW as per table 10.3 in the tender document.

23.11.2022
SCTM

Kak.KG

23.11.2022
Rajesh R
AETM

23/11
K. Prankumar SF

M/s Ecomate Energy Solutions have submitted the bid for the tender vide no. ANERT-TECH/144/2022-T4- Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9348 nos ranging from 2kW-150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala.

While evaluating the technical bid you submitted against the tender mentioned above, we are seeking some clarifications on the points mentioned below in order to avoid rejection. of your bid. Your reply should reach us by e-mail on or before 25th Nov.2022, 6 pm.

I. Exemption of tender fee and EMD is possible only if the firm comes under the MSME category, but no document is submitted to substantiate the claim. Need to provide the same as per Technical corrigendum 1, point no.8.

II. As per the clause in tender 10.1.3 only Manufacturers of PV Modules OR manufacturers of Solar Pumps OR a Joint Venture of Manufacturers of Solar Panels or manufacturers of Solar Water pumps are eligible to undertake works under the scheme. Provide a declaration from the manufacturer in your JV partnership as it comes under the above clause.

III. Work orders and completion certificates for claiming the installation experience as per table 10.3 in the tender document. to be provided.

IV. Format A- Undertaking for Non-Blacklisted record for both members in JV in Rs 200 stamp paper.

V. The format C–Certificate of Bidder's Financial Qualification provided by M/s Ecomate Energy Solutions is not as per the format furnished in the Tender document.

VI. Income Tax Returns of M/s Ecomate Energy Solutions for financial years 2017-18, and 2020-21 need to be provided. (Refer to Table 10.3 of the tender document)

VII. For M/s Ecomate Energy Solutions Annual Audit report, Balance sheet, Profit & Loss Account for 2021-2022 are not provided. (Refer to Table 10.3 of the tender document)

VIII. The Bill of Material is not as per the format provided in the tender clause# 40.1.

IX. Certificates substantiating the compliance mentioned in the tender document **for all models** of modules and inverters shall be included as per the tender clause

X. Information regarding service center should be provided as per the tender clause # 10.1.4, clause # 15.1, and annexure A point #9.

XI. GTP needs to be provided as per the format given in Annexure G of the tender document.

XII. For the JV partner- in your case, M/s *LIVFAST BATTERIES PRIVATE LIMITED*, we need the following documents to consider them as a valid Joint venture partner -

- Format C- Certificate of Bidder's Financial Qualification with valid supporting documents.
- Income Tax Returns for the last 5 financial years as specified in the tender.(Refer to Table 10.3 of the tender document)
- Need to declare whether the Panel & cell are indigenously manufactured (DCR Content) or not. (Refer Technical Corrigendum-5, Point#2)

23.11.2022. Kala. K.G. 23-11-2022 Rajesh R ACTM 23/11 K Premkumar, SF

Scim

M/s. AditiSolar Private Ltd. have submitted the bid for the tender vide no. ANERT-TECH/144/2022-T4- Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos ranging from 2kW-150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala.

While evaluating the technical bid you submitted against the tender mentioned above, we are seeking some clarifications on the points mentioned below in order to avoid rejection of your bid. Your reply should reach us by e-mail on or before 25th Nov.2022, 6 pm.

I. Declaration regarding non-black listing as per format A should be provided on Rs.200/- Stamp paper
II. Agreement format B should be submitted on Rs.200/- ~~Kerala~~ Stamp paper
III. Need to declare whether the Panel & cell are indigenously manufactured (DCR Content) or not. (Refer Technical Corrigendum-5, Point#2).
IV. Provide IS certificate of the prescribed models of the INVERTER
V. Information regarding service center should be provided as per the tender clause # 10.1.4, clause # 15.1, and annexure A point #9.

23/11/2022.
Jr TM.

Kala. K G

23-11-2022
Rajesh R
ACTM

23/11
K Parenkumar, SF

M/s. Suryam International Private Ltd. have submitted the bid for the tender vide no. ANERT-TECH/144/2022-T4- Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos ranging from 2kW-150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala.

While evaluating the technical bid you submitted against the tender mentioned above, we are seeking some clarifications on the points mentioned below in order to avoid rejection of your bid. Your reply should reach us by e-mail on or before 25th Nov.2022, 6 pm

I. Need to declare whether the Panel & cell are indigenously manufactured (DCR Content) or not. (Refer Technical Corrigendum-5, Point#2).
II. GTP (Annexure G) as per the format needs to be provided.
III. The Bill of Material is not as per the format provided in the tender clause# 40.1.
IV. Certificates substantiating the compliance mentioned in the tender document **for all models** of modules and inverters shall be included.

23-11-2022
Rajesh R
ACTM

23/11
K. Pramkumar SF

M/s. Kondaas Automation Private Ltd. have submitted the bid for the tender vide no. ANERT-TECH/144/2022-T4- Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos ranging from 2kW-150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala.

While evaluating the technical bid you submitted against the tender mentioned above, we are seeking some clarifications on the points mentioned below in order to avoid rejection. of your bid. Your reply should reach us by e-mail on or before 25th Nov.2022, 6 pm.

I. Exemption for tender fee and EMD is possible only if your firm comes under MSME category, but no document is submitted to substantiate the claim. Need to provide the same as per Technical corrigendum 1 point no.8.

II. As per the clause in tender 10.1.3 only Manufacturers of PV Modules OR manufacturers of Solar Pumps OR a Joint Venture of Manufacturers of Solar Panels or manufacturers of Solar Water pumps are eligible to undertake works under the scheme. Provide a declaration as it comes under the above clause.

III. The uploaded files (pqd.pdf and preagreement.pdf) are illegible format, Please provide legible copy of the same.

IV. Need to declare whether the Panel & cell are indigenously manufactured (DCR Content) or not. (Refer Technical Corrigendum-5, Point#2).

23.11.2022
ഇലക്ട്രിക്കൽ
JCTM

Kala K.U.

23-11-2022
Rajesh R
ACTM

23/11
K Premkumar, SF

M/s. Rajasthan Electronics and Instruments Ltd. have submitted the bid for the tender vide no. ANERT-TECH/144/2022-T4- Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos ranging from 2kW-150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala.

While evaluating the technical bid submitted by you against the tender mentioned above, we are seeking some clarifications on the points mentioned below in order to avoid rejection. Your reply should reach us by e-mail on or before 25th Nov.2022, 6 pm.

I. The PV module offered should be included in the ALMM list, Please provide details regarding the same.

II. Income Tax Returns for the financial year 2017-18 and the annual audit report, Balance sheet, Profit & loss Account for the 2021-22 financial year should be submitted.

III. The Bill of Material is not as per the format provided in the tender document clause# 40.1.

IV. GTP (Annexure G) is not as per the format provided in the tender document.

V. Certificates substantiating the compliance mentioned in the tender document **for all models** of modules and inverters shall be included.

VI. Undertaking for Non-blacklisted record as per format A to be provided on Rs.200/- non-Judicial Stamp paper.

VII. Need to declare that the Panel & cell are indigenously manufactured (DCR Content) or not. (Refer Technical Corrigendum-5, Point#2).

23.11.2022
[illegible]
[illegible] ACTM

23.11.22
Rajesh R
ACTM

Kalaiselvi

23/11
K Premkumar
SF

M/s. Tata Power Solar Systems LIMITED have submitted the bid for the tender vide no. ANERT-TECH/144/2022-T4- Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos ranging from 2kW-150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala.

While evaluating the technical bid submitted by you against the tender mentioned above, we are seeking some clarifications on the points mentioned below in order to avoid rejection of your bid. Your reply should reach us by e-mail on or before 25th Nov.2022, 6 pm.

I. Work orders and completion certificates for claiming the experience as per table 10.3 in the tender document. to be provided
II. TATA TP540HG10W is not in the ALMM list. If you can provide any other panel which is included in the ALMM list, please provide the same in the GTP and BoM.
III. Certificates substantiating the compliance mentioned in the tender document **for all models** of modules and inverters shall be included.

23.11.2022.
Team.

Kala.K G.

23/11/22
Rajesh R
HETM

23/11/22
K Premkumar, SE

TENDER EVALUATION REPORT

TENDER ID. :- 2022_ANERT_504042_1

TENDER REF ID:- ANERT-TECH/144/2022-T4

TENDER NAME:- *RATE CONTRACT FOR THE SOLARISATION OF GRID CONNECTED AGRICULTURAL PUMPS OF CUMULATIVE CAPACITY OF 9,348 NOS RANGING FROM 2KW- 150KW UNDER THE PM-KUSUM SCHEME (COMPONENT-C) IN THE STATE OF KERALA*

TENDER OPENING DATE: **14.11.2022**

As per the tender details mentioned above, e-tender was invited dated 19.08.2022. Against that we have received bids from the following firms

1. M/s. Aditi Solar Pvt Ltd
2. M/s. Agrawal Renewable Energy Pvt Ltd
3. M/s. Almiya Engineering Consultants Pvt Ltd
4. M/s. Ecomate Energy Solutions
5. M/s. INKEL Limited
6. M/s. KC Copar Energy Solutions Pvt Ltd
7. M/s. Kondaas Automation Pvt Ltd
8. M/s. Moopens Energy solution Pvt Ltd
9. M/s. Rajasthan Electronics Instruments Ltd
10. M/s. Sirius Solar energy solutions Pvt Ltd
11. M/s. Suntastic engineering Pvt Ltd
12. M/s. Surya International Pvt Ltd
13. M/s. Tata Power Solar Systems Ltd

A committee constituted for the evaluation of this tender, scrutinized all the documents and found none of the firms submitted all the relevant documents. Hence committee sought clarifications from 13 firms, out of these, 12 of them submitted clarifications. The committee evaluated the tender again and final conclusions as follows-

- The 7 of them found disqualified for the financial bid evaluation due to following reason/reasons-

Sl No	Bidder	Reason/Reasons	Tender clause
1	M/s. Agrawal Renewable Energy Pvt Ltd	Documents submitted as the proof for attaining the 3 MW technical experience criteria are from the private companies	Copy of work orders and a certificate issued by the SNA/ Govt. Organization/SECI/PSUs towards the satisfactory work completion to be furnished by the bidder. In absence of any one, it qualifying in technical bid.
2	M/s. Almiya Engineering Consultants Pvt Ltd	Didn't respond to the clarifications sought	
3	M/s. Ecomate Energy Solutions	No Work orders to substantiate the work experience of 1MW in Govt Sector	Copy of work orders and a certificate issued by the SNA/ Govt. Organization/SECI/PSUs towards the satisfactory work completion to be furnished by the bidder. In absence of any one, it qualifying in technical bid.
4	M/s. INKEL Limited	No financial documents provided prior to 2017	Firm's Annual Audit Report, Balance sheet, Profit & Loss and Income Tax Returns / CA certificate for last Five years i.e. F.Y: FY2017 18, FY2018 19, FY2019 20, FY2020 21 and FY2021 22 and FY21 22.
5	M/s. KC Copar Energy Solutions Pvt Ltd	Didn't meet the work experience of 1 MW criteria	Each of the JV member should have carried out works related to installation of solar systems of min capacity of 1MW during the last five financial years. Total aggregate capacity by both members of JV should be of 3MW during last 5 financial years.

6	M/s. Kondaas Automation Pvt Ltd	They are not a manufacturer and failed to provide valid JV agreement with any manufacturers.	As per the guidelines of PM-KUSUM, only Manufacturers of PV Modules OR manufacturer of Solar Pumps OR a Joint Venture of Manufacturer of Solar Panels or manufacturer of Solar Water pumps are eligible to undertake works under the scheme.
7	M/s. Moopens Energy solution Pvt Ltd	The Format C- Certificate of Bidders Financial Qualification is not submitted for JV partner	Certificate fulfilling required financial criteria in the name of Bidder duly certified by Practicing Chartered Accountant as per the form at provided Format C, duly mentioning UDIN

- Found 6 of them as successful passed the technical evaluation,

They are

i. ***M/S Aditi solar Pvt ltd.***
ii. ***M/s. Rajasthan Electronics Instruments Ltd***
iii. ***M/s. Sirius Solar energy solutions Pvt Ltd***
iv. ***M/s. Suntastic engineering Pvt Ltd***
v. ***M/s. Surya International Pvt Ltd***
vi. ***M/s. Tata Power Solar Systems Ltd***

Decision

THE ABOVE 6 BIDDERS ARE RECOMMENDED FOR OPENING OF THE FINANCIAL BID OF TENDER ID- 2022_ANERT_504042_1

Approved

28/11/22

eTendering System Government of Kerala

Kerala Tenders

Bid List Details

Date : 15-Nov-2022 11:35 AM

Print

Organisation Chain :	ANERT
Tender ID :	2022_ANERT_504042_1
Tender Ref No :	ANERT-TECH/144/2022-T4
Tender Title :	Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos ranging from 2kW- 150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala

Bids List

S.No	Packet Type	Bidder Number	Bidder Name	Submitted Date	Status	Reason	Status Updated On
1	Fee/PreQual /Technical	1334191	Aditi Solar Private Limited	11-Nov-2022 04:07 PM	Admitted-Fee/PreQual /Technical		15-Nov-2022 11:32 AM
2	Fee/PreQual /Technical	1351107	Agrawal Renewable Energy Private Limited	10-Nov-2022 01:24 PM	Admitted-Fee/PreQual /Technical		15-Nov-2022 11:32 AM
3	Fee/PreQual /Technical	1360514	ALMIYA ENGINEERING CONSULTANTS PVT LTD	01-Nov-2022 10:57 AM	Admitted-Fee/PreQual /Technical		15-Nov-2022 11:33 AM
4	Fee/PreQual /Technical	1379756	ECOMATE ENERGY SOLUTIONS	11-Nov-2022 03:48 PM	Admitted-Fee/PreQual /Technical		15-Nov-2022 11:34 AM
5	Fee/PreQual /Technical	1324161	INKEL LIMITED	14-Nov-2022 02:43 PM	Admitted-Fee/PreQual /Technical		15-Nov-2022 11:31 AM
6	Fee/PreQual /Technical	1384855	KC COPAR ENERGY SOLUTIONS (P) LTD	14-Nov-2022 02:06 PM	Admitted-Fee/PreQual /Technical		15-Nov-2022 11:34 AM
7	Fee/PreQual /Technical	1377640	Kondaas Automation Private Limited	11-Nov-2022 05:45 PM	Admitted-Fee/PreQual /Technical		15-Nov-2022 11:33 AM
8	Fee/PreQual /Technical	1339713	Moopens Energy Solutions Pvt Ltd	11-Nov-2022 04:04 PM	Admitted-Fee/PreQual /Technical		15-Nov-2022 11:32 AM
9	Fee/PreQual /Technical	1323574	Rajasthan Electronics Instruments Ltd, Jaipur	14-Nov-2022 02:35 PM	Admitted-Fee/PreQual /Technical		15-Nov-2022 11:31 AM
10	Fee/PreQual /Technical	1379613	SIRIUS SOLAR ENERGY SYSTEMS PVT LTD	11-Nov-2022 03:38 PM	Admitted-Fee/PreQual /Technical		15-Nov-2022 11:33 AM
11	Fee/PreQual /Technical	1380384	SUNTASTIC ENGINEERING PRIVATE LIMITEDD	11-Nov-2022 02:31 PM	Admitted-Fee/PreQual /Technical		15-Nov-2022 11:34 AM
12	Fee/PreQual /Technical	1351638	Suryam Internatinal private Limited	09-Nov-2022 12:51 PM	Admitted-Fee/PreQual /Technical		15-Nov-2022 11:33 AM
13	Fee/PreQual /Technical	1325007	Tata Power Solar	10-Nov-2022 05:57 PM	Admitted-Fee/PreQual /Technical		15-Nov-2022 11:31 AM

TENDER EVALUATION REPORT

TENDER ID. :- 2022_ANERT_504042_1

TENDER REF ID:- ANERT-TECH/144/2022-T4

TENDER NAME:- *RATE CONTRACT FOR THE SOLARISATION OF GRID CONNECTED AGRICULTURAL PUMPS OF CUMULATIVE CAPACITY OF 9,348 NOS RANGING FROM 2KW- 150KW UNDER THE PM-KUSUM SCHEME (COMPONENT-C) IN THE STATE OF KERALA*

TENDER OPENING DATE: **14.11.2022**

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2. M/s. Agrawal Renewable Energy Pvt Ltd
3. M/s. Almiya Engineering Consultants Pvt Ltd
4. M/s. Ecomate Energy Solutions
5. M/s. INKEL Limited
6. M/s. KC Copar Energy Solutions Pvt Ltd
7. M/s. Kondaas Automation Pvt Ltd
8. M/s. Moopens Energy solution Pvt Ltd
9. M/s. Rajasthan Electronics Instruments Ltd
10. M/s. Sirius Solar energy solutions Pvt Ltd
11. M/s. Suntastic engineering Pvt Ltd
12. M/s. Surya International Pvt Ltd
13. M/s. Tata Power Solar Systems Ltd

A committee constituted for the evaluation of this tender, scrutinized all the documents and found none of the firms submitted all the relevant documents. Hence committee sought clarifications from 13 firms, out of these, 12 of them submitted clarifications. The committee evaluated the tender again and final conclusions as follows-

- The 7 of them found disqualified for the financial bid evaluation due to following reason/reasons-

Sl No	Bidder	Reason/Reasons	Tender clause
1	M/s. Agrawal Renewable Energy Pvt Ltd	Documents submitted as the proof for attaining the 3 MW technical experience criteria are from the private companies	Copy of work orders and a certificate issued by the SNA/ Govt. Organization/SECI/PSUs towards the satisfactory work completion to be furnished by the bidder. In absence of any one, it qualifying in technical bid.
2	M/s. Almiya Engineering Consultants Pvt Ltd	Didn't respond to the clarifications sought	
3	M/s. Ecomate Energy Solutions	No Work orders to substantiate the work experience of 1MW in Govt Sector	Copy of work orders and a certificate issued by the SNA/ Govt. Organization/SECI/PSUs towards the satisfactory work completion to be furnished by the bidder. In absence of any one, it qualifying in technical bid.
4	M/s. INKEL Limited	No financial documents provided prior to 2017	Firm's Annual Audit Report, Balance sheet, Profit & Loss and Income Tax Returns / CA certificate for last Five years i.e. F.Y: FY2017 18, FY2018 19, FY2019 20, FY2020 21 and FY2021 22 and FY21 22.
5	M/s. KC Copar Energy Solutions Pvt Ltd	Didn't meet the work experience of 1 MW criteria	Each of the JV member should have carried out works related to installation of solar systems of min capacity of 1MW during the last five financial years. Total aggregate capacity by both members of JV should be of 3MW during last 5 financial years.

6	M/s. Kondaas Automation Pvt Ltd	They are not a manufacturer and failed to provide valid JV agreement with any manufacturers.	As per the guidelines of PM-KUSUM, only Manufacturers of PV Modules OR manufacturer of Solar Pumps OR a Joint Venture of Manufacturer of Solar Panels or manufacturer of Solar Water pumps are eligible to undertake works under the scheme.
7	M/s. Moopens Energy solution Pvt Ltd	The Format C- Certificate of Bidders Financial Qualification is not submitted for JV partner	Certificate fulfilling required financial criteria in the name of Bidder duly certified by Practicing Chartered Accountant as per the form at provided Format C, duly mentioning UDIN

- Found 6 of them as successful passed the technical evaluation,

They are

i. ***M/S Aditi solar Pvt ltd.***
ii. ***M/s. Rajasthan Electronics Instruments Ltd***
iii. ***M/s. Sirius Solar energy solutions Pvt Ltd***
iv. ***M/s. Suntastic engineering Pvt Ltd***
v. ***M/s. Surya International Pvt Ltd***
vi. ***M/s. Tata Power Solar Systems Ltd***

Decision

THE ABOVE 6 BIDDERS ARE RECOMMENDED FOR OPENING OF THE FINANCIAL BID OF TENDER ID- 2022_ANERT_504042_1

28/11 SF

Kala. K. G.

28/11/22

28/11-2022.

Agreed

28/11/22

Name of Work : Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos ranging from 2kW-150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala							
Contract No: ANERT-TECH/144/2022-T4							
Sl.No	Capacity	Aditi Solar Private Limited	Tata Power Solar	SUNTASTIC ENGINEERING PRIVATE LIMITED	Rajasthan Electronics Instruments Ltd, Jaipur	SIRIUS SOLAR ENERGY SYSTEMS PVT LTD	Suryam Internatinal private Limited
1	Total cost for the SIC of 2 kW SPV Power plant	66,624	2,51,498	2,61,740	2,70,000	3,11,439	3,21,887
2	Total cost for the SIC of 3 kW SPV Power plant	66,624	3,01,570	3,17,502	3,99,000	3,82,937	4,48,699
3	Total cost for the SIC of 5 kW SPV Power plant	64,968	4,64,304	4,89,340	5,65,000	5,42,712	6,70,083
4	Total cost for the SIC of 7 kW SPV Power plant	61,106	5,35,998	5,81,518	10,50,000	7,55,620	9,72,649
5	Total cost for the SIC of 10 kW SPV Power plant	61,106	7,73,840	8,40,982	10,50,000	9,79,590	10,44,631

Rates incl GST

Seem to be per kW

Sl.No	Capacity	Aditi Solar Private Limited	SUNTASTIC ENGINEERING PRIVATE LIMITED	Suryam Internatinal private Limited
1	Cost per kW for 30 kW to 99 kW or part there of	56,555	73,936	87.11
2	Cost per kW for 100 kW to 150 kW or part there of	56,555	71,384	82.56

Rates incl GST

Seem to be per W

Minutes of the meeting with PM KUSUM C- technically qualified bidders

Date- 6/12/22- 10.00AM Place: Conference Hall, ANERT HQ

The meeting was conducted under chairmanship of, *Narendra Nath Veluri* IFS, CEO, ANERT.

Participants for the meeting

1. Shri. Aneesh S Prasad- CTM ANERT
2. Shri. Jayakumar R (online)- PM KUSUSM NODAL OFFICER
3. Shri. Arun Rajan R V – Project Engineer ANERT
4. Shri. Abhijith K K – PE
5. Shri. Kiran Krishnan G - PE
6. Smt. Manju S – DPE
7. Smt. Sajitha V - Computer Operator
8. Smt. Geethu – IT Department ANERT
9. Representative from TATA Power Solar systems Ltd (online)
10. Representative from Suryam International Pvt Ltd (online)
11. Representative from Suntastic Engineering Pvt Ltd (online)
12. Representative from Sirius Solar Energy Systems Pvt ltd (online)
13. Representative from Rajasthan Electronics Instruments Ltd (online)
14. Representative from Aditi Solar Pvt Ltd (online)

I. The point observed by CEO was the lesser number of successful bidders and exorbitantly high rates quoted by the bidders in tender. These two factors collectively will cause issues in loan repayment in NABARD scheme and project completion of huge volume of customers with in stipulated time period. The return on investment will happen only after unreasonably long years which will affect the benefits of the farmers who are the beneficiaries. Also observed that since the price came was on higher rates, MNRE should also be notified as the price is no way near to the approved benchmark cost for the project.

II. CEO also commented on the lower number of Bidders in the Group 2 ie above 10 kW system and shared his concern on the completion of the project with this lesser number of bidders.

III. CEO also observed the quantity of quotes received were lesser when compared to the quantity of installations needed to be done.

IV. CEO sought the views of representatives from the firms came as technically qualified.

V. The representative from TATA POWER responded that from the recent cost of installations the cost arrived is not higher, also the accommodation of RMS is also made the project expensive. Also the same cost is done for Odisha in PM KUSUM Scheme.

VI. Also he told that MNRE will be notified about the overall change in the cost of the PM KUSUM C tenders and TATA will be able to substantiate the need for revision of benchmark cost for PM KUSUSM C projects. TATA also sought the support of ANERT in highlighting about the requirement of price revision in MNRE

VII. The representative from Suntastic Engineering Private Ltd bought the attention to chairman that the absence of separate BoQ in the tender will aroused some confusions while tendering.

VIII. CEO also observed that some of the successful bidders intimated ANERT that the rates quoted was not considering the actual scenario of the installations and this will also affect the rate finalised as per the present tender.

IX. By considering all these facts, CEO provided the scope of re tendering as the solution.

X. CEO observed that in the retender, the compulsory participation of all bidders in all capacities may be considered.

XI. On that observation, The representative from Sirius Solar Energy Systems Pvt Ltd requested on not to make quoting for above 10kW mandatory for the retendering.

The decision taken by CEO during the meeting are given below

1) Retendering need to be done by considering all corrigendum released for the previous tender.
2) All the bidders should mandatorily submit bids for group 1 and group 2 (above 10kw)
3) To provide separate quote for rooftop and ground mount systems in the retender document.

Meeting concluded at 10.20 AM.

****

NARENDRA NATH VELURI IFS
CHIEF EXECUTIVE OFFICER, ANERT

AGENCY FOR NEW AND RENEWABLE ENERGY RESEARCH AND TECHNOLOGY
ANERT
TVM

AGENCY FOR NEW & RENEWABLE ENERGY RESEARCH AND TECHNOLOGY (ANERT)
Department of Power, Government of Kerala
Thiruvananthapuram, Kerala – 695 033;
www.anert.gov.in , projects@anert.in | anert033@gmail

E-TENDER DOCUMENT

Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW - 150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala

Ref. No. ANERT-TECH/144/2022-T4

Date of Publishing of Bids	**: -**	**12/12/2022**
Last Date of Submission of Bids	**: -**	**20/12/2022**

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FORMAT FOR COVERING LETTER

(This letter to be submitted on the official letter head of the tenderer, signed by the authorised signatory.)

Sir,

I/We hereby e-tender to supply, under annexed terms and conditions of contract, the whole of the articles referred to and described in the attached specification and quantity decided by the Agency for New and Renewable Energy Research and Technology (ANERT), at the rates quoted against each item. The articles will be delivered and installed/commissioned within the time and at the place(s) specified in the schedule.

I am/We are remitting herewith the required amount of Rs. ..... towards the cost of e-tender and Earnest Money Deposit by electronic payment vide transaction No ..... dtd.....

Yours faithfully,

Place:

Date:

Signature

Name

Designation

(Office Seal)

E-TENDER NOTICE

Competitive e-tenders in two cover system with Earnest Money Deposit (EMD) and Price Bid in accordance with the ANERT approved technical specifications are invited from ***Manufacturers of Solar PV Modules OR Joint Venture of SPV Module Manufacturer & EPC contractor for the Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW - 150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala***. The e-tender documents can be downloaded from the e-tendering website of Govt. of Kerala. Tender form will not be available in any other form.

Thiruvananthapuram CEO

12/12/2022

TENDER ABSTRACT

Table A

Ref. No.	**ANERT-TECH/144/2022-T4**
Name of Work	**Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW - 150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala**
Building Site and Requirements	**All over Kerala**
Download of Tender Form	http://www.etenders.kerala.gov.in
Last date of submission of Tender	**20/12/2022 @ 3.00 PM**
Date and Time of opening the Tender	**21/12/2022 @ 3.30 PM**
Estimated Tender Value	**Rs. 240 Cr**
Cost of Tender form	**Rs. 15,000/- (Excluding GST)**
EMD	**Rs. 5,00,000/-**
Warranty period	7 years from the date of commissioning the system.
Location of Sites	More than 80% of sites are in Thrissur, Kasaragod, Malappuram, Palakkad, Ernakulum districts.
Availability of Tender Forms	Website http://www.etenders.kerala.gov.in
Place of opening of tender	Office of CEO, ANERT Law College Road, Vikas Bhavan. PO, Thiruvananthapuram – 695 033, Kerala
Contact Details for clarifications	Shri. Jayakumar R Nodal Officer PM- KUSUM Scheme, ANERT +91 9188119425; jayakumar@anert.in
Thiruvananthapuram 12/12/2022	Sd/- CEO

GENERAL TERMS AND CONDITIONS FOR E-PROCUREMENT

This e-Tender is being published for theRate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW - 150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala. The tender is invited in two cover system through e-procurement portal of Government of Kerala(www.etenders.kerala.gov.in). Prospective bidders willing to participate in this tender shall necessarily register themselves with above mentioned e-procurement portal.

The tender timeline is available in the critical date section of this tender published in www.etenders.kerala.gov.in

1. ONLINE BIDDER REGISTRATION PROCESS:

1.1 Bidders should have a Class III or above Digital Signature Certificate (DSC) to be procured from any Registration Authorities (RA) under the Certifying Agency of India. Details of RAs will be available on www.cca.gov.in. Once, the DSC is obtained, bidders have to register on www.etenders.kerala.gov.in website for participating in this tender. Website registration is a one-time process without any registration fees. However, bidders have to procure DSC at their own cost.

1.2 Bidders may contact e-Procurement support desk of Kerala State IT Mission over telephone at 0471- 2577088, 2577188, 2577388 or 0484 – 2336006, 2332262 - through email: helpetender@gmail.com / etendershelp@kerala.gov.in for assistance in this regard

2. ONLINE TENDER PROCESS:

The tender process shall consist of the following stages:

i. Downloading of tender document: Tender document will be available for free download on www.etenders.kerala.gov.in. However, tender document fees shall be payable at the time of bid submission as stipulated in this tender document.

ii. Pre-bid meeting: (not applicable).

iii. Publishing of Corrigendum: All corrigenda shall be published on www.etenders.kerala.gov.in and shall not be available elsewhere.

iv. Bid submission: Bidders have to submit their bids along with supporting documents to support their eligibility, as required in this tender document on www.etenders.kerala.gov.in. No manual submission of bid is allowed and manual bids shall not be accepted under any circumstances.

v. In case bidder encounters any technical issues pertaining to e-Procurement system while acting on the tender, computer screen shot of the error message with date & time stamp on the web-browser along with the query shall be e-mailed by the bidder to the help desk **(helpetender@gmail.com/ etendershelp@kerala.gov.in)**, for resolution of the problem. At the same time, problem must be intimated to the concerned Tender Inviting Authority via email.

vi. The time taken to ascertain, evaluate and suggest a solution for the problem reported by bidder may vary from case to case. Hence bidders are advised to submit the bid **at least 2 working days before the due date** and time of bid submission to avoid any last-minute issues that may come up.

vii. Opening of Bid and Bidder short-listing: The single cover bids will be opened, evaluated and shortlisted as per the eligibility. Failure to submit the required documents online will attract disqualification. Price bids of the eligible bidder's will open the same day of opening and the work will be awarded.

3. DOCUMENTS COMPRISING BID:

3.1 (a) The First Stage - Part-I Pre- Qualification cum Technical Bid with Commercial terms without Price Bid

Technical proposal shall contain the scanned copies of the following documents which every bidder has to upload:

Envelop -1 shall contain, Part-I (this document in PDF form)/scanned copies as below order along with the checklist provided

File No	Name of the file	Documents to up uploaded
1	Prebid agreement and signed tender doc	1. ANNEXURE B-Agreement on stamp paper worth Rs.200/-

File No	Name of the file	Documents to up uploaded
		2. Signed and sealed tender document along with corrigendum 3. Exemption document in case of EMD and Tender fee exemption /Proof of Online payment of EMD and Tender fees/In case of EMD paid as BG, Format H to be submitted
2	PQ Documents	1. A Joint venture Agreement clearly mentioning the name of the lead bidder, in case the bid is submitted by an EPC contractor / vendor in Rs. 200 Stamp paper 2. Copy of work order and corresponding completion certificate for meeting eligibility criteria (Document should be submitted as Work order along with its own completion certificate for each project)
3	Technical Documents	1. ANNEXURE G– Guaranteed Technical Parameters 2. Bill of material 3. Data sheet 4. Test certificates 5. ICRA Solar Grading Certificate
4	Annexures and format	1. Copy of Registration Certificate of firm 1 2. In case of JV, Copy of Registration Certificate of firm 2 3. Copy of GST Certificate of firm 1 4. In case of JV, Copy of GST of firm 2 5. Copy of PAN card of bidder/TAN of firm 1 6. Copy of PAN card of bidder/TAN of firm 2 7. Proof and declaration regarding manufacturing of solar panel

File No	Name of the file	Documents to up uploaded
		8. Under taking by the manufacturer to supply DCR solar panel as per tender. 9. Under taking by the bidder to supply indigenously manufactured solar on grid Inverter with IS certifications. 10. ANNEXURE A– Summary of Bid Qualification Requirement. 11. ANNEXURE C– Declaration by the bidder 12. ANNEXURE D– Declaration on subsidy claim 13. ANNEXURE E– Declaration of relationship with ANERT employee 14. FORMAT A– Undertaking for no blacklisting and no banning (To be provided on Rs.200 Non-Judicial Stamp paper. In Case of JV the same to be provided by Each Member of the Joint Venture shall submit the same) 15. FORMAT B – Power of attorney in favor of authorized signatory (In case bidder is JV). If it is not applicable, need to submit self-declaration on authorized signatory. 16. Undertaking by the agency regarding service centre to be provided on Rs.200 Non-Judicial Stamp paper else details of service center as per tender. 17. Any other document which is relevant to this tender shall be included here.

Note: In case of JV, Firm 1 will be the lead member and Firm 2 will be the second partner. In case of the bidder being both EPC and Manufacturer, documents shall be submitted accordingly.

3.1 (b)The Second Stage (Financial Cover as per two cover system):

Envelop -2: shall contain the Price Schedule as per BOQ in Excel format for this tender to be downloaded from e-tender website, duly digitally signed by the tenderer/authorized signatory of the tender.

3.2 The department doesn't take any responsibility for any technical snag or failure that has taken place during document upload.

3.3 The Bidder shall complete the Price bid as per format given for download along with this tender.

Note: The blank price bid should be downloaded and saved on bidder's computer without changing file-name otherwise price bid will not get uploaded. The bidder should fill in the details in the same file and upload the same back to the website.

3.4 Fixed price: Prices quoted by the Bidder shall be fixed during the bidder's performance of the contract and not subject to variation on any account. A bid submitted with an adjustable/ variable price quotation will be treated as non - responsive and rejected.

4. TENDER DOCUMENT FEES AND EARNEST MONEY DEPOSIT (EMD)

4.1 The Bidder shall pay, a Tender document fee of Rs.15,000/- and Earnest Money Deposit or Bid Security of Rs.5,00,000/-. The Bid security is required to protect the purchaser against risk of Bidder's conduct, which would warrant the forfeiture of security.

4.2 Online Payment modes: The tender document fees can be paid in through e-Payment facility provided by the e-Procurement system. Bidders can make payment only via Internet banking facility. EMD is to be paid as FD/Bank Guarantee/Online Payment Mode.

State Bank of India Multi Option Payment System (SBI MOPS Gateway): Bidders are required to avail Internet Banking Facility in any of below banks for making tender remittances in eProcurement System.

Table 4.2

A) Internet Banking Options (Retail)			
1	Allahabad Bank	32	Kotak Mahindra Bank
2	Axis Bank	33	Lakshmi Vilas Bank
3	Andhra Bank	34	Mehsana Urban Co-op Bank
4	Bandan Bank	35	NKGSB Co-operative Bank
5	Bank of Bahrain and Kuwait	36	Oriental Bank of Commerce
6	Bank of Baroda	37	Punjab and Maharashtra Cooperative Bank
7	Bank of India	38	Punjab National Bank
8	Bank of Maharashtra	39	Punjab and Sind Bank
9	Bassein Catholic Co-operative Bank	40	RBL Bank
10	BNP Paribas	41	Saraswat Cooperative Bank
11	Canara Bank	42	Shamrao Vithal Cooperative Bank
12	Catholic Syrian Bank	43	South Indian Bank
13	Central Bank of India	44	Standard Chartered Bank
14	City Union Bank	45	State Bank of India
15	Corporation Bank	46	Syndicate Bank
16	Cosmos Bank	47	Tamilnad Mercantile Bank
17	DCB Bank	48	Tamilnadu Cooperative Bank
18	Dena Bank	49	The Kalyan Janata Sahakari Bank
19	Deutsche Bank	50	TJSB Bank
20	Dhanalaxmi Bank	51	UCO Bank
21	Federal Bank	52	Union Bank of India
22	HDFC Bank	53	United Bank of India
23	ICICI Bank	54	Vijaya Bank
24	IDBI Bank	55	YES Bank
25	Indian Bank		
26	Indian Overseas Bank		
27	IndusInd Bank		
28	Jammu & Kashmir Bank		
29	Janata Sahakari Bank		

30	Karnataka Bank		
31	Karur Vysya Bank		
B) Internet Banking Options (Corporate)			
1	Bank of Baroda	21	Laxmi Vilas Bank
2	Bank of India	22	Oriental Bank of Commerce
3	Bank of Maharashtra	23	Punjab & Maharashtra Coop Bank
4	BNP Paribas	24	Punjab & Sind Bank
5	Canara Bank	25	Punjab National Bank
6	Catholic Syrian Bank	26	RBL Bank
7	City Union Bank	27	Shamrao Vitthal Co-operative Bank
8	Corporation Bank	28	South Indian Bank
9	Cosmos Bank	29	State Bank of India
10	Deutsche Bank	30	Syndicate Bank
11	Development Credit Bank	31	UCO Bank
12	Dhanalaxmi Bank	32	Union Bank of India
13	Federal Bank	33	UPPCL
14	HDFC Bank	34	Vijaya Bank
15	ICICI Bank	35	Axis Bank
16	Indian Overseas Bank		
17	Janta Sahakari Bank		
18	Jammu & Kashmir Bank		
19	Karur Vysya Bank		
20	Kotak Bank		

During the online bid submission process, bidder shall select ***SBI MOPS*** option and submit the page, to view the ***Terms and Conditions*** page. On further submitting the same, the e-Procurement system will re-direct the bidder to MOPS Gateway, where two options namely ***SBI*** and ***Other Banks****** will be shown. Here, Bidder may proceed as per below:

a) *SBI Account Holders* shall click ***SBI*** option to with its Net Banking Facility., where bidder can enter their internet banking credentials and transfer the Tender Fee and EMD amount.

b) *Other Bank Account Holders* may click ***Other Banks*** option to view the bank selection page. Here, bidders can select from any of the 54 Banks to proceed with its Net Banking Facility, for remitting tender payments.

**Transaction Charges for Other Banks vide SBI Letter No. LHO/TVM/AC/2016-17/47 – 1% of transaction value subject to a minimum of Rs. 50/- and maximum of Rs. 150/-*

** Bidders who are using Other Banks option under SBI MOPS Payment Gateway, are advised by SBI to make online payment 72 hours in advance before tender closing time.*

5. SUBMISSION PROCESS:

5.1 For submission of bids, all interested bidders have to register online as explained above in this document. After registration, bidders shall submit their Technical bid and financial bid online on www.etenders.kerala.gov.in along with online payment of tender document fees and EMD.

5.2 For page-by-page instructions on bid submission process, please visit www.etenders.kerala.gov.in and click "Bidders Manual Kit" link on the home page.

5.3 It is necessary to click on "Freeze bid" link/ icon to complete the process of bid submission otherwise the bid will not get submitted online and the same shall not be available for viewing/ opening during bid opening process.

6. VALIDITY

6.1 The tender offer shall be kept valid for acceptance for a period of 6 months from the date of opening of offers. The offers with lower validity period are liable for rejection.

6.2 Further, the tenderer may extend the validity of the Bids without altering the substance and prices of their Bid for further periods, if so required

7. DEVIATIONS

7.1 The offers of the Tenderers with Deviations in Commercial terms and Technical Terms of the Tender Document are liable for rejection.

8. BLACK LIST

8.1 All the intending tenderers shall agree that in the event of the documents furnished with the offer being found to be bogus or the documents contain false particulars, they shall be blacklisted for future tenders/ association with ANERT and EMD shall be forfeited against any losses incurred by ANERT.

9. BIDDER'S LOCATION

9.1 The tenderers are requested to furnish the exact location of their factories/godown with detailed postal address and pin code, telephone nos and email id .etc. in their tenders to arrange inspection by ANERT, if considered necessary.

9.2 All communication shall be made to the registered email of the bidder in the e-tendering systems and ANERT shall not be responsible for non-receipt or delay of any such communication.

10. BID QUALIFICATION REQUIREMENTS

10.1 General Requirements

10.1.1 Every tenderer should submit along with his e-tender an Earnest Money Deposit (EMD). This may be done electronically from any of the Nationalized/Schedule Banks. The EMD of the disqualified tenderers will be returned automatically through e-procurement system. The EMD of the successful tenderers may be adjusted towards the security deposit. No interest shall be paid for the earnest money deposited.

10.1.2 An agreement in Rs.200/- Stamp Paper as per the format given in Annexure B must be submitted along with e-tender document.

10.1.3 As per the guidelines of PM-KUSUM, only Manufacturers of PV Modules OR a Joint Venture of an EPC with a Manufacturer of Solar Module are eligible to undertake works under the scheme. But in case of JV the manufacturers shall not participate in multiple bids.

10.1.4 The bidder / Lead bidder should have a Solar Grading certificate issued by M/s ICRA Analytics and this will be considered as Pre-Qualification criteria for the tender

10.1.5 The bidder should have service centres/authorised service providers in all districts of Kerala. Detailed list with address, contact details and proof has to be submitted. If the bidder does not have such facility at the time of tendering, an undertaking should be submitted along with the tender on Stamp paper worth Rs. 200/- agreeing to set up such facility and intimate the same within 15 days of letter of intent. Urja Mithra service centres supported by ANERT can also be included as service centres provided the bidders make separate agreements with them.

10.1.6 Price Bid in excel format, for this tender to be downloaded from e-tender website, duly digitally signed by the tenderer/authorized signatory of the tender.

10.2 Eligibility Requirement

10.2.1 The detail of eligibility requirements is provided in the table below. The bidders are required to furnish the required supporting documents along with the Technical Bid.

Table 10.2

S. No.	Criteria	Documents Required
1.1.	Bidder can be sole/ single bidder OR, Joint Venture (JV) of up to 2 (two) members, with one of the members as a Lead Member	In case of JV, Deed of Undertaking
1.2.	The Bidder should have any of the following legal status: a) Body incorporated in India under the Companies Act, 2013 including any amendment thereto; OR b) Body incorporated in India under the Limited Liability Partnership (LLP) Act, 2008 including any amendment thereto; OR c) Firm registered under Partnership Act, 1932 in India; OR d) Sole Proprietor In case of JV, all the members must fulfil this requirement and submit the documents as per the Tender Document.	a) In case of Company – Copy of Registration/Incorporation Certificate b) In case of LLP – Copy of Deed of Partnership c) In case of Partnership – Copy of Deed of Partnership d) In case of Sole Proprietor – Duly notarized Undertaking from Sole proprietor
1.3.	The Bidder must have the required GST Registration In case of JV, all the members must fulfil this requirement.	Copy of GST registration certificate with legible GSTIN.
1.4.	The Bidder must have valid PAN Number In case of JV, all the members must fulfil this requirement.	Copy of Pan Card
1.5.	The bidder must have completed Solar Installations of at least 3 MW in India. In case of JV, all the members jointly must fulfil this requirement and submit the documents as per the Tender document.	Statutory Documents substantiating this requirement along with Documents submitted in Clause 1.2 of this Table above.

1.6.	The bidder should be having unblemished record and must not be blacklisted or declared ineligible for corrupt & fraudulent practices by "any state/ central government" department/ company / entity" as on date of bid opening. In case of JV, all the members must fulfil this requirement.	The bidder shall provide an Undertaking as per the format provided as Format A. In case of JV, all the members must submit the undertaking as per the format provided in Format A.
1.7.	The bidder must submit a Power of Attorney (POA) authorizing a person to sign the documents on behalf of the Bidder, submit technical, commercial information and attend meetings on behalf of the Bidder.	Sole Bidder to provide POA in the format as per the applicable Law. In case of JV, Agreement by JV as per the clause # 11.23. and POA as per the format provided in Format B.

11. GENERAL CONDITIONS

11.1 The tenders should be submitted online at www.etenders.kerala.gov.in

11.2 The tenders should be as per the prescribed form which should be downloaded from the e-tender website. The cost of tender forms should be paid online, and once paid will not be refunded. Tender forms are not transferable. Tenders that are not in the prescribed form are liable to be rejected.

11.3 Intending tenderers should submit their tenders on or before the due date and time mentioned in the tender abstract. Late tender will not be accepted.

11.4 The rates quoted should be only in Indian currency. Tenders in any other currency are liable to rejection. The rates quoted should be for the unit specified in the schedule attached.

11.5 The tenderer shall submit a copy of PAN card of the authorised signatory along with tender.

11.6 Tenders subject to conditions will not be considered. They are liable to be rejected on that sole ground.

11.7 The tenders will be opened on the specified day and time in the office of the CEO, ANERT in the presence of such of those tenderer's representatives who may be present with proper authorisation issued by the tenderer.

11.8 Every tenderer should send along with his tender an Earnest Money Deposit. This may be paid online at the e-tenders website.

11.9 If any tenderer withdraws from his e-tender before the expiry of the period fixed for keeping the rates firm for acceptance, the earnest money if any, deposited by him, will be forfeited.

11.10 The final acceptance/rejection of the tenders rests entirely with CEO, ANERT who do not bind themselves to accept the lowest or any tender.

11.11 In the case of materials of technical nature, the successful tenderer should be prepared to guarantee satisfactory performance for a period of guarantee under a definite penalty. Communication of acceptance of the e-tender normally constitutes a concluded contract. Nevertheless, the successful tenderer shall also execute an agreement for the due fulfilment of the contract within the period to

be specified in the letter of acceptance. The contractor shall have to pay all stamp duty, Lawyer's charges and other expenses incidental to the execution of the agreement. Failure to execute the agreement within the period specified will entail the penalties set out below:

a. The successful tenderer shall before sign the agreement and within the period specified in the letter of acceptance of his tender, deposit a sum equivalent to 3% of the value of the contract as security for the satisfactory fulfilment of the contract less the amount of money deposited by him along with his tender. Bidders having a MSME / NSIC / Udhyog Aadhar registration are exempted from paying Tender Fee and requisite EMD. In case of joint venture, all the bidders should meet these criteria. The format of Bank Guarantee for EMD as mentioned in the tender document is attached as annexure – H. If the successful tenderer fails to deposit the security and execute the agreement as stated above, the earnest money deposited by him will be forfeited to ANERT and contract arranged elsewhere at the defaulter's risk and any loss incurred by ANERT on account of the purchase will be recovered from the defaulter who will however not be entitled to any gain accruing thereby.
b. In cases where a successful tenderer, after having made partial supplies fails to fulfil the contracts in full, all or any of the materials not supplied may at the discretion of the Purchasing Officer be purchased by means of another tender/quotation or by negotiation or from the next higher tenderer who had offered to supply already, and the loss if any caused to ANERT shall thereby together with such sums as may be fixed by ANERT towards damages be recovered from the defaulting tenderer.
c. If the contractor fails to deliver all or any of the stores or perform the service within the time/period(s) specified in the contract, the purchaser shall without prejudice to its other remedies under the contract, deduct from the contract prices, as liquidated damages, a sum equivalent to 0.5 % of the delivered price of the delayed stores or unperformed services for each week of delay until actual delivery or performance, up to a maximum deduction of 10% of the contract price of the delayed stores and services.

Once the maximum is reached, the purchaser may consider termination of the contract at the risk and cost of the contractor.

11.12 The Security deposit shall, subject to the conditions specified herein be returned to the contractor within three months after the expiration of the contract but in the event of any dispute arising between ANERT and the contractor, ANERT shall be entitled to deduct out of the deposits or the balance thereof, until such dispute is determined the amount of such damages, costs, charges and expenses as may be claimed. The same may also be deducted from any other sum which may be due at any time from ANERT to the contractor. In all cases where there are guarantee for the goods supplied, the security deposit will be released only after the expiry of the guarantee period.

(a) All payments to the contractors will be made in due course via NEFT only

(b) All incidental expenses incurred by ANERT for making payments outside the State in which the claim arises shall be borne by the contractor.

11.13 Payments will be made only after the supply, Installation and Commissioning of the items and certification by the competent technical personnel of ANERT.

11.14 The contractor shall not assign or make over the contract on the benefits or burdens thereof to any other person or body corporate. The contractor shall not underlet or sublet to any person or persons or body corporate the execution of the contract or any part thereof without the consent in writing of the purchasing officer who shall have absolute power to refuse such consent or to rescind such consent (if given) at any time if he is not satisfied with the manner in which the contract is being executed and no allowance or compensation shall be made to the contractor or the subcontractor upon such rescission. Provided always that if such consent be given at any time, the contractor shall not be relieved from any obligation, duty or responsibility under this contract.

11.15 In case the contractor becomes insolvent or goes into liquidation, or makes or proposes to make any assignment for the benefit of his creditors or proposes any composition with his creditors for the settlement of his debts, carries on his business or the contract under inspection or behalf of or his creditors or in case any receiving order(s) for the administration of his estate are made against him or in case the contractor shall commit any act of insolvency or in case in which

under any clause or clauses any act of insolvency or in case in which under any clause(s) of this contract the contractor shall have rendered himself liable to damages amounting to the whole of his security deposits, the contract shall, thereupon, after notice given by the Purchasing Officer to the contractor, be determined and ANERT may complete the contract in such time and manner and by such persons as ANERT shall think fit. But such determination of the contract shall be without any prejudice to any right or remedy of ANERT against the contractor or his sureties in respect of any breach of contract committed by the contractor. All expenses and damages caused to ANERT by any breach of contract by the contractor shall be paid by the contractor to ANERT and may be recovered from him under the provisions of the Revenue Recovery Act in force in the State.

11.16 In case the contractor fails to supply and deliver any of the said articles and things within the time provided for delivery of the same, or in case the contractor commits any breach of any of the covenants, stipulations and agreements herein contained, and on his part to be observed and performed, then and in any such case, it shall be lawful for ANERT (if they shall think fit to do so) to arrange for the purchase of the said articles and things from elsewhere of on behalf of ANERT by an order in writing under *the* hand of the CEO put an end to this contract and in case ANERT shall have incurred sustained or been put to any costs, damages or expenses by reason of such purchase or by reason of this contract having been so put an end to or in case any difference in price, compensation, loss, costs, damages, expenses or other moneys shall then or any time during the continuance of this contract be payable by the contractor to ANERT under and by virtue of this contract, it shall be lawful for ANERT from and out of any moneys for the time being payable or owing to the contractor from ANERT under or by virtue of this contract or otherwise to pay and reimburse to ANERT all such costs, damages and expenses they may have sustained, incurred or been put to by reason of the purchase made elsewhere or by reason of this contract having been so put an end to as aforesaid and also all such difference in price, compensation, loss, costs, damages, expenses and other moneys as shall for the time being payable by the contractor aforesaid.

11.17 Any sum of money due and payable to the contractor (including security deposit returnable to him) under this contract may be appropriated by the CEO or any other person authorised by ANERT and set off against any claim of ANERT for the payment of a sum of money arising out of or under any other contract made by the contractor with ANERT or any other person authorised by ANERT. Any sum of money due and payable to the successful tenderer or contractor from ANERT shall be adjusted against any sum of money due to ANERT from him under any other contracts.

11.18 Every notice hereby required or authorised to be given may be either given to the contractor personally or left at his residence or last known place of abode or business, or may be handed over to his agent personally, or may be addressed to the contractor by post at his usual or last known place of abode or business and if so addressed and posted, shall be deemed to have been served on the contractor on the date on which in the ordinary course of post, a letter so addressed and posted would reach his place of abode or business.

11.19 The tenderer shall undertake the installation and commissioning of the system according to the standards and specification.

11.20 No representation for enhancement of rate once accepted will be considered.

11.21 The prices quoted should be inclusive of GST and all other expenses which are or may become payable by the contractor under existing or future laws or rules of the country of origin/supply or delivery during execution of the contract.

11.22 Special conditions, if any, of the tenderers attached with the tenders will not be applicable to the contract unless they are expressly accepted in writing by the purchaser.

11.23 Bidders are requested to submit the JV agreement in Rs. 200 stamp paper, clearly mentioning the tender details and lead bidder. Tenders without the agreement in stamped paper will be rejected outright.

11.24 The documents such as Annexure B (Rs. 200/- stamp paper), undertaking of service centres (200/- stamp paper), JV agreement (in case of JV) (200/- stamp paper), Format-B- Power of Attorney in favour of authorised signatory (200/- stamp paper) and Format-A- Undertaking for No Blacklisting & No Banning (200/- stamp paper) need not be submitted for those who already submitted for

tender id vide. 2022_ANERT_504042_1. These documents must be clear and complete in all aspects, failing which the bid will be duly rejected.

11.25 All other documents other than listed in the clause 11.24 need to be submitted with valid date and signatures.

11.26 Conditions in the technical document, technical specifications and special conditions of this tender document would override these general conditions, wherever applicable.

11.27 ANERT, by notice sent to the supplier, may terminate the contract, in whole or in part, at any time for its convenience. The notice of termination shall specify that termination is for ANERT's convenience, the extent to which performance of the Supplier under the contract is terminated, and the date upon which such termination becomes effective.

11.28 E-tender shall be opened at the time and date announced in the tender notice, and the price bid will be evaluated on the same day.

11.29 In case any difference or dispute arises in connection with the contract, all legal proceedings relating to the matter shall be instituted in the Court within whose jurisdiction the CEO, ANERT voluntarily resides.

11.30 The Courts situated at the place where the headquarters of ANERT is situated viz, Thiruvananthapuram alone will have jurisdiction to entertain civil suits and all other legal pertaining to this contract.

12. SPECIAL CONDITIONS

12.1 The entire quantity of 9,348 Nos of systems in two groups as below: -

Group Number	PV capacity (kW)	Nos	Total quantity
1	2	5000	9,248
	3	3000	
	5	1000	
	7	100	
	10	148	
2	30-150		100

12.2 It is mandatory for all bidders to quote in both the groups

12.3 Each bidder should submit only one (1) bid. Any bidder who submits/participates in more than one bid for the work shall be disqualified.

12.4 Price bid for the installation in SPV system inclusive of all requirements as per the document is to be quoted by the bidders and for the Group 1, the L1 rate for each system (2 - 10 kW) will be considered separately. In case of Group 2, prices are to be quoted in terms of Rate/kW (rates for PV capacity 30 -100 kW and capacity above 100 kW shall be quoted separately).

12.5 For evaluating the L1 price, only the rates quoted by the bidder having ICRA Grading of 1A, 1B, 1C, 2A & 2B will be considered. Vendors having lower grade are also eligible for participation in the tender, whereas their rates will not be considered for L1 rate finalisation. The allotment of works will also be based on the ICRA grading mentioned in this document.

12.6 It will be mandatory to use indigenously manufactured solar panels with indigenous solar cells and modules. Further, inverters/controllers and the Balance of System should also be manufactured indigenously. The contractor must declare the list of imported components used in the solarisation system.

12.7 If the bidder has NOT submitted the requisite EMD OR Agreement, OR if the price bid is not submitted along with the tender, such tenders will be summarily rejected.

12.8 During the tender evaluation, ANERT may seek more clarifications/details from any or all the tenderers, if felt necessary.

12.9 The price bids of the tenderers, who are technically qualified, will be opened and the L1 bidder as mentioned in clause #12.5 will be awarded the work of supply and installation of items after fulfilling all the requirements.

12.10 If found essential, ANERT reserves the right, in the interest of completion of work within the time limit, to award portion/portions of the work order to next higher bidders, called for negotiation in the increasing order of their price offers, if they agree to supply at the L1 price.

12.11 L1 bidder will get priority on allotting the work order.

12.12 The tenderer should use the PV modules available in the ALMM list issued by MNRE vide order No. F. No. 283/54/2018-GRID Solar – Part (1) dtd 29/09/2021(New one) or latest issued by MNRE as specifications.

12.13 The tenderer should provide inverters meeting all the specifications stipulated in this document.

12.14 The agency can take approval for the new components except PV modules by submitting a request with relevant certificates.

12.15 For the installations in Group 2 (Higher capacity pumps)- in case of installation of additional/new transformer is required, the bidder shall install through KSEBL at their expenses. The amount shall be recouped by ANERT afterwards upon submission of the proper documents.

12.16 The rate quoted should be all inclusive including delivery of materials at the locations to be specified including transportation, loading, unloading etc, and the cost of materials and labour for the civil works, installation and commissioning, Remote Monitoring System excluding the SIM cost, warranties, all fees for approval from KSEBL and Electrical Inspectorate, application fees, GST and all other expenses. ***In case of installations under Group No.2 as per tender document, additional site-specific costs if any required for structure works, pathway, ladder for accessing PV modules etc will be considered separately.***

12.17 **The price quotes should be inclusive of initial cost of supply, installation and commissioning and support during the warranty period of 7-years. The rates for the installation in Rooftop and Ground mounted system under Group 1 is to be quoted**

12.18 The additional costs required for cabling, structural works etc for any excess quantity other than the standard installation mentioned in the tender document is to be quoted separately in letter head and is to be uploaded in the provision provided for uploading PDF document in the finance cover, The additional rates for each capacity range are to be quoted as follows:

i. Per meter cost for DC Cable for Installations under Group 1 & 2 category
ii. Per meter cost for AC Cabling for Installations under Group 1 category
iii. Per meter cost for AC Cabling for Installations under Group 2 category

iv. Cost for additional Structure for increase in height of above 1m from the standard height / kW

v. Cost for additional Structure for increase in height of above 2m from the standard height / kW

vi. Cost for additional Structure for Rooftop installation in slanting GI or Aluminium sheet roof / kW

Any other component required in excess to be quoted in per unit cost of that component

12.19 The tender offer shall be kept valid for acceptance for a period of 12 months from the date of opening of bid. The offers with lower validity period are liable for rejection.

12.20 **Bidder should not apply directly to MNRE for claiming the subsidy/ incentive amount. ANERT will be responsible for claiming the subsidy/ incentive from MNRE for onward distribution to the agency once sanctioned from MNRE. Also, bidder should submit a separate declaration stating that they would not apply separately to MNRE for claiming the subsidy/ incentive for the project.**

12.21 The evaluation of the price bid will be based on the grand total of all-inclusive amount quoted excluding GST. However, the estimated cost mentioned in the Tender will be inclusive of GST.

13. SCHEDULE OF SUPPLY

13.1 The items should be delivered and installed for which work orders given as specified by ANERT, under prior intimation and supervision of ANERT for the solarisation of the existing Agricultural Pumps all over Kerala.

13.2 The Supply, Installation and Commissioning of each of the work allotted shall be completed within **2 months of the date of supply order.** This is the time period for handing over the system to ANERT and no time extension in this regard without valid reasons will be entertained.

13.3 The capacity of pumps to be solarised and the max allowed capacity of SPV power plant is as given below.

Pump Capacity	Capacity of PV Plant
below 2 HP	2kW
2-3 HP	2-3kW
>3-5HP	5kW
>5-7HP	7kW
>7-10HP	10kW
20 HP	30 kW
30 HP	50 kW
50 HP	75 kW
100 HP	150 kW

13.5 Supply of the main components such as SPV module, PCU and charge controller should be from the approved component list published by MNRE and ANERT websites.

13.6 Penalty for delay in supply and installation will be imposed at 0.5 % per week up to a maximum 10 %. In case of delay in supply and installation, CEO, ANERT may cancel the contract and take recourse to other action as deemed appropriate.

14. PAYMENT

14.1 No advance payment will be given. The payment will be released for each work order on completion of entire systems upon the report submitted by the respective District Engineer, ANERT.

14.2 The terms of payment shall be:

a. 50% of the contract value shall be released upon the delivery of the major components at all the sites mentioned in the work order to be issued.

b. 30% of the contract value shall be released on completion of installation on submitting documents such as completion reports to ANERT

c. 20% of the contract value will be released as and when the funds for the project is received from MNRE for the particular installation. The Performance Bank Guarantee (PBG) will be 3% of the final project cost and the PBG shall be submitted on or before the final releasing of the payment. The validity of PBG shall be rolled over every year for first seven years or till the warranty period of the last installation is completed. The rolling over or

release of this PBG shall be based on the clearance of pending penalties/fines imposed by ANERT.

14.3 Income tax, contribution to workers' welfare fund which will be applicable to installations which involve civil construction work and other statutory deductions shall be made from the payment as per prevailing norms.

15. SERVICE AND MAINTENANCE

15.1 Empanelled agency should have at least one service centre at each district where their system is installed. Also, there should be an additional service centre for each 500 installations per district.

15.2 The faulty system or components should be replaced/ repaired within 7 days of fault reporting.

15.3 Delay in servicing beyond 7 days of fault reporting would attract penalty at the rates decided by CEO, ANERT and further actions will be initiated against the agency.

15.4 The service personnel should visit the installations at least once in 3 months for preventive maintenance even if no faults are reported. **Reports of these preventive maintenance visits and generation data should be submitted to the concerned ANERT District Offices on a quarterly basis**. The delay beyond a period of 15 days may lead to penalty as decided by CEO ANERT.

15.5 A designated Helpline (in Malayalam language) address should be indicated on the inverter/controller at suitable location easily visible to the user for reporting faults during the warranty period.

16. SCOPE OF THE WORK

The scope covers the Solarisation of existing Agricultural Pumps in the State under Component C of the Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyaan (PM KUSUM) scheme. This includes the Supply, Installation and Commissioning of **SPV Power Plants with Grid connectivity for solarising the following capacity of Agricultural pumps:**

Pump Capacity	Capacity of PV Plant
below 2 HP	2kW
2-3 Hp	2-3kW
>3-5HP	5kW
10HP	10 kW
20 HP	30 kW
30 HP	50 kW
50 HP	75 kW
100 HP	150 kW

All the necessary approvals from KSEBL(Electrical Utility)/Electrical Inspectorate, feasibility study, necessary civil work, Mounting of Module Structures, PV Module Installation, Inverter Installation, DC/AC Cabling and interconnections, Installation of Lightning Arresters and Earthing System as per the standards, Net Metering, arranging all the necessary inspections from KSEBL/Electrical Inspectorate/ ANERT District Office as part of Pre-Commissioning, if any, Commissioning of the PV Power Plant, are coming under the scope of the bidder.

i. **Location**

The proposed location for installation of the SPV modules will be on the Roof top of existing building rooftop / vacant land available with Farmers / WUAs (Water User Association) spread across the 14 Districts in the State of Kerala. Majority of the installations under Group 1 will be concentrated on 5 districts of Kerala ie. Thrissur, Kasaragod, Malappuram, Palakkad & Ernakulum. In the case of Group 2, the installations

will be on the agricultural fields (mostly paddy) in the kole wet lands of Thrissur and Ponnani.

17. DEFINITION

17.1 Solar Plant systems tendered through this document includes installation as follows

a. For GROUP 1, it shall include installations of Roof Top as well as Ground mount SPV Power plants with based on site survey.

b. For GROUP 2, the Ground mount structures are preferred to install.

17.2 Solar PV power plant system comprises of C-Si (Crystalline Silicon)/ Thin Film Solar PV modules with intelligent Inverter having MPPT technology and Anti-Islanding feature and associated power electronics, which feeds generated AC power to the Grid. Other than PV Modules and Inverter/Inverters, the system consists of Module Mounting Structures, appropriate DC and AC Cables, Array Junction Boxes (AJB) / String Combiner Boxes (SCB), AC and DC Distribution Box, Lightning Arrester, Earthing Systems, Net meter, etc.

17.3 The system should be capable for exporting the generated AC power to the Grid, whenever the Grid is available with all System Protection facilities.

18. STANDARDS AND REGULATIONS TO BE COMPLIED

18.1 The connectivity should be as per (Technical Standards for connectivity of the Distributed generation resources, Regulation, 2013) and its amendments thereof

18.2 KSERC (Grid interactive Distributed Solar Energy Systems) Regulations, 2014 and its amendments thereof

18.3 KSERC (Renewable Energy and Net Metering) Regulations, 2020 and its amendments thereof

18.4 CEA Regulation 2010 has to be followed safety and Electricity supply.

18.5 Metering should be as per CEA regulation 2006.

18.6 Any amendments thereof will also be applicable.

19. SYSTEM COMPONENTS- TECHNICAL COMPLIANCE FOR SYSTEM COMPONENTS

S/N	System Component	Capacity/ rating	Minimum Technical Compliance
1.	Solar panel	As per the requirement	IS 14286 -Design Qualification and Type Approval for Crystalline Silicon Terrestrial Photovoltaic (PV) Modules
			IEC/IS61730: Part I& II;
			IS 16170: Part I
			IS/IEC 61701-Salt Mist Corrosion Testing of Photovoltaic (PV) Modules
2.	Grid Tied Inverter	As per the rating system selected	IS 16221: Part 1 &2- Safety of Power Converters for use in Photovoltaic Power Systems
			IS 16169 - Test Procedure of Islanding Prevention Measures for Utility-Interconnected Photovoltaic Inverters
3.	Cables	Max 15m in AC side and DC side as 25m.	IEC 60227 / IS 694
			IEC 60502 / IS 1554 (Pt. I & II)
4.	Switches/ Circuit Breakers/ Connectors	As required	IEC 60947 part I, II, III /
			IS 60947 Part I, II, III
			EN 50521
5.	Junction Boxes/Enclosures for Inverters and meters/ Charge Controllers	As required	IP 54 (for outdoor) or IP 65 / IP 21(for indoor) as per IEC 529
6.	Energy Meter for Recording Solar Electricity Generated		As per CEA regulations
7.	Two-way meter for Distribution Licensee grid connection		As per CEA regulations
8.	Electrical Grounding (Earthing)	As required	As per IS 3043
9.	Remote Monitoring System (RMS)	As required	As per MNRE requirements.

20. SPV MODULES

20.1 Only crystalline silicon cell PV modules of 335W_p or higher capacity should be used in the power plant. It is necessary to use SPV modules with indigenously manufactured solar cells (DCR Content) and shall be listed under the approved list of ALMM issued by MNRE from time to time.

20.2 Shading correction/ bypass for optimizing array out to be incorporated in each solar module or panel level and shading optimization to be provided.

20.3 Each PV module used in any solar power project must use a RF identification tag (RFID), which must contain the following information. The RFID can be inside or outside the module laminate, but must be able to withstand harsh environmental conditions.

i. Name of the manufacturer of PV Module
ii. Name of the manufacturer of Solar cells
iii. Month and year of the manufacture (separately for solar cells and module)
iv. Country of origin (separately for solar cell and module)
v. I-V curve for the module
vi. Peak Wattage, I_m, V_m and FF for the module
vii. Unique Serial No. and Model No. of the module
viii. Date and year of obtaining IEC PV module qualification certificate
ix. Name of the test lab issuing IEC certificate
x. Other relevant information on traceability of solar cells and module as per ISO 9000 series

20.4 The following details should be provided on the module

i. Name of the manufacturer
ii. Month and year of manufacture
iii. Rated Power at STC
iv. V_{mp}, I_{mp}, V_{oc}, I_{sc}

20.5 The PV modules must qualify (enclose Test Reports/Certificates from IEC/NABL accredited laboratory) as per relevant IEC standard. The Performance of PV Modules at STC conditions must be tested and approved by one of the IEC/NABL Accredited Testing Laboratories.

20.6 PV modules used in solar power plants/ systems must be warranted for their output peak watt capacity, which should not be less than 90% at the end of 10 years and 80% at the end of 25 years.

21. POWER CONDITIONING UNIT (PCU)

Technical data sheet of the inverter proposed or the project indicating operating modes, protection, efficiency etc. should be provided by the bidder.

Common Technical Specification:

Output voltage	1 phase, 240 VAC; 3 phase, 415 VAC Inverter/ PCU should be capable of synchronise with grid voltage between 110% and 80% of the rated output. Beyond this system has to stop generating.
Over Voltage / Under Voltage trip	When Voltages reaches above 110% or below 80% respectively, with clearing time up to two seconds for reconnection.
Frequency	50 Hz. Inverter/ PCU should be capable to synchronise with grid for a variation of frequency between 50.5 Hz and 47.5 Hz. Beyond this system has to stop generating.
Over and Under frequency Trip	High frequency at 50.5 Hz and low frequency at 47.5 Hz clearing time up to 0.2 seconds.
Continuous rating	Rated capacity of the configuration.
Nominal Power	Rated power should not be less than the rated capacity of the SPV array at STC.
Communication capability	Should have RS 485 Communication mode so as to integrate with Remote Monitoring System.
Standard conformation	IS16221(Part 1,2)
	IS16169:2014 (Procedure for Islanding prevention measures for Utility Connected PV Inverters)
Total Harmonic Distortion	Less than 5%
Operating temperature Range	-50 to 600 C
Housing cabinet	PCU to be housed in suitable switch cabinet, Within IP 21 (Indoor)/ IP 54 (Outdoor)
PCU efficiency	95% and above at full load.
Power Control	MPPT
Harmonic Current Injections	Shall not exceed the limits specified in IEEE519

Direct Current Injection	Less than 0.5 % of the full rated output at the interconnection point.
Flicker	Should be within the limits specified in IEC 61000
Synchronisation	Automatic (Built into the inverter)
Hysteresis required for reenergizing	Sixty seconds at stabilized condition.
Power Factor	The PCU power factor at the point of distribution Licensee service connection shall be 0.95 lagging or leading when operating at above 25 percent of the rated output.
Maximum time for cease to Energise in the case of formation of an unintended Island	2 Seconds

21.1 The PCU shall not produce Electromagnetic interference (EMI) which may cause malfunctioning of electronic and electrical instruments including communication equipment, which are located within the facility in which the PCU is housed.

21.2 The PCU shall have an appropriate display on the front panel to display the instantaneous AC power output and the DC voltage, current and power input. Each of these measurement displays shall have an accuracy of 1 percent of full scale or better. The display shall be visible from outside the PCU enclosure. Operational status of the PCU, alarms, trouble indicators and AC and DC disconnect switch positions shall also be communicated by appropriate messages or indicator lights on the front of the PCU enclosure.

21.3 The PCU shall include an easily accessible emergency OFF button located at an appropriate position on the unit.

21.4 The PCU shall include ground lugs for equipment and PV array grounding.

21.5 All exposed surfaces of ferrous parts shall be thoroughly cleaned, primed, and painted or otherwise suitably protected to survive a nominal 30 years' design life of the unit.

21.6 The PCU enclosure shall be weather proof and capable of surviving climatic changes and should keep the PCU intact under all conditions in the room where it will be housed. The inverter shall be located indoor and should be

either wall/ pad mounted. Moisture condensation and entry of rodents and insects shall be prevented in the PCC enclosure.

21.7 Components and circuit boards mounted inside the enclosures shall be clearly identified with appropriate permanent designations, which shall also serve to identify the items on the supplied drawings.

21.8 Maximum Power Point Tracker (MPPT) - MPPT shall be integrated in the PCU to maximize the energy drawn from the array. The MPPT should be microprocessor based to minimize the power losses.

22. ELECTRICAL SAFETY, EARTHING AND PROTECTION

22.1 Internal Faults: In built protection for internal faults including excess temperature, commutation failure, over load and cooling fan failure (if fitted) is obligatory.

22.2 Over Voltage Protection: Over Voltage Protection against atmospheric lightning discharge to the PV array is required. Protection is to be provided against voltage fluctuations in the grid itself and internal faults in the power conditioner, operational errors and switching transients.

22.3 Earth fault supervision: An integrated earth fault device shall have to be provided to detect eventual earth fault on DC side and shall send message to the supervisory system.

23. CABLING PRACTICE

23.1 Cable connections must be made using PVC Cu cables, as per BIS standards. All cable connections must be made using suitable terminations for effective contact. The PVC Cu cables must be run in GL trays with covers for protection.

24. FACTORY TESTING

24.1 PCU shall be tested prior to shipment and factory test certificate for relevant parameters should be provided with the PCU supplied. ANERT or authorised representative of ANERT may be allowed to witness the tests if required.

24.2 Factory testing shall not only be limited to measurement of phase currents, efficiencies, harmonic content and power factor, but shall also include all other

necessary tests/simulation required and requested by the Purchasers Engineers. Tests may be performed at 25, 50, 75 and 100 percent of the rated nominal power.

25. PLANT METERING/ DATA LOGGING

25.1 Net meter as per CEA standards approved by the utility as per accuracy class has to be supplied and installed.

25.2 A separate Energy Meter shall be provided at the output of PCU to record the energy generation from the solar system. (This energy meter should not be integrated with PCU). This has to calibrate and installed nearer to the Consumer meter board so that meter reader from Electrical utility could access while.

25.3 All major parameters should be available on the digital bus and logging facility for energy auditing through the internal microprocessor and can be read on the digital front panel at any time the current values, previous values for up to a month and the average values.

26. REMOTE MONITORING SYSTEM

Remote Monitoring System (RMS) should have provision to monitor and upload all parameters required by MNRE under PM KUSUM Scheme to a specified server including:

a) Solar System Performance: DC Voltage, DC current, AC output Current, Power, Drive frequency, Energy, etc.

b) RMS Performance: Device Connectivity, Data Availability, etc.

c) Geo Location: Real time latitude and longitude should be captured. This is required to ensure that system is not moved from its original location.

d) Events and Notifications: Faults related to Pump Operation, Solar generation, Controller/Drive faults like overload, dry run, short circuit, etc.

e) Consumer Management: Name, Agriculture details, Service No. Contact Details, etc.

f) Asset Management: Ratings, Serial Number, Make, Model Number of Pump, Panel and Controller, Geo Location, IMEI number (of communication module) and ICCID (of SIM).

g) Complaint and Ticket Management: Complaint management system is a part of centralized monitoring software platform – State Level Solar Energy Management Platform to be operated and maintained by the State implementing agency (SIA).

h) Consumer Mobile Application: Generation, Complaint logging, etc.

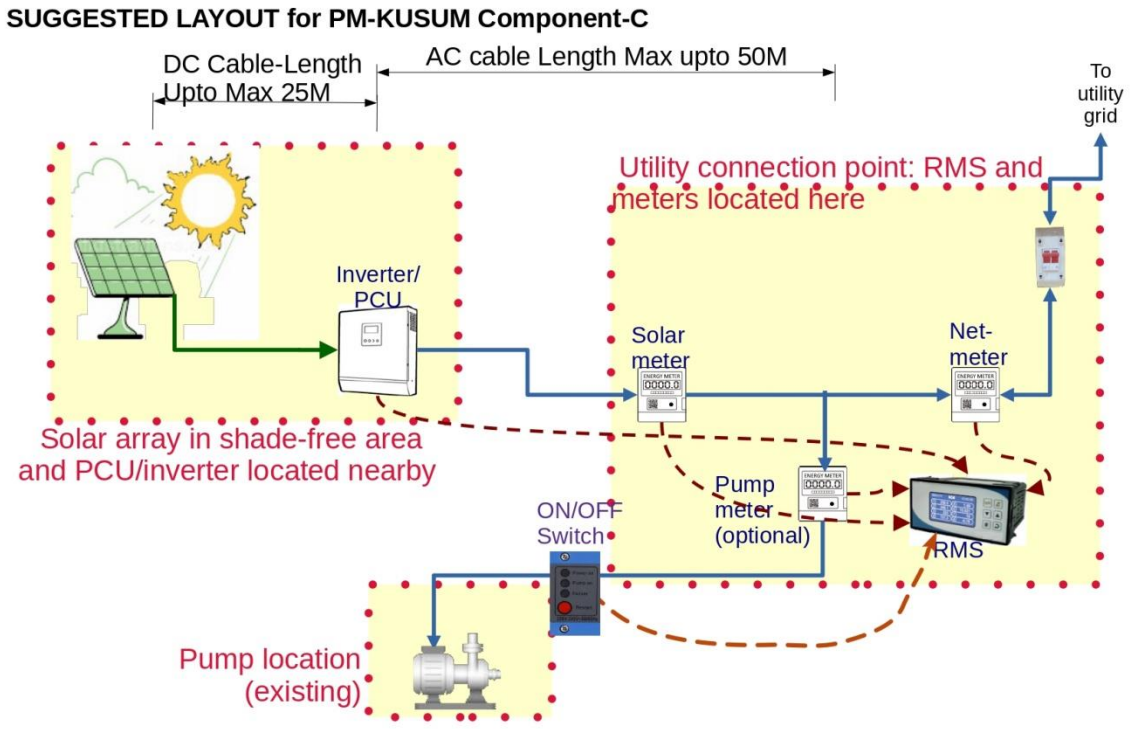
The RMS will be provided access to the interface with State Level Solar Energy Data Management platform i.e., ANERT will provide server infrastructure and shall maintain the same in the State Data Centre. The ANERT shall provide SIM card of suitable ISP having maximum Signal Strength in the respective locations. The bidder should ensure connectivity as well as pushing of data to centralized platform as mentioned in specifications.

Communication architecture should be as per following:

a) Communication Connectivity:

i. Remote monitoring system installed along with the system should be compatible with the connectivity to PCU, Controllers and meters of the system.

The proposed connectivity diagram is as follows.



ii. RMS should have provision to give remote On/Off command to pump through farmer mobile app. to save ground water.

b) Communication Modes:

i. Push Data on Event/Notification: such as pump on, pump off, protection operated, etc.

ii. Push Data Periodically: important parameters of solar pump (as mentioned above) should be pushed to central server on configurable interval. Interval should be configurable for 15 mins. However, if required, it should be possible to configure the periodic interval in multiple of 1 minute starting from 1 minute and up to 15 minutes. Further, in case of any abnormalities or event, RMS should push on event immediately.

iii. Command on Demand: It should be possible to send commands via GSM or GPRS to RMS either to control pump operations or to update configuration

c) Communication Protocol: RMS should provide data on MQTT protocol to establish communication with thousands of systems. The message formats and details shall be as per the MNRE requirement.

d) Security:

i. Communication between RMS and Server should be secured and encrypted using TLS/SSL certificate etc.

ii. As a part of IoT protocol, Authentication and Authorization should be implemented using token/password mechanism

e) Message Format: RMS should provide data in a JSON message format as required by MNRE /ANERT.

f) Data Storage: In case of unavailability of cellular network, RMS should store data locally and on availability of network it should push data to central Server. Local data storage should be possible for at least one year in case of unavailability of cellular network.

Configuration update over the Air of multiple parameters such as IP, APN, Data logging Interval, Set Points etc. is essential. Software updating should be possible with 2G and even without the presence of SD card. Software updating process and/or failure to update software shouldn't disrupt pumping operations

27. Remote ON/OFF feature

27.1 The successful bidders shall arrange for the provision of remotely turning ON/OFF Feature and this must be integrated with system.

27.2 Necessary switch gear as well as communication structures should be done by the bidder so as the user can switch off/on the pump remotely.

27.3 The remote working system should be integrated with RMS.

28. ARRAY SUPPORT STRUCTURE.

28.1 Specification of module mounting structure shall be in line with specifications for SPV water pumping systems of MNRE vide Circular No. F. No. 41/3/2018-SPV Division dated17.7.2019 enclosed and any further amendment(s) issued by MNRE. However, considering the flooded scenario in Kerala the minimum height required under Group 1 category will be 50 cm for rooftop installations and 100 cm for ground mount installations and that of Group 2 will be 150cm.

28.2 Supply, installation, erection and acceptance of module mounting structure (MMS) with all necessary accessories, auxiliaries and spare part shall be in the scope of the Contractor.

28.3 The PV modules shall be mounted on fixed metallic structures having adequate strength and appropriate design, which can withstand the load of the modules and high wind velocities as per the wind zone and IS of the location of installation.

28.4 The MMS shall be designed and constructed such that it complies with the necessary mounting requirements of PV modules in order to maintain the PV module's warranty.

28.5 MMS and its foundation shall be designed considering life span of 25 years and withstand wind speeds of 150 kmph.

28.6 Design of the MMS shall take into consideration site conditions, soil report, loading data, wind data and design standards as per latest applicable IS standard.

28.7 The structure shall be designed for simple mechanical and electrical installation. It shall support SPV modules at a given orientation and tilt, absorb and transfer the mechanical loads to the ground properly.

28.8 The Contractor shall be fully responsible for any damages caused by high wind velocity within guarantee period. The parameters of prevailing wind speed, soil conditions, load, and upward lift shall be taken care of while preparing the design and the same is required to be mentioned on design.

28.9 MMS shall be made of hot dip Galvanized steel per ASTM A123/ IS 4759. Minimum thickness of HDGI zinc coating shall be 80 microns at any point when measured. No averaging is allowed in the measurement of coating thickness. Necessary testing provision for MMS to be made available by Contractor at site.

28.10 All bolts, nuts, panel mounting clamps fasteners shall be of stainless steel of grade SS304/ 8.8 grade HDG and must sustain the adverse climatic conditions.

28.11 MMS shall be designed and positioned such that the PV modules are completely shadow-free solar during generation hours.

28.12 All solar panels shall be easily accessible for cleaning and the beneficiaries shall not be inclined to climb on the MMS or PV modules for cleaning the PV modules.

28.13 Junction boxes shall be mounted on the MMS such that they are easily accessible and are protected from direct sunlight and harsh weather.

28.14 Civil foundation design for MMS shall be made in accordance with the IS and prevailing soil conditions with the help of Chartered Structural Designer having substantial experience in similar work.

28.15 All the cables shall be aesthetically tied to module mounting structure.

28.16 Cutting, Welding, drilling etc. at site is not allowed for MMS. Contractor shall carry out all correction in structure (if required) at his works. If any cutting, welding, drilling is required to be done after material arrived at site then material shall be again sent for hot dip galvanization. No zinc spray shall be allowed on the MMS.

28.17 Contractor shall submit the all the quality test documents and test certificates complying with the requirement of the structure.

28.18 Contractor shall submit detailed drawings of the MMS and its civil foundations, results of design computations and stability calculations for

foundations, and structural fitness of PV module mounting structures as per STADD Pro analysis. Such details shall include, but not limited to, the following;

a) Determination of true south at the site
b) Array tilt angle to the horizontal, with permitted tolerance
c) Details with drawings for fixing the modules
d) Details with drawings for fixing the junction/ terminal boxes
e) Interconnection details inside the junction/ terminal boxes
f) Structure installation details and drawings
g) Electrical grounding (earthling as per BIS specifications) and surge Protections.
h) Inter-panel/ inter-row distances with allowed tolerances; and
i) Lightning protection for PV array.
j) Safety precautions to be taken

28.19 Structures shall be supplied complete with all members to be compatible for allowing easy installation at the site. Additional Structures/Frames for required for the installation of modules if any need to be provided by the bidder.

28.20 It is necessary to use anti-theft bolts in Ground mounted installations, whereas the same need not be provided for rooftop installations, in which case easy replacement of modules are necessary.

28.21 Each structure shall have a provision to adjust its angle of inclination to the horizontal as per the site conditions. Solar module should be inclined towards south direction and installed at an angle of 10° to 15° from the horizontal.

29. SURGE PROTECTION AND EARTHING

29.1 The system should have installed with Surge Protection Device (SPD) for higher withstand of the continuous PV-DC voltage during earth fault condition. SPD shall have safe disconnection and short circuit interruption arrangements through integrated DC in-built bypass fuse (parallel) which should get tripped driving failure mode of MOV, extinguishing DC arc safely in order to protect

the installation against fire hazards. The SPD should be provided in the AC Distribution Box as well.

29.2 Earthing for PV Array:

- The PV module, BOS and other components of power plants require adequate Earthing for protecting against any serious fault.
- The Earthing for array and LT power shall be made as per the provisions of IS:3043.
- Necessary provision shall be made for bolted isolating joints of each Earthing pit for periodic checking of earth resistance.
- Each String/Array and MMS of the plant shall be grounded properly. The array structure has to be connected to earth pit as per IS standards. Necessary provisions shall be made for bolted isolating joins of each earthing pit for periodic checking or earth resistance.
- The complete earthing system shall be mechanically & electrically connected to provide independent return to earth.
- For each earth pit, a necessary test point shall be provided.
- The bidder shall submit the detailed specification for the Earthing arrangements.

30. LIGHTNING PROTECTION FOR PV ARRAY

The SPV power plant should be provided with lightning and over voltage protection. The source of over voltage can be lightning or other atmospheric disturbance. The lightning conductors shall be made as per applicable Indian Standards in order to protect the entire array yard from lightning stroke.

The design and specification shall conform to **IS/IEC 62305, "Protection against lightning"** govern all lightning protection-related practices of a PV system.

30.1 The entire space occupying SPV array shall be suitably protected against lightning by deploying required number of lightning arresters. Lightning protection should be provided as per IS/ IEC 62305.

30.2 Lightning system shall comprise of air terminations, down conductors, test links, earth electrode etc. as per approved drawings.

30.3 The protection against induced high voltages shall be provided by the use of surge protection devices (SPDs) and the earthing terminal of the SPD shall be connected to the earth through the earthing system.

30.4 The EPC Contractor / Company shall submit the drawings and detailed specifications of the PV array lightning protection equipment to Employer for approval before installation of system.

31. AC DISTRIBUTION PANEL BOARD

31.1 AC Distribution Panel Board (DPB) shall control the AC power from inverter and should have necessary surge arrestors.

31.2 An ACDB panel shall be provided in between PCU and Utility grid. It shall have MCB/MCCB/ACB or circuit breaker of suitable rating for connection and disconnection of PCU from grid.

31.3 The connection between ACDB and Utility grid shall be of standard cable/ Conductor with suitable termination. It shall have provision to measure grid voltage, current and power.

31.4 The ACDB incomer shall be four (4) pole MCCB with thermal over current and earth fault releases. The incomer shall be selected at required rating.

32. DC DISTRIBUTION BOARD

32.1 DC bus/ cable which can handle the current and the voltage of inverter output safely with necessary surge arrester as per the relevant IS standards.

32.2 DC panel should be equipped with an adequate capacity indoor DC circuit breaker along with control circuit, protection relays, fuses, annunciations etc.

32.3 DCDB shall have sheet from enclosure of dust and vermin proof, the busbar/ cables are to be made of copper of desired size. DCDB shall be fabricated to comply with IP 65 protection.

33. SWITCHES AND GENERAL REQUIREMENTS

33.1 Switches/ circuit breakers/ connectors meeting general requirements and safety measurements as per IS 60947 Part I, II, III and EN 50521 for AC/DC.

33.2 Junction boxes, enclosures for inverters/ charge controllers and meters shall meet IP 54 (for outdoor)/ IP 21 (for indoor) as per IEC 529.

34. AC/DC WIRING

Cabling is required for wiring from AC output of inverter/PCU to the Grid Interconnection point. It includes the DC cabling from Solar Array to AJB and from AJB to inverter input.

34.1 All cables of appropriate size to be used in the system shall have the following characteristic:

a. Shall conform to IEC 60227 / IS 694 & IEC 60502 / IS 1554 standards.
b. Temperature Range: -10 degree Celsius to +80 degree Celsius
c. Voltage rating: 660/1000V
d. Excellent resistance to heat, cold, water, oil, abrasion, UV radiation
e. Flexible

34.2 Sizes of cables between any array interconnections, array to junction boxes, junction boxes to inverter etc. shall be so selected to keep the voltage drop (power loss) of the entire solar system to the minimum (2%).

34.3 For the DC cabling, XLPE or XLPO insulated and sheathed, UV stabilized single core flexible copper cables shall be used; Multi-core cables shall not be used.

34.4 For the AC cabling, PVC or XLPE insulated and PVC sheathed single or, multi-core flexible copper cables shall be used. However, for above 25kWp systems, XLPE insulated Aluminium cable of suitable area of cross section can be used in the AC side subject to a minimum area of cross section of 10 sq.mm. Outdoor AC cables shall have a UV -stabilized outer sheath IS/IEC 69947.

34.5 All LT XLPE cables shall conform to IS:7098 part I&II.

34.6 The total voltage drop on the cable segments from the solar PV modules to the solar grid inverter shall not exceed 2.0%

34.7 The total voltage drop on the cable segments from the solar grid inverter to the building distribution board shall not exceed 2.0%

34.8 The DC cables from the SPV module array shall run through a UV-stabilized PVC conduit pipe of adequate diameter with a minimum wall thickness of 1.5mm

34.9 Cables and wires used for the interconnection of solar PV modules shall be provided with solar PV connectors (MC4) and couplers

34.10 All cables and conduit pipes shall be clamped to the rooftop, walls, and ceilings with thermo-plastic clamps at intervals not exceeding 50cm; the minimum DC cables size shall be 4.0mm^2 copper; the minimum AC cable size shall be 4.0mm^2 copper. In three phase systems, the size of the neutral wire size shall be equal to the size of the phase wires.

34.11 Cable Marking: All cable/wires are to be marked in proper manner by good quality ferule or by other means so that the cable can be easily identified. The following colour code shall be used for cable wires

a) DC positive: red (the outer PVC sheath can be black with a red line marking
b) DC negative: black
c) AC single phase: Phase: red; Neutral: black
d) AC three phase: phases: red, yellow, blue; neutral: black
e) Earth wires: green

34.12 Cables and conduits that have to pass through walls or ceilings shall be taken through PVC pipe sleeve.

34.13 Cable conductors shall be terminated with tinned copper end ferrules to prevent fraying and breaking of individual wire strands. The termination of the DC and AC cables at the Solar Grid Inverter shall be done as per instructions of the manufacturer, which in most cases will include the use of special connectors.

34.14 All cables and connectors used for installation of solar field must be of solar grade which can withstand harsh environment conditions including high temperatures, UV radiation, rain, humidity, dirt, salt, burial and attack by moss and microbes' for 25 years and voltages as per latest IEC standards. DC cables used from solar modules to array junction box shall solar grade copper (Cu) with XLPO insulation and rated for 1.1 kV as per relevant standards only.

34.15 Bending radii for cables shall be as per manufactures recommendations and IS: 1255.

34.16 For laying/termination of cables latest BIS/IEC Codes/ standards shall be followed.

35. NET METERING AND UTILITY INTERCONNECTION

35.1 Net metering equipment (an Import-Export Energy Meter) approved and tested by the electrical utility based on the accuracy class required for the proposed capacity of the system must be provided with the necessary data cables if required.

35.2 Net Metering and Utility Interconnection should be accomplished according the Kerala State Electricity Regulatory Commission (Grid Interactive Distributed Solar Energy Systems) Regulations 2014 Clauses (8) & (9) (Notification No. 2096/KSERC/CT/2014 dt. 10th June 2014) as well as approved by the DISCOM (KSEBL).

35.3 Meters shall be microprocessor based conforming IEC 60687 / IEC 6205211 / IEC 62053-22 / IS 14697 and solar energy meter or its display shall be placed adjacent to net energy meter.

35.4 Display parameters: LCD test, kWh import, kWh export, MD in kW export, MD in kW import, Date & Time, AC current and voltages and power factor (Cumulative kWh will be indicated continuously by default & other parameters through push-button). The solar energy meters and net energy meters should be DLMS compliant and AMR compatible.

35.5 The solar energy meters shall be provided with two ports for communication of the measured / collected data. The provided both meters shall provide an optical port for DLMS communication to RMS using separate Optical (IR) to RS 232 converter complying with hardware specifications detailed in IEC 62056-21.

35.6 The provision of the Optical (IR) to RS 232 convertor shall be the part of the SPV system and should be provided by the bidder.

35.7 The bidders shall imply Virtual/Group metering facility with KSEBL as if it is found more suitable as per the site.

36. INTER CONNECTION OF INVERTER OUTPUT WITH UTILITY GRID

36.1 The interconnection of load with inverter output should be done after obtaining permission from Electrical Inspectorate and Electrical Utility.

36.2 The plan scheme and drawing related to interconnection details should be submitted to Electrical Inspectorate through a licensed Electrical contractor with the guidance appropriate Engineering Authority.

36.3 Licensed contractor has to be engaged for preparation of plan scheme to be submitted to the Kerala State Electricity Licensing Board and necessary fee should be remitted for energisation of Solar Power Plant.

36.4 The panel board and distribution board required for AC interconnection should be done as per specification/ instruction given appropriate Engineering Authority.

36.5 All the electrical works required for the interconnection of load with inverter output should be done by the successful bidder as a part of the Solar Power Plant installation.

36.6 Bidder should visit the actual site and ensure the exact place for providing Solar Modules and Inverter etc. in presence of technical representative from the ANERT.

36.7 Net Metering Equipment shall be installed and maintained in accordance with the provisions of The Central Electricity Authority (Installation and Operation of Meters) Regulations, 2006 as amended from time to time. The Contractor shall maintain the Metering System as per metering code and CEA guidelines. The defective meter shall be immediately tested and calibrated.

36.8 The accuracy class of the Net Metering Equipment will be selected so that all levels of energy produced or taken by the Solar Power Plant will be measured accurately, and this equipment has applicable accuracy class.

36.9 Net Metering Equipment shall be microprocessor-based conforming to the relevant IEC standards with Advanced Metering Infrastructure (AMI) with RS232 cable facility.

36.10 Net Metering Equipment shall measure active energy (both import and export) and reactive energy (import) by 3 ph, 4 wire principle suitable for balanced / un-balanced 3 phase load (With KVAr, KWh, KVA measuring registers). Tri-vector based energy meter shall have an accuracy class of energy measurement of at least Class 0.2 for active energy and at least 0.5 Class for reactive energy according to IEC 60687.

36.11 Display parameters: LCD test, kWh import, kWh export, MD in kW export, MD in kW import, Date & Time, AC current and voltages and power factor (Cumulative KWH will be indicated continuously by default)

37. PERMISSION FROM KSELB/ELECTRICAL INSPECTORATE BY BIDDER

37.1 The plan scheme and drawing related to interconnection details should be submitted to Kerala State Electricity Licensing Board through a licensed Electrical Contractor with the guidance of PWD Electrical wing/A.E, L.S.G.D/appropriate Engineering Authority.

37.2 The panel board and distribution board required for AC interconnection should be done as per specification/instruction given by PWD Electrical wing/Electrical Inspectorate Authorities /A.E, L.S.G.D. /appropriate Engineering Authorities

37.3 The fee for utility feasibility, plant registration fee etc if any is to be borne by the successful bidder. Also, the application and charges for Electrical Inspectorate are also under the scope of the bidder.

37.4 If additional wiring is required for segregating the load, then that work should also be done as a part of this project implementation.

37.5 It is mandatory to obtain Energisation certificate by bidder from Electrical Inspectorate for the installations of capacity above and including 10 kW.

37.6 It is mandatory to obtain pre scheme approval from Electrical inspectorate for the installations in Group 2.

38. WARRANTY

38.1 7years' warranty should be provided by the supplier for the system and components or part of the system must be provided as per the special conditions of the contract.

38.2 PV modules used in solar power plants/ systems must be warranted for their output peak watt capacity, which should not be less than 90 % at the end of 10 years and 80% at the end of 25 years

38.3 The Warranty Card to be supplied with the system must contain the details of all the components supplied.

39. OPERATION MANUAL

39.1 An Operation, Instruction and Maintenance Manual, in English and Malayalam should be provided with the system.

39.2 The following minimum details must be provided in the manual:

a) About solar power plant – its components and expected performance.
b) About PV module
c) About electronics
d) About charging and significance of indicators
e) DO's and DON'T's
f) Clear instructions on regular maintenance and troubleshooting of solar power plant
g) Name and address of the contract person in case of non-functionality of the solar power plant.

40. BILL OF MATERIAL

40.1 The bidder should provide the bill of material mentioning the quantity of each of the item consisting in the system, along with the offer.

Table 40.1

Sl. No.	Item	Make (if any)	Model & Individual Capacity (If any)	Qty (Nos)	Rating / Capacity
1.	PV Module				
2.	PCU/Inverter				
3.	Remote Monitoring Unit				
4.	DC Cables				
5.	AC Cables				
6.	AJB/SCB				
7.	Module Mounting Structure (MMS)				
8.	ACDB				
9.	Lightning Arrester				

10.	Earthing System Details and No. of Earth pits				

41. DISPLAY BOARD

41.1 The logo of ANERT and details of the scheme as specified in the work order.

42. INSURANCE

42.1 The power plant must be insured at every stage of operation – from Material dispatch, storage, completion of installation and till 7 years after commissioning.

42.2 The insurance coverage on handing over of the system must include all conditions of **Standard Fire and Special Perils as well as burglary and house break Policy (Material Damage as well as theft)**. The insurance premium for the 7years of warranty is to be paid by the bidder. On handing over of the system, the original insurance policy is to be handed over to the authorised person at the site of installation and a copy to ANERT District Office. The annual premium payment receipt must be handed to the authorised person at the site of installation.

43. ENGINEERING DRAWINGS

43.1 The bidder should submit and get the necessary approval of the following detailed Engineering Drawings as per the system described in 17.1 (a)&(b) of this document before execution of the project:

a. Schematic drawing showing the PV panels, Power conditioning Unit(s)/Inverter, Array Junction Boxes (AJBs)/String Combiner Boxes (SJB), AC and DC Distribution Box, Net meters, MSB etc.
b. Foundation ad structural diagram shall be approved by any of the IITs, NITs or other government universities.
c. Layout of solar PV Array
d. Single Line Diagram (SLD) with specification of all components.

e. Design document for Module Mounting Structure (MMS) including certificate showing wind speed withstanding capacity of the structure (STAAD/Equivalent).

f. Module Mounting Structure (MMS) drawing along with foundation details for the structure.

g. Sizes and specification of cables for PV Module interconnections, PV Array to Array Junction Boxes, Array Junction Boxes to Inverter, Inverter to ACDB/ Grid Connection point etc. shall be furnished.

44. SELECTION PROCEDURE

The Lead bidder need to get themselves graded

i. The eligibility of capacity for installation of single plant and total allocation per batch (allotment) will be based on the grading provided by the grading agency appointed by ANERT.

ii. The grading agency selected for this purpose is "ICRA Analytics Limited" Securities and Exchange Board of India (SEBI) approved Agency for "Assessing and Grading of Manufacturers / Contractors / Joint Venture of Manufacturers & integrators for submitting bids under PM KUSUM scheme – Component C Programme implemented in the state of Kerala. The grading is to be done with the same criteria set by ANERT for the Vendor Registration process.

iii. The grading will be done by M/s ICRA Analytics Ltd at the rates finalised by ANERT as below:

#	Rate For Undertaking Grading Services	AMOUNT (incl GST)
1	Initial Grading	23,600/-
2	Renewal of Grading post one year	9,440/-

The contact details of the ICRA Analytics Limited mentioned below and personnel dedicated for ANERT functionalities are as below:

ICRA Analytics Ltd
Infinity Benchmark, 17th Floor, Plot – G-1,
Block GP, Sector V, Salt Lake, Kolkata – 700091

Name	Contact Details	Email id
Mr. Mamun	+91 7304036988	anert.grading@icraanalytics.com
Mr. Indranil Chakraborty	+91 99033 77455	

The grading certificate issued only after 20/09/2022 will be considered under the tender. The EPC / System Integrators are to be graded in the same pattern for Registration of Vendors for Solar Program by M/s ICRA. This grading shall be submitted in due course and is not required at the time of tender submission. The same will be called for once the tender is opened and finalised during project implementation stage. Once the bids are opened, ANERT will evaluate all the proposals to determine whether these are complete in all respects as specified in the tender document. Evaluation of the proposals shall be done in three stages as:

i. Level - I (Technical Evaluation):

ANERT shall evaluate the technical bid(s) to determine whether these qualify the essential eligibility criteria, whether the bidder has submitted the EMD whether any computational errors have been made, whether all the documents have been properly signed & stamped, whether all the documents as mentioned / or required to submitted with technical bid are submitted and whether bids are completed and generally in order.

After evaluation of technical bid(s), a list of the qualifying bidder(s) shall be made. Short-listed bidder{s) shall be informed of the date, time and place of opening of financial bid(s) (online).

ii. Level - II (Ranking of qualified Bidders & elimination):

The financial bid(s) of Technically Qualified Bids shall be ranked in the ascending order of their respective financial bids (L1, L2, ..,Ln). The bids which have quoted the same amount shall be assigned the same rank.

If there are more than one L1 bidders quoting the same cost in Rs, tie breaking is based on the time of submission of the bid as recorded in the e-tender site. The bidder who has submitted the bid first will be the lowest bidder (L1 Bidder) and the other bidders who have quoted the L1 rates will be ranked based on the time of submission of

bids as L2 bidder, L3 bidder etc. After ranking bidders who have offered L1 rates, the next lowest bidders are assigned subsequent ranks based on the same criteria.

iii. Level – III (L1 Matching)

Under this process, all bidders other than L1 bidder/(s) within the price bracket (L1+25% of L1) will be asked to match the L1 rate discovered. Only those bidders within the above price bracket are considered for matching with L-1 rate, and if they match with L-1 rate, then they will be selected. If total no. of bidders within the above price bracket is less than 5, then those bidders who fall in (L1 + 30 % of L1) will also be considered for matching with the Lowest discovered rate ("L-1 Matching"). If they match, they will also be selected.

iv. Level – IV (Allocation of works)

i. ANERT will issue an order regarding the selection of bidders for each capacity and the total volume allotted to them based on the grading provided to the bidder by M/s ICRA. The rates including taxes will be included in the order and no requests for enhancement will be entertained.

ii. The L1 matched bidders are required to enter into an agreement with ANERT within 7 days from the date of issue of order.

iii. The capacity of Solar Power Plant that can be allotted to a particular vendor depends on their grading issued by M/s ICRA Analytics Limited, which is determined using the experience and financial strength of the vendor. Based on the grading, the vendors will be listed in certain categories as below:

Grading Scale		Financial Strength				
		Strong	**Above Average**	**Average**	**Below Average**	**Weak**
Performance capability	**Strong**	1A	1B	1C	1D	1E
	Above Average	2A	2B	2C	2D	2E
	Average	3A	3B	3C	3D	3E
	Below Average	4A	4B	4C	4D	4E
	Weak	5A	5B	5C	5D	5E

iv. Only agencies obtaining grades 5C and above are eligible for listing

v. With reference to the grading allotted, the single plant capacity and the total volume of works that can be allotted at a time is

Grade Allotted	Total Volume in kW in Batch
1A	5000
1B	3500
1C	1000
1D	500
1E	100
2A	2500
2B	2000
2C	1000
2D	200
2E	100
3A	1000
3B	500
3C	300
3D	50
3E	50
4A	100
4B	100
4C	50
4D	25
4E	25
5A	25
5B	15
5C	10

45. CHANGE IN LAW

i. If as a result of Change in Law, the Successful bidder suffers any additional costs in the execution of the Works or in relation to the performance of its other obligations under this Agreement, the Successful bidder shall, within 15 (fifteen) days from the date it becomes reasonably aware of such addition in cost, notify ANERT with a copy to ANERT's Engineer of such additional cost due to Change in Law.

ii. If as a result of Change in Law, the Successful bidder benefits from any reduction in costs for the execution of this Agreement or in accordance with the provisions of

this Agreement, either Party shall, within 15 (fifteen) days from the date it becomes reasonably aware of such reduction in cost, notify the other Party with a copy to the Authority's Engineer of such reduction in cost due to Change in Law.

iii. ANERT's Engineer shall, within 15 (fifteen) days from the date of receipt of the notice from the Successful bidder or ANERT, determine any addition or reduction to the Contract Price, as the case may be, due to the Change in Law.

46. FORCE MAJEURE

i. Notwithstanding the provisions of clauses contained in the tender document; the work awarded agency shall not be liable to forfeit
   a. Security deposit for delay and
   b. termination of contract; if he is unable to fulfill his obligation under this contract due to force majeure conditions.

ii. For purpose of this clause, "Force Majeure" means an event beyond the control of the work awarded agency and not involving the work awarded agency's fault or negligence and not foreseeable, either in its sovereign or contractual capacity. Such events may include but are not restricted to Acts of God, wars or revolutions, fires, floods, epidemics, quarantine restrictions and fright embargoes etc. Whether a "Force majeure" situation exists or not, shall be decided by ANERT and its decision shall be final and binding on the work awarded agency and all other concerned.

iii. In the event that the work awarded agency is not able to perform his obligations under this contract on account of force majeure, he will be relieved of his obligations during the force majeure period. In the event that such force majeure extends beyond six months, ANERT has the right to terminate the contract in which case, the security deposit shall be refunded to him.

iv. If a force majeure situation arises, the work awarded agency shall notify ANERT in writing promptly, not later than 14 days from the date such situation arises. The work awarded agency shall notify ANERT not later than 3 days of cessation of force majeure conditions. After examining the cases, ANERT shall decide and grant suitable additional time for the completion of the work, if required.

47. Limitation of Liability

Except in cases of criminal negligence or wilful misconduct,

a. The Successful bidder shall not be liable to the ANERT, whether in contract, tort, or otherwise, for any indirect or consequential loss or damage, loss of use, loss of production, or loss of profits or interest costs, provided that this exclusion shall not apply to any obligation of the Successful bidder to pay liquidated damages to the ANERT

b. The aggregate liability of the Successful bidder to the ANERT, whether under the Contract, in tort or otherwise, shall not exceed the total Contract Price, provided that this limitation shall not apply to any obligation of the Successful bidder to indemnify the ANERT with respect to patent infringement

ANNEXURE A – SUMMARY OF BID QUALIFICATION REQUIREMENTS

(To be filled in by the bidder)

1.	Name of the Applicant/Bidder						
2.	Address in full						
3.	Contact Details Mobile Land Phone Email						
4.	Name and Designation of the authorised signatory						
5.	GST Registration No.						
6.	Total number and Aggregate capacity of solar power plants installed for the last 5 Years (Off-Grid/On-Grid) *(proof to be enclosed, and flagged as Annexure)*		2017	2018	2019	2020	2021
		Number of systems:					
		Total capacity					
7.	Highest Capacity of individual PV Power Plant installed so far (With the details of Beneficiary/Institution name, Phone No, Email ID, Grama Panchayat, District, State etc.						
8.	Annual turnover of the firm during last three years (Rs.)						
9.	No. of service centres/Authorised service providers in Kerala	*(Proof or undertaking to be enclosed as Annexure)*					
10.	Whether Bidder was/is de-barred by ANERT/Other State Nodal Agencies /MNRE/DISCOMs (Yes/No)?						
11.	Agreement submitted (Yes/ No)?						

Documentary evidence for the bid qualification requirements are submitted along with this document and the details furnished above are true and correct.

Signature of authorised signatory

Name

Designation

Date: (office seal)

ANNEXURE B-AGREEMENT

ARTICLES OF AGREEMENT executed on this the . . . . day of . . . . Two thousand and . . . .between the **Agency for New & Renewable Energy Research and Technology** (hereinafter referred to as **ANERT**) of the one part and Sri . . . . (Name and Address of the tenderer) hereinafter referred to as "the Bounden") of the other part.

WHEREAS in response to the Notification No. . . . . dated . . . . the bounden has submitted to ANERT a e-tender for the ***Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW - 150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala*** specified therein subject to the terms and conditions contained in the said e-tender.

AND WHEREAS the bounden has furnished to ANERT a sum of Rs. . . . . .. as Earnest Money Deposit for execution of an agreement undertaking the due fulfilment of the contract in case his e-tender is accepted by ANERT. NOW THESE PRESENTS WITNESS and it is hereby mutually agreed as follows: -

In case the e-tender submitted by the bounden is accepted by ANERT and the contract for . . . . is awarded to the bounden, the bounden shall within Fifteen days of acceptance of this e-tender, execute an agreement with ANERT incorporating all the terms and conditions under which ANERT accepts this e-tender.

In case the bounden fails to execute the agreement as aforesaid incorporating the terms and conditions governing the contract, ANERT shall have power and authority to recover from the bounden any loss or damage caused to ANERT by such breach as may be determined by ANERT by appropriating the moneys inclusive of Earnest Money deposited by the bounden and if the Earnest Money is found to be inadequate the deficit amount may

be recovered from the bounden and his properties movable and immovable in the manner hereinafter contained.

All sums found due to ANERT under or by virtue of this agreement shall be recoverable from the bounden and his properties movable and immovable under the provisions of the Revenue Recovery Act for the time being in force as though such sums are arrears of land revenue and in such other manner as ANERT may deem fit.

In witness whereof Sri . . . . . (Name and Designation) for and on behalf of the Agency for Non-conventional Energy and Rural Technology and Sri . . . . the bounden have hereunto set their hands the day and year shown against their respective signature.

Signed by Sri	Signed by Sri . . . . .
(Date)	(Date) . . . .
in the presence of witnesses	in the presence of witnesses
1.	1.
2.	2.

ANNEXURE C –DECLARATION BY THE BIDDER

e-Tender Notification No: ....., dtd …….. for Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW - 150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala

To

The CEO
ANERT

We, the undersigned, declare that:

1. We have examined and have no reservations to the Bidding Document, including Addenda No.: ..... (if any)
2. We offer to supply in conformity with the Bidding Document and in accordance with the delivery schedule
3. Our Bid shall be valid for a period of 12 months from the date fixed as deadline for the submission of tenders in accordance with the Bidding Document, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;
4. If our Bid is accepted, we commit to submit a Security Deposit in the amount of 3 percent of the Contract Price for the due performance of the Contract;
5. We are not participating, as Bidders, in more than one Bid in this bidding process;
6. Our firm, its affiliates, or subsidiaries, including any subcontractors or suppliers for any part of the Contract, has not been declared ineligible by the ANERT or Government of Kerala;
7. We understand that this Bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal Contract is prepared and executed.
8. Our firm has obtained the certifications from MNRE or NABL approved Test laboratories that the goods and services are satisfying the technical criteria specified in the bid.

Signature

Date

Name

ANNEXURE D– DECLARATION ON SUBSIDY CLAIM

(to be signed and submitted by the bidder along with the bid)

Tender Notification No.: ……..

Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW - 150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala

To

The CEO
ANERT

I hereby declare that we will not apply directly to MNRE for claiming the subsidy for this SPV project with .....HP capacity and proposed to be installed at .....

Signature of Bidder:

Name :

Date:

Office Seal

ANNEXURE E – DECLARATION OF RELATIONSHIP WITH ANERT EMPLOYEE

(to be signed and submitted by the bidder along with the bid)

Tender Notification No.: ……..
Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW - 150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala

To

The CEO
ANERT

Name of the ANERT employee with Designation:

Name of the bidder related to the employee:

This is to put on record that Shri/Smt ……

currently working as …… in ANERT is related to ……., who is the bidder in the bid. We are aware of the Anti-corruption policy of ANERT and will observe the highest standards during the procurement and the execution of contract and shall retain from corrupt, fraudulent, collusive or coercive practices on competing for the contract.

Signature

Name

Date

ANNEXURE F –SERVICE REPORT

(Format of Service Report to be submitted on Quarterly basis to respective District Offices)

SERVICE REPORT

Fault/ Quarterly Service
(Put ✓on the number of Periodic service & Month from the date of commissioning)

Periodic Service				Months after commissioning			
1	2	3	4	3	6	9	12
8	7	6	5	15	18	21	24
9	10	11	12	27	30	33	36
16	15	14	13	39	42	45	48
17	18	19	20	51	54	57	60
21	22	23	24	63	66	69	72
25	26	27	28	75	78	81	84

GENERAL INFORMATION			
Installation Site			
Address			
LSG			
Assembly Constituency			
District			
Service Executive Name & Contact :		Inspection Date & Time	

VISUAL INSPECTION DATA

SOLAR MODULE		
Total capacity Solar Array (kW):		
Solar Module size (Watt peak per module) Wp		
Brand of solar module :		
Model of solar module :		
Cracked glass of PV panel	☐ Yes	☐ No
White or Brown spot, bubble of air, moisture behind the glass	☐ Yes	☐ No
Junction boxes at backside loose or without cover?	☐ Yes	☐ No
Physical damage to any PV module	☐ Yes	☐ No
Check for loose cable terminations between PV modules	☐ Yes	☐ No
PV modules are properly grounded with lugs on each module	☐ Yes	☐ No
STRUCTURAL AND ROOF		
Are the modules mounted securely, and level?	☐ Yes	☐ No
Results of module hand lift test?	☐ Secure	☐ Not Secure
Are Conductors loose, touching roof surface or in contact with sharp or abrasive surfaces?	☐ Yes	☐ No
Conductor plug-and-receptacle connectors are fully engaged between junction boxes ?	☐ Yes	☐ No
Are any dissimilar metals being combined?	☐ Yes	☐ No
corrosion/evidence of rust, when encountered apply the cold galvanization spray	☐ Yes	☐ No
Check for proper earthing of structures	☐ Yes	☐ No
Check for physical damage of structures	☐ Yes	☐ No
INVERTER		
Inverter Make & Model		

Power output (kW / kVA) :		
Is the inverter located in an area which is exposed to direct sun?	☐ Yes	☐ No
Proper wire sizes ?	☐ Yes	☐ No
Check all meters and control wiring connected as per drawing	☐ Yes	☐ No
Enclosure cleaned and vacuumed out	☐ Yes	☐ No
Display and indications are working	☐ Yes	☐ No
Check for Noise levels of inverter	☐ Normal	☐ High
Check for ventilation condition (Exhaust fan is working properly or not)	☐ Yes	☐ No
Grounded ?	☐ Yes	☐ No
JUNCTION BOXES		
Check for tightness of clamps, supports, Nut- bolts used for combiner box	☐ Yes	☐ No
Check cables are secured from sharp edges	☐ Yes	☐ No
Check proper conduit fittings used and adequately tightened	☐ Yes	☐ No
Array box is Vermin and dust proof	☐ Yes	☐ No
MAIN ELECTRICAL DISTRIBUTION PANEL		
Electrical Concerns or Code Violations	☐ Yes	☐ No
Check cable terminals for burnt marks, hot spot or loose connection	☐ Yes	☐ No
Check for physical damage	☐ Yes	☐ No
REMOTE MONITORING SYSTEM		
Check whether RMS unit is functioning	☐ Yes	☐ No

SPV POWER PLANT MONITORING SHEET

Parameters under Measurement	Data	Remarks if any
GENERATION		
Current Energy Meter Reading (C)		
Previous Energy Meter Reading (P)		
Quarterly Generation (C – P) kWh		
Inverter Cumulative Generation (kWh)		
Number of days without generation (*in case of fault*)		
PV MODULES (AJB Reading using Multimeter)		
i. Watt Peak (Wp)		
ii. Voltage (V)		
iii. Current (A)		
iv. Number of Series		
v. Number of Parallel		
POWER CONDITIONING UNIT (PCU)		
i. PV Voltage (V)		
ii. PV Current (A)		
iii. PV Power (kW)		
iv. AC Voltage (R Phase)		
v. AC Voltage (Y Phase)		
vi. AC Voltage (B Phase)		
vii. Frequency (Hz)		
viii. Error log/Warning log Details		

Special Remarks (if any) Customer / Service Executive:

The above generation data are verified and the power plant is working satisfactorily. The periodic maintenance is regular and no default in inspection is noticed.

Signature with Seal	Signature with Seal
Authorised Representative of LSG	Service Executive
Name:	Installed Agency
Designation:	

To be issued in Triplicate: Original to ANERT DO, copy to beneficiary& One for the installed agency

ANNEXURE G –GUARANTEED TECHNICAL PARAMETERS

PV Module			
#	**Particulars**	**Required**	**Offered**
1	PV Module Manufacture Name & Country of origin	manufacture name to be specified)	
2	PV Module type	Poly/Mono Crystalline, Mono/Poly PERC	
3	Product Code		
4	No. of PV cells per Module		
5	Total number of PV modules		
6	Max. Power, Pmp @STC	335 Wp or above	
7	Max. power tolerance (%)	Not more than 3%	
8	Max. Power voltage (Vmp)@STC	To be specified	
9	Max. Power current (Imp) @STC	To be specified	
10	Open circuit voltage, Voc@STC	To be specified	
11	Short circuit current, Isc@STC	To be specified	
12	Nominal voltage	To be specified	
13	Nominal Wattage	To be specified	
14	Fill Factor	Not less than 0.7	
15	Temp. coefficient of Voc (%/C)		
16	Temp. coefficient of Pmp (%/C)		
17	Temperature Co-efficient of Isc (%/°C)		
18	Normal Operating Cell Temperature (NOCT) (°C)		

PV Module			
#	**Particulars**	**Required**	**Offered**
19	Operating Temperature (°C)		
20	Max Temperature rise of solar cells under severe working conditions over Max. Ambient Temp.	To be specified	
21	Module is suitable to operate at 500 ambient	Yes/No	
22	Cell efficiency	%	
23	Module efficiency	>=17% (Document to prove efficiency shall be furnished with the offer)	
24	Maximum System Voltage		
25	No. of By-pass Diodes		
26	Mounting arrangement for Solar Module	Fixed Arrangement	
27	Solar Module frame material	Anodized Aluminum	
28	Finish		
29	Types of Sections used		
30	Module dimensions cms (LxWxH)	To be specified	
31	PV panel Weight (kg)	To be specified	
32	Module Life (minimum)	25 years	
33	PV array area(sqm)		

PV Module			
#	Particulars	Required	Offered
34	Standards/Approvals from International Agencies	IEC 61215/IEC 61730/ IEC 61701	
35	Guaranteed output confirm	Yes	
36	Output Cables	Polarized, UV protected &Weather Proof DC rated multi-contact connector	
37	Output Terminal	PV Connectors	
38	Junction Box	Weather resistant HDPE (IP65)	
39	Construction Front, Back	High transmittance glass. Polyester Ethyl Vinyl Acetate (EVA) encapsulate	
40	Glass	Low iron tempered	
43	Copies of test certificates	IS 14286/IEC 61215,61730 part 1&2, IEC 61701	

INVERTER (To be provided for each capacity)			
#	Particulars	Required	Offered
1	Manufacturer		
2	Model name/No.		
3	Number of units		
5	Nominal AC power		
6	Nominal AC voltage		
7	Nominal AC Current		

INVERTER (To be provided for each capacity)			
#	**Particulars**	**Required**	**Offered**
8	AC grid Frequency range	50Hz ± 0.5%	
9	AC grid voltage range		
10	Power Factor (+ and -)		
11	Total Harmonic Distortion	As per IEEE-519 2014	
12	AC over / under voltage over / under frequency protection		
13	Max PV input power		
14	Maximum DC voltage	Less than 1000 V	
15	MPPT voltage range		
16	Maximum DC current		
17	No. of DC input ports		
18	Maximum Efficiency	as perIEC61683	
19	DC voltage ripple		
20	Ambient temperature range		
21	Humidity (non-condensing)	95%, non-condensing	
22	Degree of protection		
23	Dimensions approx. (HxWxD)		
24	Weight		
25	Protective functions AC over/under voltage, ACover/under frequency, overtemperature, AC and		

INVERTER (To be provided for each capacity)			
#	**Particulars**	**Required**	**Offered**
	DC overcurrent, DC over-voltage,against Islanding		
26	Communication Interface	RS485. MPI Profi Bus/Telephone Modem/WiFi	
27	User-display standard	LCD panel with membrane Keypad	
28	Enclosure environment rating		
29	Safety and EMC		
30	Anti-islanding feature	IEEE1547/UL1741/IEC62116	

Others				
#	**Particulars**	**Required**	**Offered**	
1	Remote Monitoring Unit	IIOT-Compatible	☐ Yes	☐ No
2	Cables	UV Rated	☐ Yes	☐ No
3	Junction Boxes	IP 54 or IP 65 Rated	☐ Yes	☐ No

ANNEXURE H – BID SECURITY BANK GUARANTEE

BID SECURITY BANK GUARANTEE

BG No. :

Amount :

Date :

Valid up to :

This guarantee is made on this ..... day of ..... 20..... by ..... (Complete postal address of the bank) hereinafter called 'the **Bank**', which expression shall unless repugnant to the context or meaning thereof shall include its successors and assigns.

WHEREAS the **ANERT,** having its registered office at PMG-Law College Rd, Vikas Bhavan PO, Thiruvananthapuram, Kerala, PIN – 695 033, hereinafter called as **ANERT,** which expression shall unless repugnant to the context or meaning thereof shall include its successors and assigns in having agreed to exempt .....(hereinafter called "**contractor(s)**" which expression unless repugnant to the context and meaning thereof shall include its successors and assigns) from depositing with **ANERT,** a sum of Rs. ..... towards Security Deposit in lieu of the said **contractor(s)** having agreed to furnish a bank guarantee for the said sum of Rs. ..... as required under the terms and conditions of Tender No. ..... dated ..... (hereinafter referred as the 'bid') placed by the **ANERT.**, on the said **contractor(s)** and on specific request on the part of the said **Contractor**(s), we the **Bank** hereby unconditionally and irrevocably affirm and undertake-

On production of the Bank Guarantee for Rs..... (Rupees..... only) we, ...Bank having our Head Office at ..... (herein after referred to as "the Bank") at the request of M/s. .....(name of contractor) do hereby undertake to pay to the ANERT an amount not exceeding Rs..... (Rupees ..... only), against any loss or damage

caused to or suffered or would be caused to or suffered by the ANERT by reason of any breach by the said contractor of any of the terms and conditions contained in the said agreement

We, ...Bank, do hereby undertake to pay the amount due and payable under this Guarantee without any demur, merely on a demand from the ANERT stating that the amount claimed is due by way of loss or damage caused to or would be caused to or suffered by the ANERT by reasons of breach by the said contractor of any of the terms or conditions contained in the said agreement. Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. ..... (Rupees ..... only).

This guarantee will not be discharged due to change in the constitution of the bank or the contractor/supplier.

Notwithstanding anything contained hereinbefore:

1) Our liability under this Bank Guarantee shall not exceed Rs.....(Rupees .... only)
2) This Bank Guarantee shall be valid upto .....
3) We are liable to pay the guaranteed amount or any part thereof under this Bank Guarantee amount only and only if you serve us a written claim or demand on or before.....

Dated at ..... this .... day of 2021

SIGNATURE OF THE BANK _____

SEAL OF THE BANK _____

SIGNATURE OF THE WITNESS _____

Name and Address of the Witness _____

The bank guarantee shall be issued by a bank (Nationalized/Scheduled) located in India

FORMAT A –UNDERTAKING FOR NO BLACKLISTING & NO BANNING

(To be provided on Rs.200 Non-Judicial Stamp paper. In Case of JV the following format is to be provided by Each Member of the Joint Venturerespectevly)

Undertaking for No Blacklisting & No Banning

To

The CEO
ANERT

Sub: Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW - 150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala

I / We hereby declare that presently our Company/Limited Liability Partnership/ Partnership Firm/ Sole Proprietorship is having unblemished record and is not declared ineligible for corrupt/fraudulent practices by any State/Central Government/PSU on the date of Bid Submission.

I / We further declare that presently our Company/Limited Liability Partnership/ Partnership Firm/ Sole Proprietorship is not blacklisted and not declared ineligible for reasons other than corrupt/fraudulent practices by any State/Central Government/PSU on the date of Bid Submission.

If this declaration is found to be incorrect then without prejudice to any other action that may be taken, our security may be forfeited in full and the tender if any to the extent accepted may be cancelled.

(Signature & Seal of Authorized Signatory for which POA attached)

Name of Authorized Signatory:

Designation:

Date:

Place:

FORMAT B –POWER OF ATTORNEY IN FAVOUR OF AUTHORIZED SIGNATORY (IN CASE BIDDER IS JOINT VENTURE)

(On Non-Judicial Stamp Paper of Rs. 200/- attested by Notary Public / First Class Magistrate)

Power of Attorney in favour of Authorized Signatory

KNOW ALL MEN BY THESE PRESENTS THAT WE, the Partners whose details are given hereunder ..... have formed a Joint Venture under the laws of ..... and having our Registered Office(s)/Head Office(s) at ..... (hereinafter called the 'Joint Venture' which expression shall unless repugnant to the context or meaning thereof, include its successors, administrators and assigns) acting through M/s ..... being the Partner in-charge do hereby constitute, nominate and appoint M/s..... a Company incorporated under the laws of ..... and having its Registered/Head Office at ..... as our duly constituted lawful Attorney (hereinafter called "Attorney" or "Authorised Representative" or "Partner In-charge") to exercise all or any of the powers for and on behalf of the Joint Venture in regard to “Bid Specification” for the Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9348 nos. under the PM-KUSUM scheme (Component-C) in the State of Kerala”, under NIT No: ANERT-TECH/45/2020-PE1(RTS) for which bids have been invited by ANERT undertake the following acts:

i. To submit proposal and participate in the aforesaid Bid Specification of ANERT on behalf of the "Joint Venture".

ii. To negotiate with ANERT the terms and conditions for award of the Contract pursuant to the aforesaid Bid and to sign the Contract with the ANERT for and on behalf of the "Joint Venture".

iii. To do any other act or submit any document related to the above.

iv. To receive, accept and execute the Contract for and on behalf of the "Joint Venture".

It is clearly understood that the Partner In-charge (Lead Partner) shall ensure performance of the Contract(s) and if one or more Partner fail to perform their

respective portions of the Contract(s), the same shall be deemed to be a default by all the Partners.

It is expressly understood that this Power of Attorney shall remain valid binding and irrevocable till completion of the period to complete all the Scope of Work awarded under the terms of Bid Specification/ Contract.

The Joint Venture hereby agrees and undertakes to ratify and confirm all the whatsoever the said Attorney/Authorised Representatives/Partner in-charge quotes in the bid and negotiates with ANERT and signs the Contract with ANERT and/or proposes to act on behalf of the Joint Venture by virtue of this Power of Attorney and the same shall bind the Joint Venture as if done by itself.

IN WITNESS THEREOF the Partners Constituting the Joint Venture as aforesaid have executed these presents on this ..... day of ……..... under the Common Seal(s) of their Companies.

For and on behalf of the partners of Joint Venture

.....

.....

The Common Seal of the above Partners of the Joint Venture:

The Common Seal has been affixed there unto in the presence of:

WITNESS

1. Signature.....
   Name .....
   Designation .....
   Occupation .....
2. Signature.....
   Name .....
   Designation .....
   Occupation .....

Note:

1. For the purpose of executing the Agreement, the non-judicial stamp papers of appropriate value shall be purchased in the name of Joint Venture.
2. The Agreement shall be signed on all the pages by the authorised representatives of each of the partners and shall invariably be witnessed.

FORMAT C –CERTIFICATE OF BIDDER'S FINANCIAL QUALIFICATION

(On Letterhead of the respective entity (Bidder/ Lead Member/ Other Member) for which the below details are provided. In Case of JV the following format is to be provided by Each Member of the Joint Venture separately on their respective letterhead))

Financial Qualification Certificate

In Response to NIT No:

(Rupees in Lakhs)

S/N	Financial parameters	FY17-18	FY18-19	FY19-20	FY20-21	FY 21-22
1.	**Net Worth**					
a)	Paid up Capital					
b)	Free Reserves and Surplus*					
c)	Misc expenses to the extent not written off					
	Net Worth (a+b-c)					
2.	**Annual Turnover ****					

* Free Reserve and Surplus shall be Exclusive of Revaluation Reserve, written back of Depreciation Provision and Amalgamation.

** Annual total Income/ turnover as incorporated in the Profit and Loss Account excluding non-recurring income, i.e., sale of fixed asset etc.

It is certified that all the figures are based on audited accounts read with auditors report and Notes to Accounts etc.

Name of Authorized Signatory:
Designation:

Date:
Place:

Certifying Chartered Accountant:
Name of Firm:

UDIN No:

Date:
Place:

Note:

1. In addition to above certificate from Chartered Accountant, Bidder is required to submit Firm's Annual Audit Report, Balance sheet, Profit & Loss and Income Tax Returns / CA certificate for last Five years i.e., F.Y: 2017-18, 2018-19, 2019-20, 2020-21 & 2021-22.
2. **In case of JV, the form shall also be signed by respective entity's authorized signatory along with Authorized Signatory for which POA is attached.**

FORMAT D –CHECKLIST TO BE SUBMITTED ALONG WITH COVERING LETTER

Checklist to be submitted along with Covering letter					
Tender ID:			**Date:**		
Tender name: - Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 Nos ranging from 2kW- 150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala					
Name of Sole/ Lead Bidder					
Name of JV Partner					
Sl No	**Particular**	**Sole/Lead bidder**		**Partner in JV**	
		Pg No	**File Name**	**Pg No**	**File Name**
1	Proof for Tender fee Exemption, if any				
2	Proof for EMD fee Exemption, if any				
3	In case of JV, provide JV agreement defining lead member				
4	Copy of Registration/Incorporation Certificate				
5	Copy of GST Registration certificate				
6	Copy of Pan Card				
7	Power of Attorney in favour of authorized signatory in Rs 200 Stamp paper				
8	If Power of Attorney in favour of authorized signatory not applicable - need to submit self-declaration on authorized signatory				
9	Declaration by JV partner /Sole bidder on Manufacturing of Solar Panels				
10	Work orders as proof of Experience				
11	Completion certificate for the work orders				
12	Undertaking for Non-Black Listing in 200 Rs Stamp Paper				
13	Scanned copy of Tender Document Signed and Sealed				
14	Agreement in the Prescribed format Annexure B in 200Rs stamp paper				
15	Declaration by manufacturer to provide PV module from ALMM List & with DCR content				

16	Declaration from lead bidder to provide Inverter with IS1621, IS16169 certification				
17	Summary of Bid Qualification Requirement				
18	Bill of Material				
19	Guaranteed Technical Parameters				
20	Test Certificates as per GTP				
21	Datasheet as per GTP				
22	Declaration by the bidder				
23	Declaration on subsidy claim				
24	Declaration of relationship with ANERT Employee				
25	List of Service centres /Declaration to provide service centre in 200Rs Stamp Paper				
26	ICRA Grading Certificate				

Tender submitted by the following 8 firms have been opened on 21/12/2022

1. TATA Power Solar Systems Pvt Ltd.
2. Inkel Ltd.
3. Kondaas Automation Pvt Ltd.
4. Suryam International Pvt Ltd.
5. Suntastic Engineering Pvt Ltd.
6. Moopens Energy Solutions Pvt Ltd.
7. KC Kopar Energy Solutions Pvt. Ltd.
8. Mechatronik Technologies Pvt Ltd.

Technical evaluation of the bid started on the same day itself.
While evaluating technical bids, some clarifications were sought on the document submitted by the bidders. Corresponding mail was communicated to them on 24/12/2022 for submitting clarifications before 27/12/2022, 6.00 PM.
The copy of mail received are attached herewith for reference.

The following firms have submitted clarifications.

1. TATA Power Solar Systems Pvt Ltd.
(ICRA Rating 1B)

(a) Declaration on solar panel manufacturer was missing and upon clarification mail they provided the same.

-Complied

2. Inkel Ltd.
(ICRA Rating 1C)

(a) Undertaking for Non-black listing in Rs.200/- stamp paper as per format-A was provided only for INKEL, but not for the JV partner-Topsun Energy Ltd. Now they have submitted the required document for clearing the query.

(b) In the GTP, RMS details were missing and Inkel has provided the same for reply to the mail.

-Complied.

3. Kondaas Automation Pvt Ltd
(ICRA Rating 2B)

(a) In case of Joint Venture (JV), it is required to submit power of attorney in favour of authorised signatory in Rs.200/- stamp paper signed on all pages by authorised representative of each of JV partner. This document was missing among the documents submitted and we had raised clarification regarding the same. Upon that they have provided the Power of attorney.

(b) Declaration regarding service centers was missing in the documents submitted and clarification was enquired. For that bidder provided declaration as they will provide additional service center within 15 days of letter of intent.

-Complied.

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4. Suryam International Pvt Ltd
(ICRA Rating 2B)

(a) In the bill of materials RMS details were missing and the clarification query was cleared by the firm by providing the same.

-Compiled.

5. Suntastic Engineering Pvt Ltd
(ICRA- Rating-2C)

(a) In case of Joint Venture (JV), it is required to submit power of attorney in favour of authorised signatory in Rs.200/- stamp paper signed on all pages by authorised representative of each of JV partner. But they had provided in Rs.100/- stamp paper without authorised signatory of JV Partner. Hence we asked for clarification. They have submitted the documents as required.

(b) They haven't submitted documents to prove work order for 3 MW eligibility, raised query regarding that. They have provided documents to prove work order for 3 MW.

-Compiled

6. Moopens Energy Solutions Pvt Ltd.
(ICRA Rating- 1B)

(a) In case of Joint Venture (JV), it is required to submit power of attorney in favour of authorised signatory in Rs.200/- stamp paper signed on all pages by authorised representative of each of JV partner. But didn't provided the same. Hence asked to submit the document. For that bidder replied as *"Lead bidder in this tender is Moopens Energy Solutions Pvt Ltd ,hence we request you to waive the requirements in stamp paper for power of attorney, considering the Pennar Industries is public listed company so such documents cannot be issued,the board resolution is attached."*- clarification not satisfactory

(b) Declaration by manufacturer to provide PV module from ALMM List with DCR content not provided. They have provided the same as reply to clarification mail.

(c) Declaration regarding service centers was missing in the documents submitted and clarification was enquired. For that bidder provided declaration as they will provide service center with in 15 days of the letter of intent.

(d) Declaration of lead bidder that they will provide Inverters with IS compliance of IS16221, IS16169 is missing. So clarification was raised. For that they had provided a declaration that they will provide inverters with IEC certification and terms as per tender.

-(a) above not complied.

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7. KC Kopar Energy solutions Pvt. Ltd
(ICRA- Rating-2C)

KC Kopar is not a manufacturer of solar panels, hence they have made a joint venture with M/s Swelect Energy Systems Ltd. For the clarification mail they have replied as follows.

a) Lead member is not specified in JV agreement submitted along with documents, in place of this KC Kopar has submitted a self-declaration in their own letter head stating KC Kopar as the lead member.
b) In case of Joint Venture (JV), it is required to submit power of attorney in favour of authorised signatory in Rs.200/- stamp paper signed on all pages by authorised representative of each of JV partner. KC Kopar- Lead member provided clarification as managing Director is authorised signatory. The corresponding statement was provided as a self-declaration in the letter head of KC Kopar Energy Ltd.
c) Declaration by JV partner on manufacturer of solar panels was missing and asked for the clarification. They have provided the same as reply.
d) Undertaking for Non-black listing in Rs.200/- stamp paper as per format-A was provided by KC Kopar (lead member) and the same was missing for Swelect Energy Systems Ltd (JV Partner). Hence we raised a clarification on this. For that KC Kopar as clarified that M/s. Swelect, being a listed company and JV (consortium) partner shall not be able to provide the same but any such information shall be verified on line.
e) In the bill of materials RMS details were missing and the clarification query was cleared by providing the same.
f) In the GTP, RMS details were missing and Kopar has provided the same for reply to the mail.
g) Proof of completion was missing for 333 kW work order provided to claim aggregate 1 MW experience. As clarification, KC Kopar has submitted the screenshot of the dash board of e-Kiran site to claim experience in KSEB Soura projects which indicates completion report of 345 kW.
h) Declaration regarding service centers was missing in the documents submitted and clarification was enquired. For that Kc Kopar provided declaration as they will provide additional service center within 15 days of letter of intent.

-(d) above not complied.

8. Mechatronik Technologies Pvt Ltd

a) ICRA grading certificate not provided.
b) They haven't submitted documents to prove 3 MW eligibility, raised query regarding that. But they re-submitted some documents to claim the experience. The documents were in language other than English and also illegible. Hence experience eligibility cannot be ascertained.
c) Joint venture agreement was not submitted as directed.

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d) PAN card submitted was not in the name of firm, instead individual PAN card submitted.
e) Declaration regarding service centres states that they have no service centres in Kerala.

-not complied.

25/12/22 Rajesh R ACTM

K Premkumar SI

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അനെർട്ട്
ANERT
Agency for New and renewable Energy Research and Technology
നവീനവും പുനരുപയോഗയോഗ്യവുമായ ഊർജ്ജ ഗവേഷണങ്ങൾക്കും സാങ്കേതിക വിദ്യകൾക്കുമുള്ള ഏജൻസി
DEPARTMENT OF POWER, GOVERNMENT OF KERALA
Law College Road, PMG, Thiruvananthapuram 695033 • director@anert.in • www.anert.gov.in
Tel.: (+91-471) 2338077, 2334122, 2333124, 2331803 • Fax: (+91-471) 2329853

No. ANERT-TECH/144/2022-T4 16/12/2022

ADDENDUM / CORRIGENDUM

Corrigendum

Type :Technical Corrigendum - 1

Tender ID :2022_ANERT_504042_2
Tender Title :Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos ranging from 2kW-150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala

i. The clause #10.1.3, to be read as *"As per the guidelines of PM-KUSUM, only Manufacturers of PV Modules OR manufacturer of Solar Pumps OR a Joint Venture of Manufacturer of Solar Panels are eligible to undertake works under the scheme."*
ii. In table 10.2, the clause #1.5 stands modified as,

S. No.	Criteria	Documents Required
	The bidder must have completed Solar Installations of at least 3 MW in India. The works shall have been executed under SNA/ Govt. Organization/SECI/PSUs. In case of JV, all the members jointly may fulfil this requirement and also	The details of projects executed during period mentioned above should be listed. Copy of work orders and a certificate issued by the SNA/ Govt. Organization/SECI/PSUs towards

1. 5.	the lead bidder should have carried out works related to installation of solar systems of min capacity of 1MW during the last five financial years. Total aggregate capacity by both members of JV should be of 3MW during last 5 financial years.	the satisfactory work completion to be furnished by the bidder. In absence of any one, it will not be considered for qualifying in technical bid.

iii. The format C provided as Certificate for Bidders Financial Qualification stands cancelled.

iv. The format D provided as Checklist to be submitted along with the covering letter modified and provided as Annexure I in this corrigendum.

v. In the section 44. Selection procedure,

a. The clause *"This grading shall be submitted in due course and is not required at the time of tender submission. The same will be called for once the tender is opened and finalised during project implementation stage."* Is modified as *"This grading shall be submitted at the time of tender submission and failure on submission will lead to rejection of the bid."*

b. The clause - **Level - II (Ranking of qualified Bidders & elimination)** is modified as follows:-

The financial bid(s) of Technically Qualified Bids shall be opened and for evaluating the L1 price, only the rates quoted by the bidder having ICRA Grading of 1A, 1B, 1C, 2A & 2B will be considered. Vendors having lower grade are also eligible for participation in the tender, whereas their rates will not be considered for L1 rate finalisation. If there are more than one L1 bidders quoting the same cost in Rs, tie breaking is based on the time of submission of the bid as recorded in the e-tender site. The bidder who has submitted the bid first will be the lowest bidder (L1 Bidder) and the other bidders who have quoted the L1 rates will be ranked based on the time of submission of bids as L2

bidder, L3 bidder etc. After ranking bidders who have offered L1 rates, the next lowest bidders are assigned subsequent ranks based on the same criteria.

Thiruvananthapuram

Yours faithfully,

Narendra Nath Veluri I F S
Chief Executive Officer

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ANERT
Agency for New and renewable Energy Research and Technology
നവീനവും പുനരുപയോഗയോഗ്യവുമായ ഊർജ്ജ ഗവേഷണങ്ങൾക്കും സാങ്കേതിക വിദ്യകൾക്കുമുള്ള ഏജൻസി
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No. ANERT-TECH/144/2022-T4 16/12/2022

ADDENDUM / CORRIGENDUM

Corrigendum

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bidder, L3 bidder etc. After ranking bidders who have offered L1 rates, the next lowest bidders are assigned subsequent ranks based on the same criteria.

Thiruvananthapuram

Yours faithfully,

Narendra Nath Veluri I F S
Chief Executive Officer

KUSUM Tender Summary

Ground Mounted

Sl.No	Capacity	INKEL LIMITED	KC COPAR ENERGY SOLUTIONS (P) LTD	SUNTASTIC ENGINEERING PRIVATE LIMITED	Suryam Internatinal private Limited	Kondaas Automation Private Limited	Tata Power Solar	Moopens Energy Solutions Pvt Lt
1.01	Total cost for the SIC of 2 kW SPV Power plant	2,61,740	2,75,453	2,48,084	2,57,188	**2,35,270**	2,48,190	2,53,319
1.02	Total cost for the SIC of 3 kW SPV Power plant	3,47,090	3,39,489	3,00,773	3,17,502	**2,85,456**	2,98,195	3,06,168
1.03	Total cost for the SIC of 5 kW SPV Power plant	5,30,986	5,11,505	4,61,459	4,83,650	**4,44,207**	4,61,894	4,72,156
1.04	Total cost for the SIC of 7 kW SPV Power plant	6,65,880	6,09,060	***5,32,925***	6,21,348	**5,64,289**	5,93,004	6,10,594
1.05	Total cost for the SIC of 10 kW SPV Power plant	8,99,671	8,74,534	7,67,353	8,30,740	**7,34,078**	7,68,873	7,91,820
1.06	Cost per kW for the SIC of SPV Power plants in the range of 30 kW - 99 kW or part therof	*79,080*	*76,483*	*72,832*	*71,694*	***71,343***	*78,727*	*83,962*
1.07	Cost per kW for the SIC of SPV Power plants in the range of 100 kW - 150 kW or part therof	*78,820*	*71,383*	*71,694*	*72,832*	***70,266***	*78,272*	*83,359*

Rooftop

Sl.No	Capacity	INKEL LIMITED	KC COPAR ENERGY SOLUTIONS (P) LTD	SUNTASTIC ENGINEERING PRIVATE LIMITED	Suryam Internatinal private Limited	Kondaas Automation Private Limited	Tata Power Solar	Moopens Energy Solutions Pvt Lt
1.01	Total cost for the SIC of 2 kW SPV Power plant	No Separate Quote	No Separate Quote	2,31,697	No Separate Quote	2,57,074	**2,29,982**	2,35,748
1.02	Total cost for the SIC of 3 kW SPV Power plant			2,80,631		3,07,533	**2,79,413**	2,85,018
1.03	Total cost for the SIC of 5 kW SPV Power plant			4,38,699		4,70,700	**4,31,930**	4,43,194
1.04	Total cost for the SIC of 7 kW SPV Power plant			5,58,417		6,09,501	**5,47,137**	5,64,710
1.05	Total cost for the SIC of 10 kW SPV Power plant			7,21,492		7,91,638	**7,13,457**	7,31,165
1.06	Cost per kW for the SIC of SPV Power plants in the range of 30 kW - 99 kW or part therof			69,418		**74,933**	No separate Quote	83,506
1.07	Cost per kW for the SIC of SPV Power plants in the range of 100 kW - 150 kW or part therof			68,280		**73,608**		83,188

eTendering System Government of Kerala
Created By: Vinay P
Created Date/Time: 29-Dec-2022 05:09 PM
Tender Title: Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW - 150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala
Tender ID: 2022_ANERT_504042_2

Tender Inviting Authority: Director,ANERT

Name of Work : Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2 kW-150 kW under the PM

Contract No: ANERT-TECH/144/2022-T4

SCHEDULE OF WORK / ITEM(S)

Sl.No	Description of Work / Item(s)	No.of Qty	Units	Estimated Rate	INKEL LIMITED(GSTN-32AABCI6802JIZT)		KC COPAR ENERGY SOLUTIONS (P) LTD(GSTN-32AACCK9259L2Z4)		SUNTASTIC ENGINEERING PRIVATE LIMITEDD(GSTN-NA)		Suryam Internatinal private Limited(GSTN-NA)		Kondaas Automation Private Limited(GSTN-NA)		Tata Power Solar(GSTN-NA)		Moopens Energy Solutions Pvt Ltd(GSTN-NA)		L1 Amount	L1 Vendor
					Rate	Amount	Rate	Amount	Rate	Amount	Rate	Amount	Rate	Amount	Rate	Amount	Rate	Amount		
1.00	Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2 kW-150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala Group - 1																			
1.01	Total cost for the SIC of 2 kW SPV Power plant meeting all the specifications as per tender	1.00	Nos	0.00	230000.00	230000.00	242050.00	242050.00	218000.00	218000.00	226000.00	226000.00	206740.00	206740.00	218093.00	218093.00	222600.00	222600.00	206740.00	Kondaas Automation Private Limited
1.02	Total cost for the SIC of 3 kW SPV Power plant meeting all the specifications as per tender	1.00	Nos	0.00	305000.00	305000.00	298321.00	298321.00	264300.00	264300.00	279000.00	279000.00	250840.00	250840.00	262034.00	262034.00	269040.00	269040.00	250840.00	Kondaas Automation Private Limited
1.03	Total cost for the SIC of 5 kW SPV Power plant meeting all the specifications as per tender	1.00	Nos	0.00	466596.00	466596.00	449477.00	449477.00	405500.00	405500.00	425000.00	425000.00	390340.00	390340.00	405882.00	405882.00	414900.00	414900.00	390340.00	Kondaas Automation Private Limited
1.04	Total cost for the SIC of 7 kW SPV Power plant meeting all the specifications as per tender	1.00	Nos	0.00	585132.00	585132.00	535202.00	535202.00	468300.00	468300.00	546000.00	546000.00	495860.00	495860.00	521093.00	521093.00	536550.00	536550.00	468300.00	SUNTASTIC ENGINEERING PRIVATE LIMITEDD
1.05	Total cost for the SIC of 10 kW SPV Power plant meeting all the specifications as per tender	1.00	Nos	0.00	790572.00	790572.00	768483.00	768483.00	674300.00	674300.00	730000.00	730000.00	645060.00	645060.00	675635.00	675635.00	695800.00	695800.00	645060.00	Kondaas Automation Private Limited
	Total in Figures					2377300.00		2293533.00		2030400.00		2206000.00		1988840.00		2082737.00		2138890.00		

Lowest Amount Quoted BY: Kondaas Automation Private Limited(1988840.00)

eTendering System Government of Kerala
Created By: Vinay P
Created Date/Time: 29-Dec-2022 05:09 PM
Tender Title: Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW - 150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala
Tender ID: 2022_ANERT_504042_2

Tender Inviting Authority: Director,ANERT

Name of Work : Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2 kW-150 kW under the PM-K

Contract No: ANERT-TECH/144/2022-T4

SCHEDULE OF WORK / ITEM(S)

Sl.No	Description of Work / Item(s)	No.of Qty	Units	Estimated Rate	INKEL LIMITED(GSTN-32AABCI6802JIZT)		KC COPAR ENERGY SOLUTIONS (P) LTD(GSTN-		SUNTASTIC ENGINEERING PRIVATE LIMITEDD(GSTN-NA)		Suryam Internatinal private Limited(GSTN-NA)		Kondaas Automation Private Limited(GSTN-NA)		Tata Power Solar(GSTN-NA)		Moopens Energy Solutions Pvt Ltd(GSTN-NA)		L1 Amount	L1 Vendor
					Rate	Amount	Rate	Amount	Rate	Amount	Rate	Amount	Rate	Amount	Rate	Amount	Rate	Amount		
1.00	Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2 kW-150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala Group - 2																			
1.01	Cost per kW for the SIC of SPV Power plants in the range of 30 kW - 99 kW or part therof	1.00	Nos	0.00	69490.00	69490.00	67208.00	67208.00	64000.00	64000.00	63000.00	63000.00	62692.00	62692.00	69180.00	69180.00	73780.00	73780.00	62692.00	Kondaas Automation Private Limited
1.02	Cost per kW for the SIC of SPV Power plants in the range of 100 kW - 150 kW or part therof	1.00	Nos	0.00	69262.00	69262.00	62727.00	62727.00	63000.00	63000.00	64000.00	64000.00	61745.00	61745.00	68780.00	68780.00	73250.00	73250.00	61745.00	Kondaas Automation Private Limited
	Total in Figures					138752.00		129935.00		127000.00		127000.00		124437.00		137960.00		147030.00		

Lowest Amount Quoted BY: Kondaas Automation Private Limited(124437.00)

Suryam International Pvt. Ltd.

Regd. Office: H/O-M.Shivaji, 2nd Lane Gandhi Nagar, Berhampur, Odisha, India-760001
Corp. Office: A-24, HIG Duplex,Phase-2, Ananta Vihar,Pokhariput, BBSR, Odisha-751020
E-mail: project@groupsurya.co.in / info@groupsurya.co.in / tender@groupsurya.co.in
Call us: +91 7440012105 / +91 7440012168

ADDITIONAL COSTS FOR GROUP-1 AND GROUP-2 ITEMS

12.18 The additional costs required for cabling, structural works etc for any excess quantity other than the standard installation mentioned in the tender document is to be quoted separately in letter head and is to be uploaded in the provision provided for uploading PDF document in the finance cover, the additional rates for each capacity range are to be quoted as follows:

- Per meter cost for DC Cable for Installations under Group 1 & 2 category
- Per meter cost for AC Cabling for Installations under Group 1 category
- Per meter cost for AC Cabling for Installations under Group 2 category
- Cost for additional Structure for increase in height of above 1m from the standard height / kW
- Cost for additional Structure for increase in height of above 2m from the standard height / kW
- Cost for additional Structure for Rooftop installation in slanting GI or Aluminium sheet roof / kW
- Any other component required in excess to be quoted in per unit cost of that component

Sl. No.	Items	Rates for Categories		Remarks
		Group-1	Group-2	
1.	Per meter cost for DC Cable for Installations	Rs. 200	Rs. 250	As per Requirement
2.	Per meter cost for AC Cabling for Installations	Rs. 350	Rs. 500	As per Requirement
3.	Cost for additional Structure for increase in height of above 1m from the standard height / kW	Rs. 1500		As per Requirement
4.	Cost for additional Structure for increase in height of above 2m from the standard height / kW		Rs. 1750	As per Requirement
5.	Cost for additional Structure for Rooftop installation in slanting GI or Aluminium sheet roof / kW	Rs. 1000	Rs. 800	As per Requirement
6.	Any other component required in excess to be quoted in per unit cost of that component.	NA	NA	NA

SURYAM INTERNATIONAL PVT. LTD.

For Suryam International Private Limited

sunsenz GREEN LIFE
Corporate.off: Bldg.No. 2/159, Smart Tower, Muttom
Choornikara, Aluva 683106, Ernakulam, Kerala, India
Tel: +91484 262583, Mob : 09946788881 -86
www.sunsenz.com Email : contact@sunsenz.in
Moopens Energy Solutions Pvt. Ltd.

Name of the Bidder: - MOOPENS ENERGY SOLUTIONS PVT. LTD.

PRICE SCHEDULE

A) Price Schedule using Ground Mounted Structure

Sl. No.	Item Description	Estimated Rate in Figures To be Entered by the Bidder	GST Rate in Figures To be entered by the Bidder	Total Amount Without Taxes	Total Amount with Taxes
	Group -1				
1	Total Cost for the SIC of 2 kW SPV Power Plant meeting all the specifications as per tender	₹ 2,22,600.00	₹ 30,718.80	₹ 2,22,600.00	₹ **2,53,318.80**
2	Total Cost for the SIC of 3 kW SPV Power Plant meeting all the specifications as per tender	₹ 2,69,040.00	₹ 37,127.52	₹ 2,69,040.00	₹ **3,06,167.52**
3	Total Cost for the SIC of 5 kW SPV Power Plant meeting all the specifications as per tender	₹ 4,14,900.00	₹ 57,256.20	₹ 4,14,900.00	₹ **4,72,156.20**
4	Total Cost for the SIC of 7 kW SPV Power Plant meeting all the specifications as per tender	₹ 5,36,550.00	₹ 74,043.90	₹ 5,36,550.00	₹ **6,10,593.90**
5	Total Cost for the SIC of 10 kW SPV Power Plant meeting all the specifications as per tender	₹ 6,95,800.00	₹ 96,020.40	₹ 6,95,800.00	₹ **7,91,820.40**

Group 2

1	Cost per kW for the SIC of SPV Power Plants in the range of 30 kW - 99 kW or part thereof	₹ 73,780.00	₹ 10,181.64	₹ 73,780.00	₹ **83,961.64**
2	Cost per kW for the SIC of SPV Power Plants in the range of 100 kW - 150 kW or part thereof	₹ 73,250.00	₹ 10,108.50	₹ 73,250.00	₹ **83,358.50**

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Moopens Energy Solutions Pvt. Ltd.

B) Price Schedule using Roof top Structure

Sl. No.	Item Description	Estimated Rate in Figures To be Entered by the Bidder	GST Rate in Figures To be entered by the Bidder	Total Amount Without Taxes	Total Amount with Taxes
	Group -1				
1	Total Cost for the SIC of 2 kW SPV Power Plant meeting all the specifications as per tender	₹ 2,07,160.00	₹ 28,588.08	₹ 2,07,160.00	₹ **2,35,748.08**
2	Total Cost for the SIC of 3 kW SPV Power Plant meeting all the specifications as per tender	₹ 2,50,455.00	₹ 34,562.79	₹ 2,50,455.00	₹ **2,85,017.79**
3	Total Cost for the SIC of 5 kW SPV Power Plant meeting all the specifications as per tender	₹ 3,89,450.00	₹ 53,744.10	₹ 3,89,450.00	₹ **4,43,194.10**
4	Total Cost for the SIC of 7 kW SPV Power Plant meeting all the specifications as per tender	₹ 4,96,230.00	₹ 68,479.74	₹ 4,96,230.00	₹ **5,64,709.74**
5	Total Cost for the SIC of 10 kW SPV Power Plant meeting all the specifications as per tender	₹ 6,42,500.00	₹ 88,665.00	₹ 6,42,500.00	₹ **7,31,165.00**

Group 2

1	Cost per kW for the SIC of SPV Power Plants in the range of 30 kW - 99 kW or part thereof	₹ 73,380.00	₹ 10,126.44	₹ 73,380.00	₹ **83,506.44**
2	Cost per kW for the SIC of SPV Power Plants in the range of 100 kW - 150 kW or part thereof	₹ 73,100.00	₹ 10,087.80	₹ 73,100.00	₹ **83,187.80**

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Moopens Energy Solutions Pvt. Ltd.

Rate for Extra Items if required

Sl No	Item Description	Estimated Rate in Figures
1	Per meter cost for DC cabling for installations under group 1 (3-5KW) Category	₹ 250
2	Per meter cost for DC cabling for installations under group 1 (7-10KW) Category	₹ 450
3	Per meter cost for DC cabling for installations under group 2 (30-50KW) Category	₹ 1,650
4	Per meter cost for DC cabling for installations under group 2 (70-99KW) Category	₹ 3,250
5	Per meter cost for DC cabling for installations under group 2 (100-150KW) Category	₹ 5,000
6	Per meter cost for AC cabling for installations under group 1 (3-5KW) Category	₹ 200
7	Per meter cost for AC cabling for installations under group 1 (7-10KW) Category	₹ 400
8	Per meter cost for AC cabling for installations under group 2 (30-50KW) Category	₹ 900
9	Per meter cost for AC cabling for installations under group 2 (70-99KW) Category	₹ 1,200
10	Per meter cost for AC cabling for installations under group 2 (100-150KW) Category	₹ 1,800
11	Cost for additional structure for increase in height of above 1 m from the standard height/KW	₹ 2,400
12	Cost for additional structure for increase in height of above 2 m from the standard height/KW	₹ 5,000
13	Cost for additional structure for rooftop installation in slanting GI or Aluminium sheet roof/KW	₹ 9,850

MOOPENS ENERGY SOLUTIONS PVT. LTD. MUTTOM ALUVA 683 106

Mohammed Fayaz Salam

CEO & Director,

Moopens Energy Solutions Pvt Ltd.

SUNTASTIC ENGINEERING PRIVATE LIMITED
(Formerly Suntastic Solar Systems Private Limited)
Class I Contractor - PWD, TN Highways and Corporation
Business in Solar, Construction, Engineering, Trading

Tender Inviting Authority : Director, ANERT

Name of Work : Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos ranging from 2kW 150kW under the PM KUSUM scheme (Component C) in the State of Kerala

Name of Bidder : M/s. Suntastic Engineering Private Limited.

Item Description (in Rs)	Basic Rate (in Rs)	GST (in Rs)	Total Price (in Rs)
Per meter cost of DC Cable for installation under Group 1 &2 category; Spec: 1C, 4 Sq.mm	Rs. 150.00	Rs. 27.00	Rs. 177.00
Per meter cost of AC Cable for installation under Group 1 category; Spec: 3c; 4Sq.mm	Rs. 150.00	Rs. 27.00	Rs. 177.00
Per meter cost of AC Cable for installation under Group 1 category; Spec: 3c; 6 Sq.mm	Rs. 250.00	Rs. 45.00	Rs. 295.00
Per meter cost of AC Cable for installation under Group 2 category; Spec: 4C; 4 Sq.mm	Rs. 350.00	Rs. 63.00	Rs. 413.00
Cost for Additional structure for increase in height above 1 m from the standard height / KW	Rs. 4000.00	Rs. 720.00	Rs. 4720.00
Cost for Additional structure for increase in height above 2 m from the standard height / KW	Rs .8000.00	Rs. 1140.00	Rs. 9140.00
Cost for Additional structure for rooftop installation in slanting GI / Aluminium sheet roof per KW	Rs. 5000.00	Rs. 900	Rs. 5900.00
CAT 6 Cable for RMU	Rs. 100.00	Rs. 18.00	Rs. 118.00
RS 485 Cable	Rs. 250.00	Rs.45.00	Rs. 295.00
Electric Pole	Rs. 16000.00	Rs. 2880.00	Rs. 18880.00

For SUNTASTIC ENGINEERING PVT. LTD

Chief Executive Officer

No.69/27A, First Pilliayar Koil St, Lakshmipuram, Chrompet, Chennai - 600044
Conatct : +91 8939838052/58 Mail : suntasticengineering@gmail.com
Web : www.suntasticsolarsystems.com GST : 33AAXCS4958B1ZZ

SUNTASTIC ENGINEERING PRIVATE LIMITED
(Formerly Suntastic Solar Systems Private Limited)
Class I Contractor - PWD, TN Highways and Corporation
Business in Solar, Construction, Engineering, Trading

Tender Inviting Authority : Director, ANERT

Name of Work : Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos ranging from 2kW 150kW under the PM KUSUM scheme (Component C) in the State of Kerala

Name of Bidder : M/s. Suntastic Engineering Private Limited.

ROOF TOP MOUNTED SOLAR POWER PLANT

Group 1:

Item Description (in Rs)	Basic Rate (in Rs)	GST (in Rs)	Total Amount Without Tax (in Rs)	Total Amount With Tax (in Rs)
Total cost for the SIC 2KW SPV Power plant meeting all the specifications as per the Tender	203600.00	28096.80	203600.00	231696.80
Total cost for the SIC 3KW SPV Power plant meeting all the specifications as per the Tender	246600.00	34030.80	246600.00	280630.80
Total cost for the SIC 5KW SPV Power plant meeting all the specifications as per the Tender	385500.00	53199.00	385500.00	438699.00
Total cost for the SIC 7KW SPV Power plant meeting all the specifications as per the Tender	490700.00	67716.60	490700.00	558416.60
Total cost for the SIC 10KW SPV Power plant meeting all the specifications as per the Tender	634000.00	87492.00	634000.00	721492.00

For SUNTASTIC ENGINEERING PVT. LTD

Chief Executive Officer

No.69/27A, First Pilliayar Koil St, Lakshmipuram, Chrompet, Chennai - 600044
Conatct : +91 8939838052/58 Mail : suntasticengineering@gmail.com
Web : www.suntasticsolarsystems.com GST : 33AAXCS4958B1ZZ

SUNTASTIC ENGINEERING PRIVATE LIMITED
(Formerly Suntastic Solar Systems Private Limited)
Class I Contractor - PWD, TN Highways and Corporation
Business in Solar, Construction, Engineering, Trading

Tender Inviting Authority : Director, ANERT

Name of Work : Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos ranging from 2kW 150kW under the PM KUSUM scheme (Component C) in the State of Kerala

Name of Bidder : M/s. Suntastic Engineering Private Limited.

ROOF TOP MOUNTED SOLAR POWER PLANT

Group 2:

Item Description (in Rs)	Basic Rate (in Rs)	GST (in Rs)	Total Amount Without Tax (in Rs)	Total Amount With Tax (in Rs)
Cost per KW for the SPV Power plant meeting in the range of 30KW to 99 KW or part there of	61000.00	8418.00	61000.00	69418.00
Cost per KW for the SPV Power plant meeting in the range of 100KW to 150 KW or part there of	60000.00	8280.00	60000.00	68280.00

For SUNTASTIC ENGINEERING PVT. LTD

Chief Executive Officer

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Web : www.suntasticsolarsystems.com GST : 33AAXCS4958B1ZZ

kondaas™ Since 1995

Kondaas Automation Pvt. Ltd.,
(An ISO 9001 : 2015 Certified Company)
5 B, Sri Alamelu Nagar,Kamarajar Road,Coimbatore 641 015
Phone : 0422- 2574000,5000,6000
email : info@kondaas.com URL: www.kondaas.com

Tender Inviting Authority : Director, ANERT

Name of Work : Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos ranging from 2kW 150kW under the PM KUSUM scheme (Component C) in the State of Kerala

Name of Bidder : M/s. Kondaas Automation Private Limited.

GROUND MOUNTED SOLAR POWER PLANT

Group 1:

Item Description (in Rs)	Basic Rate (in Rs)	GST (in Rs)	Total Amount Without Tax (in Rs)	Total Amount With Tax (in Rs)
Total cost for the SIC 2KW SPV Power plant meeting all the specifications as per the Tender	225900.00	31174.00	225900.00	257074.00
Total cost for the SIC 3KW SPV Power plant meeting all the specifications as per the Tender	270240.00	37293.12	270240.00	307533.12
Total cost for the SIC 5KW SPV Power plant meeting all the specifications as per the Tender	413620.00	57079.56	413620.00	470699.56
Total cost for the SIC 7KW SPV Power plant meeting all the specifications as per the Tender	535590.00	73911.42	535590.00	609501.42
Total cost for the SIC 10KW SPV Power plant meeting all the specifications as per the Tender	695640.00	95998.32	695640.00	791638.32

kondaas™ Since 1995
Kondaas Automation Pvt. Ltd.,
(An ISO 9001 : 2015 Certified Company)
5 B, Sri Alamelu Nagar,Kamarajar Road,Coimbatore 641 015
Phone : 0422- 2574000,5000,6000
email : info@kondaas.com URL: www.kondaas.com

Tender Inviting Authority : Director, ANERT

Name of Work : Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos ranging from 2kW 150kW under the PM KUSUM scheme (Component C) in the State of Kerala

Name of Bidder : M/s. Kondaas Automation Private Limited.

GROUND MOUNTED SOLAR POWER PLANT

Group 2:

Item Description (in Rs)	Basic Rate (in Rs)	GST (in Rs)	Total Amount Without Tax (in Rs)	Total Amount With Tax (in Rs)
Cost per KW for the SPV Power plant meeting in the range of 30KW to 99 KW or part there of	65846.00	9086.74.00	65846.00	74932.74
Cost per KW for the SPV Power plant meeting in the range of 100KW to 150 KW or part there of	65682.00	8926.11	65682.00	73608.11

kondaas™ Since 1995

Kondaas Automation Pvt. Ltd.,
(An ISO 9001 : 2015 Certified Company)
5 B, Sri Alamelu Nagar,Kamarajar Road,Coimbatore 641 015
Phone : 0422- 2574000,5000,6000
email : info@kondaas.com URL: www.kondaas.com

Tender Inviting Authority : Director, ANERT

Name of Work : Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos ranging from 2kW 150kW under the PM KUSUM scheme (Component C) in the State of Kerala

Name of Bidder : M/s. Kondaas Automation Private Limited.

ROOF TOP MOUNTED SOLAR POWER PLANT

Group 1:

Item Description (in Rs)	Basic Rate (in Rs)	GST (in Rs)	Total Amount Without Tax (in Rs)	Total Amount With Tax (in Rs)
Total cost for the SIC 2KW SPV Power plant meeting all the specifications as per the Tender	206740.00	28530.12	206740.00	235270.12
Total cost for the SIC 3KW SPV Power plant meeting all the specifications as per the Tender	250840.00	34615.92	250840.00	285455.92
Total cost for the SIC 5KW SPV Power plant meeting all the specifications as per the Tender	390340.00	53866.92	390340.00	444206.92
Total cost for the SIC 7KW SPV Power plant meeting all the specifications as per the Tender	495860.00	68428.68	495860.00	564288.68
Total cost for the SIC 10KW SPV Power plant meeting all the specifications as per the Tender	645060.00	89018.28	645060.00	734078.28

Kondaas Automation Pvt. Ltd.,
(An ISO 9001 : 2015 Certified Company)
5 B, Sri Alamelu Nagar, Kamarajar Road, Coimbatore 641 015
Phone : 0422- 2574000,5000,6000
email : info@kondaas.com URL: www.kondaas.com

Tender Inviting Authority : Director, ANERT

Name of Work : Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos ranging from 2kW 150kW under the PM KUSUM scheme (Component C) in the State of Kerala

Name of Bidder : M/s. Kondaas Automation Private Limited.

ROOF TOP MOUNTED SOLAR POWER PLANT

Group 2:

Item Description (in Rs)	Basic Rate (in Rs)	GST (in Rs)	Total Amount Without Tax (in Rs)	Total Amount With Tax (in Rs)
Cost per KW for the SPV Power plant meeting in the range of 30KW to 99 KW or part there of	62692.00	8651.49	62692.00	71343.49
Cost per KW for the SPV Power plant meeting in the range of 100KW to 150 KW or part there of	61745.00	8520.81	61745.00	70265.81

KUSUM Tender Summary

Ground Mounted

Sl.No	Capacity	INKEL LIMITED	KC COPAR ENERGY SOLUTIONS (P) LTD	SUNTASTIC ENGINEERING PRIVATE LIMITED	Suryam Internatinal private Limited	Kondaas Automation Private Limited	Tata Power Solar	Moopens Energy Solutions Pvt Lt
1.01	Total cost for the SIC of 2 kW SPV Power plant	2,61,740	2,75,453	**2,48,084**	2,57,188	2,57,074	**2,48,190**	2,53,319
1.02	Total cost for the SIC of 3 kW SPV Power plant	3,47,090	3,39,489	3,00,773	3,17,502	3,07,533	**2,98,195**	3,06,168
1.03	Total cost for the SIC of 5 kW SPV Power plant	5,30,986	5,11,505	**4,61,459**	4,83,650	4,70,700	**4,61,894**	4,72,156
1.04	Total cost for the SIC of 7 kW SPV Power plant	6,65,880	6,09,060	***5,32,925***	6,21,348	6,09,501	**5,93,004**	6,10,594
1.05	Total cost for the SIC of 10 kW SPV Power plant	8,99,671	8,74,534	**7,67,353**	8,30,740	7,91,638	**7,68,873**	7,91,820
1.06	Cost per kW for the SIC of SPV Power plants in the range of 30 kW - 99 kW or part therof	*79,080*	*76,483*	*72,832*	***71,694***	74,933	*78,727*	*83,962*
1.07	Cost per kW for the SIC of SPV Power plants in the range of 100 kW - 150 kW or part therof	*78,820*	*71,383*	***71,694***	***72,832***	73,608	*78,272*	*83,359*

Rooftop

Sl.No	Capacity	INKEL LIMITED	KC COPAR ENERGY SOLUTIONS (P) LTD	SUNTASTIC ENGINEERING PRIVATE LIMITED	Suryam Internatinal private Limited	Kondaas Automation Private Limited	Tata Power Solar	Moopens Energy Solutions Pvt Lt
1.01	Total cost for the SIC of 2 kW SPV Power plant	No Separate Quote	No Separate Quote	2,31,697	No Separate Quote	2,35,270	**2,29,982**	2,35,748
1.02	Total cost for the SIC of 3 kW SPV Power plant			2,80,631		2,85,456	**2,79,413**	2,85,018
1.03	Total cost for the SIC of 5 kW SPV Power plant			4,38,699		4,44,207	**4,31,930**	4,43,194
1.04	Total cost for the SIC of 7 kW SPV Power plant			5,58,417		5,64,289	**5,47,137**	5,64,710
1.05	Total cost for the SIC of 10 kW SPV Power plant			7,21,492		7,34,078	**7,13,457**	7,31,165
1.06	Cost per kW for the SIC of SPV Power plants in the range of 30 kW - 99 kW or part therof			**69,418**		***71,343***	No separate Quote	83,506
1.07	Cost per kW for the SIC of SPV Power plants in the range of 100 kW - 150 kW or part therof			**68,280**		***70,266***		83,188

Tender Evaluation Sheet

Tender ID:ANERT-TECH/144/2022-T4

Tender name: - Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 Nos ranging from 2kW-150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala

Name of Sole/ Lead Bidder:Mechatronik Technologies Pvt Limited

Name of JV Partner: Not mentioned

File No	Submitted File name
1	Annexureandformatd
2	AnnexureG
3	PQDOCUMENTS
4	preagreement

Sl No	Particular	Sole/Lead bidder		Partner in JV	
		Yes/No	Remarks	Yes/No	Remarks
1	Proof for tender fee exemption, if any	yes	4.89	NA	
2	Proof for EMD fee exemption, if any	yes	4.89	NA	
3	In case of JV, provide JV agreement defining lead member	no		NA	
4	Copy of Registration/Incorporation Certificate	yes	1.1	no	
5	Copy of GST Registration certificate	yes	1.22	no	
6	Copy of Pan card	yes	1.25	no	
7	Power of Attorney in favour of authorized signatory in Rs. 200 /- stamp paper (Format B) in case of JV	no		NA	
8	If Power of Attorney in favour of authorized signatory not applicable - need to submit self-declaration on authorized signatory	NA	mechatronics provided power of attorney in name of their MD for signing the tender	NA	
9	Declaration by sole bidder/ JV partner on manufacturing of solar panels	NA		yes	1.26
10.1	Work orders as proof of experience (3 MW cumulative capacity required)	no		no	
10.2	Work orders as proof of experience - minimum 1 MW capacity for EPC in case of JV	yes	1369kw Work order provided	NA	
11.1	Completion certificate for the work orders(3MW)	no		no	
11.2	Completion certificate for the work orders(1 MW)in case of JV	no	1962 kw completion certificate provided out of which 1726 kwp do not have corresponding work orders	NA	
12	Undertaking for Non-black listing in Rs.200/- stamp paper Format-A	yes	1.31	no	
13	Scanned copy of Tender Document signed and sealed	yes	4.7	NA	
14	Agreement in the prescribed format Annexure B in Rs.200/- stamp paper	yes	4.3	NA	

15	Declaration by manufacturer to provide PV module from ALMM List & with DCR content	NA		yes	1.26
16	Declaration from lead bidder to provide Inverter with IS1621, IS16169 certification	no		NA	
17	Summary of Bid Qualification Requirement- Annexure A	yes	1.27	NA	
18	Bill of Material	no		NA	
19	Guaranteed Technical Parameters Annexure G (GTP)	yes	2.1	NA	
20	Test Certificates as per GTP	no		NA	
21	Datasheet as per GTP	yes	2.1	NA	
22	Declaration by the bidder Annexure C	no		NA	
23	Declaration on subsidy claim Annexure D	yes	1.29	NA	
24	Declaration of relationship with ANERT Employee Annexure E	no		NA	
25	List of service centres /Declaration to provide service centre in Rs.200/- Stamp paper	no	Provided a undertaking stating that they do not have serice center in Kerala	NA	
26	ICRA Grading Certificate(Indicate Grade 1A, 1B , 1C, 2A, 2B)	no		NA	

Clarification required

1 As per the guidelines of PMKUSM only manufacturers of PV modules or a joint venture of an EPC with a manufacturer of solar modules are eligible to undertake works under the scheme - provide JV agreement defining lead member

2 ICRA grading certificate should be provided

3 Cumulative work order for 3MW not provided

4 Completion certificate for the work orders(3MW) not provided .

5 Power of attorney in favour of authorised signatory in Rs 200 stamp paper (format B)not provide

6 Completion certifcate for 1MW not provided for EPC (cumulative 1962 kw completion certificate provided out of which 1726 kwp do not have corresponding work orders)

7 Copy of Registration/Incorporation Certificate for JV partner not provided

8 Copy of GST Registration certificate for JV partner not provided

9 Copy of Pan card for JV parner not provided

10 Undertaking for Non-black listing in Rs.200/- stamp paper Format-A should be provided for JV partner also
11 Bill of Material not provided
12 Test Certificates as per GTP not provided
13 Declaration by the bidder Annexure C not provided
14 Declaration of relationship with ANERT Employee Annexure E not provided
15 Declaration to provide service centre in Rs.200/- Stamp paper not provided (they have submitted a notorized document in stamppaper stating that they do not have any service center in Kerala

Tender Evaluation Sheet

Tender ID:ANERT-TECH/144/2022-T4

Tender name: - Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 Nos ranging from 2kW- 150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala

Name of Sole/ Lead Bidder: INKEL LIMITED

Name of JV Partner: TOPSUN ENERGY LIMITED

File No	Submitted File name
1	Agreement_tenderdocuments
2	Annexures
3	PQ_Documents
4	Technical_documents

Sl No	Particular	Sole/Lead bidder		Partner in JV	
		Yes/No	Remarks	Yes/No	Remarks
1	Proof for tender fee exemption, if any	paid	1.99	NA	
2	Proof for EMD fee exemption, if any	yes	1.93- 1.98	NA	
3	In case of JV, provide JV agreement defining lead member	yes	3.1- 3.5	NA	
4	Copy of Registration/Incorporation Certificate	yes	2.1	yes	2.2
5	Copy of GST Registration certificate	yes	2.3	yes	2.4-2.5
6	Copy of Pan card	yes	2.6	yes	2.7
7	In case of JV Power of Attorney in favour of authorized signatory in Rs. 200 /- stamp paper (Format B) in case of JV	yes	2.20-2.21	NA	
8	If Power of Attorney in favour of authorized signatory not applicable - need to submit self-declaration on authorized signatory	NA		NA	
9	Declaration by JV partner on manufacturing of solar panels	NA		yes	2.2
9.1	Declaration by sole bidder on manufacturing of solar panels	NA		NA	
10.1	Work orders as proof of experience (3 MW cumulative capacity required)	yes	3.6-3.199	NA	
10.2	Work orders as proof of experience - minimum 1 MW capacity for EPC in case of JV	NA		NA	
11.1	Completion certificate for the work orders(3MW)	yes	3.6-3.199	NA	

11.2	Completion certificate for the work orders(1 MW)in case of JV	NA		NA	
12	Undertaking for Non-black listing in Rs.200/- stamp paper Format-A	yes	2.17- 2.18	no	2.19 provided in letter head
13	Scanned copy of Tender Document signed and sealed	yes	1.7-1.92	NA	
14	Agreement in the prescribed format Annexure B in Rs.200/- stamp paper	yes	1.4-1.6	NA	
15	Declaration by manufacturer to provide PV module from ALMM List & with DCR content	NA		yes	2.8
16	Declaration from lead bidder to provide Inverter with IS1621, IS16169 certification	yes	2.1	NA	
17	Summary of Bid Qualification Requirement- Annexure A	yes	2.12-2.13	NA	
18	Bill of Material	yes	4.57-4.59	NA	
19	Guaranteed Technical Parameters Annexure G (GTP)	yes	4.1-4.56 (Not complete)	NA	
20	Test Certificates as per GTP	yes	4.60-4.373	NA	
21	Datasheet as per GTP	yes	4.60-4.373	NA	
22	Declaration by the bidder Annexure C	yes	2.14	NA	
23	Declaration on subsidy claim Annexure D	yes	2.15	NA	
24	Declaration of relationship with ANERT Employee Annexure E	yes	2.16	NA	
25	List of service centres /Declaration to provide service centre in Rs.200/- Stamp paper	yes	2.22-2.24	NA	
26	ICRA Grading Certificate(Indicate Grade 1A, 1B , 1C, 2A, 2B)	yes	2.25-2.27 1C	NA	

Required Clarification

2.19 Topsun should provide non blacklisitng certifcate in format provided in Rs.200/- stamp paper

4.1- 4.56 GTP incomplete, details of RMS not provided

24.12.2022

24/12/22 K Premkumar SE

Tender Evaluation Sheet

Tender ID:ANERT-TECH/144/2022-T4

Tender name: - Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 Nos ranging from 2kW- 150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala

Name of Sole/ Lead Bidder: INKEL LIMITED

Name of JV Partner: TOPSUN ENERGY LIMITED

File No	Submitted File name
1	Agreement_tenderdocuments
2	Annexures
3	PQ_Documents
4	Technical_documents

Sl No	Particular	Sole/Lead bidder		Partner in JV	
		Yes/No	Remarks	Yes/No	Remarks
1	Proof for tender fee exemption, if any	paid	1.99	~~na~~ NA	
2	Proof for EMD fee exemption, if any	yes	1.93- 1.98	~~na~~ NA	
3	In case of JV, provide JV agreement defining lead member	yes	3.1- 3.5	NA ~~na~~	
4	Copy of Registration/Incorporation Certificate	yes	2.1	yes	2.2
5	Copy of GST Registration certificate	yes	2.3	yes	2.4-2.5
6	Copy of Pan card	yes	2.6	yes	2.7
7	In case of JV Power of Attorney in favour of authorized signatory in Rs. 200 /- stamp paper (Format B) in case of JV	yes	2.20-2.21	NA ~~na~~	
8	If Power of Attorney in favour of authorized signatory not applicable - need to submit self-declaration on authorized signatory	NA ~~na~~		NA ~~na~~	
9	Declaration by JV partner on manufacturing of solar panels	NA ~~na~~		yes	2.2
9.1	Declaration by sole bidder on manufacturing of solar panels	NA ~~na~~		NA ~~na~~	
10.1	Work orders as proof of experience (3 MW cumulative capacity required)	yes	3.6-3.199	NA ~~na~~	
10.2	Work orders as proof of experience - minimum 1 MW capacity for EPC in case of JV	NA ~~na~~		NA ~~na~~	
11.1	Completion certificate for the work orders(3MW)	yes	3.6-3.199	NA ~~na~~	

11.2	Completion certificate for the work orders(1 MW)in case of JV	NA ~~na~~		NA ~~na~~	
12	Undertaking for Non-black listing in Rs.200/- stamp paper Format-A	yes	2.17- 2.18	no	2.19 provided in letter head
13	Scanned copy of Tender Document signed and sealed	yes	1.7-1.92	NA ~~na~~	
14	Agreement in the prescribed format Annexure B in Rs.200/- stamp paper	yes	1.4-1.6	NA ~~na~~	
15	Declaration by manufacturer to provide PV module from ALMM List & with DCR content	NA		yes	2.8
16	Declaration from lead bidder to provide Inverter with IS1621, IS16169 certification	yes	2.1	NA ~~na~~	
17	Summary of Bid Qualification Requirement- Annexure A	yes	2.12-2.13	NA ~~na~~	
18	Bill of Material	yes	4.57-4.59	NA ~~na~~	
19	Guaranteed Technical Parameters Annexure G (GTP)	yes	4.1-4.56 (Nt complete)	NA ~~na~~	
20	Test Certificates as per GTP	yes	4.60-4.373	NA ~~na~~	
21	Datasheet as per GTP	yes	4.60-4.373	NA ~~na~~	
22	Declaration by the bidder Annexure C	yes	2.14	NA ~~na~~	
23	Declaration on subsidy claim Annexure D	yes	2.15	NA ~~na~~	
24	Declaration of relationship with ANERT Employee Annexure E	yes	2.16	NA ~~na~~	
25	List of service centres /Declaration to provide service centre in Rs.200/- Stamp paper	yes	2.22-2.24	NA ~~na~~	
26	ICRA Grading Certificate(Indicate Grade 1A, 1B , 1C, 2A, 2B)	yes	2.25-2.27 1C	NA ~~na~~	

Required Clarification

2.19 Topsun should provide non blacklisitng certifcate in format provided in Rs.200/- stamp paper

4.1- 4.56 GTP incomplete, details of RMS not provided

23/12/2022

23-12-22
Rajesh R
ACTM

Tender Evaluation Sheet

Tender ID:ANERT-TECH/144/2022-T4

Tender name: - Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 Nos ranging from 2kW- 150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala

Name of Sole/ Lead Bidder :M/s. SURYAM INTERNATIONAL PRIVATE LIMITED

Name of JV Partner: M/s. NAVITAS GREEN SOLUTIONS PRIVATE LIMITED

Sl No	Particular	Sole/Lead bidder		Partner in JV	
		Yes/No	Remarks	Yes/No	Remarks
1	Proof for Tender fee exemption, if any	Yes	Fee paid 2.04	NA	
2	Proof for EMD fee exemption, if any	Yes	Fee paid 2.04	NA	
3	In case of JV, provide JV agreement defining lead member	Yes	1.02		
4	Copy of Registration/Incorporation Certificate	Yes	3.01	Yes	3.32
5	Copy of GST Registration certificate	Yes	3.56	Yes	3.57
6	Copy of Pan card	Yes	3.60	Yes	3.61
7	In case of JV, Power of Attorney in favour of authorized signatory in Rs. 200 /- stamp Paper (Format B)	Yes	3.62	NA	
8	If Power of Attorney in favour of authorized signatory not applicable - need to submit self-declaration on authorized signatory	Yes	3.66	NA	
9	Declaration by JV partner on manufacturing of solar panels	No		Yes	3.71
9.1	Declaration by sole bidder on manufacturing of solar panels	NA		NA	
10.1	Work orders as proof of experience (3 MW cumulative capacity required)	Yes	1.189	NA	
10.2	Work orders as proof of experience - minimum 1 MW capacity for EPC in case of JV	NA		NA	
11.1	Completion certificate for the work orders(3 MW)	Yes	1.184	NA	
11.2	Completion certificate for the work orders(1 MW)(in case of JV)	NA		NA	

12	Undertaking for Non-black listing in Rs.200/- stamp paper Format-A	Yes	3.67	yes	3.70
13	Scanned copy of Tender Document signed and sealed	Yes	2		
14	Agreement in the prescribed format Annexure B in Rs.200/- stamp paper	Yes	2.05		
15	Declaration by manufacturer to provide PV module from ALMM List & with DCR content	Yes	3.73	Yes	3.71 &72
16	Declaration from lead bidder to provide Inverter with IS1621, IS16169 certification	Yes	3.74	NA ~~na~~	
17	Summary of Bid Qualification Requirement-Annexure A	Yes	3.75	Yes	3.77
18	Bill of Material (BoM)	No			
19	Guaranteed Technical Parameters Annexure G (GTP)	Yes	3.79-80 3.108-109		
20	Test Certificates as per GTP	Yes	3.81-107 3.110-136		
21	Datasheet as per GTP	Yes	3.81-107 3.110-136		
22	Declaration by the bidder Annexure C	Yes	3.138		
23	Declaration on subsidy claim Annexure D	Yes	3.139		
24	Declaration of relationship with ANERT Employee Annexure E	Yes	3.140		
25	List of service centres /Declaration to provide service centre in Rs.200/- stamp paper	Yes	3.141		
26	ICRA Grading Certificate(Indicate Grade 1A, 1B , 1C, 2A, 2B)	Yes	3.143 2B		

Clarification

1. Bill of material not provided

23-12-2022.
JCIM.

23/12/22
Rajesh R
ACTM

23/12
K Premkumar
IF

Kala. KG

Tender Evaluation Sheet

Tender ID:ANERT-TECH/144/2022-T4

Tender name: - Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 Nos ranging from 2kW- 150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala

Name of Sole/ Lead Bidder: KONDASS AUTOMATION PRIVATE LTD

Name of JV Partner: NAVITAS GREEN SOLUTIONS PRIVATE LTD

File No	Submitted File name
1	PREAGREEMENT
2	PQD
3	OTHERDOCUMENT
4	TECHNICAL

Sl No	Particular	Sole/Lead bidder		Partner in JV	
		Yes/No	Remarks	Yes/No	Remarks
1	Proof for tender fee exemption, if any	yes	1.5-1.7		
2	Proof for emd fee exemption, if any	yes	1.5-1.7		
3	In case of JV, provide JV agreement defining lead member	yes	2.4		
4	Copy of Registration/Incorporation Certificate	yes	3.1	yes	3.2
5	Copy of GST Registration certificate	yes	3.3	yes	3.6
6	Copy of Pan card	yes	3.9	yes	3.99
7	Power of Attorney in favour of authorized signatory in Rs. 200 /- stamp paper (Format B) in case of JV	no	3.88 - 3.89 not as per format and not in Rs.200/- stamp paper		
8	If Power of Attorney in favour of authorized signatory not applicable - need to submit self-declaration on authorized signatory	na	Provided Power of attorney to Tender head in case of Kondass automation		
9	Declaration by sole bidder/JV partner on manufacturing of solar panels	na		yes	3.1
10.1	Work orders as proof of experience (3 MW cumulative capacity required)	yes	2.8 to 2.126	na	
10.2	Work orders as proof of experience - minimum 1 MW capacity for EPC in case of JV	na		na	
11.1	Completion certificate for the work orders(3MW)	yes	2.8 to 2.126	na	

11.2	Completion certificate for the work orders(1 MW)in case of JV	na		na	
12	Undertaking for Non-black listing in Rs.200/- stamp paper Format-A	yes	3.86-3.87	yes	3.100-3.101
13	Scanned copy of Tender Document signed and sealed	yes	1.1	na	
14	Agreement in the prescribed format Annexure B in Rs.200/- stamp paper	yes	1.2	na	
15	Declaration by manufacturer to provide PV module from ALMM List & with DCR content	na		yes	3.1
16	Declaration from lead bidder to provide Inverter with IS1621, IS16169 certification	yes	3.98	na	
17	Summary of Bid Qualification Requirement- Annexure A	yes	3.13	na	
18	Bill of Material	yes	4.1	na	
19	Guaranteed Technical Parameters Annexure G (GTP)	yes	4.15	na	
20	Test Certificates as per GTP	yes	4.58	na	
21	Datasheet as per GTP	yes	4.48	na	
22	Declaration by the bidder Annexure C	yes	3.82	na	
23	Declaration on subsidy claim Annexure D	yes	3.84	na	
24	Declaration of relationship with ANERT Employee Annexure E	yes	3.85	na	
25	List of service centres /Declaration to provide service centre in Rs.200/- Stamp paper	no		na	
26	ICRA Grading Certificate(Indicate Grade 1A, 1B , 1C, 2A, 2B)	yes	3.91 2B	na	

Clarification Required

1 3.88 Power of Attorney in favour of Authorized signatory not ptovided in 200 rs stamp paper and not as per format B

2 Declaration on service center not provided

24/12 K Premkumar

24.12.2022.

Tender Evaluation Sheet

Tender ID:ANERT-TECH/144/2022-T4

Tender name: - Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 Nos ranging from 2kW-150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala

Name of Sole/ Lead Bidder:Moopans Energy Solutions pvt ltd

Name of JV Partner: Pennar Industries Limited

File No	Submitted File name
1	1 AAF
2	1PQD
3	1STD
4	1TD

Sl No	Particular	Sole/Lead bidder		Partner in JV	
		Yes/No	Remarks	Yes/No	Remarks
1	Proof for tender fee exemption, if any	Yes	3.86	NA	
2	Proof for EMD fee exemption, if any	Yes	3.86	NA	
3	In case of JV, provide JV agreement defining lead member	yes	2.1	NA	
4	Copy of Registration/Incorporation Certificate	yes	1.1	yes	1.2
5	Copy of GST Registration certificate	yes	1.6	yes	1.9
6	Copy of Pan card	yes	1.11	yes	1.12
7	Power of Attorney in favour of authorized signatory in Rs. 200 /- stamp paper (Format B) in case of JV	no	1.227 Not provided in Rs 200/- stamp paper and not as per format	NA	
8	If Power of Attorney in favour of authorized signatory not applicable - need to submit self-declaration on authorized signatory	NA		NA	
9	Declaration by sole bidder/ JV partner on manufacturing of solar panels	NA		yes	1.216
10.1	Work orders as proof of experience (3 MW cumulative capacity required)	yes	2.6-2.27	NA	
10.2	Work orders as proof of experience - minimum 1 MW capacity for EPC in case of JV	NA		NA	
11.1	Completion certificate for the work orders(3MW)	yes	2.6-2.27	NA	
11.2	Completion certificate for the work orders(1 MW)in case of JV	NA		NA	
12	Undertaking for Non-black listing in Rs.200/- stamp paper Format-A	yes	1.22-1.23	yes	1.22-1.23
13	Scanned copy of Tender Document signed and sealed	yes	3.4-3.85	NA	

14	Agreement in the prescribed format Annexure B in Rs.200/- stamp paper	yes	3.1-3.3	NA	
15	Declaration by manufacturer to provide PV module from ALMM List & with DCR content	NA		no	
16	Declaration from lead bidder to provide Inverter with IS1621, IS16169 certification	no		NA	
17	Summary of Bid Qualification Requirement- Annexure A	yes	1.15	NA	
18	Bill of Material	yes	4.81	NA	
19	Guaranteed Technical Parameters Annexure G (GTP)	yes	4.1	NA	
20	Test Certificates as per GTP	yes	4.119	NA	
21	Datasheet as per GTP	yes	4.104	NA	
22	Declaration by the bidder Annexure C	yes	1.17	NA	
23	Declaration on subsidy claim Annexure D	yes	1.18	NA	
24	Declaration of relationship with ANERT Employee Annexure E	yes	1.2	NA	
25	List of service centres /Declaration to provide service centre in Rs.200/- Stamp paper	no	1.26 no declaration provided in Rs 200 stamp paper	NA	
26	ICRA Grading Certificate(Indicate Grade 1A, 1B , 1C, 2A, 2B)	yes	4.286 1B	NA	

Required Clarification

1 1.227 Power of attorney to sign the tender not provided in Rs 200 stamp paper and not in format provided

2 1.216 Declaration by manufacturer to provide PV module from ALMM List & with DCR content provided is general . Submit the same specifically for this tender .

3 1.26 Declaration to provide service center not provided inRs 200 stamp paper

4 Declaration from lead bidder to provide Inverter with IS1621, IS16169 certification not provided

24.12.2022.

24/12

K Prem Kumar SF

Kala. K.G.

Tender Evaluation Sheet

Tender ID:ANERT-TECH/144/2022-T4

Tender name: - Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 Nos ranging from 2kW-150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala

Name of Sole/ Lead Bidder:Moopans Energy Solutions Pvt ltd

Name of JV Partner: Pennar Industries Limited

File No	Submitted File name
1	1 AAF
2	1PQD
3	1STD
4	1TD

Sl No	Particular	Sole/Lead bidder		Partner in JV	
		Yes/No	Remarks	Yes/No	Remarks
1	Proof for tender fee exemption, if any	Yes	3.86	NA ~~na~~	
2	Proof for EMD fee exemption, if any	Yes	3.86	NA ~~na~~	
3	In case of JV, provide JV agreement defining lead member	yes	2.1	NA ~~na~~	
4	Copy of Registration/Incorporation Certificate	yes	1.1	~~Yes~~	1.2
5	Copy of GST Registration certificate	yes	1.6	yes	1.9
6	Copy of Pan card	yes	1.11	yes	1.12
7	Power of Attorney in favour of authorized signatory in Rs. 200 /- stamp paper (Format B) in case of JV	no	1.227 Not provided in Rs 200/- stamp paper and not as per format	NA ~~na~~	
8	If Power of Attorney in favour of authorized signatory not applicable - need to submit self-declaration on authorized signatory	NA ~~na~~		NA ~~na~~	
9	Declaration by sole bidder/ JV partner on manufacturing of solar panels	NA ~~na~~		yes	1.216
10.1	Work orders as proof of experience (3 MW cumulative capacity required)	yes	2.6-2.27	NA ~~na~~	
10.2	Work orders as proof of experience - minimum 1 MW capacity for EPC in case of JV	NA ~~na~~		NA ~~na~~	
11.1	Completion certificate for the work orders(3MW)	yes	2.6-2.27	NA ~~na~~	
11.2	Completion certificate for the work orders(1 MW)in case of JV	NA ~~na~~		NA ~~na~~	
12	Undertaking for Non-black listing in Rs.200/- stamp paper Format-A	yes	1.22-1.23	yes	1.22-1.23
13	Scanned copy of Tender Document signed and sealed	yes	3.4-3.85	NA ~~na~~	

14	Agreement in the prescribed format Annexure B in Rs.200/- stamp paper	yes	3.1-3.3	NA ~~na~~	
15	Declaration by manufacturer to provide PV module from ALMM List & with DCR content	NA ~~na~~		No ~~no~~	
16	Declaration from lead bidder to provide Inverter with IS1621, IS16169 certification	No		NA ~~na~~	
17	Summary of Bid Qualification Requirement- Annexure A	yes	1.15	NA ~~na~~	
18	Bill of Material	yes	4.81	NA ~~na~~	
19	Guaranteed Technical Parameters Annexure G (GTP)	yes	4.1	NA ~~na~~	
20	Test Certificates as per GTP	yes	4.119	NA ~~na~~	
21	Datasheet as per GTP	yes	4.104	NA ~~na~~	
22	Declaration by the bidder Annexure C	yes	1.17	NA ~~na~~	
23	Declaration on subsidy claim Annexure D	yes	1.18	NA ~~na~~	
24	Declaration of relationship with ANERT Employee Annexure E	yes	1.2	NA ~~na~~	
25	List of service centres /Declaration to provide service centre in Rs.200/- Stamp paper	no	1.26 no declaration provided in Rs 200 stamp paper	NA ~~na~~	
26	ICRA Grading Certificate(Indicate Grade 1A, 1B , 1C, 2A, 2B)	yes	4.286 1B	NA ~~na~~	

Required Clarification

1. 1.227 Power of attorney to sign the tender not provided in Rs 200 stamp paper and not in format provided
2. 1.216 Declaration by manufacturer to provide PV module from ALMM List & with DCR content provided is general . Submit the same specifically for this tender .
3. 1.26 Declaration to provide service center not provided inRs 200 stamp paper
4. Declaration from lead bidder to provide Inverter with IS1621, IS16169 certification not provided

23-11-22
Rajesh R
ACTM

23.11.2022
JCTM.

Tender Evaluation Sheet

Tender ID:ANERT-TECH/144/2022-T4

Tender name: - Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 Nos ranging from 2kW- 150kW

Name of Sole/ Lead Bidder	Tata Power Solar System Ltd. , Banglore
Name of JV Partner -	**No JV partner**

Sl No	Particular	Sole/Lead bidder	
		Yes/No	Remarks
1	Proof for Tender fee exemption, if any	Yes	Tender fee paid
2	Proof for EMD fee exemption, if any	yes	EMD Paid
3	In case of JV, provide JV agreement defining lead member	NA	
4	Copy of Registration/Incorporation Certificate	Yes	4.1
5	Copy of GST Registration certificate	Yes	4.18-4.20
6	Copy of Pan card	Yes	4.21
7	In case of JV, Power of Attorney in favour of authorized signatory in Rs. 200 /- stamp paper (Format B)	NA	
8	If Power of Attorney in favour of authorized signatory not applicable - need to submit self-declaration on authorized signatory	NA	
9	Declaration by JV partner on manufacturer of solar panels	NA	
9.1	Declaration by sole bidder on manufacturer of solar panels	No	Not submitted. Need to clarify.
10.1	Work orders as proof of experience (3 MW cumulative capacity required)	Yes	1.4
10.2	Work orders as proof of experience - minimum 1 MW capacity for EPC in case of JV	NA	
11.1	Completion certificate for the work orders(3 MW)	Yes	1.6

11.2	Completion certificate for the work orders(1 MW) (In case of JV)	NA	
12	Undertaking for Non-black listing in Rs.200/- stamp paper format-A	Yes	4.31
13	Scanned copy of Tender Document signed and sealed	Yes	2.8
14	Agreement in the prescribed format Annexure B in Rs.200/- stamp paper	Yes	2.4
15	Declaration by manufacturer to provide PV module from ALMM List & with DCR content	Yes	4.33,
16	Declaration from lead bidder to provide Inverter with IS1621, IS16169 certification	Yes	4.22
17	Summary of Bid Qualification Requirement- Annexure A	Yes	4.24-4.25
18	Bill of Material	Yes	3.7-3.12
19	Guaranteed Technical Parameters Annexure G (GTP)	Yes	3.1-3.6
20	Test Certificates as per GTP	Yes	3.13
21	Datasheet as per GTP	Yes	3.31
22	Declaration by the bidder Annexure C	Yes	4.26
23	Declaration on subsidy claim Annexure D	Yes	4.27
24	Declaration of relationship with ANERT Employee Annexure E	Yes	4.28
25	List of service centres /Declaration to provide service centre in Rs.200/- Stamp paper	Yes	List of service centers provided in 14 districts, page 4.29
26	ICRA Grading Certificate(Indicate Grade 1A, 1B , 1C, 2A, 2B)	Yes	1B, page-3.109

Clarification Required

1) Self Declaration on solar module manufacturer (SL No- 9.1)

22.12.2022

ACTM

SF

Tender Evaluation Sheet

Tender ID:ANERT-TECH/144/2022-T4

Tender name: - Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 Nos ranging from 2kW- 150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala

Name of Sole/ Lead Bidder- Suntastic Engineering Pvt ltd.
Name of JV Partner- Navitas Green Solutions Pvt. Ltd.

Sl No	Particular	Sole/Lead bidder		Partner in JV	
		Yes/N	Remarks	Yes/N	Remarks
1	Proof for Tender fee exemption, if any	YES	MSME fee exemption,	Yes	MSME fee exemption, Page-
2	Proof for EMD fee exemption, if any	YES	MSME fee exemption,	Yes	MSME fee exemption, Page-
3	In case of JV, provide JV agreement defining lead member	Yes	1.1	NA	
4	Copy of Registration/Incorporation Certificate	Yes	1.2	Yes	1.7
5	Copy of GST Registration certificate	Yes	1.3	Yes	1.9
6	Copy of Pan card	Yes	1.6	Yes	1.8
7	In case of JV, Power of Attorney in favour of authorized signatory in Rs. 200 /- stamp paper (Format B)	No	Power of attorney given in page 1.22 is not as per our format and only in Rs 100 stamp paper.	NA	
8	If Power of Attorney in favour of authorized signatory not applicable - need to submit self-declaration on authorized signatory	NA		NA	

9	Declaration by sole bidder/ JV partner on manufacturer of solar panels	NA		Yes	1.14
10.1	Work orders as proof of experience (3 MW cumulative capacity required)	No	Work Order provided only for 377 kW. (2.154)	No	No work order provided
10.2	Work orders as proof of experience - minimum 1 MW capacity for EPC in case of JV	No	Page 2.154	NA	
11.1	Completion certificate for the work orders(3 MW)	Yes	For 3 MW given (2.193)	NA	
11.2	Completion certificate for the work orders(1 MW) (In case of JV)	NA	Page 2.193	NA	
12	Undertaking for Non-black listing in Rs.200/- stamp paper format-A	Yes	1.29	Yes	1.31
13	Scanned copy of Tender Document signed and sealed	Yes	3.4	NA	
14	Agreement in the prescribed format Annexure B in Rs.200/- stamp paper	Yes	3.1	NA	
15	Declaration by manufacturer to provide PV module from ALMM List & with DCR content	NA		Yes	1.14
16	Declaration from lead bidder to provide Inverter with IS1621, IS16169 certification	Yes	1.27	NA	
17	Summary of Bid Qualification Requirement- Annexure A	Yes	1.18	NA	
18	Bill of Material	Yes	4.1	NA	
19	Guaranteed Technical Parameters Annexure G (GTP)	Yes	4.6	NA	
20	Test Certificates as per GTP	Yes	4.2	NA	
21	Datasheet as per GTP	Yes	4.2	NA	
22	Declaration by the bidder Annexure C	Yes	1.27	NA	
23	Declaration on subsidy claim Annexure D	Yes	1.28	NA	

24	Declaration of relationship with ANERT Employee Annexure E	Yes	1.17	NA	
25	List of service centres /Declaration to provide service centre in Rs.200/- Stamp paper	Yes	1.25		
26	ICRA Grading Certificate(Indicate Grade 1A, 1B , 1C, 2A, 2B)	Yes	ICRA grading **2C**, 4.9	NA	

1- otherdoc **2-PQ** **3-preagre** **4-technical**

Clarification

1) Power of attorney in favour of authorized signatory should provide as per Format B in 200 Rs stamp paper.

2) Provide work order for 3 MW solar power plant at Thanjavur Corporation (Corresponding to completion certificate already priovided)

23.12.2022
ICTM

23-7-22
Rajesh R
ACTM

23/12
K Premkumar
SP

Kala. K G

Tender Evaluation Sheet

Tender ID:ANERT-TECH/144/2022-T4

Tender name: - Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 Nos ranging from 2kW- 150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala

Name of Sole/ Lead Bidder- KC KOPAR Energy Solutions Pvt ltd., Angamaly

Name of JV Partner- Swelect Energy Systems Limited

Sl No	Particular	Sole/Lead bidder		Partner in JV	
		Yes/No	Remarks	Yes/No	Remarks
1	Proof for Tender fee exemption, if any	Yes	2.86	NA	
2	Proof for EMD fee exemption, if any	Yes	2.86	NA	
3	In case of JV, provide JV agreement defining lead member	No	Lead member should be mentioned in JV agreement on stamp paper of Rs 200	NA	
4	Copy of Registration/Incorporation Certificate	Yes	4.4	Yes	4.12
5	Copy of GST Registration certificate	Yes	4.5	Yes	4.14
6	Copy of Pan card	Yes	4.8	Yes	4.9

12

7	In case of JV, Power of Attorney in favour of authorized signatory in Rs. 200 /- stamp paper (Format B)	No		NA	
8	If Power of Attorney in favour of authorized signatory not applicable - need to submit self-declaration on authorized signatory	NA		NA	
9	Declaration by sole bidder/ JV partner on manufacturer of solar panels	NA		No	Document provided in 1.34 is from the EPC, not from manufacturer
10.1	Work orders as proof of experience (3 MW cumulative capacity required)	NA		Yes	1.147
10.2	Work orders as proof of experience - minimum 1 MW capacity for EPC in case of JV	YES	1.147	NA	
11.1	Completion certificate for the work orders(3 MW)	NA		Yes	1.147

11.2	Completion certificate for the work orders(1 MW) (In case of JV)	NO	To claim 1 MW experience EPC should submit proof of completion certificate for 333 kW soura roof top project.	NA	
12	Undertaking for Non-black listing in Rs.200/- stamp paper format-A	Yes	4.36	No	Not Submitted
13	Scanned copy of Tender Document signed and sealed	Yes	2.1	NA	
14	Agreement in the prescribed format Annexure B in Rs.200/- stamp paper	Yes	2.87	NA	
15	Declaration by manufacturer to provide PV module from ALMM List & with DCR content	NA		YES	Provided one from Goldi in 4.16
16	Declaration from lead bidder to provide Inverter with IS1621, IS16169 certification	Yes	4.17	NA	
17	Summary of Bid Qualification Requirement- Annexure A	Yes	4.18	NA	
18	Bill of Material	Yes	Provided in 3.38. But nothing mentioned about RMS	NA	

19	Guaranteed Technical Parameters Annexure G (GTP)	Yes	Provided in 3.24. But nothing mentioned about RMS	NA	
20	Test Certificates as per GTP	Yes	3.1-3.23,3.52-3.63	NA	
21	Datasheet as per GTP	Yes	3.1-3.23,3.52-3.63	NA	
22	Declaration by the bidder Annexure C	Yes	4.19	NA	
23	Declaration on subsidy claim Annexure D	Yes	4.2	NA	
24	Declaration of relationship with ANERT Employee Annexure E	Yes	4.21	NA	
25	List of service centres /Declaration to provide service centre in Rs.200/- Stamp paper	No	Need declaration. Total 9 centers for 14 districts	NA	
26	ICRA Grading Certificate(Indicate Grade 1A, 1B , 1C, 2A, 2B)	Yes	ICRA certification of 2C, in page 3.49	NA	

Clarification points needed

1 Lead member should be mentioned in JV agreement in stamp paper of Rs 200

2 Power of attorney in favour of authorized signatory should be provided as per Format B in 200 Rs stamp paper.

3 Declaration should be provided by JV partner on manufacturer of solar panels.

4 Undertaking for Non-black listing in Rs.200/- stamp paper as per format-A should be provided for JV partner

5 Bill of material should contain RMS

6 GTP should contain RMS

7 To claim 1 MW experience EPC should submit proof of completion certificate for 333 kW soura roof top project. (The available screenshot contains no start and end date)

8 Declaration on service centre as per tender should be provided on 200 Rs stamp paper.

24.12.2022
ICM.

24/12
K Premkumar

Kalaik

09/01/2023

To,
CEO- ANERT
PMG- Law College Road,
Vikas Bhavan P.O,
Thiruvananthapuram,
Pin:695033

Sub: Regarding consent for matching and acceptance of the L-1 Price.

Ref:

1. **ANERT TECH/144/2022-T4, dtd 12/12/2022 for Rate Contract for the solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos. ranging from 2kW-150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala.**
2. **Email regarding the L1 matching from ANERT dated 07-01-2023**

Dear Sir,

This refers to the above referred email seeking our confirmation on acceptance of our L-1 price in the Group-1 category and matching the L1 price in Group-2 category.

In this regard, we are pleased to inform you that we unconditionally accept the rates mentioned below.

Ground Mounted			Rooftop		
Sl.No	**Capacity**	**Amount**	**Sl.No**	**Capacity**	**Amount**
1.01	Cost for the SIC of 2 kW SPV Power plant	2,48,190	1.01	Cost for the SIC of 2 kW SPV Power plant	2,29,982
1.02	Cost for the SIC of 3 kW SPV Power plant	2,98,195	1.02	Cost for the SIC of 3 kW SPV Power plant	2,79,413
1.03	Cost for the SIC of 5 kW SPV Power plant	4,61,894	1.03	Cost for the SIC of 5 kW SPV Power plant	4,31,930
1.04	Cost for the SIC of 7 kW SPV Power plant	5,93,004	1.04	Cost for the SIC of 7 kW SPV Power plant	5,47,137
1.05	Cost for the SIC of 10 kW SPV Power plant	7,68,873	1.05	Cost for the SIC of 10 kW SPV Power plant	7,13,457
1.06	Cost per kW for the SIC of SPV Power plants in the range of 30 kW - 99 kW or part thereof	71,694	1.06	Cost per kW for the SIC of SPV Power plants in the range of 30 kW - 99 kW or part thereof	71,343
1.07	Cost per kW for the SIC of SPV Power plants in the range of 100 kW - 150 kW or part thereof	72,832	1.07	Cost per kW for the SIC of SPV Power plants in the range of 100 kW - 150 kW or part thereof	70,266

We also confirm that rest of terms and conditions of the bid shall remain the same.

Thanking you.

Rama Krishna S
Chief- Business Development-Products & DGMS

TATA POWER SOLAR
Tata Power Solar Systems Limited
3rd Floor Shatabdi Bhavan B12-13 Sector 04 Noida Uttar Pradesh 201301 India
CIN : U40106KA1989PLC034989 Tel : 0120 610 2000 Email : info.solar@tatapower.com Website : www.tatapowersolar.com
Registered Office : 78 Electronics City Phase I Hosur Road Bengaluru 560100 India

ANERT Projects <projects@anert.in>

Acceptance of Contract for the PM-KUSUM scheme

Kondaas Dealers <kondaasdealers@gmail.com> 9 January 2023 at 18:49
To: ANERT Projects <projects@anert.in>
Cc: jayasankar234@gmail.com, sofia.kondaas@gmail.com, Sanjay Santhanakrishnan <sanjaykondaas@gmail.com>, uma sanjay <umakondaas@gmail.com>

Dear Sir / Madam,

Greetings from Kondaas Automation Pvt. Ltd.

With reference to the email and Tender - **"Rate Contract for the Solarisation of Grid Connected Agricultural Pumps under the PM-KUSUM scheme (Component-C) in the State of Kerala'.**

We are pleased to accept the below "L1 - Price" for the above said tender.

Ground Mounted		
Sl.No	Capacity	Amount
1.01	Cost for the SIC of 2 kW SPV Power plant	2,48,190
1.02	Cost for the SIC of 3 kW SPV Power plant	2,98,195
1.03	Cost for the SIC of 5 kW SPV Power plant	4,61,894
1.04	Cost for the SIC of 7 kW SPV Power plant	5,93,004
1.05	Cost for the SIC of 10 kW SPV Power plant	7,68,873
1.06	Cost per kW for the SIC of SPV Power plants in the range of 30 kW - 99 kW or part thereof	71,694
1.07	Cost per kW for the SIC of SPV Power plants in the range of 100 kW - 150 kW or part thereof	72,832

Rooftop		
Sl.No	Capacity	Amount
1.01	Cost for the SIC of 2 kW SPV Power plant	2,29,982
1.02	Cost for the SIC of 3 kW SPV Power plant	2,79,413
1.03	Cost for the SIC of 5 kW SPV Power plant	4,31,930
1.04	Cost for the SIC of 7 kW SPV Power plant	5,47,137
1.05	Cost for the SIC of 10 kW SPV Power plant	7,13,457
1.06	Cost per kW for the SIC of SPV Power plants in the range of 30 kW - 99 kW or part thereof	71,343
1.07	Cost per kW for the SIC of SPV Power plants in the range of 100 kW - 150 kW or part thereof	70,266

Thanks & Regards

Mr. Ravi
Tender - Head

ANERT Projects <projects@anert.in>

ANERT - KUSUM Tender - Component C (2022_ANERT_504042_2) - L1 Matching - reg

Sam Roofus <sam.roofus@inkel.in> 10 January 2023 at 17:10
To: ANERT Projects <projects@anert.in>

Dear Sir,

With reference to your bid for the Tender - "Rate Contract for the Solarisation of Grid Connected Agricultural Pumps under the PM-KUSUM scheme (Component-C) in the State of Kerala", we are ready to match with the following models.

Ground Mounted			Rooftop		
Sl.No	**Capacity**	**Amount**	**Sl.No**	**Capacity**	**Amount**
1.05	Cost for the SIC of 10 kW SPV Power plant	7,68,873	1.05	Cost for the SIC of 10 kW SPV Power plant	7,13,457
1.06	Cost per kW for the SIC of SPV Power plants in the range of 30 kW - 99 kW or part thereof	71,694	1.06	Cost per kW for the SIC of SPV Power plants in the range of 30 kW - 99 kW or part thereof	71,343
1.07	Cost per kW for the SIC of SPV Power plants in the range of 100 kW - 150 kW or part thereof	72,832	1.07	Cost per kW for the SIC of SPV Power plants in the range of 100 kW - 150 kW or part thereof	70,266

Thanks & Regards

Creating Infrastructure
A PPP INITIATIVE OF GOVERNMENT OF KERALA

SAM ROOFUS

General Manager

Renewable Energy & Business Development

INKEL Ltd.

(A public Private Partnership company initiated by Government of Kerala)

Door No.7/473ZA-5 & 6, 2nd Floor,

Ajiyal Complex, Kakkanad

Cochin - 682030

Tel: +91 484 6491138 Ext. 115 | Mobile: 9447576888

Email: sam@inkelkerala.com

Web: http://www.inkel.in

ANERT Projects <projects@anert.in>

PM-KUSUM (Component-C) L1 matching

Jose KC Kopar <jose.k@kckopar.com> 7 January 2023 at 15:18
To: ANERT Projects <projects@anert.in>

Dear Sir/Madam,

With reference to our bid for the Tender - "Rate Contract for the Solarisation of Grid Connected Agricultural Pumps under the PM-KUSUM scheme (Component-C) in the State of Kerala", and your request to match to the below mentioned L1 rate for each capacity, we hereby accept the same and agree to match to L1 price.

Ground Mounted		
Sl.No	Capacity	Amount
1.01	Cost for the SIC of 2 kW SPV Power plant	2,48,190
1.02	Cost for the SIC of 3 kW SPV Power plant	2,98,195
1.03	Cost for the SIC of 5 kW SPV Power plant	4,61,894
1.04	Cost for the SIC of 7 kW SPV Power plant	5,93,004
1.05	Cost for the SIC of 10 kW SPV Power plant	7,68,873
1.06	Cost per kW for the SIC of SPV Power plants in the range of 30 kW - 99 kW or part thereof	71,694
1.07	Cost per kW for the SIC of SPV Power plants in the range of 100 kW - 150 kW or part thereof	72,832

Rooftop		
Sl.No	Capacity	Amount
1.01	Cost for the SIC of 2 kW SPV Power plant	2,29,982
1.02	Cost for the SIC of 3 kW SPV Power plant	2,79,413
1.03	Cost for the SIC of 5 kW SPV Power plant	4,31,930
1.04	Cost for the SIC of 7 kW SPV Power plant	5,47,137
1.05	Cost for the SIC of 10 kW SPV Power plant	7,13,457
1.06	Cost per kW for the SIC of SPV Power plants in the range of 30 kW - 99 kW or part thereof	71,343
1.07	Cost per kW for the SIC of SPV Power plants in the range of 100 kW - 150 kW or part thereof	70,266

Regards,
Jose Kallookaran C
Managing Director / Cell: 9895 70 1785
KC Kopar Energy Solutions Private Limited
Angamaly - 683 572 KERALA
An ISO 9001 Certified Solar Solution Company

ANERT Projects <projects@anert.in>

Acceptance of L1 Rates Provided by the department

RABI SANKAR MOHANTY <tender.suryaminternational@gmail.com> 10 January 2023 at 11:43
To: "projects@anert.in" <projects@anert.in>
Cc: "ctm@anert.in" <ctm@anert.in>, "jayakumar@anert.in" <jayakumar@anert.in>, anert <anert033@gmail.com>

Dear Sir/Madam,

With reference to your mail received on dated 7th January 2023 at 2:40 PM requesting the L1 rate Acceptance for the Tender - "Rate Contract for the Solarisation of Grid Connected Agricultural Pumps under the PM-KUSUM scheme (Component-C) in the State of Kerala",

We, Suryam International Private Limited, are accepting the below mentioned L1 rates provided by you for the respective Capacity of Solar Photovoltaic Power Plants.

Ground Mounted			Rooftop		
Sl.No	Capacity	Amount	Sl.No	Capacity	Amount
1.01	Cost for the SIC of 2 kW SPV Power plant	2,48,190	1.01	Cost for the SIC of 2 kW SPV Power plant	2,29,982
1.02	Cost for the SIC of 3 kW SPV Power plant	2,98,195	1.02	Cost for the SIC of 3 kW SPV Power plant	2,79,413
1.03	Cost for the SIC of 5 kW SPV Power plant	4,61,894	1.03	Cost for the SIC of 5 kW SPV Power plant	4,31,930
1.04	Cost for the SIC of 7 kW SPV Power plant	5,93,004	1.04	Cost for the SIC of 7 kW SPV Power plant	5,47,137
1.05	Cost for the SIC of 10 kW SPV Power plant	7,68,873	1.05	Cost for the SIC of 10 kW SPV Power plant	7,13,457
1.06	Cost per kW for the SIC of SPV Power plants in the range of 30 kW - 99 kW or part thereof	71,694	1.06	Cost per kW for the SIC of SPV Power plants in the range of 30 kW - 99 kW or part thereof	71,343
1.07	Cost per kW for the SIC of SPV Power plants in the range of 100 kW - 150 kW or part thereof	72,832	1.07	Cost per kW for the SIC of SPV Power plants in the range of 100 kW - 150 kW or part thereof	70,266

Thanks & Regards,
Suryam International Private Limited

sunsenz GREEN LIFE

Corporate.off: Bldg.No. 2/159, Smart Tower, Muttom
Choornikara, Aluva 683106, Ernakulam, Kerala, India
Tel: +91484 262583, Mob : 09946788881 -86
www.sunsenz.com Email : contact@sunsenz.in

Moopens Energy Solutions Pvt. Lt

To

Office of the Nodal Officer (PM KUSUM PROGRAMME),
ANERT, Trivandrum, Kerala, 695 033

10.01.2023

Sub: Request for acceptance of L1 Price

We **M/s Moopens Energy Solutions Pvt Ltd** accept the L1 price and are willing to undertake the works under **"Rate Contract for the Solarisation of Grid Connected Agricultural Pumps under the PM-KUSUM scheme (Component-C) in the State of Kerala", the L1 rate for each capacity is as mentioned below.**

Ground Mounted		
Sl.No	Capacity	Amount
1.01	Cost for the SIC of 2 kW SPV Power plant	2,48,190
1.02	Cost for the SIC of 3 kW SPV Power plant	2,98,195
1.03	Cost for the SIC of 5 kW SPV Power plant	4,61,894
1.04	Cost for the SIC of 7 kW SPV Power plant	5,93,004
1.05	Cost for the SIC of 10 kW SPV Power plant	7,68,873
1.06	Cost per kW for the SIC of SPV Power plants in the range of 30 kW - 99 kW or part thereof	71,694
1.07	Cost per kW for the SIC of SPV Power plants in the range of 100 kW - 150 kW or part thereof	72,832

Rooftop		
Sl.No	Capacity	Amount
1.01	Cost for the SIC of 2 kW SPV Power plant	2,29,982
1.02	Cost for the SIC of 3 kW SPV Power plant	2,79,413
1.03	Cost for the SIC of 5 kW SPV Power plant	4,31,930
1.04	Cost for the SIC of 7 kW SPV Power plant	5,47,137
1.05	Cost for the SIC of 10 kW SPV Power plant	7,13,457
1.06	Cost per kW for the SIC of SPV Power plants in the range of 30 kW - 99 kW or part thereof	71,343
1.07	Cost per kW for the SIC of SPV Power plants in the range of 100 kW - 150 kW or part thereof	70,266

Thanking you,

MOOPENS ENERGY SOLUTIONS PVT. LTD. MUTTOM ALUVA 683 106

Mohammed Fayaz Salam
CEO & Director,
Moopens Energy Solutions Pvt Ltd.

SUN TASTIC

SUNTASTIC ENGINEERING PRIVATE LIMITED
(Formerly Suntastic Solar Systems Private Limited)
Class I Contractor - PWD, TN Highways and Corporation
Business in Solar, Construction, Engineering, Trading

Date : 09/01/2023

To,
The Director,
ANERT.

Subject : L1 Price Matching Confirmation – Reg

Tender ID : 2022_ANERT_504042_2
Tender Ref : ANERT-TECH/144/2022-T4

Dear Sir

We M/s. Suntastic Engineering Private Limited having registered office at Chennai, We submitted bid for the above tender for "Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW - 150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala". With reference to your email dated on 7th January 2023, we confirm that we are agreeing to match with L1 rate and we are willing to undertake the work with the L1 Price. Kindly consider.

Looking forward for your Work Order.

Thanks & Regards,

For SUNTASTIC ENGINEERING PVT. LTD

Chief Executive Officer

L. Mohamed Shoaib
Chief Executive Officer

No.69/27A, First Pilliayar Koil St, Lakshmipuram, Chrompet, Chennai - 600044
Conatct : +91 8939838052/58 Mail : suntasticengineering@gmail.com
Web : www.suntasticsolarsystems.com GST : 33AAXCS4958B1ZZ

ELECTRICAL - MARKET RATE

Electrical(MR 700 - MR 1199)

code no:	Description	unit	rate
MR700	Cable Jointer mate	Day	700.0
MR701	Electrician	Day	750.0
MR702	Hardware Technician (Computer)	Day	750.0
MR703	Lineman Assistant	Day	675.0
MR704	Man Mazdoor	Day	675.0
MR705	Mazdoor- Heavy Load Mazdoor for handling iron materials	Day	800.0
MR706	Mechanic Grade I	Day	750.0
MR707	Mechanic Grade II	Day	675.0
MR708	Mechanic -II pump/ Generator	Day	750.0
MR709	Motor winder	Day	675.0
MR710	Operator- Lifit irrigation	Day	0.0
MR711	Operator- Lift	Day	0.0
MR712	Plumber/Pipe fitter	Day	650.0
MR713	Skilled Assistant (Diploma Holder)	Day	900.0
MR714	Skilled Assistant (Engineering Degree Holder)	Day	1000.0
MR715	Skilled Assistant (ITI holder)	Day	750.0
MR716	Technician - Electronic machinery	Day	750.0
MR717	Turner- I	Day	800.0
MR718	Wireman Assistant	Day	675.0
MR719	Wireman Helper	Day	600.0
MR720	Khalasi	Day	750.0
MR731	1.0 sqmm ISI marked FR LS PVC insulated single core copper conductor cable	metre	7.03
MR732	25 sqmm ISI Marked FR LS PVC insulated single core copper conductor cable	metre	177.12
MR733	35 sqmm ISI Marked FR LS PVC insulated single core copper conductor cable	metre	244.07
MR734	50 sqmm ISI Marked FR LS PVC insulated single core copper conductor cable	metre	349.15
MR735	70 sqmm ISI Marked FR LS PVC insulated single core copper conductor cable	metre	508.47
MR736	24/0.20 sqmm twin core ISI Marked FR LS PVC sheathed round copper conductor cable	metre	22.88
MR737	48/0.20 sqmm twin core ISI Marked FR LS PVC sheathed round copper conductor cable	metre	38.98
MR738	80/0.20 sqmm twin core ISI Marked FR LS PVC sheathed round copper conductor cable	metre	61.86
MR739	128/0.20 mm (56/0.30 mm) twin core ISI marked FR LS PVC sheathed round copper conductor cable	metre	94.07
MR740	24/0.20 sqmm three core ISI Marked FR LS PVC sheathed round copper conductor cable	metre	23.73
MR741	48/0.20 sqmm three core ISI Marked FR LS PVC sheathed round copper conductor cable	metre	38.14
MR742	80/0.20 mm sqmm three core ISI Marked FR LS PVC sheathed round copper conductor cable	metre	59.32
MR743	128/0.20 mm (56/0.30 mm) three core ISI marked FR LS PVC sheathed round copper conductor cable	metre	87.29
MR744	85/0.30 mm three core ISI Marked FR LS PVC sheathed round copper conductor cable	metre	128.81
MR745	24/0.20 sqmm four core ISI Marked FR LS PVC sheathed round copper conductor cable	metre	29.66
MR746	48/0.20mm sqmm four core ISI Marked FR LS PVC sheathed round copper conductor cable	metre	50.0
MR747	80/0.20 mm sqmm four core ISI Marked FR LS PVC sheathed round copper conductor cable	metre	81.36
MR748	128/0.20 mm (56/0.30 mm) four core ISI marked FR LS PVC sheathed round copper conductor cable	metre	120.34

Other Engineering Organisations
PRICE

MR749	85/0.30 mm four core ISI marked FR LS PVC sheathed round copper conductor cable	metre	181.36
MR750	22/0.30 sqmm three core ISI Marked FR LS PVC sheathed flat copper conductor cable	metre	40.68
MR751	36/0.30 sqmm three core ISI Marked FR LS PVC sheathed flat copper conductor cable	metre	63.56
MR752	56/0.30 sqmm three core ISI Marked FR LS PVC sheathed flat copper conductor cable	metre	93.22
MR753	85/0.30 sqmm three core ISI Marked FR LS PVC sheathed flat copper conductor cable	metre	137.29
MR754	140/0.30 sqmm three core ISI Marked FR LS PVC sheathed flat copper conductor cable	metre	227.97
MR755	225/0.30 sqmm three core ISI Marked FR LS PVC sheathed flat copper conductor cable	metre	366.1
MR756	354/.300 sqmm three core ISI Marked FR LS PVC sheathed flat copper conductor cable	metre	628.81
MR757	495/0.30 sqmm three core ISI Marked FR LS PVC sheathed flat copper conductor cable	metre	907.63
MR758	Co-axial TV cable RG 59 grade solid copper conductor PE insulated shielded with fine tinned copper braid protected with PVC sheet	metre	13.56
MR759	Co-axial TV cable RG 11 grade solid copper conductor PE insulated shielded with fine tinned copper braid protected with PVC sheet	metre	17.8
MR760	2 pair FR PVC sheathed copper conductor polyethylene polyester taped Telephone cables for indoor application (un - armoured) conforming to ITD specifications	metre	8.47
MR761	3 pair FR PVC sheathed copper conductor polyethylene polyester taped Telephone cables for indoor application (un - armoured) conforming to ITD specifications	metre	11.86
MR762	4 pair FR PVC sheathed copper conductor polyethylene polyester taped Telephone cables for indoor application (un - armoured) conforming to ITD specifications	metre	16.1
MR763	5 pair FR PVC sheathed copper conductor polyethylene polyester taped Telephone cables for indoor application (un - armoured) conforming to ITD specifications	metre	19.49
MR764	6 pair FR PVC sheathed copper conductor polyethylene polyester taped Telephone cables for indoor application (un - armoured) conforming to ITD specifications	metre	22.88
MR765	8 pair FR PVC sheathed copper conductor polyethylene polyester taped Telephone cables for indoor application (un - armoured) conforming to ITD specifications	metre	29.66
MR766	10 pair FR PVC sheathed copper conductor polyethylene polyester taped Telephone cables for indoor application (un - armoured) conforming to ITD specifications	metre	36.44
MR767	20 pair FR PVC sheathed copper conductor polyethylene polyester taped Telephone cables for indoor application (un - armoured) conforming to ITD specifications	metre	70.34
MR768	50 pair FR PVC sheathed copper conductor polyethylene polyester taped Telephone cables for indoor application (un - armoured) conforming to ITD specifications	metre	177.12
MR769	100 pair FR PVC sheathed copper conductor polyethylene polyester taped Telephone cables for indoor application (un - armoured) conforming to ITD specifications	metre	338.98
MR770	4 sqmm 2 core PVC/ XLPE insulated armoured cable with aluminium conductors for working voltages up to and including 1100 volts conformings IS 1584/part/1988 for PVC IS 7098/part I for XLPE	metre	67.8
MR771	6 sqmm 2 core PVC/ XLPE insulated armoured cable with aluminium conductors for working voltages up to and including 1100 volts conformings IS 1584/part/1988 for PVC IS 7098/part I for XLPE	metre	77.97
MR772	10 sqmm 2 core PVC/ XLPE insulated armoured cable with aluminium conductors for working voltages up to and including 1100 volts conformings IS 1584/part/1988 for PVC IS 7098/part I for XLPE	metre	96.61
MR773	16 sqmm 2 core PVC/ XLPE insulated armoured cable with aluminium conductors for working voltages up to and including 1100 volts conformings IS 1584/part/1988 for PVC IS 7098/part I for XLPE	metre	101.69
MR774	25 sqmm 2 core PVC/ XLPE insulated armoured cable with aluminium conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/1988 for PVC IS 7098 part I for XLPE	metre	105.93
MR775	35 sqmm 2 core PVC/ XLPE insulated armoured cable with aluminium conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/1988 for PVC IS 7098 part I for XLPE	metre	128.81
MR776	50 sqmm 2 core PVC/ XLPE insulated armoured cable with aluminium conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/1988 for PVC IS 7098 part I for XLPE	metre	160.17

Other Engineering Organisations
PRICE

MR777	70 sqmm 2 core PVC/ XLPE insulated armoured cable with aluminium conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/1988 for PVC IS 7098 part I for XLPE	metre	213.56
MR778	95 sqmm 2 core PVC/ XLPE insulated armoured cable with aluminium conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/1988 for PVC IS 7098 part I for XLPE	metre	271.19
MR779	4 sqmm 3 core PVC/ XLPE insulated armoured cable with aluminium conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/1988 for PVC IS 7098 part I for XLPE	metre	69.49
MR780	6 sqmm 3 core PVC/ XLPE insulated armoured cable with aluminium conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/1988 for PVC IS 7098 part I for XLPE	metre	84.75
MR781	10 sqmm 3 core PVC/ XLPE insulated armoured cable with aluminium conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/1988 for PVC IS 7098 part I for XLPE	metre	104.24
MR782	16 sqmm 3 core PVC/ XLPE insulated armoured cable with aluminium conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/1988 for PVC IS 7098 part I for XLPE	metre	110.17
MR783	25 sqmm 3 core PVC/ XLPE insulated armoured cable with aluminium conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/1988 for PVC IS 7098 part I for XLPE	metre	143.22
MR784	35 sqmm 3 core PVC/ XLPE insulated armoured cable with aluminium conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/1988 for PVC IS 7098 part I for XLPE	metre	181.36
MR785	50 sqmm 3 core PVC/ XLPE insulated armoured cable with aluminium conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/1988 for PVC IS 7098 part I for XLPE	metre	227.12
MR786	70 sqmm 3 core PVC/ XLPE insulated armoured cable with aluminium conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/1988 for PVC IS 7098 part I for XLPE	metre	305.08
MR787	95 sqmm 3 core PVC/ XLPE insulated armoured cable with aluminium conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/1988 for PVC IS 7098 part I for XLPE	metre	391.53
MR788	120 sqmm 3 core PVC/ XLPE insulated armoured cable with aluminium conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/1988 for PVC IS 7098 part I for XLPE	metre	467.8
MR789	150 sqmm 3 core PVC/ XLPE insulated armoured cable with aluminium conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/1988 for PVC IS 7098 part I for XLPE	metre	576.27
MR790	185 sqmm 3 core PVC/XLPE insulated armoured cable with aluminium conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/1988 for PVC IS 7098 part I for XLPE	metre	704.24
MR791	240 sqmm 3 core PVC/XLPE insulated armoured cable with aluminium conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/1988 for PVC IS 7098 part I for XLPE	metre	889.83
MR792	300 sqmm 3 core PVC/XLPE insulated armoured cable with aluminium conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/1988 for PVC IS 7098 part I for XLPE	metre	1084.75
MR793	400 sqmm 3 core PVC/XLPE insulated armoured cable with aluminium conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/1988 for PVC IS 7098 part I for XLPE	metre	1381.36
MR794	25 sqmm 3.5 core PVC/XLPE insulated armoured cable with aluminium conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/1988 for PVC IS 7098 part I for XLPE	metre	165.25
MR795	35 sqmm 3.5 core PVC/XLPE insulated armoured cable with aluminium conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/1988 for PVC IS 7098 part I for XLPE	metre	203.39
MR796	50 sqmm 3.5 core PVC/XLPE insulated armoured cable with aluminium conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/1988 for PVC IS 7098 part I for XLPE	metre	262.71
MR797	70 sqmm 3.5 core PVC/XLPE insulated armoured cable with aluminium conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/1988 for PVC IS 7098 part I for XLPE	metre	355.93
MR798	95 sqmm 3.5 core PVC/XLPE insulated armoured cable with aluminium conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/1988 for PVC IS 7098 part I for XLPE	metre	440.68
MR799	120 sqmm 3.5 core PVC/XLPE insulated armoured cable with aluminium conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/1988 for PVC IS 7098 part I for XLPE	metre	550.85
MR800	150 sqmm 3.5 core PVC/XLPE insulated armoured cable with aluminium conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/1988 for PVC IS 7098 part I for XLPE	metre	652.54

Power Engineering Organisations

MR801	185 sqmm 3.5 core PVC/XLPE insulated armoured cable with aluminium conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/1988 for PVC IS 7098 part I for XLPE	metre	816.95
MR802	240 sqmm 3.5 core PVC/XLPE insulated armoured cable with aluminium conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/1988 for PVC IS 7098 part I for XLPE	metre	1050.85
MR803	300 sqmm 3.5 core PVC/XLPE insulated armoured cable with aluminium conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/1988 for PVC IS 7098 part I for XLPE	metre	1262.71
MR804	400 sqmm 3.5 core PVC/XLPE insulated armoured cable with aluminium conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/1988 for PVC IS 7098 part I for XLPE	metre	1601.69
MR805	4 sqmm 4 core PVC/XLPE insulated armoured cable with aluminium conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/1988 for PVC IS 7098 part I for XLPE	metre	78.81
MR806	6 sqmm 4 core PVC/XLPE insulated armoured cable with aluminium conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/1988 for PVC IS 7098 part I for XLPE	metre	94.07
MR807	10 sqmm 4 core PVC/XLPE insulated armoured cable with aluminium conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/1988 for PVC IS 7098 part I for XLPE	metre	101.69
MR808	16 sqmm 4 core PVC/XLPE insulated armoured cable with aluminium conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/1988 for PVC IS 7098 part I for XLPE	metre	131.36
MR809	25 sqmm 4 core PVC/XLPE insulated armoured cable with aluminium conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/1988 for PVC IS 7098 part I for XLPE	metre	173.73
MR810	35 sqmm 4 core PVC/XLPE insulated armoured cable with aluminium conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/1988 for PVC IS 7098 part I for XLPE	metre	221.19
MR811	50 sqmm 4 core PVC/XLPE insulated armoured cable with aluminium conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/1988 for PVC IS 7098 part I for XLPE	metre	288.14
MR812	70 sqmm 4 core PVC/XLPE insulated armoured cable with aluminium conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/1988 for PVC IS 7098 part I for XLPE	metre	389.83
MR813	95 sqmm 4 core PVC/XLPE insulated armoured cable with aluminium conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/1988 for PVC IS 7098 part I for XLPE	metre	483.05
MR814	120 sqmm 4 core PVC/XLPE insulated armoured cable with aluminium conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/1988 for PVC IS 7098 part I for XLPE	metre	593.22
MR815	150 sqmm 4 core PVC/XLPE insulated armoured cable with aluminium conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/1988 for PVC IS 7098 part I for XLPE	metre	737.29
MR816	185 sqmm 4 core PVC/XLPE insulated armoured cable with aluminium conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/1988 for PVC IS 7098 part I for XLPE	metre	915.25
MR817	240 sqmm 4 core PVC/XLPE insulated armoured cable with aluminium conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/1988 for PVC IS 7098 part I for XLPE	metre	1144.07
MR818	300 sqmm 4 core PVC/XLPE insulated armoured cable with aluminium conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/1988 for PVC IS 7098 part I for XLPE	metre	1453.39
MR819	400 sqmm 4 core PVC/XLPE insulated armoured cable with aluminium conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/1988 for PVC IS 7098 part I for XLPE	metre	1779.66
MR820	16 sqmm Single core PVC insulated unarmoured cable with aluminium starnded conductors 660/110 V grade conforming IS 1554/part I/1988	metre	27.97
MR821	25 sqmm Single core PVC insulated unarmoured cable with aluminium starnded conductors 660/110 V grade conforming IS 1554/part I/1988	metre	37.29
MR822	35 sqmm Single core PVC insulated unarmoured cable with aluminium starnded conductors 660/110 V grade conforming IS 1554/ Part I/1988	metre	49.15
MR823	50 sqmm Single core PVC insulated unarmoured cable with aluminium starnded conductors 660/110 V grade conforming IS 1554/ Part I/1988	metre	63.56
MR824	70 sqmm Single core PVC insulated unarmoured cable with aluminium starnded conductors 660/110 V grade conforming IS 1554/ Part I/1988	metre	84.75
MR825	95 sqmm Single core PVC insulated unarmoured cable with aluminium starnded conductors 660/110 V grade conforming IS 1554/ Part I/1988	metre	110.17
MR826	4 sqmm 2 core PVC/XLPE insulated armoured cable withcopper conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/ 1988 for PVC IS 7098 part I for XLPE	metre	118.64

Power Engineering Organisations

MR827	6 sqmm 2 core PVC/XLPE insulated armoured cable with copper conductors for working Voltages up to and including 1100 volts conforming IS 1584/part I/ 1988 for PVC IS 7098 part I for XLPE	metre	159.32
MR828	10 sqmm 2 core PVC/XLPE insulated armoured cable with copper conductors for working Voltages up to and including 1100 volts conforming IS 1584/part I/ 1988 for PVC IS 7098 part I for XLPE	metre	241.53
MR829	16 sqmm 2 core PVC/XLPE insulated armoured cable with copper conductors for working Voltages up to and including 1100 volts conforming IS 1584/part I/ 1988 for PVC IS 7098 part I for XLPE	metre	343.22
MR830	4 sqmm 3 core PVC/XLPE insulated armoured cable with copper conductors for working Voltages up to and including 1100 volts conforming IS 1584/part I/ 1988 for PVC IS 7098 part I for XLPE	metre	153.39
MR831	6 sqmm 3 core PVC/XLPE insulated armoured cable with copper conductors for working Voltages up to and including 1100 volts conforming IS 1584/part I/ 1988 for PVC IS 7098 part I for XLPE	metre	211.86
MR832	10 sqmm 3 core PVC/XLPE insulated armoured cable with copper conductors for working Voltages up to and including 1100 volts conforming IS 1584/part I/ 1988 for PVC IS 7098 part I for XLPE	metre	329.66
MR833	16 sqmm 3 core PVC/XLPE insulated armoured cable with copper conductors for working Voltages up to and including 1100 volts conforming IS 1584/part I/ 1988 for PVC IS 7098 part I for XLPE	metre	466.95
MR834	25 sqmm 3 core PVC/XLPE insulated armoured cable with copper conductors for working Voltages up to and including 1100 volts conforming IS 1584/part I/ 1988 for PVC IS 7098 part I for XLPE	metre	770.34
MR835	35 sqmm 3 core PVC/XLPE insulated armoured cable with copper conductors for working Voltages up to and including 1100 volts conforming IS 1584/part I/ 1988 for PVC IS 7098 part I for XLPE	metre	1061.02
MR836	50 sqmm 3 core PVC/XLPE insulated armoured cable with copper conductors for working Voltages up to and including 1100 volts conforming IS 1584/part I/ 1988 for PVC IS 7098 part I for XLPE	metre	1445.76
MR837	70 sqmm 3 core PVC/XLPE insulated armoured cable with copper conductors for working Voltages up to and including 1100 volts conforming IS 1584/part I/ 1988 for PVC IS 7098 part I for XLPE	metre	2052.54
MR838	95 sqmm 3 core PVC/XLPE insulated armoured cable with copper conductors for working Voltages up to and including 1100 volts conforming IS 1584/part I/ 1988 for PVC IS 7098 part I for XLPE	metre	2949.15
MR839	120 sqmm 3 core PVC/XLPE insulated armoured cable with copper conductors for working Voltages up to and including 1100 volts conforming IS 1584/part I/ 1988 for PVC IS 7098 part I for XLPE	metre	3705.08
MR840	150 sqmm 3 core PVC/XLPE insulated armoured cable with copper conductors for working voltages up to and including 1100 volts conforming IS 1583/part I/ 1988 for PVC IS 7098 part I for XLPE	metre	4625.42
MR841	185 sqmm 3 core PVC/XLPE insulated armoured cable with copper conductors for working voltages up to and including 1100 volts conforming IS 1583/part I/ 1988 for PVC IS 7098 part I for XLPE	metre	5692.37
MR842	230 sqmm 3 core PVC/XLPE insulated armoured cable with copper conductors for working voltages up to and including 1100 volts conforming IS 1583/part I/ 1988 for PVC IS 7098 part I for XLPE	metre	7333.05
MR843	300 sqmm 3 core PVC/XLPE insulated armoured cable with copper conductors for working voltages up to and including 1100 volts conforming IS 1583/part I/ 1988 for PVC IS 7098 part I for XLPE	metre	9129.66
MR844	400 sqmm 3 core PVC /XLPE insulated armoured cable with copper conductors for working voltages up to and including 1100 volts conforming IS 1583/part I/ 1988 for PVC IS 7098 part I for XLPE	metre	11980.51
MR845	25 sqmm 3.5 core PVC /XLPE insulated armoured cable with copper conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/ 1988 for PVC IS 7098 part I for XLPE	metre	927.12
MR846	3.55 sqmm 3.5 core PVC /XLPE insulated armoured cable with copper conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/ 1988 for PVC IS 7098 part I for XLPE	metre	1217.8
MR847	50 sqmm 3.5 core PVC /XLPE insulated armoured cable with copper conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/ 1988 for PVC IS 7098 part I for XLPE	metre	1690.68
MR848	70 sqmm 3.5 core PVC /XLPE insulated armoured cable with copper conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/ 1988 for PVC IS 7098 part I for XLPE	metre	2393.22
MR849	95 sqmm 3.5 core PVC /XLPE insulated armoured cable with copper conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/ 1988 for PVC IS 7098 part I for XLPE	metre	3444.92
MR850	120 sqmm 3.5 core PVC /XLPE insulated armoured cable with copper conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/ 1988 for PVC IS 7098 part I for XLPE	metre	4415.25

Power Engineering Organisations

MR851	150 sqmm 3.5 core PVC /XLPE insulated armoured cable with copper conductors for working voltages up to and including 1100 volts conforming IS 1583.5/part I/ 1988 for PVC IS 7098 part I for XLPE	metre	5334.75
MR852	185 sqmm 3.5 core PVC /XLPE insulated armoured cable with copper conductors for working voltages up to and including 1100 volts conforming IS 1583.5/part I/ 1988 for PVC IS 7098 part I for XLPE	metre	6654.24
MR853	240 sqmm 3.5 core PVC /XLPE insulated armoured cable with copper conductors for working voltages up to and including 1100 volts conforming IS 1583.5/part I/ 1988 for PVC IS 7098 part I for XLPE	metre	8548.31
MR854	300 sqmm 3.5 core PVC /XLPE insulated armoured cable with copper conductors for working voltages up to and including 1100 volts conforming IS 1583.5/part I/ 1988 for PVC IS 7098 part I for XLPE	metre	10649.15
MR855	400 sqmm 3.5 core PVC /XLPE insulated armoured cable with copper conductors for working voltages up to and including 1100 volts conforming IS 1583.5/part I/ 1988 for PVC IS 7098 part I for XLPE	metre	13855.08
MR856	4 sqmm 4 core PVC /XLPE insulated armoured cable with copper conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/ 1988 for PVC IS 7098 part I for XLPE	metre	194.92
MR857	6 sqmm 4 core PVC /XLPE insulated armoured cable with copper conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/ 1988 for PVC IS 7098 part I for XLPE	metre	272.88
MR858	10 sqmm 4 core PVC /XLPE insulated armoured cable with copper conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/ 1988 for PVC IS 7098 part I for XLPE	metre	425.42
MR859	16 sqmm 4 core PVC /XLPE insulated armoured cable with copper conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/ 1988 for PVC IS 7098 part I for XLPE	metre	613.56
MR860	25 sqmm 4 core PVC /XLPE insulated armoured cable with copper conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/ 1988 for PVC IS 7098 part I for XLPE	metre	1015.25
MR861	45 sqmm 4 core PVC/XLPE insulated armoured cable with copper conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/ 1988 for PVC IS 7098 part I for XLPE	metre	1399.15
MR862	50 sqmm 4 core PVC/XLPE insulated armoured cable with copper conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/ 1988 for PVC IS 7098 part I for XLPE	metre	1915.25
MR863	70 sqmm 4 core PVC/XLPE insulated armoured cable with copper conductors for working voltages up to and including 1100 volts conforming IS 1584/part I/ 1988 for PVC IS 7098 part I for XLPE	metre	2716.95
MR864	3 core 35 sqmm 11KV stranded compact circular aluminium conductor, conductors screened with extruded semi conducting compound XLPE insulated, insulation screened with extruded semi conducting compound in combination with copper tape (0.3KA for I sec.) cores laid up. inner sheath of PVC tape, galvanized steel flat strip armoured, and overall PVC sheathed cable conforming to IS: 7098 part II 1985 with latest amendments	metre	0.0
MR865	3 core 50 sqmm 11KV stranded compact circular aluminium conductor, conductors screened with extruded semi conducting compound XLPE insulated, insulation screened with extruded semi conducting compound in combination with copper tape (0.3KA for I sec.) cores laid up. inner sheath of PVC tape, galvanized steel flat strip armoured, and overall PVC sheathed cable conforming to IS: 7098 part II 1985 with latest amendments	metre	0.0
MR866	3 core 70 sqmm 11KV stranded compact circular aluminium conductor, conductors screened with extruded semi conducting compound XLPE insulated, insulation screened with extruded semi conducting compound in combination with copper tape (0.3KA for I sec.) cores laid up. inner sheath of PVC tape, galvanized steel flat strip armoured, and overall PVC sheathed cable conforming to IS: 7098 part II 1985 with latest amendments	metre	0.0
MR867	3 core 95 sqmm 11KV stranded compact circular aluminium conductor, conductors screened with extruded semi conducting compound XLPE insulated, insulation screened with extruded semi conducting compound in combination with copper tape (0.3KA for I sec.) cores laid up. inner sheath of PVC tape, galvanized steel flat strip armoured, and overall PVC sheathed cable conforming to IS: 7098 part II 1985 with latest amendments	metre	928.81
MR868	3 core 120 sqmm 11KV stranded compact circular aluminium conductor, conductors screened with extruded semi conducting compound XLPE insulated, insulation screened with extruded semi conducting compound in combination with copper tape (0.3KA for I sec.) cores laid up. inner sheath of PVC tape, galvanized steel flat strip armoured, and overall PVC sheathed cable conforming to IS: 7098 part II 1985 with latest amendments	metre	1055.08

Other Engineering Organisations
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MR869	3 core 150 sqmm 11KV stranded compact circular aluminium conductor, conductors screened with extruded semi conducting compound XLPE insulated, insulation screened with extruded semi conducting compound in combination with copper tape (0.3KA for I sec.) cores laid up. inner sheath of PVC tape, galvanized steel flat strip armoured, and overall PVC sheathed cable conforming to IS: 7098 part II 1985 with latest amendments	metre	1164.41
MR870	3 core 185 sqmm 11KV stranded compact circular aluminium conductor, conductors screened with extruded semi conducting compound XLPE insulated, insulation screened with extruded semi conducting compound in combination with copper tape (0.3KA for I sec.) cores laid up. inner sheath of PVC tape, galvanized steel flat strip armoured, and overall PVC sheathed cable conforming to IS: 7098 part II 1985 with latest amendments	metre	1100.0
MR871	3 core 240 sqmm 11KV stranded compact circular aluminium conductor, conductors screened with extruded semi conducting compound XLPE insulated, insulation screened with extruded semi conducting compound in combination with copper tape (0.3KA for I sec.) cores laid up. inner sheath of PVC tape, galvanized steel flat strip armoured, and overall PVC sheathed cable conforming to IS: 7098 part II 1985 with latest amendments	metre	1567.8
MR872	3 core 300 sqm stranded compact circular aluminium conductor, conductors screened with extruded semi conducting compound XLPE insulated, insulation screened with extruded semi conducting compound in combination with copper tape (0.3KA for I sec.) cores laid up. inner sheath of PVC tape, galvanized steel flat strip armoured, and overall PVC sheathed cable conforming to IS: 7098 part II 1985 with latest amendments	metre	1804.24
MR873	3 core 400 sqm stranded compact circular aluminium conductor, conductors screened with extruded semi conducting compound XLPE insulated, insulation screened with extruded semi conducting compound in combination with copper tape (0.3KA for I sec.) cores laid up. inner sheath of PVC tape, galvanized steel flat strip armoured, and overall PVC sheathed cable conforming to IS: 7098 part II 1985 with latest amendments	metre	2118.64
MR874	1.5 sqmm 2 core PVC / XLPE insulated armoured control cables with copper conductors for working votages up to and including 1100 V conforming to IS 1554 part I 1988 for PVC and IS 7098 Part I for XLPE	metre	72.03
MR875	1.5 sqmm 3 core PVC / XLPE insulated armoured control cables with copper conductors for working voltages up to and including 1100 V conforming to IS 1554 part I 1988 for PVC and IS 7098 Part If for XLPE	metre	88.98
MR876	1.5 sqmm 4 core PVC / XLPE insulated armoured control cables with copper conductors for working voltages up to and including 1100 V conforming to IS 1554 part I 1988 for PVC and IS 7098 part I for XLPE	metre	107.63
MR877	1.5 sqmm 5 core PVC / XLPE insulated armoured control cables with copper conductors for working voltages up to and including 1100V conforming to IS 1554 part I 1988 for PVC and IS 7098 part I for XLPE	metre	126.27
MR878	1.5 sqmm 6 core PVC / XLPE insulated armoured control cables with copper conductors for working voltages up to and including 1100 V comforming to IS 1554 part I 1988 for PVC and IS 7098 Part I for XLPE	metre	144.07
MR879	1.5 sqmm 7 core PVC / XLPE insulated armoured control cables with coper conductors for working voltages up to and including 1100V conforming to IS 1554 part I 1988 for PVC and IS 7098 Part I for XLPE	metre	156.78
MR880	1.5 sqmm 8 core PVC / XLPE insulated armoured control cables with copper conductors for working voltages up to and including 1100V conforming to IS 1554 part I 1988 for PVC and IS 7098 Part I for XLPE	metre	177.97
MR881	1.5 sqmm 9 core PVC / XLPE insulated armoured control cables with copper conductors for working voltages up to and including 1100 V conforming to IS 1554 part I 1988 for PVC and IS 7098 Part I for XLPE	metre	203.39
MR882	1.5 sqmm 10 core PVC / XLPE insulated armoured control cables with copper conductors for working voltages up to and including 1100V conforming to IS 1554 part I 1988 for PVC and IS 7098 Part I for XLPE	metre	229.66
MR883	1.5 sqmm 12 core PVC / XLPE insulated armoured control cables with copper conductors for working voltages up to and including 1100 V conforming to IS 1554 part I 1988 for PVC and IS 7098 Part I for XLPE	metre	264.41
MR884	1.5 sqmm 14 core PVC / XLPE insulated armoured control cables with copper conductors for working voltages up to and including 1100V conforming to IS 1554 part I 1988 for PVC and IS 7098 part I for XLPE	metre	300.85
MR885	1.5 sqmm 16 core PVC / XLPE insulated armoured control cables with copper conductors for working voltages up to and including 1100 V conforming to IS 1554 part I 1988 for PVC and ID 7098 Part I for XLPE	metre	311.02
MR886	1.5 sqmm 19 core PVC / XLPE insulated armoured control cables with copper conductors for working voltages up to and including 1100 V conforming to IS 1554 part I 1988 for PVC and IS 7098 Part I for XLPE	metre	361.02
MR887	1.5 sqmm 24 core PVC / XLPE insulated armoured control cables with copper conductors for working voltages up to and including 1100 V conforming to IS 1554 part I 1988 for PVC and IS 7098 Part I for XLPE	metre	451.69

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MR888	2.5 sqmm 2 core PVC / XLPE insulated armoured control cables with copper conductors for working voltages up to and including 1100 V conforming to IS 1554 part I 1988 for PVC and IS 7098 Part I for XLPE	metre	99.15
MR889	2.5 sqmm 3 core PVC / XLPE insulated armoured control cables with copper conductors for working voltages up to and including 1100 V conforming to IS 1554 part I 1988 for PVC and IS 7098 Part I for XLPE	metre	121.19
MR890	2.5 sqmm 4 core PVC / XLPE insulated armoured control cables with copper conduct1ors for working voltages up to and including 1100 V conforming to IS 1554 part I 1988 for PVC and IS 7098 Part I for XLPE	metre	150.85
MR891	2.5 sqmm 5 core PVC/ XLPE insulated armoured control cables with copper conductors for working voltages up to and including 1100 V conforming to IS 1554 part I 1988 for PVC and IS 7098 Part I for XLPE	metre	180.51
MR892	2.5 sqmm 6 core PVC/ XLPE insulated armoured control cables with copper conductors for working voltages up to and including 1100 V conforming to IS 1554 part I 1988 for PVC and IS 7098 Part I for XLPE	metre	210.17
MR893	2.5 sqmm 7 core PVC/ XLPE insulated armoured control cables with copper conductors for working voltages up to and including 1100 V conforming to IS 1554 part I 1988 for PVC and IS 7098 Part I for XLPE	metre	237.29
MR894	2.5 sqmm 8 core PVC/ XLPE insulated armoured control cables with copper conductors for working voltages up to and including 1100 V conforming to IS 1554 part I 1988 for PVC and IS 7098 Part I for XLPE	metre	271.19
MR895	2.5 sqmm 9 core PVC/ XLPE insulated armoured control cables with copper conductors for working voltages up to and including 1100 V conforming to IS 1554 part I 1988 for PVC and IS 7098 Part I for XLPE	metre	289.83
MR896	2.5 sqmm 10 core PVC/ XLPE insulated armoured control cables with copper conductors for working voltages up to and including 1100 V conforming to IS 1554 part I 1988 for PVC and IS 7098 Part I for XLPE	metre	311.86
MR897	2.5 sqmm 12 core PVC/ XLPE insulated armoured control cables with copper conductors for working voltages up to and including 1100 V conforming to IS 1554 part I 1988 for PVC and IS 7098 Part I for XLPE	metre	366.1
MR898	2.5 sqmm 14 core PVC/ XLPE insulated armoured control cables with copper conductors for working voltages up to and including 1100 V conforming to IS 1554 part I 1988 for PVC and IS 7098 Part I for XLPE	metre	422.88
MR899	2.5 sqmm 16 core PVC/ XLPE insulated armoured control cables with copper conductors for working voltages up to and including 1100 V conforming to IS 1554 part I 1988 for PVC and IS 7098 Part I for XLPE	metre	475.42
MR900	2.5 sqmm 19 core PVC/ XLPE insulated armoured control cables with copper conductors for working voltages up to and including 1100 V conforming to IS 1554 part I 1988 for PVC and IS 7098 Part I for XLPE	metre	524.58
MR901	2.5 sqmm 24 core PVC/ XLPE insulated armoured control cables with copper conductors for working voltages up to and including 1100 V conforming to IS 1554 part I 1988 for PVC and IS 7098 Part I for XLPE	metre	699.15
MR902	4 sqmm to 16 sqmm. 60 mm long x 12 mm wide x 1 mm thick Copper earthing clips for single compression glands	each	6.36
MR903	25 sqmm to 95 sqmm, 60 mm long x 20 mm wide x 1.20 mm thick Copper earthing clips for single compression glands	each	13.56
MR904	Tubular Copper sockets for 2.5 sqmm cable	each	3.14
MR905	Tubular Copper sockets for 4 sqmm cable	each	6.44
MR906	Tubular Copper sockets for 6 sqmm cable	each	7.03
MR907	Tubular Copper sockets for 10 sqmm cable	each	8.14
MR908	Tubular Copper sockets for 16 sqmm cable	each	10.76
MR909	Tubular Copper sockets for 25 sqmm cable	each	17.54
MR910	Tubular Copper sockets for 35 sqmm cable	each	21.44
MR911	Tubular Copper sockets for 50 sqmm cable	each	29.24
MR912	Tubular Copper sockets for 70 sqmm cable	each	48.22
MR913	Tubular Copper sockets for 95 sqmm cable	each	58.73
MR914	Tubular Copper sockets for 120 sqmm cable	each	64.32
MR915	Tubular Copper sockets for 150 sqmm cable	each	85.59
MR916	Tubular Copper sockets for 185 sqmm cable	each	128.81
MR917	Tubular Copper sockets for 240 sqmm cable	each	194.07
MR918	Tubular Copper sockets for 300 sqmm cable	each	242.37
MR919	Tubular Copper sockets for 400 sqmm cable	each	355.08
MR920	20 mm Corrugated PVC flexible conduit	metre	9.32
MR921	25 mm Corrugated PVC flexible conduit	metre	15.25
MR922	50/38 mm Double Walled Corrugated (DWC) pipes made out of HDPE for mechanical protection to underground power / communication / OFC/ Signal cables conforming to IS 14930 Part - II	metre	92.37

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MR923	63/50 mm Double Walled Corrugated (DWC) pipes made out of HDPE for mechanical protection to underground power / communication / OFC/ Signal cables conforming to IS 1490 Part - II	metre	98.31
MR924	77/63 mm Double Walled Corrugated (DWC) pipes made out of HDPE for mechanical protection to underground power / communication / OFC/ Signal cables conforming to IS 14930 Part - II	metre	117.8
MR925	90/75 mm Double Walled Corrugated (DWC) pipes made out of HDPE for mechanical protection to underground power / communication / OFC/ Signal cables conforming to IS 14930 Part - II	metre	155.93
MR926	110/94 mm Double Walled Corrugated (DWC) pipes made out of HDPE for mechanical protection to underground power / communication / OFC/ Signal cables conforming to IS 14930 Part - II	metre	184.75
MR927	120/102.5 mm Double Walled Corrugated (DWC) pipes made out of HDPE for mechanical protection to underground power / communication / OFC/ Signal cables conforming to IS 14930 Part - II	metre	210.17
MR928	125/109 mm Double Walled Corrugated (DWC) pipes made out of HDPE for mechanical protection to underground power / communication / OFC/ Signal cables conforming to IS 14930 Part - II	metre	250.85
MR929	145/123 mm Double Walled Corrugated (DWC) pipes made out of HDPE for mechanical protection to underground power / communication / OFC/ Signal cables conforming to IS 14930 Part - II	metre	279.66
MR930	160/135 mm Double Walled Corrugated (DWC) pipes made out of HDPE for mechanical protection to underground power / communication / OFC/ Signal cables conforming to IS 14930 Part - II	metre	305.08
MR931	175/147 mm Double Walled Corrugated (DWC) pipes made out of HDPE for mechanical protection to underground power / communication / OFC/ Signal cables conforming to IS 14930 Part - II	metre	359.32
MR932	200/174 mm Double Walled Corrugated (DWC) pipes made out of HDPE for mechanical protection to underground power / communication / OFC/ Signal cables conforming to IS 14930 Part - II	metre	451.69
MR933	Rigid P.V.C light Conduit 20 mm	metre	12.71
MR934	Rigid P.V.C light Conduit 25 mm	metre	19.49
MR935	Rigid P.V.C light Conduit 32 mm	metre	31.36
MR936	Rigid P.V.C light Conduit 40 mm	metre	54.24
MR937	Rigid P.V.C light Conduit 50 mm	metre	80.51
MR938	50x50 mm cable management system with base and lid	metre	257.63
MR939	50x50 mm External angle 90 degree	each	94.07
MR940	50x50 mm Flat angle 90 degree	each	88.14
MR941	50x50mm Internal angle 90 degree	each	88.14
MR942	50x50 mm Internal coupler	each	52.54
MR943	50x50mm Flat cross	each	245.76
MR944	50x50mm End cap	each	40.68
MR945	50x50 mm Flanged coupler	each	93.22
MR946	50x50 mm Joint cover	each	32.2
MR947	50x50 mm Special internal angle 45 degree	each	186.44
MR948	50x50 mm Special external angle 45 degree	each	127.12
MR949	50x50 mm Special flat angle 45 degree	each	127.12
MR950	50x50mm External Tee	each	360.17
MR951	50x50mm FlatTee	each	59.32
MR952	50x50mm Internal Tee	each	360.17
MR953	50x50mm Cable retainer	each	25.42
MR954	50x50mm Wall plate for internal angle	each	211.86
MR955	100x50 mm Cable management system with base and lid	metre	508.47
MR956	Cable divider	each	63.56
MR957	100x50 mm External angle 90 degree	each	169.49
MR958	100x50 mm Flat angle 90 degree	each	271.19
MR959	100x50 mm Internal angle 90 degree	each	169.49
MR960	100x50 mm Internal coupler	each	84.75
MR961	100x50 mm Flat cross	each	254.24
MR962	100x50 mm End cap	each	76.27
MR963	100x50 mm Flanged coupler	each	169.49
MR964	100x50 mm Joint cover	each	50.85
MR965	100x50 mm Special internal angle 45 degree	each	203.39
MR966	100x50 mm Special External angle 45 degree	each	135.59

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MR967	100x50 mm Special flat angle 45 degree	each	135.59
MR968	100x50 mm External Tee	each	381.36
MR969	100x50 mm Flat Tee	each	254.24
MR970	100x50 mm Internal Tee	each	381.36
MR971	100x50 mm Cable retainer	each	25.42
MR972	1 to 3 module mounting box	each	76.27
MR973	4 to 5 module mounting box	each	118.64
MR974	8 module mounting box	each	161.02
MR975	10 module mounting box	each	169.49
MR976	Spacer for premium box	each	152.54
MR977	3/5 module under box divider	each	29.66
MR978	100x50 mm wall plate for internal angle	each	148.31
MR979	100x50 mm Mini trunking adapter	each	25.42
MR980	100x50mm MCB / RCD housing	each	203.39
MR981	Reducer 100 x 50 to 50x50 mm	each	254.24
MR982	6 A hanging bed switch 1 way piano type	each	0.0
MR983	6 A hanging bell push piano type	each	0.0
MR984	16 A 1 Way switch with neon piano type	each	0.0
MR985	16 A2 way switch piano type	each	0.0
MR986	Neon indicator piano type	each	0.0
MR987	6 A 2 pin sockert piano type	each	0.0
MR988	16 A 3 pin socket piano type	each	0.0
MR989	6/13 A international socket piano type	each	0.0
MR990	6 A 3 pin switch socket combined flush type piano type	each	0.0
MR991	16 A3 pin switch socket combined flush type piano type	each	0.0
MR992	6/16 A switch socket combined flush type piano type	each	0.0
MR993	6/16 A switch socket combined flush tupe with neon piano type	each	0.0
MR994	6 A 3 pin plug to piano type	each	0.0
MR995	16 A 3 pin plug to piano type	each	0.0
MR996	16 A 3 pin plug top with fuse piano type	each	0.0
MR997	6 A 3 pin plug top unbreakable (polycarbonate)	each	0.0
MR998	16 A 3 pin plug top unbreakable (polycarbonate)	each	0.0
MR999	2 plate ceiling rose	each	0.0
MR1000	3 Plate ceiling rose	each	0.0
MR1001	3 pin telephone socket	each	0.0
MR1002	3 pin telephone top	each	0.0
MR1003	RJ 11 telephone jack (4 lines)	each	0.0
MR1004	RJ 11 telephone jack (2 lines) with shutter	each	0.0
MR1005	TV antenna socket - switch size	each	17.37
MR1006	Step fan regulator - switch size	each	0.0
MR1007	Step fan regulator - socket size	each	156.78
MR1008	PVC Gang box I way	each	0.0
MR1009	415 V 32 A TP & N metal case enclosure with TPN plug socket along with pin suitable for incorporating TPMCB/ RCCB (Less cost of MCB/RCCB) conforming to I.S.8804.	each	805.08
MR1010	250 V 20 A SP & N metal case enclosure with 2 pole and earth plug socket along with pin suitable for incorporating SPMCB/ SP RCCB (Less cost of MCB/RCCB) conforming to I.S. 8804	each	508.47
MR1011	6 A SP I way switch with indicator modular	each	66.95
MR1012	6 A SP 2 way switch with indicator modular	each	0.0
MR1013	6 A SP I way bell push with indicator modular	each	0.0
MR1014	16 A SP 2 way switch modular	each	0.0
MR1015	16 A SP I way switch with indicator modular	each	0.0
MR1016	25 A SP switch with indicator modular	each	177.97
MR1017	32 A DP switch with indicator modular	each	432.2
MR1018	A/C Powder units flush type with suitably rated MCB and suitably rated motor starter along with 25 A illuminated plug and socket with front plate etc., suitable for 1.5 TRA /C, 2 TR A/C	each	0.0

Public Works Engineering Organisations
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MR1019	A/C Power units box type with suitably rated MCB and suitably rated motor starter along with 25 A illuminated plug and socket with front plate, mounting box etc., for direct fitting to wall suitable for 1.5 TR A/C., 2TR A/C or 2.5 TR A/C	each	0.0
MR1020	6 A charger socket 2 module for mobile charger, lap top modular	each	0.0
MR1021	6 A Universal Socket modular	each	142.37
MR1022	6/16 A combined socket modular	each	0.0
MR1023	6/10/13 A international sockets for all pins modular	each	0.0
MR1024	25 A3 pin shuttered socket modular	each	237.29
MR1025	shaver socket, 110/230 V AC with transformer - 4 m	each	0.0
MR1026	2 Line RJ 11 Telephone jack modular	each	0.0
MR1027	CAT 6 RJ 45 Computer jack modular	each	0.0
MR1028	6 A 3 pin plug top	each	59.32
MR1029	16 A 3 pin plug top	each	88.98
MR1030	25 A 3 pin plug top with indicator	each	93.22
MR1031	Buzzer modular	each	0.0
MR1032	Foot Lamp with 4 module box and lamp holder modular	each	0.0
MR1033	Foot Lamp with 8 module box and lamp holder	each	0.0
MR1034	6 A fuse unit - 1 M	each	0.0
MR1035	16 A fuse unit - 1M	each	0.0
MR1036	Neon Indicator red 1M	each	0.0
MR1037	Neon Indicator - Amber 1M	each	0.0
MR1038	Neon Indicator - Green 1 M	each	0.0
MR1039	Speaker volume control - 2 M	each	0.0
MR1040	Light Control 300 W 2 M	each	0.0
MR1041	Light Control 400 W 4 M	each	0.0
MR1042	Light Control 1000 W 4 M	each	0.0
MR1043	Energy key switch with Tag - 3M	each	0.0
MR1044	Key tag	each	0.0
MR1045	Electronic key tag (card operated)	each	0.0
MR1046	16 A DP key card switch	each	0.0
MR1047	Secret Key 16 A 1 way - 1M	each	0.0
MR1048	20 A energy key tag switch with time delay - 3M	each	0.0
MR1049	Hotel key fob switch 20A without key fob	each	0.0
MR1050	Key Fob for 20 A key fob switch	each	0.0
MR1051	Key fob switch 100 VA with 30 second delay	each	0.0
MR1052	Key fob for 100 VA with 30 second delay switch	each	0.0
MR1053	"Do not disturb" indicator lamp 1+ 1 module	each	0.0
MR1054	Internal control unit for "Do not disturb" indicator lamp 1+1 module	each	0.0
MR1055	Pre- wired 10M horizontal plate assembled with 3 Intel Sockets controlled by 16 A Indicator switch	each	0.0
MR1056	Pre- wired 10M horizontal plate assembled with 3 Nos 6/ 16A Sockets controlled by 16 A Indicator switch	each	0.0
MR1057	Pre- wired 10M horizontal plate assembled with 4 Nos 6A Sockets controlled by 16A Indicator switch	each	0.0
MR1058	6 A SPN MCB 2 module	each	0.0
MR1059	10 A SPN MCB 2 module	each	0.0
MR1060	16 A SPN MCB 2 Module	each	0.0
MR1061	16 A, 30 MA SPN RCBO 2 M	each	0.0
MR1062	16 A 250 V AC Voltage surge protector	each	0.0
MR1063	Replacement module for voltage surge protector	each	0.0
MR1064	75 mm x 75 mm x 50 mm	each	0.0
MR1065	100 mm x 100 mm x 50 mm	each	0.0
MR1066	100 mm x125 mm x 50 mm	each	0.0
MR1067	125 mm x 150 mm x 50 mm	each	0.0
MR1068	125 mm x 200 mmx50mm	each	0.0
MR1069	125 mm x 250 mm x 50 mm	each	0.0
MR1070	125 mm x 300 mm x 50 mm	each	0.0
MR1071	150 mm x 150 mm x 50 mm	each	0.0
MR1072	150 mm x 200 mm x 50 mm	each	0.0

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MR1073	200 mm x 250 mm x 50 mm	each	0.0
MR1074	75 mm x 75 mm x 75 mm	each	0.0
MR1075	100 mm x 100 mm x 75 mm	each	0.0
MR1076	100 mm x 125 mm x 75 mm	each	0.0
MR1077	125 mm x 150 mm x 75 mm	each	0.0
MR1078	125 mm x 200 mm x 75 mm	each	0.0
MR1079	125 mm x 250 mm x 75 mm	each	0.0
MR1080	125 mm x 300 mm x 75 mm	each	0.0
MR1081	150 mm x 150 mm x 75 mm	each	0.0
MR1082	75 mm x 75 mm phenolic laminated sheet 3 mm	each	0.0
MR1083	100 mm x100 mm phenolic laminated sheet 3 mm	each	0.0
MR1084	100 mm x 125 mm phenolic laminated sheet 3 mm	each	0.0
MR1085	125 mm x 150 mm phenolic laminated sheet 3 mm	each	0.0
MR1086	125 mm x 200 mm phenolic laminated sheet 3 mm	each	0.0
MR1087	125 mm x 250 mm phenolic laminated sheet 3 mm	each	0.0
MR1088	125 mm x 300 mm phenolic laminated sheet 3 mm	each	0.0
MR1089	150 mm x 150 mm phenolic laminated sheet 3 mm	each	0.0
MR1090	150 mm x 200 mm phenolic laminated sheet 3 mm	each	0.0
MR1091	200 mm x 250 mm phenolic laminated sheet 3 mm	each	0.0
MR1092	150 mm x 200 mmx75mm	each	0.0
MR1093	200 mm x 250 mmx75mm	each	0.0
MR1094	1 module Moulded Plastic boxes	each	54.24
MR1095	2 module Moulded Plastic boxes	each	54.24
MR1096	3 module Moulded Plastic boxes	each	59.32
MR1097	4 module Moulded plastic boxes	each	63.56
MR1098	5 module Moulded Plastic boxes	each	0.0
MR1099	6 module Moulded Plastic boxes	each	81.36
MR1100	8 module Moulded Plastic boxes	each	123.73
MR1101	9 module Moulded Plastic boxes	each	137.29
MR1102	10 module Moulded Plastic boxes	each	139.83
MR1103	12 module Moulded Plastic boxes	each	0.0
MR1104	16 module Moulded Plastic boxes	each	0.0
MR1105	1 module Metal boxes	each	0.0
MR1106	2 module Metal boxes	each	0.0
MR1107	3 module Metal boxes	each	0.0
MR1108	4 module Metal boxes	each	0.0
MR1109	5 module Metal boxes	each	0.0
MR1110	6 module Metal boxes	each	0.0
MR1111	8 module Metal boxes	each	0.0
MR1112	9 module Metal boxes	each	0.0
MR1113	10 module Metal boxes	each	0.0
MR1114	10 module Metal boxes	each	0.0
MR1115	16 module Metal boxes	each	0.0
MR1116	18 module Metal boxes	each	0.0
MR1117	24 module Metal boxes	each	0.0
MR1118	1 module white/off- white modular front plate	each	0.0
MR1119	2 module white / off - white modular front plate	each	0.0
MR1120	3 module white / off - white modular front plate	each	0.0
MR1121	4 module white / off - white modular front plate	each	0.0
MR1122	5 module white / off - white modular front plate	each	0.0
MR1123	6 module white / off - white modular front plate	each	0.0
MR1124	8 module white / off - white modular front plate	each	0.0
MR1125	9 module white / off - white modular front plate	each	0.0
MR1126	10 module white / off - white modular front plate	each	0.0
MR1127	12 module white / off - white modular front plate	each	0.0
MR1128	16 module white / off - white modular front plate	each	0.0
MR1129	18 module white / off - white modular front plate	each	0.0
MR1130	24 module white / off - white modular front plate	each	0.0

Ajmer Engineering Organisations
PRICE

MR1131	Ding dong bell	each	101.69
MR1132	Musical bell with bird sound	each	211.86
MR1133	Musical bell with multiple tunes	each	0.0
MR1134	DC operated remote controlled electric bell	each	508.47
MR1135	Gong bell 75 mm	each	508.47
MR1136	Gong bell 100 mm	each	550.85
MR1137	Gong bell 150 mm	each	694.92
MR1138	Gong bell 225 mm	each	1080.51
MR1139	Gong bell 300 mm	each	1250.0
MR1140	Bell indicator with box and cover	each	677.97
MR1141	T 8 18W FTL	each	29.66
MR1142	T8 36 W FTL	each	33.9
MR1143	14 W fluorescent tube light (T5) - normal	each	88.98
MR1144	24 W fluorescent tube light (T5) - normal	each	93.22
MR1145	28 W fluorescent tube light (T5) - High lumen	each	114.41
MR1146	Dwarf size 5 W BC/ ES/E14	each	97.46
MR1147	Dwarf size 8 W BC/ ES/E14	each	101.69
MR1148	Normal size 8 W BC/ ES	each	101.69
MR1149	Normal size 11 W BC/ ES	each	110.17
MR1150	Normal size 14 W BC/ ES	each	118.64
MR1151	Normal size 15 W BC/ ES	each	118.64
MR1152	Higher size 65 W BC/ES	each	491.53
MR1153	Higher size 85 W BC/ES	each	542.37
MR1154	Spiral 7 W BC/ES	each	144.07
MR1155	Spiral 9 W BC/ES	each	144.07
MR1156	Spiral 11 W BC/ES	each	169.49
MR1157	Spiral 13 W BC/ES	each	169.49
MR1158	Spiral 15 W BC/ES	each	186.44
MR1159	Integral LED aviation obstruction light with yellow painted die-cast aluminium alloy housing, red coloured polycarbonate enclosure	each	2500.0
MR1160	1200mm, 20W LED Tube	each	491.07
MR1161	Angle batten holder with advance international interlock configuration	each	24.58
MR1162	200 mm Plastic sill shade	each	13.14
MR1163	1x20 W LED box type tube fittings. The fittings shall be made from CRCA MS sheet of minimum thickness 0.50 mm nominal thickness inside & outside (including LED Tube).	each	848.21
MR1164	2x20 W LED box type tube fittings. The fittings shall be made from CRCA MS sheet of minimum thickness 0.50 mm nominal thickness inside & outside (including LED Tubes).	each	1339.29
MR1165	Fluorescent tube light fitting suitable for single 28 W T5 lamp with lamp holder, APF electronic ballest suitable for continious operation with THD <10%, power factor >0.98, RoHS compliant, duly wired up for use on 230 V AC supply without fluorescent tubes. The fittings shall be made from CRCA MS sheet of minimum thickness 0.50 mm nominal thickness inside and outside.	each	593.22
MR1166	Fluorescent tube light fitting suitable for twin 28 W T5 lamp with lamp holder, APF electronic ballest suitable for continious operation with THD <10%, power factor>0.98, RoHS compliant , duly wired up for use on 230 V AC supply without fluorescent tubes. The fittings shall be made from CRCA MS sheet of minimum thickness 0.50 mm nominal thickness inside and outside.	each	847.46
MR1167	Bi- pin tube holder for 1 X 28 W T5 lamp	each	6.78
MR1168	APF electronic control gear for 1 x 28W T5 lamp with THD<10%, power factor>0.98 & RoHS compliant	each	364.41
MR1169	APF electronic control gear for 2 x 28W T5 lamp with THD<10%, power Factor>0.98 & RoHS compliant.	each	508.47
MR1170	APF electronic control gear for 4 x 14/ 4x24 W T5 lamp with THD<10%, power Factor>0.98 & RoHS compliant.	each	805.08
MR1171	Holder adaptor kit for conversion of single T12/T8 fitting to suit T5 lamp	each	0.0
MR1172	Holder adaptor kit for conversion of double T12/T8 fitting to suit T5 lamp	each	0.0
MR1174	Surface mounting decorative fluorescent tube light fitting (cat-2) suitable for single 28 W T5 lamps complete with lamp holder, APF electronic ballest suitable for continuous opeartion with THD<10%, power factor > 0.98, RoHS compliant, duly wired up for use on 230 V AC supply without fluorescent tubes. Mirror Optics	each	1610.17

Outer Engineering Organisations
PRICE

MR1175	Surface mounting decorative fluorescent tube light fitting (cat-2) suitable for twin 28 W T5 lamps complete with lamp holder, APF electronic ballest suitable for continuous opeartion with THD<10%, power factor > 0.98, RoHS compliant, duly wired up for use on 230 V AC supply without fluorescent tubes. Mirror optics	each	2059.32
MR1176	Surface mounting 20 W LED Batten with output of 2000 lumen for use on 230 V AC supply	each	1674.11
MR1177	Surface mounting 40 W LED Batten with output of 4000 lumen for use on 230 V AC supply	each	2589.29
MR1178	Recess mounting decorative fluorescent tube light fitting (cat-2) suitable for 4 Nos 14 W T5 lamps complete with lamp holder, APF electronic ballest suitable for continuous opeartion with THD<10%, power factor > 0.98, RoHS compliant, duly wired up for use on 230 V AC supply without fluorescent tubes.	each	3305.08
MR1179	Fluorescent street light fitting Suitable for single 28W T5 lamp with aluminium housing, stove enameled CRCA sheet steel reflector cover, acrylic cover complete with lamp holder, APF electronic ballest suitable for continious operation with THD<10%, power factor>0.98, RoHS compliant, duly wired up for use on 230 V AC supply without fluorescent tubes.	each	1271.19
MR1180	Fluorescent street light fitting Suitable for twin 28 TS W lamps with aluminium housing, stove enameled CRCA sheet steel reflector cover, acrylic cover complete with lamp holder, APF electronic ballest suitable for continious operation with THD<10%, power factor>0.98, RoHS compliant, duly wired up for use on 230 V AC supply without fluorescent tubes.	each	1440.68
MR1181	Fluorescent street light fitting Suitable for 4 Nos 14 W T5 lamps with aluminium housing, stove enameled CRCA sheet steel reflector cover, acrylic cover complete with lamp holder, APF electronic ballest suitable for continious operation with THD<10%, power factor>0.98, RoHS compliant, duly wired up for use on 230 V AC supply without fluorescent tubes.	each	3983.05
MR1182	20 W, 2000 lumen LED, IP 65 street light fitting with aluminium housing, stove enameled CRCA sheet steel reflector cover, acrylic cover complete with THD <10%, power factor >0.98, RoHS compliant, duly wired up for use on 230 V AC supply.	each	1767.86
MR1183	36/40 W, 4000 lumen LED, IP 66 street light fitting with aluminium housing, stove enameled CRCA sheet steel reflector cover, acrylic cover complete with THD <10%, power factor >0.98, RoHS compliant, duly wired up for use on 230 V AC supply.	each	3660.71
MR1184	Fluorescent street light fitting Suitable for 4 Nos 24 W T5 lampswith FRP housing, stove enameled CRCA sheet steel reflector cover, acrylic cover complete with lamp holder, APF electronic ballast suitable for continuous operation with THD <10%, power factor >0.98, RoHS compliant, duly wired up for use on 230 V AC supply without fluorescent tubes.	each	3983.05
MR1185	1200 mm sweep- 5 star rated Ceiling fan, complete with 300mm down rod, canopies, shackles and blades and resistance type regulator working on 230/240V single phase A/C	each	1440.68
MR1186	1400 mm Sweep Ceiling fan, complete with 300mm down rod, canopies, shackles and blades and resistance type regulator working on 230/240V single phase A/C	each	1355.93
MR1187	900mm sweep Ceiling fan, complete with 300mm down rod, canopies, shackles and blades and resistance type regulator working on 230/240V single phase A/C.	each	932.2
MR1188	Ball bearing	each	93.22
MR1189	Bush bearing	each	42.37
MR1190	Rubber shackle	each	5.08
MR1191	Split pin / cotter pin	each	2.54
MR1192	300 mm sweep Wall Mounting fan	each	1313.56
MR1193	400 mm sweep Wall Mounting fan	each	1440.68
MR1194	150mm sweep Light Duty Exhaust fan in plastic body with self opening lowers working on 230V single phase A/C.	each	923.73
MR1195	200 mm sweep Light Duty Exhaust fan in plastic body with self opening lowers working on 230v single phase A/C	each	1016.95
MR1196	250 mm sweep Light Duty Exhaust fan in plastic body with self opening lowers working on 230V single phase A/C	each	1072.03
MR1197	225 mm sweep Light Duty Exhaust fan in metal frame working on 230 V A/C.	each	1169.49
MR1198	300/305 mm sweep Light Duty Exhaust fan in metal frame working on 230 V A/C	each	1266.95
MR1199	305 mm sweep, 900 rpm Heavy Duty Exhaust fan working on 230 V A/C	each	0.0

Other Engineering Organisations
PRICE

CHAPTER 7-MV CABLE LAYING

Item No.	Description	Unit	Rate
7.1	Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size direct in ground including excavation, sand cushioning, protective covering and refilling the trench etc as required.		
7.1.1	Upto 35 sq. mm	Metre	323
7.1.2	Above 35 sq. mm and upto 95 sq. mm	Metre	338
7.1.3	Above 95 sq. mm and upto 185 sq. mm	Metre	352
7.1.4	Above 185 sq. mm and upto 400 sq. mm	Metre	396
7.2	Laying of one number additional PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size direct in ground in the same trench in one tier horizontal formation including excavation, sand cushioning, protective covering and refilling the trench etc as required.		
7.2.1	Upto 35 sq. mm	Metre	222
7.2.2	Above 35 sq. mm and upto 95 sq. mm	Metre	236
7.2.3	Above 95 sq. mm and upto 185 sq. mm	Metre	251
7.2.4	Above 185 sq. mm and upto 400 sq. mm	Metre	294
7.3	Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size direct in ground including excavation and refilling the trench etc as required, but excluding sand cushioning and protective covering.		
7.3.1	Upto 35 sq. mm	Metre	167
7.3.2	Above 35 sq. mm and upto 95 sq. mm	Metre	181
7.3.3	Above 95 sq. mm and upto 185 sq. mm	Metre	196
7.3.4	Above 185 sq. mm and upto 400 sq. mm	Metre	239
7.4	Laying of one number additional PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size direct in ground in the same trench in one tier horizontal formation including excavation and refilling the trench etc as required, but excluding sand cushioning and protective covering.		
7.4.1	Upto 35 sq. mm	Metre	105
7.4.2	Above 35 sq. mm and upto 95 sq. mm	Metre	120
7.4.3	Above 95 sq. mm and upto 185 sq. mm	Metre	134
7.4.4	Above 185 sq. mm and upto 400 sq. mm	Metre	178
7.5	Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size in the existing RCC/ HUME/ METAL pipe as required.		
7.5.1	Upto 35 sq. mm	Metre	31
7.5.2	Above 35 sq. mm and upto 95 sq. mm	Metre	47
7.5.3	Above 95 sq. mm and upto 185 sq. mm	Metre	64

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[Quoted text hidden]

PM KUSUM ACCEPTANCE.pdf
294K

Jayakumar R <jayakumar@anert.in> 27 February 2023 at 10:57
To: anert <anert033@gmail.com>

---------- Forwarded message ---------
From: **Sam Roofus** <sam.roofus@inkel.in>
Date: Mon, 27 Feb 2023 at 10:55
Subject: FW: ANERT - KUSUM Tender - Component C (2022_ANERT_504042_2) - L1 Matching - reg
To: CEO ANERT <ceo@anert.in>, <jayakumar@anert.in>, Chief Technical Manager ANERT <ctm@anert.in>
Cc: Smrithi S <smrithi.s@inkel.in>

Dear Sir,

Based on the google meet we had on 25.02.2022, We are ready take up this project with 1MW initial capacity. We also would like to inform you that we are ready to accept the lowest discovered price for all models. We assure you the best quality and timely completion of this project.

Thanks & Regards

SAM ROOFUS

General Manager

Renewable Energy & Business Development

INKEL Ltd.

(A public Private Partnership company initiated by Government of Kerala)

Door No.7/473ZA-5 & 6, 2nd Floor,

Ajiyal Complex, Kakkanad

Cochin - 682030

Tel: +91 484 6491138 Ext. 115 | Mobile: 9447576888

Email: sam@inkelkerala.com

Web: http://www.inkel.in

A.O. No. 46/2023/ANERT

അനെർട്ട്
ANERT
Agency for New and renewable Energy Research and Technology
നവീനവും പുനരുപയോഗയോഗ്യവുമായ ഊർജ്ജ ഗവേഷണങ്ങൾക്കും സാങ്കേതിക വിദ്യകൾക്കുമുള്ള ഏജൻസി
DEPARTMENT OF POWER, GOVERNMENT OF KERALA
Law College Road, PMG, Thiruvananthapuram 695033 • director@anert.in • www.anert.gov.in
Tel.: (+91-471) 2338077, 2334122, 2333124, 2331803 • Fax: (+91-471) 2329853

PROCEEDINGS OF THE CHIEF EXECUTIVE OFFICER

(Present: NARENDRA NATH VELURI I F S)

Abstract

ANERT - Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 no's ranging from 2kW-150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala (NABARD-RIDF-Scheme) - orders issued

File no.: ANERT-TECH/144/2022-T4

A.O. No. 46/2023/ANERT 28-02-2023

Read:
1. Tender ID : -2022_ANERT_504042_2 Published in Kerala Tender portal
2. Tender reference No:- ANERT- TECH/144/2022-T4
3. Price bid opened on 21/12/2022
4. Email offer to match L1 cost dtd 11/01/2023 and 27/2/2023
5. A.O No. 39/2023/ANERT dated 23/2/2023
6. Video conference done on 25/2/2023

ORDER

RATE CONTRACT ORDER

ANERT had invited Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of with a cumulative capacity of 9,348 no's ranging from 2kW-150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala through the Kerala tenders portal, as reference cited 1st and there were 8 bidders who participated in the tender. During evaluation, 7 companies were qualified. M/s.Mechatronik Technologies Pvt Ltd was disqualified as they failed to produce requirements as per tender (ICRA analytics ratings). The price bid was opened on 21/12/2022 and the bidders that quoted within the range of (L1 + 25% of L1) were provided with opportunity to match the L1 rate. List of qualified bidders, with their respective solar grading issued by M/s. ICRA analytics listed in Table 1 and the allotment of work will be based on this grading.

Table no 1

Sl No	Company Name	ICRA rating	Maximum capacity in kW by batch
1	M/s. Tata Power Solar Systems LIMITED	1B	3500
2	M/s.Moopens Energy Solutions Pvt Ltd	1B	3500
3	M/s. INKEL Limited	1C	1000
4	M/s. Kondaas Automation Private Limited	2B	2000
5	M/s. Suryam International Private Ltd	2B	2000
6	M/s Suntastic Engineering Pvt.Limited	2C	1000
7	M/s. KC Kopar Energy Solutions Private Limited	2C	1000

The L1 rates obtained per kW for various capacity range of the rooftop system and ground mounded systems, as per the terms and conditions of the tender, are as follows:

Table no 2

Rate for lower capacity power plants		
	Ground Mounted (Inclusive of GST in Rs)	Rooftop (Inclusive of GST in Rs)
Cost for the SIC of 2 kW SPV power plant	2,48,190	2,29,982
Cost for the SIC of 3 kW SPV power plant	2,98,195	2,79,413
Cost for the SIC of 5 kW SPV power plant	4,61,894	4,31,930
Cost for the SIC of 7 kW SPV power plant	5,93,004	5,47,137
Cost for the SIC of 10 kW SPV power plant	7,68,873	7,13,457
Per kW Rate for higher capacity power plants		
Cost per kW for the SIC of SPV power plants in the range of 30 kW - 99 kW	71,694	71,343
Cost per kW for the SIC of SPV power plants in the range of 100 kW - 150 kW	72,832	70,266

*SIC-Supply Installation and Commissioning

The above Rates inclusive of delivery of materials, the cost of materials and labour for the civil works, all the necessary approvals from Electrical utility/Electrical inspectorate, feasibility study, mounting of standard module structures, PV module installation, Inverter installation, DC cabling (max 25 m), AC CABLING (MAX 15m) and interconnections, installation of lightning arresters, Remote Monitoring System and earthing system as per standards, net metering, arranging all the necessary inspections from KSEBL/Electrical Inspectorate/ANERT district office as part of pre-commissioning, commissioning of the power plant, 7 year warranty, fee for approval from KSEBL including application and registration fees, fee for approval from the Electrical inspectorate if any, net meter, remote monitoring facility, Insurance, GST and all other expenses deemed necessary for the proper implementation of the condition and specification as per the tender cited under reference on a flat RCC roof or slanting roof or ground mounted which have accessibility.

1. ACCEPTANCE AGREEMENT AND PERFORMANCE SECURITY

a) An LoA will be issued to companies on the basis of this order. Upon acceptance of LoA the agencies are to enter into an agreement with ANERT along with performance security.

b) Work order or NTP will be issued for feasible sites

c) Allotment will be doe as and when the allotted quantity is diminished (completed and commissioned).

2. SCHEDULE OF SUPPLY

a. The items should be delivered and installed for which work orders given as specified by ANERT, under prior intimation and supervision of ANERT for the solarisation of the existing Agricultural Pumps all over Kerala.

b. The Supply, Installation and Commissioning of each of the work allotted shall be completed within **2 months of the date of supply order.** This is the time period for handing over the system to ANERT and no time extension in this regard without valid reasons will be entertained.

c. The capacity of pumps to be solarised and the max allowed capacity of SPV power plant is as given below.

Table no 3

Pump Capacity	Capacity of PV Plant
below 2 hp	2kW
2-3 hp	3 kW
>3-5hp	5kW
>5-7hp	7kW
>7-10hp	10kW
20 hp	30 kW
30 hp	50 kW
50 hp	75 kW
100 hp	150 kW

d. Supply of the main components such as SPV module, PCU and charge controller should be from the approved component list published by MNRE and ANERT websites or as per tender conditions.

e. The agency should submit the BoM of the projects including make model and manufacture, relevant documents & drawing related to structure and electrical interconnection as per tender document before release of NTP/work order.

f. Penalty for delay in supply and installation will be imposed at 0.5 % per week up to a maximum 10 %. In case of delay in supply and installation, CEO, ANERT may cancel the contract and take recourse to other action as deemed appropriate.

3. PAYMENT

a. No advance payment will be given

b. The terms of payment shall be:

1. 50% of the contract value shall be released upon the delivery of the major components at

all the sites mentioned in the work order to be issued.

2. 30% of the contract value shall be released on completion of installation on submitting documents such as completion reports to ANERT
3. 20% of the contract value will be released as and when the funds for the project is received from MNRE for the particular installation. The Performance Bank Guarantee (PBG) will be 3% of the final project cost and the PBG shall be submitted on or before the final releasing of the payment. The validity of PBG shall be rolled over every year for first seven years or till the warranty period of the last installation is completed. The rolling over or release of this PBG shall be based on the clearance of pending penalties/fines imposed by ANERT.

Income tax, contribution to workers' welfare fund which will be applicable to installations which involve civil construction work and other statutory deductions shall be made from the payment as per prevailing norms.

4. WARRANTY

a. 7years' warranty should be provided by the supplier for the system as per the special conditions of the contract.

b. PV modules used in solar power plants/ systems must be warranted for their output peak watt capacity, which should not be less than 90 % at the end of 10 years and 80% at the end of 25 years.

c. The Warranty Card of the total system issued by the agency and the warranty issued by OEMs for PV modules & solar inverter must be handed over to the beneficiary along with a copy to ANERT district office. The warranty card issued by the vendor should include all the details of the system supplied including serial Nos.

5. OPERATION MANUAL

An Operation, Instruction and Maintenance Manual, in English and Malayalam should be provided with the system.

6. SERVICE AND MAINTENANCE

Empaneled agency should have at least one service centre at each district where their system is installed. Also, there should be an additional service centre for each 500 installations per district.

1. The faulty system or components should be replaced/ repaired within 7 days of fault reporting.
2. Delay in servicing beyond 7 days of fault reporting would attract penalty at the rates decided by CEO, ANERT and further actions will be initiated against the agency.
3. The service personnel should visit the installations at least once in 3 months for preventive maintenance even if no faults are reported. **Reports of these preventive maintenance visits and generation data should be submitted to the concerned ANERT District**

Offices on a quarterly basis. The delay beyond a period of 15 days may lead to penalty as decided by CEO ANERT.

4. A designated Helpline (in Malayalam language) address should be indicated on the inverter/controller at suitable location easily visible to the user for reporting faults during the warranty period.

7. INSURANCE

1. The power plant must be insured at every stage of operation – from Material dispatch, storage, completion of installation and till 7 years after commissioning.

2. The insurance coverage on handing over of the system must include all conditions of **Standard Fire and Special Perils as well as burglary and house break Policy (Material Damage as well as theft)**. The insurance premium for the 7years of warranty is to be paid by the bidder. On handing over of the system, the original insurance policy is to be handed over to the authorized person at the site of installation and a copy to ANERT District Office. The annual premium payment receipt must be handed to the authorized person at the site of installation.

8. RATES FOR SITE SPECIFIC COMPONENT

a. For the installations in Group 2 (Higher capacity pumps) - in case of installation of additional/new transformer is required, the bidder shall install through KSEBL at their expenses. The amount shall be recouped by ANERT afterwards upon submission of the proper documents.
b. In case of installations under Group No.2 as per tender document, additional site- specific costs if any required for structure works, pathway, ladder for accessing PV modules etc. will be considered separately.
c. The rates accepted vide table No 2 is for the standard installation and for a maximum of 25 m cabling at DC side and 15 m cabling at AC side.
d. Additional cost required for cabling and structural work

Additional cost required for cabling, structural works etc for any excess quantity other than the standard installation mentioned in the tender document, is as given below :-

Additional Cost for cabling

Sl No	Description	Rate/meter (in Rs)
1	Cost for DC cable for installation under Group 1 category	200/-
2	Cost for DC cable for installation under Group 2 category	250/-
3	Cost for AC cable for installation under Group 1 category	350/-
4	Cost for AC cable for installation under Group 2 category (30kW - 99kW)	960/-
5	Cost for AC cable for installation under Group 2 category(100kW-150kW)	1420/-

Cost for additional structure

Sl No	Description	Rate/meter
1	Cost for additional structure for increase in height of above 1M from the standard height/kW	2000/-
2	Cost for additional structure for increase in height of above 2M from the standard height/kW	3400/-
3	Cost for additional structure for rooftop installation in slanting GI or Aluminium sheet roof /kW	5500/-

9. TERMS AND CONDITIONS FOR THE RATE CONTRACT

The rate contract shall be governed by the terms and conditions of the tender vide Tender ID 2022_ANERT_504042_2dtd12/12/2022 and all corrigendum issued thereof. All the terms and conditions as per the bid document is part of this rate contract. The CEO, ANERT solely reserves the right to cancel/modify/extend this rate contract without assigning any reason.

In the aforementioned situation, the prior order A.O. No. 39/2023/ANERT, dated 23/2/2023(reference 5), is cancelled.

NARENDRA NATH VELURI I F S
CHIEF EXECUTIVE OFFICER

1. All District Offices
2. All selected vendors (as above) through email
3. ANERT website

A.O. No. 46/2023/ANERT

അനെർട്ട്
ANERT
Agency for New and renewable Energy Research and Technology
നവീനവും പുനരുപയോഗയോഗ്യമായ ഊർജ്ജ ഗവേഷണങ്ങൾക്കും സാങ്കേതിക വിദ്യകൾക്കുമുള്ള ഏജൻസി
DEPARTMENT OF POWER, GOVERNMENT OF KERALA
Law College Road, PMG, Thiruvananthapuram 695033 • director@anert.in • www.anert.gov.in
Tel.: (+91-471) 2338077, 2334122, 2333124, 2331803 • Fax: (+91-471) 2329853

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4	M/s. Kondaas Automation Private Limited	2B	2000
5	M/s. Suryam International Private Ltd	2B	2000
6	M/s Suntastic Engineering Pvt.Limited	2C	1000
7	M/s. KC Kopar Energy Solutions Private Limited	2C	1000

The L1 rates obtained per kW for various capacity range of the rooftop system and ground mounded systems, as per the terms and conditions of the tender, are as follows:

Table no 2

Rate for lower capacity power plants		
	Ground Mounted (Inclusive of GST in Rs)	Rooftop (Inclusive of GST in Rs)
Cost for the SIC of 2 kW SPV power plant	2,48,190	2,29,982
Cost for the SIC of 3 kW SPV power plant	2,98,195	2,79,413
Cost for the SIC of 5 kW SPV power plant	4,61,894	4,31,930
Cost for the SIC of 7 kW SPV power plant	5,93,004	5,47,137
Cost for the SIC of 10 kW SPV power plant	7,68,873	7,13,457
Per kW Rate for higher capacity power plants		
Cost per kW for the SIC of SPV power plants in the range of 30 kW - 99 kW	71,694	71,343
Cost per kW for the SIC of SPV power plants in the range of 100 kW - 150 kW	72,832	70,266

*SIC-Supply Installation and Commissioning

The above Rates inclusive of delivery of materials, the cost of materials and labour for the civil works, all the necessary approvals from Electrical utility/Electrical inspectorate, feasibility study, mounting of standard module structures, PV module installation, Inverter installation, DC cabling (max 25 m), AC CABLING (MAX 15m) and interconnections, installation of lightning arresters, Remote Monitoring System and earthing system as per standards, net metering, arranging all the necessary inspections from KSEBL/Electrical Inspectorate/ANERT district office as part of pre-commissioning, commissioning of the power plant, 7 year warranty, fee for approval from KSEBL including application and registration fees, fee for approval from the Electrical inspectorate if any, net meter, remote monitoring facility, Insurance, GST and all other expenses deemed necessary for the proper implementation of the condition and specification as per the tender cited under reference on a flat RCC roof or slanting roof or ground mounted which have accessibility.

1. ACCEPTANCE AGREEMENT AND PERFORMANCE SECURITY

a) An LoA will be issued to companies on the basis of this order. Upon acceptance of LoA the agencies are to enter into an agreement with ANERT along with performance security.

b) Work order or NTP will be issued for feasible sites

c) Allotment will be doe as and when the allotted quantity is diminished (completed and commissioned).

2. SCHEDULE OF SUPPLY

a. The items should be delivered and installed for which work orders given as specified by ANERT, under prior intimation and supervision of ANERT for the solarisation of the existing Agricultural Pumps all over Kerala.

b. The Supply, Installation and Commissioning of each of the work allotted shall be completed within **2 months of the date of supply order.** This is the time period for handing over the system to ANERT and no time extension in this regard without valid reasons will be entertained.

c. The capacity of pumps to be solarised and the max allowed capacity of SPV power plant is as given below.

Table no 3

Pump Capacity	Capacity of PV Plant
below 2 hp	2kW
2-3 hp	3 kW
>3-5hp	5kW
>5-7hp	7kW
>7-10hp	10kW
20 hp	30 kW
30 hp	50 kW
50 hp	75 kW
100 hp	150 kW

d. Supply of the main components such as SPV module, PCU and charge controller should be from the approved component list published by MNRE and ANERT websites or as per tender conditions.

e. The agency should submit the BoM of the projects including make model and manufacture, relevant documents & drawing related to structure and electrical interconnection as per tender document before release of NTP/work order.

f. Penalty for delay in supply and installation will be imposed at 0.5 % per week up to a maximum 10 %. In case of delay in supply and installation, CEO, ANERT may cancel the contract and take recourse to other action as deemed appropriate.

3. PAYMENT

a. No advance payment will be given

b. The terms of payment shall be:

1. 50% of the contract value shall be released upon the delivery of the major components at

all the sites mentioned in the work order to be issued.

2. 30% of the contract value shall be released on completion of installation on submitting documents such as completion reports to ANERT
3. 20% of the contract value will be released as and when the funds for the project is received from MNRE for the particular installation. The Performance Bank Guarantee (PBG) will be 3% of the final project cost and the PBG shall be submitted on or before the final releasing of the payment. The validity of PBG shall be rolled over every year for first seven years or till the warranty period of the last installation is completed. The rolling over or release of this PBG shall be based on the clearance of pending penalties/fines imposed by ANERT.

Income tax, contribution to workers' welfare fund which will be applicable to installations which involve civil construction work and other statutory deductions shall be made from the payment as per prevailing norms.

4. WARRANTY

a. 7years' warranty should be provided by the supplier for the system as per the special conditions of the contract.

b. PV modules used in solar power plants/ systems must be warranted for their output peak watt capacity, which should not be less than 90 % at the end of 10 years and 80% at the end of 25 years.

c. The Warranty Card of the total system issued by the agency and the warranty issued by OEMs for PV modules & solar inverter must be handed over to the beneficiary along with a copy to ANERT district office. The warranty card issued by the vendor should include all the details of the system supplied including serial Nos.

5. OPERATION MANUAL

An Operation, Instruction and Maintenance Manual, in English and Malayalam should be provided with the system.

6. SERVICE AND MAINTENANCE

Empaneled agency should have at least one service centre at each district where their system is installed. Also, there should be an additional service centre for each 500 installations per district.

1. The faulty system or components should be replaced/ repaired within 7 days of fault reporting.
2. Delay in servicing beyond 7 days of fault reporting would attract penalty at the rates decided by CEO, ANERT and further actions will be initiated against the agency.
3. The service personnel should visit the installations at least once in 3 months for preventive maintenance even if no faults are reported. **Reports of these preventive maintenance visits and generation data should be submitted to the concerned ANERT District**

Offices on a quarterly basis. The delay beyond a period of 15 days may lead to penalty as decided by CEO ANERT.

4. A designated Helpline (in Malayalam language) address should be indicated on the inverter/controller at suitable location easily visible to the user for reporting faults during the warranty period.

7. INSURANCE

1. The power plant must be insured at every stage of operation – from Material dispatch, storage, completion of installation and till 7 years after commissioning.

2. The insurance coverage on handing over of the system must include all conditions of **Standard Fire and Special Perils as well as burglary and house break Policy (Material Damage as well as theft)**. The insurance premium for the 7years of warranty is to be paid by the bidder. On handing over of the system, the original insurance policy is to be handed over to the authorized person at the site of installation and a copy to ANERT District Office. The annual premium payment receipt must be handed to the authorized person at the site of installation.

8. RATES FOR SITE SPECIFIC COMPONENT

a. For the installations in Group 2 (Higher capacity pumps) - in case of installation of additional/new transformer is required, the bidder shall install through KSEBL at their expenses. The amount shall be recouped by ANERT afterwards upon submission of the proper documents.

b. In case of installations under Group No.2 as per tender document, additional site- specific costs if any required for structure works, pathway, ladder for accessing PV modules etc. will be considered separately.

c. The rates accepted vide table No 2 is for the standard installation and for a maximum of 25 m cabling at DC side and 15 m cabling at AC side.

d. Additional cost required for cabling and structural work

Additional cost required for cabling, structural works etc for any excess quantity other than the standard installation mentioned in the tender document, is as given below :-

Additional Cost for cabling

Sl No	Description	Rate/meter (in Rs)
1	Cost for DC cable for installation under Group 1 category	200/-
2	Cost for DC cable for installation under Group 2 category	250/-
3	Cost for AC cable for installation under Group 1 category	350/-
4	Cost for AC cable for installation under Group 2 category (30kW - 99kW)	960/-
5	Cost for AC cable for installation under Group 2 category(100kW-150kW)	1420/-

Cost for additional structure

Sl No	Description	Rate/meter
1	Cost for additional structure for increase in height of above 1M from the standard height/kW	2000/-
2	Cost for additional structure for increase in height of above 2M from the standard height/kW	3400/-
3	Cost for additional structure for rooftop installation in slanting GI or Aluminium sheet roof /kW	5500/-

9. TERMS AND CONDITIONS FOR THE RATE CONTRACT

The rate contract shall be governed by the terms and conditions of the tender vide Tender ID 2022_ANERT_504042_2dtd12/12/2022 and all corrigendum issued thereof. All the terms and conditions as per the bid document is part of this rate contract. The CEO, ANERT solely reserves the right to cancel/modify/extend this rate contract without assigning any reason.

In the aforementioned situation, the prior order A.O. No. 39/2023/ANERT, dated 23/2/2023(reference 5), is cancelled.

NARENDRA NATH VELURI I F S
CHIEF EXECUTIVE OFFICER

1. All District Offices
2. All selected vendors (as above) through email
3. ANERT website

TATA POWER SOLAR
ENABLING SOLAR EVERYWHERE

TATA

(ELECTRONIC FUND TRANSFER)

We, hereby authorize the Employer to make all out payments through Electronic Fund Transfer System. The details for facilitating the payment are given below

1. NAME OF THE BENEFICIARY : TATA POWER SOLAR SYSTEMS LIMITED
2. ADDRESS & PIN CODE : 78, ELECTRONIC CITY, HOSUR ROAD, BANGALORE - 560100
3. TELEPHONE NO. (WITH STD CODE): 080-67772000
4. BANK PARTICULARS
   - (A) BANK NAME: STATE BANK OF INDIA
   - (B) BANK TELEPHONE NO (WITH STD CODE): 080- 25943542
   - (C) BRANCH ADDRESS & PIN CODE: INDUSTRIAL FINANCE BRANCH 61, RESIDENCY PLAZA, RESIDENCY ROAD, BANGALORE - 560025
   - (D) BANK FAX NO. (WITH STD CODE) 080-25943548
   - (E) BRANCH CODE: 9077
   - (F) IFSC CODE : SBIN0009077
   - (G)9 DIGIT MICR CODE OF THE BANK : 560002059
   - (H) BANK ACCOUNT NUMBER: 10503342950
   - (I) BANK ACCOUNT TYPE: CASH CREDIT
5. PERMANENT ACCOUNT NUMBER (PAN): AAACT4660J
6. E-MAIL ADDRESS FOR INTIMATION REGARDING RELEASE OF PAYMENTS: SATISH.GUPTA@TATAPOWERSOLAR.COM

I/We hereby declare that the particulars given above are correct and complete. If the transaction is delayed or credit is not affected at all for reasons of incomplete or incorrect information, I/We would not hold the Employer responsible.

DATE: 11th JUNE, 2015

For TATA POWER SOLAR SYSTEMS LTD.

SATISH GUPTA
General Manager - Finance and Accounts

Tata Power Solar Systems Limited
(formerly known as Tata BP Solar India Limited)
78 Electronics City Phase I Hosur Road Bangalore 560 100
CIN: U40106KA1989PLC034989 Tel: +91 80 6777 2000/3000 Fax: +91 80 6777 2252
email: info@tatapowersolar.com website: www.tatapowersolar.com

टाटा बि पि सोलार इंडिया लि.

TATA POWER SOLAR SYSTEMS LTD.

PLOT NO. 78, HOSUR ROAD, ELECTRONIC CITY, BANGALORE - 560 100.

PHONE : 6777 2200

PAYMENT ADVICE

A/C PAYEE ONLY

भारतीय स्टेट बैंक
State Bank Of India

INDUSTRIAL FINANCE BRANCH, BANGALORE
61, RESIDENCY PLAZA, RESIDENCY ROAD, BANGALORE - 560 025.
IFS CODE : SBIN0009077

केवल 3 महीने के लिए वैध /VALIDFOR3MONTHSONLY

D D M M Y Y Y Y

PAY

को या उनके आदेश पर OR ORDER

रुपये RUPEES

अदा करें ₹

खा.सं. A/c No. 10503342950

CANCELLED

For TATA POWER SOLAR SYSTEMS LTD

Prefix: 1515000001

AUTHORISED SIGNATORIES
Please sign above

MADRAS SECURITY PRINTERS PVT. LTD., CHENNAI / CTS - 2010

⑈ 758618 ⑈ 560002059⑆ 000122⑈ 13

ANERT Projects <projects@anert.in>

Re: Request Letter for EMD Refund for the Work: Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos ranging from 2kW- 150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala. and Ref. No. ANERT-TECH/144/2022-T4,Dated: 12.12.2022.

2 messages

anert <anert033@gmail.com> 6 June 2023 at 16:31
To: Suryam International Private Limited <tender.suryaminternational@gmail.com>
Cc: ANERT Projects <projects@anert.in>, Jayakumar R <jayakumar@anert.in>

Sir ,

Kindly provide your Account name , bank name and bank account number , IFSC details for the reimbursement of the same

PM KUSUM team

On Tue, 6 Jun 2023 at 16:14, Suryam International Private Limited <tender.suryaminternational@gmail.com> wrote:

> Dear Sir,
>
> With reference to the subject cited above, we had participated in this tender and submitted an EMD amount of Rs. 5,00,000/- at the time of online tender submission. As we have been already awarded by department on dated 02.03.2033 and we had submitted a Performance Bank Guarantee also.
>
> **EMD Details:**

eProcurement Ref. Number	Bank / UTR NO.	ONLINE EMD Issue Date	ONLINE EMD AMOUNT
7841361429256	CPACHQPKD6	19.12.2022	500000

> So, we would request you to kindly refund the above Online EMD amount as soon as possible as we are facing some cash crunch issue, So the refund of the EMD will help us.

On Tue, Jun 6, 2023 at 4:12 PM Suryam International Private Limited <tender.suryaminternational@gmail.com> wrote:

> Dear Sir,
>
> With reference to the subject cited above, we had participated in this tender and submitted an EMD amount of Rs. 5,00,000/- at the time of online tender submission. As we have been already awarded by the department on dated 02.03.2033 and we had submitted Performance Bank Guarantee also.
>
> **EMD Details:**

eProcurement Ref. Number	Bank / UTR NO.	ONLINE EMD Issue Date	ONLINE EMD AMOUNT
7841361429256	CPACHQPKD6	19.12.2022	

So, we would request you to kindly refund the above Online EMD amount as soon as possible as we are facing some cash crunch issue, So the refund of the EMD will help us.

--
M/s Suryam International Private Limited
Address:2nd Lane, Gandhi Nagar, Berhampur, Odisha, India - 760001
Ph No:91 7440012168

LinkedIn Profile

--
M/s Suryam International Private Limited
Address:2nd Lane, Gandhi Nagar, Berhampur, Odisha, India - 760001
Ph No:91 7440012168

LinkedIn Profile

Suryam International Private Limited <tender.suryaminternational@gmail.com> 6 June 2023 at 18:50
To: anert <anert033@gmail.com>
Cc: ANERT Projects <projects@anert.in>, Jayakumar R <jayakumar@anert.in>

Dear Sir,

Kindly find the attached account details also

Account Name : SURYAM INTERNATIOANL PVT LTD

Bank Name: AXIS BANK LIMITED

Bank Account Number: 920030057733759

IFSC CODE: UTI80001164

[Quoted text hidden]

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axis bank current cheque.pdf
244K

Kerala Tenders

eTendering System Government of Kerala

Online Payment status Details

Print

Date : **23-Jun-2023 12:30 PM**

'

Payment Initiated Details

S.No	eProc Ref.No	Date of Initiation	Amount in ₹
1	7841361429256	16-Dec-2022 11:46 AM	5,15,000.00
2	7841361429256	17-Dec-2022 03:12 PM	5,15,000.00
3	7841361429256	17-Dec-2022 03:15 PM	5,15,000.00
4	7841361429256	17-Dec-2022 03:29 PM	5,15,000.00
5	7841361429256	19-Dec-2022 10:23 AM	5,15,000.00
6	7841361429256	19-Dec-2022 12:57 PM	5,15,000.00
7	7841361429256	19-Dec-2022 01:30 PM	5,15,000.00
8	7841361429256	19-Dec-2022 01:31 PM	5,15,000.00
9	7841361429256	19-Dec-2022 01:34 PM	5,15,000.00
10	7841361429256	19-Dec-2022 01:34 PM	5,15,000.00
11	7841361429256	19-Dec-2022 04:55 PM	5,15,000.00

Success Received from Bank details

eProc Ref.No	7841361429256
Bank Ref.No	CPACHQPKD6
Amount in Rs	5,15,000.00
Pay Mode	MOPS
Payment Received at Bank	20-Dec-2022 07:56 PM
Payment Received at eProcurement	19-Dec-2022 04:55 PM
Payment Status	Success

Payment related to which tender details

Tender ID	2022_ANERT_504042_2
Tender Status	Expired
Tender Stage	AOC
Bid ID	1429256
Bidder Name	Suryam Internatinal private Limited
Bid Frozen Date	20-Dec-2022 01:15 PM
Bid Status	Accepted-AOC

Refund/Settlement Details

S.No	Description	Tender Fee	EMD Fee	Processing Fee
1	Remit Ref.No	2198605	2414741	-
2	Refund/Settlement	Settlement	Settlement	-
3	Ref/Set Requested Date	29-Dec-2022	06-Jun-2023	-
4	Ref/Set Requested Amount in ₹	15000.00	500000.00	-
5	Ref/Set Response Received Date	30-Dec-2022	07-Jun-2023	-
6	Ref/Set Response Received Amount in â,¹	15000.00	500000.00	-
7	Ref/Set Response Bank Ref.No	CG0AFERKU7	CG0AQJXOX6	-
8	Ref/Set Response Status	SUCCESS	SUCCESS	-
9	Ref/Set Response Description	Completed Successfully	Completed Successfully	-
10	Treasury Settlement Date	-	-	-
11	Treasury Sequence Number	-	-	-

'

Kerala Tenders

eTendering System Government of Kerala

Online Payment status Details

Print

Date : **23-Jun-2023 12:32 PM**

'

Payment Initiated Details

S.No	eProc Ref.No	Date of Initiation	Amount in ₹
1	7841361427999	19-Dec-2022 10:40 AM	5,15,000.00
2	7841361427999	19-Dec-2022 10:44 AM	5,15,000.00
3	7841361427999	19-Dec-2022 10:44 AM	5,15,000.00
4	7841361427999	19-Dec-2022 10:50 AM	5,15,000.00
5	7841361427999	19-Dec-2022 10:57 AM	5,15,000.00
6	7841361427999	19-Dec-2022 10:58 AM	5,15,000.00
7	7841361427999	19-Dec-2022 11:06 AM	5,15,000.00
8	7841361427999	19-Dec-2022 11:08 AM	5,15,000.00
9	7841361427999	19-Dec-2022 06:27 PM	5,15,000.00

Success Received from Bank details

eProc Ref.No	7841361427999
Bank Ref.No	CPACHPYTF5
Amount in Rs	5,15,000.00
Pay Mode	MOPS
Payment Received at Bank	20-Dec-2022 07:56 PM
Payment Received at eProcurement	19-Dec-2022 06:27 PM
Payment Status	Success

Payment related to which tender details

Tender ID	2022_ANERT_504042_2
Tender Status	Expired
Tender Stage	AOC
Bid ID	1427999
Bidder Name	Tata Power Solar
Bid Frozen Date	20-Dec-2022 02:06 PM
Bid Status	Accepted-AOC

Refund/Settlement Details

S.No	Description	Tender Fee	EMD Fee	Processing Fee
1	Remit Ref.No	2198607	2414742	-
2	Refund/Settlement	Settlement	Settlement	-
3	Ref/Set Requested Date	29-Dec-2022	06-Jun-2023	-
4	Ref/Set Requested Amount in ₹	15000.00	500000.00	-
5	Ref/Set Response Received Date	30-Dec-2022	07-Jun-2023	-
6	Ref/Set Response Received Amount in â,¹	15000.00	500000.00	-
7	Ref/Set Response Bank Ref.No	CG0AFERKU8	CG0AQJXOX7	-
8	Ref/Set Response Status	SUCCESS	SUCCESS	-
9	Ref/Set Response Description	Completed Successfully	Completed Successfully	-
10	Treasury Settlement Date	-	-	-
11	Treasury Sequence Number	-	-	-

'

SBI

Account Name : CEO ANERT
Address ANERT LAW COLLEGE ROAD VIKAS BHAVAN P O
Thiruvananthapuram
THIRUVANANTHAPURAM
KERALA-695033
INDIA

Date : 24 Jun 2023
Account Number : 00000067250668543
Account Description : CURRENT A/C - COLLECTION A/C
Branch : PATTOM
Drawing Power : 0.00
Interest Rate(% p.a.) : 0.0
MOD Balance : 0.00
CIF No. : 78709363165
IFS Code : SBIN0070212
MICR Code : 695002926
Balance as on 7 Jun 2023 : 1,17,66,189.07

Account Statement from 7 Jun 2023 to 7 Jun 2023

Txn Date	Value Date	Description	Ref No./Cheque No.	Branch Code	Debit	Credit
7 Jun 2023	7 Jun 2023	BY TRANSFER-INB 7841361427999-EMD Settlement--	CPACHPYTF5-7841361427999-CG0AQJXOX7 TRANSFER FROM 67212718333 KERALA E TENDER-- SBT O /	99922		5,00,000.00
7 Jun 2023	7 Jun 2023	BY TRANSFER-INB 7841361429256-EMD Settlement--	CPACHQPKD6-7841361429256-CG0AQJXOX6 TRANSFER FROM 67212718333 KERALA E TENDER-- SBT O /	99922		5,00,000.00

Sr. No. 1493479

AXIS BANK LIMITED

AXIS BANK LIMITED
BBD BAGH, KOLKATA [WB]
BBD BAGH, KOLKATA [WB]
1:AXIS BANK LTD,BBD BAGH BRANCH
21,HEMANTA BASU SARANI,CENTRE POINT BUILDING
KOLKATA-700001

Ref. No :11380100000139
Date:17-03-2023

To,

CEO AGENCY FOR NEW AND RENEWABLE ENERGY RESEARCH AND TECHNOL
OGY (ANERT) THIRUVANANTHAPURAM, KERALA

-

Dear Sirs,

BG No.	: 11380100000139
Date of Issue	: 15-03-2023
Amount of BG	: Rs. 6,04,839.00 (RUPEES SIX LAKHS FOUR THOUSAND EIGHT HUNDRED THIRTY NINE ONLY)
Expiry Date	: 11-03-2024
Claim Expiry Date	: 11-03-2025
Name and Address of the Applicant	: MS. SURYAM INTERNATIONAL PRIVATE LIMITED : A/24 BDA HIG DUPLEX ANANT : VIHAR PHASE-2 POKHARIPUT

We forward herewith the above Inland Bank Guarantee in original issued by us in your favour.

1. The above Guarantee is issued subject to the condition that the Bank's liability is restricted to the amount mentioned above and in the said Guarantee. Our Guarantee shall remain in force till the expiry date. Unless a demand or claim under the guarantee is made on the Bank in writing and delivered to the bank on or before the Expiry date/Claim Expiry Date, the Bank shall be discharged from all liability under the said guarantee thereafter.

Please Note:

2. The beneficiary in their own interest should verify the genuineness of this guarantee from following office of the Bank in writing.

AXIS BANK LIMITED
BG Confirmation Desk,Transaction Banking Operations
5th floor, Gigaplex, Building No 1,Plot No I.T.5,
MIDC,Airoli Knowledge Park, Airoli,
Navi Mumbai 400708 (TelFax: 022-71315803)

3. BG confirmation can also be sought by sending email to ibg.confirmation@axisbank.com .

FOR AXIS BANK LIMITED

AUTHORISED SIGNATORY
NAME:
SS No.

Sarika Vinod
Asst. Vice President
Emp. Code : 13144
SS No. : 8101

FOR AXIS BANK LIMITED

AUTHORISED SIGNATORY
NAME:
SS No.

GEETHA G NATH
EMP No.14120, SS No 13372

Encl: Bank Guarantee Number 11380100000139

Utility Forms Pvt. Ltd. Ltd/Mumbai/CTS-2010 30 - 11 - 2022

भारतीय गैर न्यायिक

एक सौ रुपये Rs. 100

रु. 100 ONE HUNDRED RUPEES

सत्यमेव जयते

भारत INDIA

INDIA NON JUDICIAL

കേരളം केरल KERALA

EA 936116

BANK GUARANTEE NO: 11380100000139 DATED 15TH MARCH 2023
BID SECURITY BANK GUARANTEE

TO,
CEO
AGENCY FOR NEW & RENEWABLE ENERGY
RESEARCH AND TECHNOLOGY (ANERT)
THIRUVANANTHAPURAM, KERALA – 695 033

For AXIS BANK LIMITED
Authorised Signatory
Sarika Vinod
Asst. Vice President
Emp. Code : 13144
SS No. : 6161

AXIS BANK LTD. THIRUVANANTHAPURAM

For AXIS BANK LIMITED
Authorised Signatory
GEETHA G NATH
EMP No.14120, SS No 13372

no 9316
1.3.2023

Axis Bank Ltd.,

PATTOM VENDOR
ROSEMARY IRANIUS

PRINCIPAL SUB TREASURY
22 FEB 2023

കേരളം केरल KERALA

EA 936115

THIS IS AN INTEGRAL PART OF BANK GUARANTEE NO : 11380100000139 ISSUANCE DATED 15-Mar-2023 FOR Rs.6,04,839/- (Rupees Six Lakhs Four Thousand Eight Hundred and Thirty Nine Only)

For AXIS BANK LIMITED

Authorised Signatory

Sarika Vinod
Asst. Vice President
Emp. Code : 13144
SS No. : 6161

For AXIS BANK LIMITED

Authorised Signatory

GEETHA G NATH
EMP No.14120, SS No 13372

THIRUVANANTHAPURAM

No 9315
1.3.2023

Axis Bank Ltd.,

PATTOM VENDOR
ROSEMARY IRANIUS

PRINCIPAL SUB TREASURY
EAST FORT, THIRUVANANTHAPURAM
22 FEB 2023

BANK GUARANTEE NO: 11380100000139 DATED 15TH MARCH 2023

Bank Guarantee: 11380100000139
BG Amount: Rs.6,04,839/- (Rupees Six Lakhs Four Thousand Eight Hundred and Thirty Nine Only)
Expiry Date: 11-03-2024
Claim Expiry Date: 11-03-2025

This guarantee is made on this **15th day of March 2023** by **Axis Bank Limited**, A Company Incorporated Under The Companies Act, 1956 And Carrying On Banking Business Under The Banking Regulation Act, 1949 And Having Its Registered Office At 'Trishul', 3rd Floor, Opposite Samartheshwar Temple, Law Garden, Ellis Bridge, Ahmedabad 380006, Gujarat And Its Corporate Office At Bombay Dyeing Mills Compound, Pandurang Budhakar Marg, Worli, Mumbai- 400025 And One Of Its Branch Office At **Axis Bank Limited** 1:AXIS BANK LTD,BBD BAGH BRANCH 21,HEMANTA BASU SARANI,CENTRE POINT BUILDING OPP GREAT EASTERN HOTEL KOLKATA 700001 hereinafter called 'the Bank', which expression shall unless repugnant to the context or meaning thereof shall include its successors and assigns.

WHEREAS the ANERT, having its registered office at PMG-Law College Rd, Vikas Bhavan PO, Thiruvananthapuram, Kerala, PIN – 695 033, hereinafter called as ANERT, which expression shall unless repugnant to the context or meaning thereof shall include its successors and assigns in having agreed to exempt M/s Suryam International Private Limited, 2ND LINE GANDHI NAGAR, NEAR KALKI MANDIR ,BERHAMPUR, GANJAM, ODISHA-760001 (hereinafter called "contractor(s)" which expression unless repugnant to the context and meaning thereof shall include its successors and assigns) from depositing with ANERT, a sum of **Rs.6,04,839/- (Rupees Six Lakhs Four Thousand Eight Hundred and Thirty Nine Only)** towards Security Deposit in lieu of the said contractor(s) having agreed to furnish a bank guarantee for the said sum of **Rs.6,04,839/- (Rupees Six Lakhs Four Thousand Eight Hundred and Thirty Nine Only)** as required under the terms and conditions of Tender No. Ref. No. ANERT-TECH/144/2022-T4 dated 12.12.2022 (hereinafter referred as the 'bid') placed by the ANERT., on the said contractor(s) and on specific request on the part of the said Contractor(s), we the Bank hereby unconditionally and irrevocably affirm and undertake-

On production of the Bank Guarantee for **Rs.6,04,839/- (Rupees Six Lakhs Four Thousand Eight Hundred and Thirty Nine Only).** we, **Axis Bank Limited** at the request of M/s. M/s Suryam International Private Limited, 2ND LINE GANDHI NAGAR, NEAR KALKI MANDIR ,BERHAMPUR, GANJAM, ODISHA-760001 do hereby undertake to pay to the ANERT an amount not exceeding **Rs.6,04,839/- (Rupees Six Lakhs Four Thousand Eight Hundred and Thirty Nine Only)** , against any loss or damage caused to or suffered or would be caused to or suffered by the ANERT by reason of any breach by the said contractor of any of the terms and conditions contained in the said agreement.

We, **Axis Bank Limited**, do hereby undertake to pay the amount due and payable under this Guarantee without any demur, merely on a demand from the ANERT stating that the amount claimed is due by way of loss or damage caused to or would be caused to or suffered by the ANERT by reasons of breach by the said contractor of any of the terms or conditions contained in the said agreement. Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding **Rs.6,04,839/- (Rupees Six Lakhs Four Thousand Eight Hundred and Thirty Nine Only).**

This guarantee will not be discharged due to change in the constitution of the bank or the contractor/supplier.

Notwithstanding anything contained hereinbefore:

1) Our liability under this Bank Guarantee shall not exceed **Rs.6,04,839/- (Rupees Six Lakhs Four Thousand Eight Hundred and Thirty Nine Only).**
2) This Bank Guarantee shall be valid up to **11-03-2024.**
3) We are liable to pay the guaranteed amount or any part thereof under this Bank Guarantee amount only and only if you serve us a written claim or demand on or before **11-03-2025.**

DATE:15THMARCH2023
PLACE: KOLKATA

For AXIS BANK LIMITED
Authorised Signatory
Sarika Vinod
Asst. Vice President
Emp. Code : 13144
SS No. : 6161

For AXIS BANK LIMITED
Authorised Signatory
GEETHA G NATH
EMP No.14120, SS No 13372

TATA

ANERT
Section.....
CAO..... T4
GM.....
CEO.....

Ref: TPSSL/ANERT/ PUMP BG/22-23/449

Date: 15th March 2023

ANERT
29 MAR 2023
Date:.....

To
CEO, ANERT
(Agency for New and renewable Energy Research and Technology)
Law College Road PMG
Thiruvananthapuram,
Kerala,695033

Subject: Bank Guarantee with reference for Solar Pumps orders in KERALA Under PM KUSUM C (Under NADARAD RIDF) Scheme.

Dear Sir/Madam

Below Bank Guarantee with reference to LOA ---

LOI/LOA/WO REF	BG NUM	BG VALUE RS	BG EXPIRY DATE	BG CLAIM DATE
ANERT-TECH/65/2023-T4 Dated 02.03.2023	022BG07230730001 Dated 14.03.2023	87,34,194.00	14.03.2024	14.03.2025

Please acknowledge receipt BG value **87,34,194.00** /(Rs Eighty Seven Lakhs Thirty Four Thousand One Hundred Ninety Four Only) the same.

Attached

1. Agency for New and renewable Energy Research and Technology (ANERT) BG Original Dated 14.03.2023. (For Receiving and Acknowledgement).
2. Agency for New and renewable Energy Research and Technology (ANERT) LOA ANERT-TECH/65/2023-T4 Dt 02.03.2023 Copy. (For reference)

Thanks, and Regards

TATA POWER SOLAR SYSTEMS LTD. BENGALURU

Avinash Kumar Srivastava
Group Head- Commercial

TATA POWER SOLAR

Tata Power Solar Systems Limited
Communication address: 78 Electronics City Phase I Hosur Road Bengaluru 560100 India
Registered office: Tata Power Corporate Centre 34 Sant Tuka Ram Road Carnac Bunder Mumbai 400009
CIN U40106KA1989PLC034989 Tel : +91 80 6777 2200 Email : info.solar@tatapower.com Website : www.tatapowersolar.com

14-MAR-23

CEO, ANERT
LAW COLLEGE ROAD, PMG,
THIRUVANANTHAPURAM,
KERALA, 695033

Our reference	: 022BG07230730001
Issue date	: 14-MAR-23
Applicant	: TATA POWER SOLAR SYSTEMS LIMITED
Guarantee amt.	: INR8,734,194.00
Amt. in words	: INDIAN RUPEES EIGHT MILLION SEVEN HUNDRED THIRTY FOUR THOUSAND ONE HUNDRED NINETY FOUR ONLY
Stated Expiry date	: 14-MAR-24
Stated Claim Expiry date	: 14-MAR-25

Dear Sir/ Madam,

Please find enclosed the captioned guarantee duly issued by YES Bank ("the Bank").

The beneficiary of this guarantee is entitled to confirm the authenticity of this guarantee directly by contacting the issuing branch or any of below controlling office:

YES Bank Limited
Yes Bank House,
Off western express highway,
Santacruz east,
Mumbai ◆ 400055.

YES Bank Limited,
NOC Gurgaon ◆ BG desk,
DLF Cyber City, 3rd floor,
Building No. 8 A,
Gurgaon ◆ 122002.

YES Bank Limited
NOC Chennai ◆ BG desk,
One Indiabulls Park,
4th Floor, Tower B,
Plot No. 14, 3rd Main Road,
Ambattur Estate,
Chennai - 600 058.

This guarantee is to be returned immediately post its expiry. Please note that any communication/demand under this guarantee should be specifically made by the official who is authorised under the guarantee and should be made in writing to the issuing branch unless otherwise specified in the enclosed guarantee.

It is confirmed that

1) Mr. Aquil Ahmed

2) Ms. Rekha P

who have signed the above guarantee, are authorised to sign the same on behalf of the Bank.

For YES Bank Limited

(Authorised Signatories)

DATE : 14-MAR-23
PLACE : YES BANK LTD - BANGALORE BRANCH

YES BANK

CONFIRMATION LETTER ON GUARANTEE ISSUANCE

14-MAR-23

CEO, ANERT
LAW COLLEGE ROAD, PMG,
THIRUVANANTHAPURAM,
KERALA, 695033

Dear Sir/Madam,

We hereby confirm that we have issued the Bank Guarantee as per the following details:

Bank Guarantee No	:	022BG07230730001
Issue Date	:	14-MAR-23
Stated Expiry-Date	:	14-MAR-24
Stated Claim-Date	:	14-MAR-25
Applicant	:	TATA POWER SOLAR SYSTEMS LIMITED
Guarantee Amount	:	INR8,734,194.00
Amount in words	:	INDIAN RUPEES EIGHT MILLION SEVEN HUNDRED THIRTY FOUR THOUSAND ONE HUNDRED NINETY FOUR ONLY

It is confirmed that

1) Mr. Aquil Ahmed

2) Ms. Rekha P

who have signed the above guarantee/extension, are authorised to sign the same on behalf of the Bank.

For YES Bank Limited

(Authorised Signatories)

Date : 14-MAR-23
Place : YES BANK LTD - BANGALORE BRANCH

सत्यमेव जयते

INDIA NON JUDICIAL

Government of Karnataka

Rs. 300

e-Stamp

Certificate No.	:	**IN-KA98924469810690V**
Certificate Issued Date	:	01-Mar-2023 08:04 PM
Account Reference	:	NONACC (FI)/ kaksfcl08/ HALASURU/ KA-SV
Unique Doc. Reference	:	SUBIN-KAKAKSFCL0886190670083324V
Purchased by	:	YES BANK LTD
Description of Document	:	Article 12 Bond
Description	:	BANK GUARANTEE
Consideration Price (Rs.)	:	0 (Zero)
First Party	:	YES BANK LTD
Second Party	:	YES BANK LTD BANGALORE
Stamp Duty Paid By	:	YES BANK LTD
Stamp Duty Amount(Rs.)	:	300 (Three Hundred only)

Please write or type below this line

THIS NON-JUDICIAL STAMP PAPER FORMS PART AND PARCEL OF BANK GUARANTEE / BANK GUARANTEE AMENDMENT DATED 14/03/2023 ISSUED UNDER REF NO: 022BG072307300001 IN FAVOUR OF CEO, ANERT BY YES BANK LTD, BANGALORE ON BEHALF OF TATA POWER SOLAR SYSTEMS LIMITED (APPLICANT).

For YES BANK LTD.

Authorised Signatory
AQUIL AHMED
Emp. No.: AAE4666039
CUST ID: 2895458

For YES BANK LTD.

Authorised Signatory
Rekha P
Cust ID: 10044054
Emp. Code: RPE6099003

Statutory Alert:

1. The authenticity of this Stamp certificate should be verified at 'www.shcilestamp.com' or using e-Stamp Mobile App of Stock Holding. Any discrepancy in the details on this Certificate and as available on the website / Mobile App renders it invalid.
2. The onus of checking the legitimacy is on the users of the certificate.
3. In case of any discrepancy please inform the Competent Authority.

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SECURITY DEPOSIT BANK GUARANTEE

BG NO. : 022BG07230730001
AMOUNT :RS. 87,34,194
DATE : 14.03.2023
VALID UP TO : 14.03.2024

TO,
CEO,ANERT
LAW COLLEGE ROAD,PMG,
THIRUVANANTHAPURAM,
KERALA,695033

This guarantee is made on this 14th day of March2023 by **We Yes Bank Limited**, a company incorporated and registered under Companies Act 1956 and a banking company within the meaning of section 5 (c) of the Banking Regulation Act 1949 and having its registered office at YES Bank House,Off Western Express Highway,Santacruz East, Mumbai – 400055, India & a branch office inter alia at **Ground Floor,Prestige Obelisk,Municipal No.3,Kasturba Road,Bangalore560001** hereinafter called 'the **Bank**', which expression shall unless repugnant to the context or meaning thereof shall include its successors and assigns.

WHEREAS the **ANERT(AGENCY FOR NEW AND RENEWABLE RESEARCH AND TECHNOLOGY),** having its registered office at ANERT Head Quarters PMG-Law College Rd, Vikas Bhavan PO, Thiruvananthapuram, Kerala, PIN – 695 033, hereinafter called as **ANERT,** which expression shall unless repugnant to the context or meaning thereof shall include its successors and assigns in having agreed to exempt **M/s Tata Power Solar Systems Limited** with its registered office/ head office at Tata Power Corporate Centre, 34 Sant Tukaram Road, Carnac Bunder, Mumbai – 400009(hereinafter called "**contractor(s)**" which expression unless repugnant to the context and meaning thereof shall include its successors and assigns) from depositing with **ANERT,** a sum of towards Security Deposit in lieu of the said **contractor(s)** having agreed to furnish a bank guarantee for the said sum of **Rs. 87,34,194/- (Rupees Eighty Seven Lakhs Thirty Four Thousand One Hundred Ninety Four Only)** as required under the terms and conditions of LOA No **ANERT**-TECH/65/2023-T4 dated 02.03.2023 (hereinafter referred as the 'Bid') placed by the **ANERT.**, on the said **contractor(s)** and on specific request on the part of the said **Contractor**(s), we the **Bank** hereby unconditionally and irrevocably affirm and undertake On production of the Bank Guarantee **Rs. 87,34,194/- (Rupees Eighty Seven Lakhs Thirty Four Thousand One Hundred Ninety Four Only) Yes Bank Limited** (herein after referred to as "the Bank") at the request of M/s Tata Power Solar Systems Limited(name of contractor) do hereby undertake to pay to the ANERT an amount not exceeding **Rs. 87,34,194/- (Rupees Eighty Seven Lakhs Thirty Four Thousand One Hundred Ninety Four Only)**, against any loss or damage caused to or suffered or would be caused to or suffered by the ANERT by reason of any breach by the said contractor of any of the terms and conditions contained in the said agreement.

For YES BANK LTD.

Authorised Signatory

AQUIL AHMED
Emp. No.: AAE4666039
CUST ID: 2895458

For YES BANK LTD.

Authorised Signatory

Rekha P
Cust ID: 10044054
Emp. Code: RPE6099003

We Yes Bank Limited, do hereby undertake to pay the amount due and payable under this Guarantee without any demur, merely on a demand from the ANERT stating that the amount claimed is due by way of loss or damage caused to or would be caused to or suffered by the ANERT by reasons of breach by the said contractor of any of the terms or conditions contained in the said agreement. Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding **Rs. 87,34,194/- (Rupees Eighty Seven Lakhs Thirty Four Thousand One Hundred Ninety Four Only)**.

This guarantee will not be discharged due to change in the constitution of the bank or the contractor/supplier.

Notwithstanding anything contained hereinbefore:

1) Our liability under this Bank Guarantee shall not exceed **Rs. 87,34,194/- (Rupees Eighty Seven Lakhs Thirty Four Thousand One Hundred Ninety Four Only).**

2) This Bank Guarantee shall be valid upto **14.03.2024.**

3) We are liable to pay the guaranteed amount or any part thereof under this bank guarantee only and only if a written claim or demand, served by you in accordance with the terms of this bank guarantee, is received by us on or before 5 P.M on or before **14.03.2025** at **Yes Bank Limited Ground Floor ,Prestige Obelisk, Municipal No.3,Kasturba Road,Bangalore560001**. Thereafter, all your rights under this bank guarantee shall be forfeited and we shall be relieved from all our liabilities hereunder irrespective of whether the original bank guarantee has been returned to us or not.

For Yes Bank Limited

Authorized Signatory
Place:
Date:
Name:
Designation:

AQUIL AHMED
Emp. No.: AAE4666039
CUST ID: 2895458

For Yes Bank Limited

Authorized Signatory
Place:
Date:
Name:
Designation:

Rekha P
Cust ID: 10044054
Emp. Code: RPE6099003

YES BANK LTD. 22, KASTURBA, BANGALORE

LOA copy for Reference

I/7264/2023

അനെർട്ട്
ANERT
Agency for New and renewable Energy Research and Technology
നവീനവും പുനരുപയോഗയോഗ്യവുമായ ഊർജ്ജ ഗവേഷണങ്ങൾക്കും സാങ്കേതിക വിദ്യകൾക്കുമുള്ള ഏജൻസി
DEPARTMENT OF POWER, GOVERNMENT OF KERALA
Law College Road, PMG, Thiruvananthapuram 695033 • director@anert.in • www.anert.gov.in
Tel: (+91-471) 2338077, 2334122, 2333124, 2331803 • Fax: (+91-471) 2329853

No. ANERT-TECH/65/2023-T4 02-03-2023

Letter of Award (LoA)

Name of Implementing Agency	Agency for New and Renewable Energy Research and Technology
Complete Postal Address	ANERT Head Quarters Vikas Bhavan P. O, Law College Rd PMG, Thiruvananthapuram, Kerala PIN:695033
Contact Details	**Phone:** 0471 - 2338077, 2334122, 2333124, 2331803 **Fax:** 0471-2329853 **email** : anert033@gmail.com/ info@anert.in

To

M/s. TATA POWER SOLAR SYSTEMS LIMITED

Plot No.78, Electronic City, Phase-1, Hosur Road,

Bangalore, Karnataka — 560100

Sir,

Lr. No. **ANERT-TECH/65/2023-T4 -1 Dated : -03-2023**

Sub: - Solarisation of 9348 nos. of grid connected agricultural pumps under component C (Under NABARD RIDF Scheme) -issuing Letter of Award (LoA) - reg.

Ref:
1.Ministry of New and Renewable Energy (MNRE), Government of India Office Memorandum No. 32/54/2018-SPV Division Dated 18.05.2022

2.Tender No.ANERT-TECH/144/2022-T4 dated12.12.2022

3. your bid no 1427999 dtd 20/12/2022.

4. Office mail dated: 07-01-2022.

5. Your e-mail dated: 10-01-2023.

6. A.O. No. 46/2023/ANERT

This is to notify you that you have been empanelled by Agency for New and Renewable Energy Research and Technology (ANERT), Govt. of Kerala vide ref (3) cited for the implementation of solarisation of grid connected agricultural pumps under component-C of PM-KUSUM scheme. ANERT has been designated as the State Implementing Agency for the component-C and sanction has been accorded for solarisation of 9348 nos. of grid connected agricultural pumps to the State in reference 1st cited.

Under the sanction in reference 1st cited as per the prevailing demand among the farmers, it has been programmed to take up the following category/capacity of grid connected agricultural pumps in the State towards below mentioned solar systems.

The rates approved by ANERT for the following category / capacity of the grid connected agricultural pumps for which you have been empanelled are hereby accepted by us.

17264/2023

The rates approved are inclusive of GST and also enclosed the Scope of Design, Manufacture, Supply, Transport, Installation, Testing and Commissioning of solarisation of grid connected agricultural pumps under component-C of PM-KUSUM scheme with Remote Monitoring Facility with 7 years insurance and 7 years warranty as per tender.

The contract /order value is inclusive of GST as applicable which is furnished as below.

Capacity of power plant	Ground Mounted (Inclusive of GST in Rs)
Cost for the SIC of 2 kW SPV power plant	2,48,190
Cost for the SIC of 3 kW SPV power plant	2,98,195
Cost for the SIC of 5 kW SPV power plant	4,61,894
Cost for the SIC of 7 kW SPV power plant	5,93,004
Cost for the SIC of 10 kW SPV power plant	7,68,873
Cost per kW for the SIC of SPV power plants in the range of 30 kW - 99 kW	71,694/kW
Cost per kW for the SIC of SPV power plants in the range of 100 kW - 150 kW	72,832/kW

Capacity of power plant	Rooftop (Inclusive of GST in Rs)
Cost for the SIC of 2 kW SPV power plant	2,29,982
Cost for the SIC of 3 kW SPV power plant	2,79,413
Cost for the SIC of 5 kW SPV power plant	4,31,930
Cost for the SIC of 7 kW SPV power plant	5,47,137
Cost for the SIC of 10 kW SPV power plant	7,13,457
Cost per kW for the SIC of SPV power plants in the range of 30 kW - 99 kW	71,343/kW
Cost per kW for the SIC of SPV power plants in the range of 100 kW - 150 kW	70,266/kW

As per the ICRA certificate provided the credit rating is 1B. The maximum capacity as per ICRA rating in a single lot is 3500kW. Present allotment is 3158kW. The next allotment will be given after the completion of the present one.

Individual farmers				
Capacity (kW)	Nos	Total Capacity (kW)	Individual System Price (Ground Mounted)	Total System Price
2	337	674	₹ 248,190.00	₹ 83,640,030.00
3	169	505.5	₹ 298,195.00	₹ 50,245,857.50
5	101	505.5	₹ 461,894.00	₹ 46,697,483.40
7	34	235.9	₹ 593,004.00	₹ 19,984,234.80
10	34	337	₹ 768,873.00	₹ 25,911,020.10
	674	**2257.9**		₹ 226,478,625.80
Wet lands- Pada sekharam				
75	8	600	₹ 5,377,050.00	₹ 43,016,400.00
90	2	180	₹ 6,452,460.00	₹ 12,904,920.00
120	1	120	₹ 8,739,840.00	₹ 8,739,840.00
	11	**900**		₹ 64,661,160.00

I/7264/2023

	Total	3157.9		₹ 291,139,785.80
	3% Amt			₹ 8,734,193.57

You are hereby requested to furnish a minimum Security Deposit (SD) for an amount of **Rs.87,34,194/-** (Rupees Eighty seven lakhs thirty four thousand and one hundred ninety four only) ~~(equivalent to 3 % of the order value (inclusive of GST) of 674 nos. individual pump with 2258kWp capacity and 11 locations of higher capacity pumps (900kWp))~~ allotted for this slot). However, if 3% of the total order value is more than the value of above mentioned amount upon the list of consent of beneficiaries in your favor, you shall submit another SD equivalent to differential value of order before issuance of Work Order / NTP. This amount shall be released upon the complete successful installation of the project.

Actions to be taken by EPC after receiving LoA

1. Submit the signed copy of LoA and agreement along with Security deposit in favour of CEO, ANERT.
2. Conduct site feasibility study at all sites given along with LoA and submit reports to ANERT fortnightly
3. Collect consent letter from beneficiary and submit to ANERT

   Annexure I- Details of beneficiaries under Krishibhavan ADAT, Thrissur district

   Annexure II –List of Padashekhara samithi

   Annexure III-Format of Consent letter

   Annexure IV-Format of agreement

You are requested to execute the contract agreement with CEO-ANERT within 15 days of issue of this Letter of Award.

On signing of contract agreement, you are requested to contact the Head Office, ANERT, Thiruvananthapuram for implementation of the scheme as per the terms and conditions specified in the contract.

This Letter of Award (LoA) is valid until March 31st 2023.

Yours faithfully,

NARENDRA NATH VELURI I F S
CHIEF EXECUTIVE OFFICER

Encl:

Annexure I- Details of beneficiaries under Krishibhavan ADAT, Thrissur district

Annexure II –List of Padashekhara samithi

Annexure III-Format of Consent letter

Annexure IV-Format of agreement

A.F. No. 1143/2023/ANERT

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ANERT
Agency for New and renewable Energy Research and Technology
നവീനവും പുനരുപയോഗയോഗ്യവുമായ ഊർജ്ജ ഗവേഷണങ്ങൾക്കും സാങ്കേതിക വിദഗ്ധർക്കുള്ള ഏജൻസി
DEPARTMENT OF POWER, GOVERNMENT OF KERALA
Law College Road, PMG, Thiruvananthapuram 695033 • director@anert.in • www.anert.gov.in
Tel.: (+91-471) 2338077, 2334122, 2333124, 2331803 • Fax: (+91-471) 2329853

PROCEEDINGS OF THE CHIEF EXECUTIVE OFFICER

(Present: NARENDRA NATH VELURI I F S)

Abstract

ANERT - Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos ranging from 2kW-150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala - Refund of Earnest Money Deposit – M/s Suryam International Private Limited and TATA Power Solar - orders issued

File no.: ANERT-TECH/144/2022-T4

A.F. No. 1143/2023/ANERT **30-06-2023**

Read: 1. Purchase Order No. ANERT-TECH/144/2022-T4,Dated: 12.12.2022

2. EMD fund transfer details by Agencies

ORDER

As per ref cited 1st, ANERT issued E tender document for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos ranging from 2kW-150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala. Based on the E Tender document, The Suryam International Private Limited and TATA Power solar have furnished an amount of Rs.5,00,000/- & Rs.5,00,000/- as EMD vide Bank Transfer to ANERT account No. 67250668543 on 07.06.2023. Now the agency has requested to release EMD.

In the circumstances stated above, sanction is hereby accorded for the release of an amount of **Rs.10,00,000/- (Rupees Ten Lakh only)** towards the refund of Earnest Money Deposit for the aforementioned work to their bank account given below. The expenditure shall be debited from Account No.67250668543.

Account Summary			Amount (in INR)
Account Name	:	SURYAM INTERNATIOANL PVT LTD	**Rs.5,00,000/-**
Bank name	:	AXIS BANK LIMITED	
Branch	:	Kolkata Corporate Banking Branch	
Account No.	:	920030057733759	
IFSC	:	UTIB0001164	
Account Name	:	TATA POWER SOLAR SYSTEMS LTD	**Rs.5,00,000/-**
Bank name	:	State Bank of India	
Branch	:	Bangalore	
Account No.	:	10503342950	

A.F. No. 1143/2023/ANERT

IFSC	: SBIN0009077	

NARENDRA NATH VELURI I F S
CHIEF EXECUTIVE OFFICER

Copy To:
1. SURYAM INTERNATIOANL PVT LTD
2. TATA POWER SOLAR SYSTEMS LTD
3. Finance Manager / Cashier
4. Office Copy

Minutes of the PM KUSUM Scheme meeting held on 5th August 2023 (11am) at the ANERT conference hall:

Attendees:

- Shri Narendranath Veluri IFS - CEO
- Shri Aneesh S Prasad – CTM
- Shri Jayakumar – JCTM
- Shri Priyesh KV - DPE(online)
- Shri Manu M Venu - DPE(online)
- Shri Dilshad - DPE(online)
- Shri Vishnu Jayan - DPE(online)
- Shri Vijeesh Kumar - DPE(online)
- Smt Manju S – DPE
- Mr Kiran Krishnan G – PE
- Mr Abhijith KK – PE

Representatives of:

- ✓ Moopens Energy India Pvt Ltd
- ✓ Inkel Ltd
- ✓ Tata Power Solar
- ✓ Kondaas Automation Private Limited
- ✓ Suntastic Engineering Pvt Ltd
- ✓ Suryam International Private Limited
- ✓ KC Koppar Energy Solutions Pvt Ltd
- ✓ HKRP innovations (online)

The CEO of ANERT commenced the meeting, discussing the implementation status of the PM KUSUM project in Kerala. So far, only 131 installations have been completed since the project started in March, and at this pace, 9348 pumps will take more than 15 years. The companies presented their one-year action plans based on available resources, and the CEO emphasised strict monitoring of their performance accordingly.

During the meeting, various issues were raised and addressed:

1. Suntastic Engineering Pvt Ltd mentioned the non-reflection of registration fees payment in the Ourma portal of KSEBL and the prerequisite of ELCB at sites, which is causing delays in commissioning. The matter is being pursued with the KSEBL IT team for resolution.
2. KC Koppar highlighted that false news about the credibility of the PM KUSUM projects led to customers withdrawing from the project after confirming work orders. The CEO instructed the EKM DE to shift the LoA issuance to other sites with more favourable conditions, and to conduct seminars and meetings with agriculture officers, KSEB personnel, and farmers to build credibility and avoid rejections.
3. Palakkad DE was asked about the status of new LoA issued to the companies, and the CEO directed them to hold seminars or meetings with stakeholders to maximize program coverage and explore areas for virtual net metering.
4. Suntastic Engineering raised concerns about extensive data collection for the MNRE portal and some missing mandatory data. The CEO requested HKRP to streamline the process and reduce data requirements to make it more user-friendly.
5. There were concerns about the availability of indigenous inverters for the project. The CEO assured that steps have been taken with MNRE to use only indigenously manufactured inverters.
6. Suntastic Engineering inquired about the pending 30% payment for executed sites. The CEO assured that connectivity issues would be addressed, and bills would be processed accordingly.
7. To expedite and ensure the smooth implementation of the project, the CEO emphasised the inclusion of other eligible companies adhering to the existing rate contract, aiming to increase participation in the project.
8. Companies were urged to follow the monthly action plan and submit their financial requirements accordingly for timely disbursement of funds in the first week of each month.
9. Non-compliance with the action plan could result in strict actions, including cancellation of LoAs and reallocation to other companies.
10. An agreement clause will be executed with farmers, stipulating their responsibility for the power plant during the loan repayment period, restricting their rights during that time.

The meeting concluded at 12.15pm

A.O. No. 39/2023/ANERT

അനെർട്ട്
ANERT
Agency for New and renewable Energy Research and Technology
നവീനവും പുനരുപയോഗയോഗ്യവുമായ ഊർജ്ജ ഗവേഷണങ്ങൾക്കും സാങ്കേതിക വിദ്യകൾക്കുമുള്ള ഏജൻസി
DEPARTMENT OF POWER, GOVERNMENT OF KERALA
Law College Road, PMG, Thiruvananthapuram 695033 • director@anert.in • www.anert.gov.in
Tel.: (+91-471) 2338077, 2334122, 2333124, 2331803 • Fax: (+91-471) 2329853

PROCEEDINGS OF THE CHIEF EXECUTIVE OFFICER

(Present: NARENDRA NATH VELURI I F S)

Abstract

ANERT - Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 no's ranging from 2kW-150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala (NABARD-RIDF-Scheme) - orders issued

File no.: ANERT-TECH/144/2022-T4

A.O. No. 39/2023/ANERT 23-02-2023

Read:
1. Tender ID : - 2022_ANERT_504042_2 Published in Kerala Tender portal
2. Tender reference No:- ANERT- TECH/144/2022-T4
3. Price bid opened on 21/12/2022
4. Email offer to match L1 cost dtd 11/01/2023

ORDER

ANERT had invited Rate Contract for the solarization of grid-connected agricultural pumps with a cumulative capacity of 9,348 no. ranging from 2kW to 150kW under the PM-KUSUM scheme (Component-C) in the state of Kerala through the Kerala tenders portal, as reference cited 1st and there were 8 bidders who participated in the tender. During the evaluation, seven companies were qualified. M/s. Mechatronik Technologies Pvt. Ltd. was disqualified as they failed to produce requirements as per the tender(ICRA Analytics ratings). The price bid was opened on 21/12/2022 and the bidders that quoted within the range of (L1 + 25% of L1) were provided with opportunity to match the rate and they have matched the L1 rates. The list of qualified bidders, with their respective solar grading issued by M/s ICRA Analytics listed in Table 1 and the allotment of works will be based on this grading.

Table 1

Sl No	Company Name	ICRA rating
1	M/s. Tata Power Solar Systems LIMITED	1B
2	M/s.Moopens Energy Solutions Pvt Ltd	1B
3	M/s. INKEL Limited	1C
4	M/s. Kondaas Automation Private Limited	2B
5	M/s. Suryam International Private Ltd	2B
6	M/s Suntastic Engineering Pvt.Limited	2C
7	M/s. KC KOPAR ENERGY SOLUTIONS Private Limited	2C

The L1 rates obtained per kW for various capacity ranges of the rooftop system and ground-mounted system, as per the terms and conditions of the tender, are as follows:

Table 2

Rate for lower capacity power plants		
	Ground Mounted (Inclusive of GST in Rs)	Rooftop (Inclusive of GST in Rs)
Cost for the *SIC of 2 kW SPV power plant	2,48,190	2,29,982
Cost for the SIC of 3 kW SPV power plant	2,98,195	2,79,413
Cost for the SIC of 5 kW SPV power plant	4,61,894	4,31,930
Cost for the SIC of 7 kW SPV power plant	5,93,004	5,47,137
Cost for the SIC of 10 kW SPV power plant	7,68,873	7,13,457
Per kW Rate for higher capacity power plants		
Cost per kW for the SIC of SPV power plants in the range of 30 kW - 99 kW	71,694	71,343
Cost per kW for the SIC of SPV power plants in the range of 100 kW - 150 kW	72,832	70,266

**SIC-Supply Installation and Commissioning*

The above rates are inclusive of delivery of materials, the cost of materials and labor for the civil works, all the necessary approvals from the Electrical utility/Electrical Inspectorate, feasibility study, mounting of standard module structures, PV module installation, inverter installation, DC cabling (max 25 m), AC cabling (max 15m) and interconnections, installation of lightning arresters, Remote Monitoring System and earthing system as per standards, net metering, arranging all the necessary inspections from KSEBL/Electrical Inspectorate/ANERT district office as part of pre-commissioning, commissioning of the power plant, 7 year warranty, fee for approval from KSEBL including application and registration fees, fee for approval from the Electrical inspectorate if any, net meter, remote monitoring facility, Insurance, GST and all other expenses deemed necessary for the proper implementation of the condition and specification as per the tender cited under reference on a flat RCC roof or slanting roof or ground mounted which have accessibility.

1. ACCEPTANCE, AGREEMENT AND PERFORMANCE SECURITY

a. An LoA will be issued to companies on the basis of this order. Upon acceptance of LoA the agencies are to enter into an agreement with ANERT along with performance security.

b. Work order or NTP will be issued for feasible sites

c.Allotments will be done as and when the allotted quantity is diminished(completed and commissioned).

2. SCHEDULE OF SUPPLY

a. The items should be delivered and installed for which work orders given as specified by ANERT,

under prior intimation and supervision of ANERT for the solarisation of the existing Agricultural Pumps all over Kerala.

b. The Supply, Installation and Commissioning of each of the work allotted shall be completed within **2 months of the date of supply order.** This is the time period for handing over the system to ANERT and no time extension in this regard without valid reasons will be entertained.

c. The capacity of pumps to be solarised and the maximum allowed SPV capacity of power plant is as given below.

Table no 3

Pump Capacity	Capacity of PV Plant
below 2 hp	2kW
2-3 hp	3 kW
>3-5hp	5kW
>5-7hp	7kW
>7-10hp	10kW
20 hp	30 kW
30 hp	50 kW
50 hp	75 kW
100 hp	150 kW

d. Supply of the main components such as SPV module, PCU and charge controller should be from the approved component list published by MNRE and ANERT websites or as per tender conditions.

e. Penalty for delay in supply and installation will be imposed at 0.5 % per week up to a maximum 10 %. In case of delay in supply and installation, CEO, ANERT may cancel the contract and take recourse to other action as deemed appropriate.

3. PAYMENT

a. No advance payment will be given. Payments will be processed on monthly basis for all the invoices received at corresponding District Office on or before 22nd of every month.

b. The terms of payment shall be:

ii. 50% of the contract value shall be released upon the delivery of the major components at all the sites mentioned in the work order to be issued.

iii. 30% of the contract value shall be released on completion of installation on submitting documents such as completion reports to ANERT

iv. 20% of the contract value will be released as and when the funds for the project is received from MNRE for the particular installation.The Performance Bank Guarantee (PBG) will be 3% of the final project cost and the PBG shall be submitted on or before the final releasing of the payment.

The validity of PBG shall be rolled over every year for first seven years or till the warranty period of the last installation is completed. The rolling over or release of this PBG shall be based on the clearance of pending penalties/fines imposed by ANERT.

c. Income tax, contribution to workers' welfare fund which will be applicable to installations which involve civil construction work and other statutory deductions shall be made from the payment as per prevailing norms.

4. WARRANTY

a. 7years' warranty should be provided by the supplier for the system as per the special conditions of the contract.
b. PV modules used in solar power plants/ systems must be warranted for their output peak watt capacity, which should not be less than 90 % at the end of 10 years and 80% at the end of 25 years.
c. The Warranty Card of the total system issued by the agency and the warranty issued by OEMs for PV modules & solar inverter must be handed over to the beneficiary along with a copy to ANERT district office. The warranty card issued by the vendor should include all the details of the system supplied including serial Nos

5. OPERATION MANUAL

- An Operation, Instruction and Maintenance Manual, in English and Malayalam should be provided with the system

6. SERVICE AND MAINTENANCE

a. Empaneled agency should have at least one service centre at each district where their system is installed. Also, there should be an additional service centre for each 500 installations per district.
b. The faulty system or components should be replaced/ repaired within 7 days of fault reporting .
c. Delay in servicing beyond 7 days of fault reporting would attract penalty at the rates decided by CEO, ANERT and further actions will be initiated against the agency.
d. The service personnel should visit the installations at least once in 3 months for preventive maintenance even if no faults are reported. **Reports of these preventive maintenance visits and generation data should be submitted to the concerned ANERT District Offices on a quarterly basis**. The delay beyond a period of 15 days may lead to penalty as decided by CEO ANERT.
e. A designated Helpline (in Malayalam language) address should be indicated on the inverter/controller at suitable location easily visible to the user for reporting faults during the warranty period.

7. INSURANCE

a. The power plant must be insured at every stage of operation – from Material dispatch, storage, completion of installation and till 7 years after commissioning.
b. The insurance coverage on handing over of the system must include all conditions of **Standard Fire and Special Perils as well as burglary and house break Policy (Material Damage as well as theft)**. The insurance premium for the 7years of warranty is to be paid by the bidder. On handing over of the system, the original insurance policy is to be handed over to the authorised person at the site of installation and a copy to ANERT District Office. The annual premium payment receipt must be handed to the authorised person at the site of installation.

8. RATES FOR SITE SPECIFIC COMPONENT

a. For the installations in Group 2 (higher capacity pumps) - in case of installation of additional/new transformer is required, the bidder shall install through KSEBL at their expenses. The amount shall be recouped by ANERT afterwards upon submission of the proper documents.
b. In case of installations under Group No.2 as per tender document, additional site- specific costs if any required for structure works, pathway, ladder for accessing PV modules etc. will be considered separately.
c. The rates accepted vide table No 2 is for the standard installation and for a maximum of 25 m cabling at DC side and 15 m cabling at AC side.
d. Additional cost required for cabling and structural work

Additional cost required for cabling, structural works etc for any excess quantity other than the standard installation mentioned in the tender document, is as given below :-

Additional Cost for cabling

Sl No	Description	Rate/meter (inRs)
1	Cost for DC cable for installation under Group 1 category	200/-
2	Cost for DC cable for installation under Group 2 category	250/-
3	Cost for AC cable for installation under Group 1 category	350/-
4	Cost for AC cable for installation under Group 2 category (30kW -99kW)	960/-
5	Cost for AC cable for installation under Group 2 category(100kW-150kW)	1420/-

Cost for additional structure

Sl No	Description	Rate/meter
1	Cost for additional structure for increase in height of above 1M from the standard height/kW	2000/-
2	Cost for additional structure for increase in height of above 2M from the standard height/kW	3400/-
3	Cost for additional structure for rooftop installation in slanting GI or Aluminium sheet roof /kW	5500/-

A.O. No. 39/2023/ANERT

9. TERMS AND CONDITIONS FOR THE RATE CONTRACT

The rate contract shall be governed by the terms and conditions of the tender vide Tender ID 2022_ANERT_504042_2 dtd12/12/2022 and all corrigendum issued thereof. All the terms and conditions as per the bid document is part of this rate contract. The CEO, ANERT solely reserves the right to cancel/modify/extend this rate contract without assigning any reason

NARENDRA NATH VELURI I F S
CHIEF EXECUTIVE OFFICER

1. All District Offices
2. All selected vendors (as above) through e mail
3. ANERT website

I/18293/2023

അനെർട്ട്
ANERT
Agency for New and renewable Energy Research and Technology
നവീനവും പുനരുപയോഗയോഗ്യവുമായ ഊർജ്ജ ഗവേഷണങ്ങൾക്കും സാങ്കേതിക വിദ്യകൾക്കുമുള്ള ഏജൻസി
DEPARTMENT OF POWER, GOVERNMENT OF KERALA
Law College Road, PMG, Thiruvananthapuram 695033 • director@anert.in • www.anert.gov.in
Tel.: (+91-471) 2338077, 2334122, 2333124, 2331803 • Fax: (+91-471) 2329853

No. ANERT-TECH/144/2022-T4 14-09-2023

To
All Empanelled Vendors under PM KUSUM (Component C)

Dear Sir,

Sub.: ANERT – Additional Empanelment of vendors under the PM KUSUM scheme – reg

Ref.: 1. ANERT AO No. 46/2023/ANERT dtd 28/02/2023
2. Minutes of Meeting held on 05/08/2023 at ANERT HQ

Kind attention is invited to the reference cited above. As per reference cited 1 st, the Empanelment process for the component C under PM KUSUM scheme was finalised for the Solarisation of 9,348 Pumps with 7 vendors. Till date, we are able to complete only 213 Pumps, which is merely 2% of the target capacity and at this rate, the project will take ages to complete. In this context, a meeting with all vendors were held at ANERT HQ on 05/08/2023 and it was decided to move ahead with an additional empanelment process to include vendors complying all the Terms and Conditions and Technical Specifications as per the finalised tender (ANERT-TECH/144/2022-T4 dated12/12/2022). The tender for the additional empanelment process will be floated adhering to rates in the present Rate Contract.

Yours faithfully

for CEO ANERT

Tender Evaluation Sheet - FINAL

Tender ID:ANERT-TECH/144/2022-T4

Tender name: -EoI for additional Empanelment of vendors under the Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW 150 kW under the PM KUSUM scheme (Component C) in the State of Kerala

Sl No	Criteria/Bidder	Wattsun Energy India Pvt ltd	Usha Electronics Systems	Soft rays Power solutions	K CP Solar Industry	Inforce Engneering solutions	Coopa Energy	BSS Community Industries	B S Energy Industries	A J Infra solutions	Adithya Innovations
	Partner Manufacturer	**Pahal Solar**	**Pahal Solar**	**Pahal solar**	**Blue Bird Solar pvt ltd**	**Navitas Green Solutions pvt ltd**	**NO**	**Pahal Solar**	**Espen and Blue bird solar pvt ltd**	**BNK Energy Pvt ltd + Blue bird solar pvt**	**NO**
1	Copy of Registration/Incorporation Certificate/ copy of Deed of partnership	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
2	Copy of GST Registration certificate	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
3	Copy of Pan Card	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
4	Undertaking for Non-Black Listing in Rs.200/- stamp Paper Format-A	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
5	JV with manufacturer of solar PV modules/ Solar Pumps	Dealership contract in white paper	yes	yes	yes	yes	no	yes	yes	yes	no

6	The bidder must have completed solar installations of at least 3 MW in India to be eligible for projects above 10 KW. In case of JV, all the members jointly may fulfil this requirement and submit the documents as per the Tender document. The bidder must have completed solar installations of at least 1 MW in India to be eligible for projects up to 10 KW In case of JV, all the members jointly must fulfil this requirement	382kw GOV work order+ commissioning	895kW Governemnt Work order +593kW completion certificate	140kW Government Work order only	263KW Governenment Work Order + Commissioning certificate and 970kWp Subsidy order (TAGENCO)and handover certiificate signed by customer	1.45MW work order and Commssioning certificate, cumulative of the EPC and JV partner	73kWork Order submitted	322KW Government Work order + commissioning certificate	4MW Governement Work Order+ Commsiioning certificate of JV Partner submitted	1MW Governement Work Order+ Commsiioning certificate of JV Partner submitted	no
	1MW technical eligibility Governmet workorder and commissioning certificate	No	No	No	Yes	yes	NO	NO	Yes	Yes	NO
7	List of service centres /Declaration to provide service centre in Rs.200/- stamp paper	ɔ declaratic	yes	yes	yes	yes	yes	NO	yes	yes	NO
8	ICRA Grading Certificate(Indicate Grade	2C	2C	2C	1C	3C	Under Process	2B	Under Process	Under Process	3B
9	Whether PV module is from ALMM approved by MNRE and DCR content (Declaration)	yes	Yes	yes	yes	yes	no	yes	yes	yes	no
10	Declaration on DCR inverter with IS certification	No	Yes	yes	yes	yes	no	no	yes	yes	no
	Evaluation result	**Not passed**	**Not Passed**	**Not Passed**	***Passed**	**Passed**	**Not Passed**	**Not Passed**	****Passed**	****Passed**	**Not Passed**

conditionally passed* Need to produce consolidated completion certificate within 30 days
conditionally passed**Need to produce ICRA certificate within 30 days

KiranKrishnan G (PE)

Manju S (PE)

Jayakumar R

31.12.2023

JAYAKUMAR R
Project Manager
PM KUSUM-NABARD (RIDF)
ANERT HQ
Thiruvananthapuram

Gmail Anert <anert033@gmail.com>

ANERT-EoI for additional Empanelment of vendors under the Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW 150 kW under the PM KUSUM scheme (Component C) in the State of Kerala scheme (Component-C) in the State of Kerala- M/s. Adithya Innovations-Clarification -reg

3 messages

anert <anert033@gmail.com> 12 December 2023 at 11:13
To: Anand ks <anandkovalam@gmail.com>
Cc: Jayakumar R <jayakumar@anert.in>, ANERT Projects <projects@anert.in>

Sir,
while evaluating the technical bid you submitted against the tender mentioned above, we
are seeking some clarifications on the points mentioned below in order to avoid rejection of
your bid. Your reply should reach us by e-mail on or before 13/12/2023 before 3.00pm.

1. If the bidder is not a manufacturer, JV needs to be formed with manufacturers as per tender clause # 10.1.3. JV agreement needs to be provided on Rs. 200/- Kerala stamp paper.
2. Need to produce Copy of Work order and completion certificate from SECI/PSU/SNA or GOVT departments to prove eligibility of 3 MW / 1MWinstallation experience to meet qualification criteria (Refer Table 10.2-1.5 of Tender Document)
3. Need to declare that the Panel & cell are indigenously manufactured (DCR Content) and frm ALMM list.
4. Need a Declaration from lead bidder to provide Inverter with IS1621, IS16169 certification and indigenously manufactured.
5. Power of Attorney in favour of authorized signatory in Rs. 200 /- stamp Paper (Format B) not filled.
6. GTP needs to be provided as per the format given in Annexure G of the tender document.
7. Test certificates and Datasheets are to be provided for all models mentioned in the bid.
8. Information regarding service centres should be provided as per the tenderclause # 10.1.5, clause # 15.1, and annexure A point #9.
9. Summary of Bid Qualification Requirement- Annexure A needs to be provided as per format in the tender document.

--

Thanks and Regards,
TEAM PM-KUSUM
ANERT HQ

Anand ks <anandkovalam@gmail.com> 13 December 2023 at 13:18
To: anert <anert033@gmail.com>
Cc: Jayakumar R <jayakumar@anert.in>, ANERT Projects <projects@anert.in>, Aadithya Innovations Sunil <info@aadithyainnovations.com>

Sir,
Please find the attached documents except JV & Service centre list.
Will update the same at the earliest.If require any further documents or corrections required please let us know.

Thanks & Regards

[Quoted text hidden]
--
Regards
Anand.ks

---

6 attachments

Annexure G.pdf
67K

Half Cut Module BIS letter-1.pdf
282K

BIS letter For all-Renewal.pdf
325K

inverter ksolar.pdf
2820K

SOVA 530Wp DCR DATA SHEET.pdf
7044K

PLANTS INSTALLED.pdf
5297K

Anand ks <anandkovalam@gmail.com> 13 December 2023 at 13:32
To: anert <anert033@gmail.com>
Cc: Jayakumar R <jayakumar@anert.in>, ANERT Projects <projects@anert.in>, Aadithya Innovations Sunil <info@aadithyainnovations.com>

Sir,
We request one more inverter brand to add on in case of availability issue happens.

Regards
Anand KS
Aadithya Innovations

[Quoted text hidden]
--
Regards
Anand.ks

---

2 attachments

V-SOLE.pdf
6802K

BIS-CERTIFICATE.pdf
587K

Gmail Anert <anert033@gmail.com>

ANERT-EoI for additional Empanelment of vendors under the Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW 150 kW under the PM KUSUM scheme (Component C) in the State of Kerala scheme (Component-C) in the State of Kerala- M/s. A J Infra Solutions -Clarification -reg

3 messages

anert <anert033@gmail.com> 12 December 2023 at 11:10
To: aj infra <ajinfra.solutions@gmail.com>
Cc: Jayakumar R <jayakumar@anert.in>, ANERT Projects <projects@anert.in>

Sir,
while evaluating the technical bid you submitted against the tender mentioned above, we
are seeking some clarifications on the points mentioned below in order to avoid rejection of
your bid. Your reply should reach us by e-mail on or before 13/12/2023 before 3.00pm.

1. Need to produce the copy of Registration/Incorporation Certificate as per table 10.2.

2. Power of Attorney in favour of authorized signatory needs to submit self-declaration on authorized signatory.

3. Need to produce Copy of Work order and completion certificate from SECI/PSU/SNA or GOVT departments to prove eligibility of 3 MW / 1MWinstallation experience to meet qualification criteria (Refer Table 10.2-1.5 of Tender Document).

4. Need to declare that the Panel & cell are indigenously manufactured (DCR Content) and frm ALMM list.

5. Need a Declaration from lead bidder to provide Inverter with IS1621, IS16169 certification.

6. ICRA grading certificate need to be submitted to qualify the bid as per tender clause # 10.1.4 & 44.iii

--

Thanks and Regards,
TEAM PM-KUSUM
ANERT HQ

---

aj infra <ajinfra.solutions@gmail.com> 12 December 2023 at 17:17
To: anert <anert033@gmail.com>
Cc: ANERT Projects <projects@anert.in>, Jayakumar R <jayakumar@anert.in>, "ceo@anert.in" <ceo@anert.in>

Dear sir

We kindly request you to please extend the time till the end of this week i.e 16-12-23 to provide all the necessary documents for the finalising the PM KUSUM EOI.

Thanks and regards
Dr.Azad
Aj infra solutions.
[Quoted text hidden]
--
Thanks & Regards,
Azad
A J Infra Solutions
Contact : 7619177111

---

aj infra <ajinfra.solutions@gmail.com> 16 December 2023 at 14:03
To: anert <anert033@gmail.com>
Cc: Jayakumar R <jayakumar@anert.in>, ANERT Projects <projects@anert.in>, ceo@anert.in

Dear sir

PFA documents.
Request you to please communicate if there is any additional documents required.

Thanks & Regards,
Dr.Azad
A J Infra Solutions
Contact : 7619177111

[Quoted text hidden]

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10 attachments

ACE - Non Blacklist.pdf
630K

AJ - Non Black list.pdf
611K

AJ - POA.pdf
969K

Blue - Non Blacklist.pdf
1114K

JV(1).pdf
1691K

Arupukottai Jayavilas CC.pdf
324K

WO ARUPUKOTTAI JAYAVILAS.PDF
5344K

Point no 1. Company Certificates.pdf
895K

Point 5. Inverter Declaration.pdf
311K

Point 4. Module DCR Declaration.pdf
521K

Gmail Anert <anert033@gmail.com>

ANERT-EoI for additional Empanelment of vendors under the Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW 150 kW under the PM KUSUM scheme (Component C) in the State of Kerala scheme (Component-C) in the State of Kerala- M/s. B S Energy Innovations -Clarification -reg

3 messages

anert <anert033@gmail.com> 11 December 2023 at 18:13
To: "bsenergyinnovations@gmail.com" <bsenergyinnovations@gmail.com>
Cc: Jayakumar R <jayakumar@anert.in>, ANERT Projects <projects@anert.in>

Sir,
while evaluating the technical bid you submitted against the tender mentioned above, we
are seeking some clarifications on the points mentioned below in order to avoid rejection of
your bid. Your reply should reach us by e-mail on or before 13/12/2023 before 3.00pm.

1. Need to produce copy of Registration/Incorporation Certificate as per table 10.2

2. Need to produce Copy of Work order and completion certificate from SECI/PSU/SNA or GOVT departments to prove eligibility of 3 MW / 1MWinstallation experience to meet qualification criteria (Refer Table 10.2-1.5 of Tender Document).

3. Power of Attorney in favour of authorized signatory needs to submit self-declaration on authorized signatory.

4. Need to declare that the Panel & cell are indigenously manufactured (DCR Content) and frm ALMM list.

5. Need a Declaration from lead bidder to provide Inverter with IS1621, IS16169 certification.

6. ICRA grading certificate need to be submitted to qualify the bid as per tender clause # 10.1.4 & 44.iii.

--

Thanks and Regards,
TEAM PM-KUSUM
ANERT HQ

B S Energy Innovations <bsenergyinnovations@gmail.com> 12 December 2023 at 17:57
To: anert <anert033@gmail.com>

Respected sir,

Greetings!!

With reference to your mail, here we request you to extend 3 more days for document submission.

Kindly consider and accept our request.

Thanks & Regards.

[Quoted text hidden]

B S Energy Innovations <bsenergyinnovations@gmail.com> 16 December 2023 at 14:02
To: anert <anert033@gmail.com>
Cc: Jayakumar R <jayakumar@anert.in>, ANERT Projects <projects@anert.in>

Dear Sir,

Please find the attachment of above Queries.

On Mon, Dec 11, 2023 at 6:13 PM anert <anert033@gmail.com> wrote:
[Quoted text hidden]

BS Energy - ANERT Req.zip
24063K

Gmail

Anert <anert033@gmail.com>

ANERT-EoI for additional Empanelment of vendors under the Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW 150 kW under the PM KUSUM scheme (Component C) in the State of Kerala scheme (Component-C) in the State of Kerala- M/s. BSS Community industries-Clarification - reg

3 messages

anert <anert033@gmail.com> 11 December 2023 at 18:15
To: "bsssolarkerala@gmail.com" <bsssolarkerala@gmail.com>
Cc: Jayakumar R <jayakumar@anert.in>, ANERT Projects <projects@anert.in>

Sir,
while evaluating the technical bid you submitted against the tender mentioned above, we
are seeking some clarifications on the points mentioned below in order to avoid rejection of
your bid. Your reply should reach us by e-mail on or before 13/12/2023 before 3.00pm.

1. If the bidder is not a manufacturer, JV needs to be formed with manufacturers as per tender clause # 10.1.3. JV agreement needs to be provided on Rs. 200/- Kerala stamp paper.

2. Format B2 Power of attorney needs to be produced in Rs.200/- stamp paper.
3. Need to produce Copy of Work order and completion certificate from SECI/PSU/SNA or GOVT departments to prove eligibility of 3 MW / 1MWinstallation experience to meet qualification criteria (Refer Table 10.2-1.5 of Tender Document).
4. Summary of Bid Qualification Requirement- Annexure A as per format provided in the tender document needs to be submitted.
5. Need to declare that the Panel & cell are indigenously manufactured (DCR Content) and frm ALMM list.
6. Need a Declaration from lead bidder to provide Inverter with IS1621, IS16169 certification and indigenously manufactured.
7. Information regarding service center should be provided as per the tender clause # 10.1.5, clause # 15.1, and annexure A point #9.
8. Guaranteed Technical Parameters Annexure G (GTP) need to be submitted as per format provided in the tender document.

--
Thanks and Regards,
TEAM PM-KUSUM

ANERT HQ

Bharath Sevak Samaj Kerala <bsssolarkerala@gmail.com> 13 December 2023 at 14:25
To: anert <anert033@gmail.com>

Sir/Madam,
Please find the attached email and do the needful.

Thanks & Regards
BSS SOLAR

Bharat Sevak Samaj Solar Division

Brahmins colony, Kowdiar PO, TVM

Ph : +91 9048001332, 0471- 2439322

Website: http://bsssolar.com/

Email: bsssagrihorti@gmail.com

bsssolarkerala@gmail.com

[Quoted text hidden]

7 attachments

- **BID QUALIFICATION.pdf** 136K
- **DCR-PANEL & CELL_compressed.pdf** 10702K
- **EXPERIANCE.pdf** 8560K
- **GTP.pdf** 1965K
- **SERVICE CENTER.pdf** 590K

Joint Venture-BSS_compressed.pdf
1385K

Delaration-inverter.pdf
57K

Bharath Sevak Samaj Kerala <bsssolarkerala@gmail.com> 13 December 2023 at 14:27
To: anert <anert033@gmail.com>

Bharat Sevak Samaj Solar Division

Brahmins colony, Kowdiar PO, TVM

Ph : +91 9048001332, 0471- 2439322

Website: http://bsssolar.com/

Email: bsssagrihorti@gmail.com

bsssolarkerala@gmail.com

[Quoted text hidden]

On Grid BIS.pdf
331K

Gmail Anert <anert033@gmail.com>

ANERT-EoI for additional Empanelment of vendors under the Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW 150 kW under the PM KUSUM scheme (Component C) in the State of Kerala scheme (Component-C) in the State of Kerala- M/s. Coopa Energy -Clarification -reg

2 messages

anert <anert033@gmail.com> 12 December 2023 at 11:14
To: COOPA Energy <coopaenergy@gmail.com>
Cc: Jayakumar R <jayakumar@anert.in>, ANERT Projects <projects@anert.in>

Sir,

While evaluating the technical bid you submitted against the tender mentioned above, we
are seeking some clarifications on the points mentioned below in order to avoid rejection of
your bid. Your reply should reach us by e-mail on or before 13/12/2023 before 3.00pm.

1. If the bidder is not a manufacturer, JV needs to be formed with manufacturers as per tender clause # 10.1.3. JV agreement needs to be provided on Rs. 200/- Kerala stamp paper.

2. Need to produce a copy of Registration/Incorporation Certificate as per table 10.2.

3. Power of Attorney in favour of authorized signatory in Rs. 200 /- stamp Paper (Format B) needs to be produced.

4. Declaration by JV partner /Sole bidder on Manufacturing of Solar Panels need to be submitted.

5. Need to produce Copy of Work order and completion certificate from SECI/PSU/SNA or GOVT departments to prove eligibility of 3 MW / 1MWinstallation experience to meet qualification criteria (Refer Table 10.2-1.5 of Tender Document).

6. Need to declare whether the Panel & cell are indigenously manufactured

(DCR Content) or not and from ALMM list.

7. Need a Declaration from lead bidder to provide Inverter with IS1621, IS16169 certification.

8. Summary of Bid Qualification Requirement- Annexure A as per format provided in the tender document needs to be submitted.

9. ICRA grading certificate need to be submitted to qualify the bid as per tender clause # 10.1.4 & 44.iii

--
Thanks and Regards,

TEAM PM-KUSUM
ANERT HQ

COOPA Energy <coopaenergy@gmail.com> 13 December 2023 at 14:53
To: anert <anert033@gmail.com>, ANJU SIJANTH <anjusijanth@gmail.com>

Sub:- Clarification in connection with Technical Bid submitted against KUSUM scheme.

Ref :- Anert eMail dated 12/12/2023 on the subject cited above.

Sir,

In response to your e-Mail dated 12/12/2023, clarification of this firm furnished as under :-

1	If the bidder is not a manufacturer, JV needs to be formed with manufacturers as per tender clause 10.1.3. JV agreement needs to be provided on Rs.200/- stamp paper.	The firm concern is being requested to sign the agreement on a stamp paper. Agreement will be provided to your good self on due course.
2.	Need to produce a copy of Registration/Incorporation certificate as per table 10.2	Coopa Energy is a sole proprietorship firm and thus Registration/Incorporation may not be required. However the firm is a MSME registered firm and copy of MSME registration enclosed herewith for your ready reference.
3.	Power of Attorney in favour of authorized signatory i.e. Rs.200/- stamp paper (Format B) needs to be provided.	
4.	Declaration by JV partner /Sole bidder on Manufacturing of Solar Panels needs to be submitted.	Requisite declaration submitted please.
5.	Need to produce copy of Work order and completion certificate from SECI/PSU/SNA or Govt departments to prove eligibility of 3 MW /1 MW installation experience to meet qualification criteria (Refer Table 110.2-1.5 of Tender Document)	Requisite document attached please.
6.	Need to declare whether the Panel & Cell are indigenously manufactured(DCR content) or not and from ALMM list.	Requisite document attached please..
7.	Need a declaration from lead bidder to provide inverter with IS1621, IS16169 certification.	Declaration as desired is submitted herewith.
8.	Summary of Bid Qualification requirement-Annexure A as per format provided in the tender document needs to be submitted.	Submitted as desired please.

9.	ICRA grading certificate need to be submitted to qualify the bid as per tender clause 10.1.4 & 44.iii	Requisite document attached please..

[Quoted text hidden]

--

Thanks and Regards,

Anju Sijanth

COOPA ENERGY

Malappuram.

---

8 attachments

ICRA.pdf
185K

BIS-Bureau Of Indian Standards-1P inclusion (2).pdf
173K

Udyam Registration Certificate (1).pdf
215K

BIS certificate 3KW-3P to 50KW-3P (4).pdf
587K

ALMM LIST.pdf
4263K

WORK ORDER ANERT-1.pdf
402K

WORK ORDER ANERT.pdf
3791K

ANEXURE.pdf
436K

Gmail Anert <anert033@gmail.com>

ANERT-EoI for additional Empanelment of vendors under the Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW 150 kW under the PM KUSUM scheme (Component C) in the State of Kerala scheme (Component-C) in the State of Kerala-Clarification-reg

2 messages

anert <anert033@gmail.com>
To: "inforce.tender@gmail.com" <inforce.tender@gmail.com>
Cc: Jayakumar R <jayakumar@anert.in>, ANERT Projects <projects@anert.in>

Sir,
While evaluating the technical bid you submitted against the tender mentioned above, we are seeking some clarifications on the points me of your bid. Your reply should reach us by e-mail on or before 13/12/2023 before 3.00pm
Clarification points that need documents

1 Format B2 Power of attorney need to be produced in Rs.200/- stamp paper
2 Need to produce Copy of Work order and completion certificate from SECI/PSU/SNA or GOVT departments to prove eligibility of 3 MW / 1MWinstallation experience to meet qualifica
3 Scanned copy of Tender Document Signed and Sealed needs to be submitted
4 Agreement in the Prescribed format Annexure B in Rs.200/- stamp Paper needs to be provided
5 Need to declare that the Panel & cell are indigenously manufactured (DCR Content) and frm ALMM list.
6 Need a Declaration from lead bidder to provide Inverter with IS1621, IS16169 certification and indigenously manufactured
7 Guaranteed Technical Parameters Annexure G (GTP) as per format provided in the tender needs to be provided

--
Thanks and Regards,
TEAM PM-KUSUM
ANERT HQ

InForce Solar - Tenders <inforce.tender@gmail.com> 13 December 2023 at 14:57
To: anert <anert033@gmail.com>
Cc: Jayakumar R <jayakumar@anert.in>, ANERT Projects <projects@anert.in>, "Venkat Kanna (InForce Solar)" <venkat@inforcesolar.com>, goutham@inforcesolar.com

Dear Sir,

Please find the desired documents and kindly do the needful.

Thanks & Regards,
Goutham D || +91 98844 34358
InForce Solar® Energize the Future

[Quoted text hidden]

8 attachments

- **1. Format B2 Power of Attorney.pdf** 534K
- **7. 6. Annexure G (GTP) Panel & Inverter.pdf** 286K
- **2. Work order and completion certificate - 1.37 MW - JV Partner (Navitas).pdf** 1589K
- **3. Signed Tender Document.pdf** 3147K
- **4. Annexure B.pdf** 514K
- **5. Declaration DCR Content - Panel.pdf** 80K
- **6. Declaration for Inverter.pdf** 79K
- **2. Work order and completion certificate - 298 MW - Lead Partner (Inforce).pdf** 2258K

Gmail Anert <anert033@gmail.com>

ANERT-EoI for additional Empanelment of vendors under the Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW 150 kW under the PM KUSUM scheme (Component C) in the State of Kerala scheme (Component-C) in the State of Kerala-Clarification-reg

5 messages

anert <anert033@gmail.com>
To: "kcpashok@kcpsolar.com" <kcpashok@kcpsolar.com>, "admin@kcpsolar.com" <admin@kcpsolar.com>, "rsm@kcpsolar.com" <rsm@kcpsolar.com>
Cc: Jayakumar R <jayakumar@anert.in>, ANERT Projects <projects@anert.in>

Sir,
While evaluating the technical bid you submitted against the tender mentioned above, we are seeking some clarifications on the points me of your bid. Your reply should reach us by e-mail on or before 13/12/2023 before 3.00pm
Clarification points that need documents

1.Power of Attorney in favour of authorized signatory in Rs. 200 /- stamp Paper (Format B) needs to be produced
2.Need to produce Copy of Work order and completion certificate from SECI/PSU/SNA or GOVT departments to prove eligibility of 3 MW / 1MWinstallation experience to meet qualifica
3.Undertaking for Non-Black Listing in Rs.200/- stamp Paper Format-A needs to be produced for JV partner
4.Declaration from lead bidder to provide Inverter with IS1621, IS16169 certification and indegenously manufactured need to be submitted

--
Thanks and Regards,
TEAM PM-KUSUM
ANERT HQ

Vinoth KCP Solar <rsm@kcpsolar.com> 13 December 2023 at 13:22
To: anert <anert033@gmail.com>
Cc: "kcpashok@kcpsolar.com" <kcpashok@kcpsolar.com>, "admin@kcpsolar.com" <admin@kcpsolar.com>, Jayakumar R <jayakumar@anert.in>, ANERT Projects <projects@anert.in>

Dear Sir,
With reference to the trailing Mail, We are getting ready to submit all the documents as per your requirement. Request you to kindly give 3 more days of extension to produce all the documents as required , So we will be submitting the same on or before 16th December .
[Quoted text hidden]
--

Thanks and Regards,
Vinoth Kumar P.A
Vice president,
KCP Solar Industry, India.
www.kcpsolar.com
Mobile : +91 9942977599

ADMIN KCP <admin@kcpsolar.com> 16 December 2023 at 15:02
To: Vinoth KCP Solar <rsm@kcpsolar.com>
Cc: anert <anert033@gmail.com>, "kcpashok@kcpsolar.com" <kcpashok@kcpsolar.com>, Jayakumar R <jayakumar@anert.in>, ANERT Projects <projects@anert.in>

- TEDA Work order-1 (1).pdf
- TEDA Work order-2.pdf
- Work order and perforamnce-3.pdf
- Work order and Performance-1.pdf
- Work oreder and performance-2.pdf

Dear Sir,
With reference to your mail, Please find the following documents in attachment

1.Power of Attorney in favour of authorized signatory in Rs. 200 /- stamp Paper (Format B) .
2.Copy of Work order and completion certificate from SECI/PSU/SNA/GOVT departments .
3.Undertaking for Non-Black Listing in Rs.200/- stamp Paper Format-A for JV Patner
4.Declaration for Inverter with IS1621, IS16169 certification and indegenously manufacturing
[Quoted text hidden]
--
Dear Sir,
Good Day!

Thanking You
For Kcp Solar Industry
With Regard,
S.Srinivasan
9842769799

3 attachments

Power of Attonery.pdf
2117K

New Doc 12-16-2023 14.50.pdf
2084K

Declaration by the bidder.pdf
2013K

ADMIN KCP <admin@kcpsolar.com> 16 December 2023 at 20:16
To: Vinoth KCP Solar <rsm@kcpsolar.com>
Cc: anert <anert033@gmail.com>, "kcpashok@kcpsolar.com" <kcpashok@kcpsolar.com>, Jayakumar R <jayakumar@anert.in>, ANERT Projects <projects@anert.in>

Consolidated 1.543 MW Work order and performance list-reg

1.543 MW Work order and perforamnce certificate...

[Quoted text hidden]

ADMIN KCP <admin@kcpsolar.com> 21 December 2023 at 15:19
To: Vinoth KCP Solar <rsm@kcpsolar.com>
Cc: anert <anert033@gmail.com>, "kcpashok@kcpsolar.com" <kcpashok@kcpsolar.com>, Jayakumar R <jayakumar@anert.in>, ANERT Projects <projects@anert.in>

Dear Sir,
We herewith enclosed undertaking letter for performance Certificate -reg
[Quoted text hidden]

UNDERTAKING LETTER.pdf
297K

Gmail Anert <anert033@gmail.com>

ANERT-EoI for additional Empanelment of vendors under the Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW 150 kW under the PM KUSUM scheme (Component C) in the State of Kerala scheme (Component-C) in the State of Kerala-Clarification-reg

5 messages

anert <anert033@gmail.com>
To: softrayspowersolutions@gmail.com
Cc: Jayakumar R <jayakumar@anert.in>, ANERT Projects <projects@anert.in>

Sir,
While evaluating the technical bid you submitted against the tender mentioned above, we are seeking some clarifications on the points me of your bid. Your reply should reach us by e-mail on or before 13/12/2023 before 3.00pm
Clarification points that need documents

1 Need to produce copy of Registration/Incorporation Certificate as per table 10.2
2 Power of Attorney in favour of authorized signatory in Rs. 200 /- stamp Paper (Format B) needs to be produced
3 Power of Attorney in favour of authorized signatory not applicable - need to submit self-declaration on authorized signatory
4 Declaration by JV partner /Sole bidder on Manufacturing of Solar Panels
5 Need to produce Copy of Work order and completion certificate from SECI/PSU/SNA or GOVT departments to prove eligibility of 3 MW / 1MW installation experience to meet qualifi
6 Need to declare whether the Panel & cell are ingeniously manufactured (DCR Content) or not and from ALMM list.
7 Need a Declaration from lead bidder to provide Inverter with IS1621, IS16169 certification
8 Summary of Bid Qualification Requirement- Annexure A needs to be provided as per format in the tender document
9 Bill of material as per format provided in the tender needs to be provided
10 Guaranteed Technical Parameters Annexure G (GTP) as per format provided in the tender needs to be provided
11 Data sheet as per GTP needs to be provided

--
Thanks and Regards,
TEAM PM-KUSUM
ANERT HQ

Softrays Power Solutions <softrayspowersolutions@gmail.com> 12 December 2023 at 12:20
To: anert <anert033@gmail.com>
Cc: Jayakumar R <jayakumar@anert.in>, ANERT Projects <projects@anert.in>

Dear Sir

You are requested to add the O&M charges for 5 years in the Work Order.
[Quoted text hidden]
--
Kind regards,
Lalprasad B

Softrays POWER SOLUTIONS

Authorised Distributor

Diesel Generators | JAKSON Solar Power | NUMERIC legrand UPS

HT & LT Electrical Consultants & Contractors
All HT Electrification • Genset - Solar - Transformer Installations • Panel Board Fabrication

Sangeetha Building, TC 13/1943(1),
Kannammoola, Medical College P.O, Trivandrum - 695011
+91 9387 803291, 8078 092440, +91 4712 550723, 4712 440723
info@softrays.in • www.softrays.in

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Use of these names,trademarks and brands does not imply endorsement.

Softrays Power Solutions <softrayspowersolutions@gmail.com> 13 December 2023 at 16:06
To: anert <anert033@gmail.com>
Cc: Jayakumar R <jayakumar@anert.in>, ANERT Projects <projects@anert.in>

Dear Sir

Enclosing the documents herewith.

On Mon, Dec 11, 2023 at 5:21 PM anert <anert033@gmail.com> wrote:
[Quoted text hidden]

[Quoted text hidden]

5 attachments

- **03-JV.PDF** 693K
- **07-POWER OF ATTORNEY.PDF** 569K
- **08-POA.pdf** 64K
- **09-PAHAL MANUFACTURING DECLARATION.pdf** 612K
- **SOFTRAYS POWER SOLUTIONS.PDF** 572K

Softrays Power Solutions <softrayspowersolutions@gmail.com> 13 December 2023 at 16:15
To: anert <anert033@gmail.com>
Cc: Jayakumar R <jayakumar@anert.in>, ANERT Projects <projects@anert.in>

10&11-WORK ORDERS.pdf

[Quoted text hidden]

Softrays Power Solutions <softrayspowersolutions@gmail.com> 13 December 2023 at 16:18
To: anert <anert033@gmail.com>
Cc: Jayakumar R <jayakumar@anert.in>, ANERT Projects <projects@anert.in>

[Quoted text hidden]

3 attachments

- **18-BOM.pdf** 4213K
- **19-GTP.pdf** 4997K
- **17-BID Qualification requirment.PDF** 136K

Gmail Anert <anert033@gmail.com>

ANERT-EoI for additional Empanelment of vendors under the Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW 150 kW under the PM KUSUM scheme (Component C) in the State of Kerala scheme (Component-C) in the State of Kerala-Clarification-reg

2 messages

anert <anert033@gmail.com>
To: "marketingueskd@gmail.com" <marketingueskd@gmail.com>, "purchase@ushaelectronicssystems.com" <purchase@ushaelectronicssystems.com>, pradeep payyazhi <pradeepues101@
Cc: Jayakumar R <jayakumar@anert.in>

Sir,
While evaluating the technical bid you submitted against the tender mentioned above, we are seeking some clarifications on the points me
your bid. Your reply should reach us by e-mail on or before 13/12/2023 before 3.00pm

Clarification points that require documentation .

1 Need to produce a copy of Registration/Incorporation Certificate as per table 10.2-1.2
2 "If the bidder is not a manufacturer, JV needs to be formed with manufacturers as
per tender clause # 10.1.3. JV agreement needs to be provided on Rs. 200/- Kerala stamp paper."
3 Power of Attorney in favour of authorized signatory in Rs. 200 /- stamp Paper (Format B) needs to be produced
4 Declaration by JV partner /Sole bidder on Manufacturing of Solar Panels needs to be produced
5 Need to produce Copy of Work order and completion certificate from SECI/PSU/SNA or GOVT departments to prove eligibility of 3 MW / 1MWinstallation ex
6 Undertaking for Non-Black Listing in Rs.200/- stamp Paper Format-A needs to be produced for JV partner
7 Scanned copy of Tender Document Signed and Sealed needs to be provided
8 Need to declare whether the Panel & cell are indigenously manufactured (DCR Content) or not and from the ALMM list .
9 Need a Declaration from lead bidder to provide Inverter with IS1621, IS16169 certification
10 "GTP needs to be provided as per the format given in Annexure G of the tender document.
11 Test certificates and Satasheets are to be provided for all models
12 "Information regarding service center should be provided as per the tender clause # 10.1.5, clause # 15.1, and annexure A point #9.
13 For the JV partner-the following documents are required to consider them as a valid Joint venture partner -
Certificate of incorporation/registration
GST registration certificate with GSTIN.
PAN Card.
Need to declare whether the Panel & cell are indigenously manufactured (DCR Content) or not.
Work orders and completion certificates for claiming the installation experience of 3
MW as per table 10.2 in the tender document.

--
Thanks and Regards,
TEAM PM-KUSUM
ANERT HQ

Chief Technical Officer Usha Electronics Systems <consultancy@ushaelectronicssystems.com> 13 December 2023 at 14:09

To: anert033@gmail.com
Cc: Rajan KK <rajanues@gmail.com>, CUSTOMER SUPPORT DIVISION <csd@ushaelectronicssystems.com>, pradeep payyazhi <pradeepues101@gmail.com>, jayakumar@anert.in

Dear Sir,
Please find the attached file and link in connection with the pending document submission of EOI of additional empanelment PM Kusum Scheme.

ANERT- PM KUSUM Solar Pump

Feel free to contact me for any clarification.

On Mon, Dec 11, 2023 at 6:38 PM USHA SYSTEMS PURCHASE <purchase@ushaelectronicssystems.com> wrote:
[Quoted text hidden]

--

GRINSON GREGORY

Chief Technical Officer

(Chartered Engineer in Electrical Engineering Division under IEI)

Usha Electronics Systems

(An ISO 9001-2015 Company. ISO & BIS certified high quality/durable solar and other LED lighting Systems Manufactures. Government approved Solar Rooftop Project Providers under Government subsidy scheme)

3 attachments

Covering Letter - Submission of Documents.pdf
629K

3. POA Usha & Pahal.pdf
2065K

2. JV AGREEMENT USHA & PAHAL.pdf
3628K

Gmail Anert <anert033@gmail.com>

ANERT-EoI for additional Empanelment of vendors under the Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW 150 kW under the PM KUSUM scheme (Component C) in the State of Kerala scheme (Component-C) in the State of Kerala- M/s.Wattsun Energy India P Ltd-Clarification - reg

2 messages

anert <anert033@gmail.com> 11 December 2023 at 18:09
To: info@wattsun.in
Cc: Jayakumar R <jayakumar@anert.in>, ANERT Projects <projects@anert.in>

Sir,
While evaluating the technical bid you submitted against the tender mentioned above, we
are seeking some clarifications on the points mentioned below in order to avoid rejection of your bid. Your reply should reach us by e-mail on or before 13/12/2023 before 3.00pm.

1. If the bidder is not a manufacturer, JV needs to be formed with manufacturers as per tender clause # 10.1.3. JV agreement needs to be provided on Rs. 200/- Kerala stamp paper.
2. Need to produce Copy of Work orders and completion certificate from **SECI/PSU/SNA or GOVT departments** to prove eligibility of 3 MW / 1MWinstallation experience to meet qualification criteria (Refer Table 10.2-1.5 of Tender Document)
3. Need to declare that the Panel & cell to be supplied are indigenously manufactured (DCR Content) and from ALMM list.
4. Need a Declaration from lead bidder to provide Inverter with IS1621, IS16169 certification and must be indigenously manufactured
5. Bill of material needs to be provided as per the format provided in the tender document. RMS not provided, welded, GI GP not allowed, incomplete Submission .
6. Guaranteed Technical Parameters Annexure G (GTP) need to be submitted as per format provided in the tender document.
7. Information regarding service center or Declaration should be provided as per the tender clause # 10.1.5, clause # 15.1, and annexure A point #9.
8. Need to submit a document regarding authorised signatory for the tender .

Thanks and Regards,
TEAM PM-KUSUM
ANERT HQ

anert <anert033@gmail.com> 14 December 2023 at 09:53
To: info@wattsun.in

Sir
Ref:

ANERT-EoI for additional Empanelment of vendors under the Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW -150 kW under the PM KUSUM scheme (Component C) in the State of Kerala scheme (Component-C) in the State of Kerala

As per request from bidders the date of submission of clarification documents extended till 16-12-23 till 3pm .

[Quoted text hidden]
--
[Quoted text hidden]

Gmail

Anert <anert033@gmail.com>

ANERT-EoI for additional Empanelment of vendors under the Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW -150 kW under the PM KUSUM scheme (Component C) in the State of Kerala scheme (Component-C) in the State of Kerala

1 message

Tenders Wattsun <tenders@wattsun.in> 27 December 2023 at 17:42
To: anert033@gmail.com
Cc: Terance Alex <terance.alex@wattsun.in>, WattSun Energy India Pvt Ltd <info@wattsun.in>

Sir/Madam

We uploaded the missing documents with this mail.We will send the remaining missing documents within two days once we received from the manufacturers side.

Thanks & Regards,
PRAVEEN S

Wattsun Energy India (P) Ltd
FF Aiswarya Towers
International Airport Road
Chackai-Thiruvananthapuram
Kerala-India-695024
Mobile No: 9072666513
E- mail: accounts@wattsun.in
Website: www.wattsun.in

4 attachments

- **Proof for works.pdf** 6009K
- **Service Center .pdf** 322K
- **BOMpm.pdf** 141K
- **POABOR.pdf** 342K

I/18423/2023

AGENCY FOR NEW & RENEWABLE ENERGY RESEARCH AND TECHNOLOGY (ANERT)
Department of Power, Government of Kerala
Thiruvananthapuram, Kerala – 695 033;
www.anert.gov.in , projects@anert.in | anert033@gmail

E-TENDER DOCUMENT

EoI for additional Empanelment of vendors under the Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW - 150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala

Ref. No. ANERT-TECH/144/2022-T4

Date of Publishing of Bids	**: -**	**20/10/2023**
Last Date of Submission of Bids	**: -**	**08/11/2023**

I/18423/2023

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FORMAT FOR COVERING LETTER

(This letter to be submitted on the official letter head of the tenderer, signed by the authorised signatory.)

Sir,

I/We hereby e-tender to supply, under annexed terms and conditions of contract, the whole of the articles referred to and described in the attached specification and quantity decided by the Agency for New and Renewable Energy Research and Technology (ANERT), at the rates quoted against each item. The articles will be delivered and installed/commissioned within the time and at the place(s) specified in the schedule.

I am/We are remitting herewith the required amount of Rs. ..... towards the cost of e-tender and Earnest Money Deposit by electronic payment vide transaction No ..... dtd.....

Yours faithfully,

Place:

Date:

Signature

Name

Designation

(Office Seal)

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E-TENDER NOTICE

Competitive e-tenders in two cover system withEarnest Money Deposit (EMD) ~~and Price Bid~~ in accordance with the ANERT approved technical specifications are invited from ***Manufacturers of Solar PV ModulesOR Joint Venture of SPV Module Manufacturer & EPC contractor for the EoI for additional Empanelment of vendors under the Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW - 150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala***. The e-tender documents can be downloaded from the e-tendering website of Govt. of Kerala.Tender form will not be available in any other form.

Thiruvananthapuram CEO

20/10/2023

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TENDER ABSTRACT

Table A

Ref. No.	**ANERT-TECH/144/2022-T4**
Name of Work	**EoI for additional Empanelment of vendors under the Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW - 150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala**
Building Site and Requirements	**All over Kerala**
Download of Tender Form	http://www.etenders.kerala.gov.in
Last date of submission of Tender	**08/11/2023**
Date and Time of opening the Tender	**09/11/2023**
Estimated Tender Value	**Rs.240 Cr**
Cost of Tender form	**Rs. 15,000/- (ExcludingGST)**
EMD	**Rs. 5,00,000/-**
Warranty period	7 years from the date of commissioning the system.
Location of Sites	More than 80% of sitesare inThrissur,Kasaragod,Malappuram,Palakkad,Ernakulum districts.
Availability of Tender Forms	Website http://www.etenders.kerala.gov.in
Place of opening of tender	Office of CEO, ANERT Law College Road, Vikas Bhavan. PO, Thiruvananthapuram – 695 033, Kerala

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Contact Details for clarifications	Shri. Jayakumar R Nodal Officer PM- KUSUM Scheme, ANERT +91 9188119425; jayakumar@anert.in
Thiruvananthapuram	Sd/- CEO

GENERAL TERMS AND CONDITIONS FOR E-PROCUREMENT

This e-Tender is being published for theEoI for additional Empanelment of vendors under the Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW - 150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala. The tender is invited in two cover system through e-procurement portal of Government of Kerala(www.etenders.kerala.gov.in). Prospective bidders willing to participate in this tender shall necessarily register themselves with above mentioned e-procurement portal.

The tender timeline is available in the critical date section of this tender published in www.etenders.kerala.gov.in

1. ONLINE BIDDER REGISTRATION PROCESS:

1.1 Bidders should have a Class III or above Digital Signature Certificate (DSC) to be procured from any Registration Authorities (RA) under the Certifying Agency of India. Details of RAs will be available on www.cca.gov.in. Once, the DSC is obtained, bidders have to register on www.etenders.kerala.gov.in website for participating in this tender. Website registration is a one-time process without any registration fees. However, bidders have to procure DSC at their own cost.

1.2 Bidders may contact e-Procurement support desk of Kerala State IT Mission over telephone at 0471- 2577088, 2577188, 2577388 or 0484 – 2336006, 2332262 - through email: helpetender@gmail.com / etendershelp@kerala.gov.in for assistance in this regard

2. ONLINE TENDER PROCESS:

The tender process shall consist of the following stages:

i. Downloading of tender document: Tender document will be available for free download on www.etenders.kerala.gov.in. However, tender document fees shall be payable at the time of bid submission as stipulated in this tender document.

ii. Pre-bid meeting: (not applicable).

iii. Publishing of Corrigendum: All corrigenda shall be published on www.etenders.kerala.gov.in and shall not be available elsewhere.

iv. Bid submission: Bidders have to submit their bids along with supporting documents to support their eligibility, as required in this tender document on www.etenders.kerala.gov.in. No manual submission of bid is allowed and manual bids shall not be accepted under any circumstances.

v. In case bidder encounters any technical issues pertaining to e-Procurement system while acting on the tender, computer screen shot of the error message with date & time stamp on the web-browser along with the query shall be e-mailed by the bidder to the help desk **(helpetender@gmail.com/ etendershelp@kerala.gov.in)**, for resolution of the problem. At the same time, problem must be intimated to the concerned Tender Inviting Authority via email.

vi. The time taken to ascertain, evaluate and suggest a solution for the problem reported by bidder may vary from case to case. Hence bidders are advised to submit the bid **at least 2 working days before the due date** and time of bid submission to avoid any last-minute issues that may come up.

vii. Opening of Bid and Bidder short-listing: The single cover bids will be opened, evaluated and shortlisted as per the eligibility. Failure to submit the required documents online will attract disqualification. ~~Price bids of the eligible bidder's will open the same day of opening and the work will be awarded.~~

3. DOCUMENTS COMPRISING BID:

3.1 (a) The First Stage - Part-I Pre- Qualification cum Technical Bid with Commercial terms ~~without Price Bid~~

Technical proposal shall contain the scanned copies of the following documents which every bidder has to upload:

Envelop -1 shall contain, Part-I (this document in PDF form)/scanned copies as below order along with the checklist provided

File No	Name of the file	Documents to up uploaded
1	Pre bid agreement and signed tender doc	1. ANNEXURE B-Agreement on stamp paper worth Rs.200/- 2. Signed and sealed tender document along with corrigendum 3. Exemption document in case of EMD and Tender fee exemption /Proof of Online payment of EMD and Tender fees/In case of EMD paid as BG, Format Hto be submitted
2	PQ Documents	1. A Joint venture Agreement clearly mentioning the name of the lead bidder, in case the bid is submitted by an EPC contractor / vendor in Rs. 200 Stamp paper 2. Copy of work order and corresponding completion certificate for meeting eligibility criteria (Document should be submitted as Work order along with its own completion certificate for each project)
3	Technical Documents	1. ANNEXURE G–Guaranteed Technical Parameters 2. Bill of material 3. Data sheet 4. Test certificates 5. ICRA Solar Grading Certificate
4	Annexures and format	1. Copy of Registration Certificate of firm 1 2. In case of JV, Copy of Registration Certificate of firm 2 3. Copy of GST Certificate of firm 1 4. In case of JV, Copy of GST of firm 2 5. Copy of PAN card of bidder/TAN of firm 1

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File No	Name of the file	Documents to up uploaded
		6. Copy of PAN card of bidder/TAN of firm 2 7. Proof and declaration regarding manufacturing of solar panel 8. Under taking by the manufacturer to supply DCR solar panel as per tender. 9. Under taking by the bidder to supply indigenously manufactured solar on grid Inverter with IS certifications. 10. ANNEXURE A– Summary of Bid Qualification Requirement. 11. ANNEXURE C– Declaration by the bidder 12. ANNEXURE D– Declaration on subsidy claim 13. ANNEXURE E–Declaration of relationship with ANERT employee 14. FORMAT A– Undertaking for no blacklisting and no banning (To be provided on Rs.200 Non-Judicial Stamp paper. In Case of JV the same to be provided by Each Member of the Joint Venture shall submit the same) 15. FORMAT B – Power of attorney in favor of authorized signatory (In case bidder is JV). If it is not applicable, need to submit self-declaration on authorized signatory. 16. Undertaking by the agency regarding service centre to be provided on Rs.200 Non-Judicial Stamp paper else details of service center as per tender. 17. Any other document which is relevant to this tender shall be included here.

Note: In case of JV, Firm 1 will be the lead member and Firm 2 will be the second partner. In case of the bidder being both EPC and Manufacturer, documents shall be submitted accordingly.

3.1 (b) ~~The Second Stage (Financial Cover as per two cover system):~~

~~**Envelop -2:** shall contain the Price Schedule as per BOQ in Excel format for this tender to be downloaded from e-tender website, duly digitally signed by the tenderer/authorized signatory of the tender.~~

3.2 The department doesn't take any responsibility for any technical snag or failure that has taken place during document upload.

3.3 ~~The Bidder shall complete the Price bid as per format given for download along with this tender~~.

~~Note: The blank price bid should be downloaded and saved on bidder's computer without changing file-name otherwise price bid will not get uploaded. The bidder should fill in the details in the same file and upload the same back to the website.~~

~~3.4 Fixed price: Prices quoted by the Bidder shall be fixed during the bidder's performance of the contract and not subject to variation on any account. A bid submitted with an adjustable/ variable price quotation will be treated as non - responsive and rejected.~~

4. TENDER DOCUMENT FEES AND EARNEST MONEY DEPOSIT (EMD)

4.1 The Bidder shall pay, a Tender document fee of Rs.15,000/- and Earnest Money Deposit or Bid Security of Rs.5,00,000/-. The Bid security is required to protect the purchaser against risk of Bidder's conduct, which would warrant the forfeiture of security.

4.2 Online Payment modes: The tender document fees can be paid in through e-Payment facility provided by the e-Procurement system. Bidders can make payment only via Internet banking facility. EMD is to be paid as FD/Bank Guarantee/Online Payment Mode.

State Bank of India Multi Option Payment System (SBI MOPS Gateway): Bidders are required to avail Internet Banking Facility in any of below banks for making tender remittances in e Procurement System.

Table 4.2

A) Internet Banking Options (Retail)			
1	Allahabad Bank	32	Kotak Mahindra Bank
2	Axis Bank	33	Lakshmi Vilas Bank
3	Andhra Bank	34	Mehsana Urban Co-op Bank
4	Bandan Bank	35	NKGSB Co-operative Bank
5	Bank of Bahrain and Kuwait	36	Oriental Bank of Commerce
6	Bank of Baroda	37	Punjab and Maharashtra Cooperative Bank
7	Bank of India	38	Punjab National Bank
8	Bank of Maharashtra	39	Punjab and Sind Bank
9	Bassein Catholic Co-operative Bank	40	RBL Bank
10	BNP Paribas	41	Saraswat Cooperative Bank
11	Canara Bank	42	ShamraoVithal Cooperative Bank
12	Catholic Syrian Bank	43	South Indian Bank
13	Central Bank of India	44	Standard Chartered Bank
14	City Union Bank	45	State Bank of India
1	Corporation Bank	4	Syndicate Bank

5		6	
16	Cosmos Bank	47	Tamilnad Mercantile Bank
17	DCB Bank	48	Tamilnadu Cooperative Bank
18	Dena Bank	49	The Kalyan Janata Sahakari Bank
19	Deutsche Bank	50	TJSB Bank
20	Dhanalaxmi Bank	51	UCO Bank
21	Federal Bank	52	Union Bank of India
22	HDFC Bank	53	United Bank of India
23	ICICI Bank	54	Vijaya Bank
24	IDBI Bank	55	YES Bank
25	Indian Bank		
26	Indian Overseas Bank		
27	IndusInd Bank		
28	Jammu & Kashmir Bank		
29	Janata Sahakari Bank		
30	Karnataka Bank		
31	Karur Vysya Bank		
B) Internet Banking Options (Corporate)			
1	Bank of Baroda	21	Laxmi Vilas Bank
2	Bank of India	2	Oriental Bank of Commerce

		2	
3	Bank of Maharashtra	23	Punjab & Maharashtra Coop Bank
4	BNP Paribas	24	Punjab & Sind Bank
5	Canara Bank	25	Punjab National Bank
6	Catholic Syrian Bank	26	RBL Bank
7	City Union Bank	27	ShamraoVitthal Co-operative Bank
8	Corporation Bank	28	South Indian Bank
9	Cosmos Bank	29	State Bank of India
10	Deutsche Bank	30	Syndicate Bank
11	Development Credit Bank	31	UCO Bank
12	Dhanalaxmi Bank	32	Union Bank of India
13	Federal Bank	33	UPPCL
14	HDFC Bank	34	Vijaya Bank
15	ICICI Bank	35	Axis Bank
16	Indian Overseas Bank		
17	Janta Sahakari Bank		
18	Jammu & Kashmir Bank		
19	Karur Vysya Bank		
20	Kotak Bank		

During the online bid submission process, bidder shall select ***SBI MOPS*** option and submit the page, to view the ***Terms and Conditions*** page. On further submitting the same, the e-Procurement system will re-direct the bidder to MOPS Gateway, where two options namely ***SBI*** and ***Other Banks**** will be shown. Here, Bidder may proceed as per below:

a) *SBI Account Holders*shall click ***SBI*** option to with its Net Banking Facility., where bidder can enter their internet banking credentials and transfer the Tender Fee and EMD amount.

b) *Other Bank Account Holders* may click ***Other Banks*** optionto view the bank selection page. Here, bidders can select from any of the 54 Banks to proceed with its Net Banking Facility, for remitting tender payments.

**Transaction Charges for Other Banks vide SBI Letter No. LHO/TVM/AC/2016-17/47 – 1% of transaction value subject to a minimum of Rs. 50/- and maximum of Rs. 150/-*

** Bidders who are using Other Banks option under SBI MOPS Payment Gateway, are advised by SBI to make online payment 72 hours in advance before tender closing time.*

5. SUBMISSION PROCESS:

5.1 For submission of bids, all interested bidders have to register online as explained above in this document. After registration, bidders shall submit their Technical bid and ~~financial bid~~ online on www.etenders.kerala.gov.in along with online payment of tender document fees and EMD.

5.2 For page-by-page instructions on bid submission process, please visit www.etenders.kerala.gov.in and click “Bidders Manual Kit” link on the home page.

5.3 It is necessary to click on “Freeze bid” link/ icon to complete the process of bid submission otherwise the bid will not get submitted online and the

same shall not be available for viewing/ opening during bid opening process.

6. VALIDITY

6.1 The tender offer shall be kept valid for acceptance for a period of 6months from the date of opening of offers. The offers with lower validity period are liable for rejection.

6.2 Further, the tenderer may extend the validity of the Bids without altering the substance and prices of their Bid for further periods, if so required

7. DEVIATIONS

7.1 The offers of the Tenderers with Deviations in Commercial terms and Technical Terms of the Tender Document are liable for rejection.

8. BLACK LIST

8.1 All the intending tenderers shall agree that in the event of the documents furnished with the offer being found to be bogus or the documents contain false particulars, they shall be black listed for future tenders/ association with ANERT and EMD shall be forfeited against any losses incurred by ANERT.

9. BIDDER'S LOCATION

9.1 The tenderers are requested to furnish the exact location of their factories/ go down with detailed postal address and pin code, telephone n sand email id. etc. In their tenders to arrange inspection by ANERT, if considered necessary.

9.2 All communication shall be made to the registered email of the bidder in the e-tendering systems and ANERT shall not be responsible for non-receipt or delay of any such communication.

10. BID QUALIFICATION REQUIREMENTS

10.1 General Requirements

10.1.1 Every tenderer should submit along with his e-tender an Earnest Money Deposit (EMD). This may be done electronically from any of the Nationalized/Schedule Banks. The EMD of the disqualified tenderers will be returned automatically through e-procurement system. The EMD of the successful tenderers may be adjusted towards the security deposit. No interest shall be paid for the earnest money deposited.

10.1.2 An agreement in Rs.200/- Stamp Paper as per the format given in Annexure B must be submitted along with e-tender document.

10.1.3 As per the guidelines of PM-KUSUM, only Manufacturers of PV Modules OR Manufactures of Solar pumps OR a Joint Venture of an EPC with a Manufacturer of Solar Module are eligible to undertake works under the scheme.

10.1.4 The sole bidder or any member of the consortium/JV should have a Solar Grading certificate issued by M/s ICRA Analytics and this will be considered as Pre-Qualification criteria for the tender.

10.1.5 The bidder should have service centres/authorised service providers in all districts of Kerala. Detailed list with address, contact details and proof has to be submitted. If the bidder does not have such facility at the time of tendering, an undertaking should be submitted along with the tender on Stamp paper worth Rs. 200/-agreeing to set up such facility and intimate the same within 15 days of letter of intent. Urja Mithra service centres supported by ANERT can also be included as service centres provided the bidders make separate agreements with them.

10.1.6 ~~Price Bid in excel format, for this tender to be downloaded from e-tender website, duly digitally signed by the tenderer/authorized signatory of the tender~~.

10.2 Eligibility Requirement

10.2.1 The detail of eligibility requirements is provided in the table below. The bidders are required to furnish the required supporting documents along with the Technical Bid.

Table 10.2

S. No.	Criteria	Documents Required
1.1.	Bidder can be sole/ single bidder OR, Joint Venture (JV) of up to 2 (two) members, with one of the members as a Lead Member	In case of JV, Deed of Undertaking
1.2.	The Bidder should have any of the following legal status: a) Body incorporated in India under the Companies Act, 2013 including any amendment thereto; OR b) Body incorporated in India under the Limited Liability Partnership (LLP) Act, 2008 including any amendment thereto; OR c) Firm registered under Partnership Act, 1932 in India; OR d) Sole Proprietor In case of JV, all the members must fulfil this requirement and submit the documents as per the Tender Document.	a) In case of Company – Copy of Registration/Incorporation Certificate b) In case of LLP – Copy of Deed of Partnership c) In case of Partnership – Copy of Deed of Partnership d) In case of Sole Proprietor – Duly notarized Undertaking from Sole proprietor
1.3.	The Bidder must have the required GST Registration In case of JV, all the members must fulfil	Copy of GST registration certificate with legible GSTIN.

	this requirement.	
1.4.	The Bidder must have valid PAN Number In case of JV, all the members must fulfil this requirement.	Copy of Pan Card
1.5.	The bidder must have completed solar installations of at least 3 MW in India to be eligible for projects above 10 KW. In case of JV, all the members jointly may fulfil this requirement and submit the documents as per the Tender document. The bidder must have completed solar installations of at least 1 MW in India to be eligible for projects up to 10 KW In case of JV, all the members jointly must fulfil this requirement and submit the documents as per the Tender document. The works shall have been executed under SNA/Govt. Organization/ SECI/PSUs.	Statutory Documents substantiating this requirement along with Documents submitted in Clause 1.2 of this Table above.
1.6.	The bidder should be having unblemished record and must not be blacklisted or declared ineligible for corrupt & fraudulent practices by "any state/ central government" department/ company / entity" as on date of bid opening. In case of JV, all the members must fulfil this requirement.	The bidder shall provide an Undertaking as per the format provided as Format A. In case of JV, all the members must submit the undertaking as per the format provided in Format A.
1.7.	The bidder must submit a Power of Attorney (POA) authorizing a person to sign the documents on behalf of the Bidder, submit technical, commercial information and attend meetings on behalf of the Bidder.	Sole Bidder to provide POA in the format as per the applicable Law. In case of JV, Agreement by JV as per the clause # 11.23. and POA as per the format provided in Format B.

CONDITIONS OF CONTRACT

11. GENERAL CONDITIONS

11.1 The tenders should be submitted online at www.etenders.kerala.gov.in

11.2 The tenders should be as per the prescribed form which should be downloaded from the e-tender website. The cost of tender forms should be paid online, and once paid will not be refunded. Tender forms are not transferable. Tenders that are not in the prescribed form are liable to be rejected.

11.3 Intending tenderers should submit their tenders on or before the due date and time mentioned in the tender abstract. Late tender will not be accepted.

11.4 The rates quoted should be only in Indian currency. Tenders in any other currency are liable to rejection. The rates quoted should be for the unit specified in the schedule attached.

11.5 The tenderer shall submit a copy of PAN card of the authorised signatory along with tender.

11.6 Tenders subject to conditions will not be considered. They are liable to be rejected on that sole ground.

11.7 The tenders will be opened on the specified day and time in the office of the CEO, ANERT in the presence of such of those tenderer's representatives who may be present with proper authorisation issued by the tenderer.

11.8 Every tenderer should send along with his tender an Earnest Money Deposit. This may be paid online at the e-tenders website.

11.9 If any tenderer withdraws from his e-tender before the expiry of the period fixed for keeping the rates firm for acceptance, the earnest money if any, deposited by him, will be forfeited.

11.10 The final acceptance/rejection of the tenders rests entirely with CEO, ANERT who do not bind themselves to accept the lowest or any tender.

11.11 In the case of materials of technical nature, the successful tenderer should be prepared to guarantee satisfactory performance for a period of guarantee under a definite penalty. Communication of acceptance of the e-tender normally constitutes a concluded contract. Nevertheless, the successful tenderer shall also ex-

ecute an agreement for the due fulfilment of the contract within the period to be specified in the letter of acceptance. The contractor shall have to pay all stamp duty, Lawyer's charges and other expenses incidental to the execution of the agreement. Failure to execute the agreement within the period specified will entail the penalties set out below:

a. The successful tenderer shall before sign the agreement and within the period specified in the letter of acceptance of his tender, deposit a sum equivalent to 3% of the value of the contract as security for the satisfactory fulfilment of the contract less the amount of money deposited by him along with his tender. Bidders having a MSME / NSIC / Udhyog Aadhar registration are exempted from paying Tender Fee and requisite EMD. In case of joint venture, all the bidders should meet these criteria. The format of Bank Guarantee for EMD as mentioned in the tender document is attached as annexure – H. If the successful tenderer fails to deposit the security and execute the agreement as stated above, the earnest money deposited by him will be forfeited to ANERT and contract arranged elsewhere at the defaulter's risk and any loss incurred by ANERT on account of the purchase will be recovered from the defaulter who will however not be entitled to any gain accruing thereby.

b. In cases where a successful tenderer, after having made partial supplies fails to fulfil the contracts in full, all or any of the materials not supplied may at the discretion of the Purchasing Officer be purchased by means of another tender/quotation or by negotiation or from the next higher tenderer who had offered to supply already, and the loss if any caused to ANERT shall thereby together with such sums as may be fixed by ANERT towards damages be recovered from the defaulting tenderer.

c. If the contractor fails to deliver all or any of the stores or perform the service within the time/period(s) specified in the contract, the purchaser shall without prejudice to its other remedies under the contract, deduct from the contract prices, as liquidated damages, a sum equivalent to 0.5 %

of the delivered price of the delayed stores or unperformed services for each week of delay until actual delivery or performance, up to a maximum deduction of 10% of the contract price of the delayed stores and services. Once the maximum is reached, the purchaser may consider termination of the contract at the risk and cost of the contractor.

11.12 The Security deposit shall, subject to the conditions specified herein be returned to the contractor within three months after the expiration of the contract but in the event of any dispute arising between ANERT and the contractor, ANERT shall be entitled to deduct out of the deposits or the balance thereof, until such dispute is determined the amount of such damages, costs, charges and expenses as may be claimed. The same may also be deducted from any other sum which may be due at any time from ANERT to the contractor. In all cases where there are guarantee for the goods supplied, the security deposit will be released only after the expiry of the guarantee period.

(a) All payments to the contractors will be made in due course via NEFT only

(b) All incidental expenses incurred by ANERT for making payments outside the State in which the claim arises shall be borne by the contractor.

11.13 Payments will be made only after the supply, Installation and Commissioning of the items and certification by the competent technical personnel of ANERT.

11.14 The contractor shall not assign or make over the contract on the benefits or burdens thereof to any other person or body corporate. The contractor shall not underlet or sublet to any person or persons or body corporate the execution of the contract or any part thereof without the consent in writing of the purchasing officer who shall have absolute power to refuse such consent or to rescind such consent (if given) at any time if he is not satisfied with the manner in which the contract is being executed and no allowance or compensation shall be made to the contractor or the subcontractor upon such rescission.Provided always that if such consent be given at any time, the contractor shall not be relieved from any obligation, duty or responsibility under this contract.

11.15 In case the contractor becomes insolvent or goes into liquidation, or makes or proposes to make any assignment for the benefit of his creditors or proposes

any composition with his creditors for the settlement of his debts, carries on his business or the contract under inspection or behalf of or his creditors or in case any receiving order(s) for the administration of his estate are made against him or in case the contractor shall commit any act of insolvency or in case in which under any clause or clauses any act of insolvency or in case in which under any clause(s) of this contract the contractor shall have rendered himself liable to damages amounting to the whole of his security deposits, the contract shall, thereupon, after notice given by the Purchasing Officer to the contractor, be determined and ANERT may complete the contract in such time and manner and by such persons as ANERT shall think fit. But such determination of the contract shall be without any prejudice to any right or remedy of ANERT against the contractor or his sureties in respect of any breach of contract committed by the contractor. All expenses and damages caused to ANERT by any breach of contract by the contractor shall be paid by the contractor to ANERT and may be recovered from him under the provisions of the Revenue Recovery Act in force in the State.

11.16 In case the contractor fails to supply and deliver any of the said articles and things within the time provided for delivery of the same, or in case the contractor commits any breach of any of the covenants, stipulations and agreements herein contained, and on his part to be observed and performed, then and in any such case, it shall be lawful for ANERT (if they shall think fit to do so) to arrange for the purchase of the said articles and things from elsewhere of on behalf of ANERT by an order in writing under *the* hand of the CEO put an end to this contract and in case ANERT shall have incurred sustained or been put to any costs, damages or expenses by reason of such purchase or by reason of this contract having been so put an end to or in case any difference in price, compensation, loss, costs, damages, expenses or other moneys shall then or any time during the continuance of this contract be payable by the contractor to ANERT under and by virtue of this contract, it shall be lawful for ANERT from and out of any moneys for the time being payable or owing to the contractor from ANERT under or by virtue of this contract or otherwise to pay and reimburse to ANERT all such costs, damages and expenses they may have sustained, incurred or been put to by reason of the purchase made elsewhere or by reason of this contract

having been so put an end to as aforesaid and also all such difference in price, compensation, loss, costs, damages, expenses and other moneys as shall for the time being payable by the contractor aforesaid.

11.17 Any sum of money due and payable to the contractor (including security deposit returnable to him) under this contract may be appropriated by the CEO or any other person authorised by ANERT and set off against any claim of ANERT for the payment of a sum of money arising out of or under any other contract made by the contractor with ANERT or any other person authorised by ANERT. Any sum of money due and payable to the successful tenderer or contractor from ANERT shall be adjusted against any sum of money due to ANERT from him under any other contracts.

11.18 Every notice hereby required or authorised to be given may be either given to the contractor personally or left at his residence or last known place of abode or business, or may be handed over to his agent personally, or may be addressed to the contractor by post at his usual or last known place of abode or business and if so addressed and posted, shall be deemed to have been served on the contractor on the date on which in the ordinary course of post, a letter so addressed and posted would reach his place of abode or business.

11.19 The tenderer shall undertake the installation and commissioning of the system according to the standards and specification.

11.20 No representation for enhancement of rate once accepted will be considered.

11.21 The prices quoted should be inclusive ofGST and all other expenses which are or may become payable by the contractor under existing or future laws or rules of the country of origin/supply or delivery during execution of the contract.

11.22 Special conditions, if any, of the tenderers attached with the tenders will not be applicable to the contract unless they are expressly accepted in writing by the purchaser.

11.23 Bidders are requested to submit the JV agreement in Rs. 200 stamp paper, clearly mentioning the tender details and lead bidder. Tenders without the agreement in stamped paper will be rejected outright.

11.24 The documents such as Annexure B (Rs. 200/- stamp paper), undertaking of service centres (200/- stamp paper),JV agreement (in case of JV) (200/- stamp paper), Format-B-Power of Attorney in favour of authorised signatory(200/- stamp paper) and Format-A- Undertaking for No Blacklisting & No Banning (200/- stamp paper) need not be submitted for those who already submitted for tender id vide.2022_ANERT_504042_1. These documents must be clear and complete in all aspects, failing which the bid will be duly rejected.

11.25 All other documents other than listed in the clause 11.24 need to be submitted with valid date and signatures.

11.26 Conditions in the technical document, technical specifications and special conditions of this tender document would override these general conditions, wherever applicable.

11.27 ANERT, by notice sent to the supplier, may terminate the contract, in whole or in part, at any time for its convenience. The notice of termination shall specify that termination is for ANERT's convenience, the extent to which performance of the Supplier under the contract is terminated, and the date upon which such termination becomes effective.

11.28 E-tender shall be opened at the time and date announced in the tender notice, and the ~~price bid~~ will be evaluated on the same day.

11.29 In case any difference or dispute arises in connection with the contract, all legal proceedings relating to the matter shall be instituted in the Court within whose jurisdiction the CEO, ANERT voluntarily resides.

11.30 The Courts situated at the place where the headquarters of ANERT is situated viz, Thiruvananthapuram alone will have jurisdiction to entertain civil suits and all other legal pertaining to this contract.

12. SPECIAL CONDITIONS

12.1 The entire quantity of 9,348Nos of systems in two groups as below: -

Group Number	PV capacity (kW)	Nos	Total quantity
1	2	5000*	9,248

	3	3000*	
	5	1000*	
	7	100*	
	10	148*	
2	30-150*		100

- The individual no of pumps may vary according to tge NABARD allocation and field survey

12.2 It is mandatory for all bidders to quote in both the groups

12.3 Each bidder should submit only one (1) bid. Any bidder who submits/participates in more than one bid for the work shall be disqualified.

12.4 ~~Price bid for the installation in SPV system inclusive of all requirements as per the document is to be quoted by the bidders~~ and for the Group 1, the L1 rate for each system (2-10kW) will be considered separately. In case of Group2, prices are to be quoted in terms of Rate/kW(rates for PV capacity 30-100 kW and capacity above 100 kW shall be quoted separately).

12.5 For evaluating the L1 price, only the rates quoted by the bidder having ICRA Grading of 1A, 1B, 1C, 2A& 2B will be considered. Vendors having lower grade are also eligible for participation in the tender, whereas their rates will not be considered for L1 rate finalisation. The allotment of works will also be based on the ICRA grading mentioned in this document.

12.6 It will be mandatory to use indigenously manufactured solar panels with indigenous solar cells and modules. Further, inverters/controllers and the Balance of System should also be manufactured indigenously. The contractor must declare the list of imported components used in the solarisation system.

12.7 If the bidder has NOT submitted the requisite EMD OR Agreement~~, OR if the price bid is not submitted along with the tender,~~ such tenders will be summarily rejected.

12.8 During the tender evaluation, ANERT may seek more clarifications/details from any or all the tenderers, if felt necessary.

12.9 ~~The price bids of the tenderers, who are technically qualified, will be opened~~ and the L1 bidder as mentioned in clause #12.5 will be awarded the work of supply and installation of items after fulfilling all the requirements.

12.10 If found essential, ANERT reserves the right, in the interest of completion of work within the time limit, to award portion/portions of the work order to next higher bidders, called for negotiation in the increasing order of their price offers, if they agree to supply at the L1 price.

12.11 L1 bidder will get priority on allotting the work order.

12.12 The tenderer should use the PV modules available in the ALMM list issued by MNRE vide order No.F.No. 283/54/2018-GRID Solar – Part (1) dtd 29/09/2021(New one) or latest issued by MNRE as specifications.

12.13 The tenderer should provide inverters meeting all the specifications stipulated in this document.

12.14 The agency can take approval for the new components except PV modules by submitting a request with relevant certificates.

12.15 For the installations in Group 2 (Higher capacity pumps)- in case of installation of additional/new transformer is required, the bidder shall install through KSEBL at their expenses. The amount shall be recouped by ANERT afterwards upon submission of the proper documents.

12.16 The rate quoted should be all inclusive including delivery of materials at the locations to be specified including transportation, loading, unloading etc, and the cost of materials and labour for the civil works, installation

and commissioning, Remote Monitoring System excluding the SIM cost, warranties, all fees for approval from KSEBL and Electrical Inspectorate, application fees, GST and all other expenses. ***In case of installations under Group No.2 as per tender document, additional site-specific costs if any required for structure works, pathway, ladder for accessing PV modules etc will be considered separately.***

12.17 **The price quotes should be inclusive of initial cost of supply, installation and commissioning and support during the warranty period of 7-years. The rates for the installation in Rooftop and Ground mounted system under Group 1 is to be quoted**

12.18 The additional costs required for cabling, structural works etc for any excess quantity other than the standard installation mentioned in the tender document is to be quoted separately in letter head and is to be uploaded in the provision provided for uploading PDF document in the finance cover, The additional rates for each capacity range are to be quoted as follows:

i. Per meter cost for DC Cable for Installations under Group 1 & 2 category
ii. Per meter cost for AC Cabling for Installations under Group 1 category
iii. Per meter cost for AC Cabling for Installations under Group 2 category
iv. Cost for additional Structure for increase in height of above 1m from the standard height / kW
v. Cost for additional Structure for increase in height of above 2m from the standard height / kW
vi. Cost for additional Structure for Rooftop installation in slanting GI or Aluminium sheet roof / kW

Any other component required in excess to be quoted in per unit cost of that component

12.19 The tender offer shall be kept valid for acceptance for a period of 12 months from the date of opening of bid. The offers with lower validity period are liable for rejection.

12.20 **Bidder should not apply directly to MNRE for claiming the subsidy/ incentive amount. ANERT will be responsible for claiming the subsidy/ incentive from MNRE for onward distribution to the agency once sanctioned from MNRE. Also, bidder should submit a separate declaration stating that they would not apply separately to MNRE for claiming the subsidy/ incentive for the project.**

12.21 ~~The evaluation of the price bid will be based on the grand total of all-inclusive amount quoted excluding GST.~~ However, the estimated cost mentioned in the Tender will be inclusive of GST.

13. SCHEDULE OF SUPPLY

13.1 The items should be delivered and installed for which work orders given as specified by ANERT, under prior intimation and supervision of ANERT for the solarisation of the existing Agricultural Pumps all over Kerala.

13.1 The Supply, Installation and Commissioning of each of the work allottedshall be completed within **2 months of the date of supply order.** This is the time period for handing over the system to ANERT and no time extension in this regard without valid reasons will be entertained.

13.2 The capacity of pumps to be solarised and the max allowed capacity of SPV power plant is as given below.

Pump Capacity	Capacity of PV Plant
below 2 HP	2kW
2-3 HP	2-3kW
>3-5HP	5kW
>5-7HP	7kW
>7-10HP	10kW
20 HP	30 kW
30 HP	50 kW
50 HP	75 kW
100 HP	150 kW

13.5 Supply of the main components such as SPV module, PCU and charge controller should be from the approved component list published byMNRE andANERT websites.

13.6 Penalty for delay in supply and installation will be imposed at 0.5 % per week up to a maximum 10 %. In case of delay in supply and installation, CEO, ANERT may cancel the contract and take recourse to other action as deemed appropriate.

14. PAYMENT

14.1 No advance payment will be given. The payment will be released for each work order on completion of entire systems upon the report submitted by the respective District Engineer, ANERT.

14.2 The terms of payment shall be:

a. 50% of the contract value shall be released upon the delivery of the major components at all the sites mentioned in the work order to be issued.

b. 30% of the contract value shall be released on commissioning of installation on submitting documents such as completion reports to ANERT

c. 20% of the contract value will be released as and when the funds for the project is received from MNRE for the particular installation. ThePerformance Bank Guarantee (PBG) will be 3% of the final project cost and the PBG shall be submitted on or before the final releasing of the payment.The validity of PBG shall be rolled over every year for first seven years or till the warranty period of the last installation is completed. The rolling over or release of this PBG shall be based on the clearance of pending penalties/fines imposed by ANERT.

14.3 Income tax, contribution to workers' welfare fund which will be applicable to installations which involve civil construction work and other statutory deductions shall be made from the payment as per prevailing norms.

15. SERVICE AND MAINTENANCE

15.1 Empanelled agency should have at least one service centre at each district where their system is installed. Also, there should be an additional service centre for each 500 installations per district.

15.2 The faulty system or components should be replaced/ repaired within 7 days of fault reporting.

15.3 Delay in servicing beyond 7 days of fault reporting would attract penalty at the ratesdecided by CEO, ANERT and further actions will be initiated against the agency.

15.4 The service personnel should visit the installations at least once in 3 months for preventive maintenance even if no faults are reported. **Reports of these preventive maintenance visits and generation data should be submitted to the concerned ANERT District Offices on a quarterly basis**. The delay beyond a period of 15 days may lead to penalty as decided by CEO ANERT.

15.5 A designated Helpline (in Malayalam language) address should be indicated on the inverter/controller at suitable location easily visible to the user for reporting faults during the warranty period.

TECHNICAL SPECIFICATIONS

16. SCOPE OF THE WORK

The scope covers the Solarisation of existing Agricultural Pumps in the State under Component C of the Pradhan Mantri Kisan Urja Suraksha evamUtthaanMahabhiyaan (PM KUSUM) scheme. This includes the Supply, Installation and Commissioning of**SPV Power Plants with Grid connectivity for solarising the following capacity of Agricultural pumps:**

PumpCapacity	Capacity of PV Plant
below 2 HP	2kW
2-3 Hp	2-3kW
>3-5HP	5kW
10HP	10 kW
20 HP	30 kW
30 HP	50 kW
50 HP	75 kW
100 HP	150 kW

All the necessary approvals from KSEBL(Electrical Utility)/Electrical Inspectorate, feasibility study, necessary civil work, Mounting of Module Structures, PV Module Installation, Inverter Installation, DC/AC Cabling and interconnections, Installation of Lightning Arresters and Earthing System as per the standards, Net Metering, arranging all the necessary inspections from KSEBL/Electrical Inspectorate/ ANERT District Office as part of Pre-Commissioning, if any, Commissioning of the PV Power Plant, are coming under the scope of the bidder.

i. Location

The proposed location for installation of the SPV modules will be on the Roof top of existing building rooftop / vacant land available with Farmers/WUAs (Water User Association) spread across the 14 Districts in the State of Kerala. Majority of the installations under Group 1 will be concentrated on 5 districts of Kerala ie. Thrissur, Kasaragod, Malappuram, Palakkad& Ernakulum. In the case of Group 2, the installations

will be on the agricultural fields (mostly paddy) in the kole wet lands of Thrissur and Ponnani.

Individual Krishibhavan/part will be provided to vendors for conducting site study and feasible site will be allotted as project for issuing work order throughBuyMySun.com

17. DEFINITION

17.1 Solar Plant systems tendered through this document includes installation as follows

a. For GROUP 1, it shall includeinstallations of Roof Top as well as Ground mount SPV Power plants with based on site survey.

b. For GROUP 2, the Ground mount structures are preferred to install.

17.2 Solar PV power plant system comprises of C-Si (Crystalline Silicon)/ Thin Film Solar PV modules with intelligent Inverter having MPPT technology and Anti-Islanding feature and associated power electronics, which feeds generated AC power to the Grid. Other than PV Modules and Inverter/Inverters, the system consists of Module Mounting Structures, appropriate DC and AC Cables, Array Junction Boxes (AJB) / String Combiner Boxes (SCB), AC and DC Distribution Box, Lightning Arrester, Earthing Systems, Net meter, etc.

17.3 The system should be capable for exporting the generated AC power to the Grid, whenever the Grid is available with all System Protection facilities.

18. STANDARDS AND REGULATIONS TO BE COMPLIED

18.1 The connectivity should be as per (Technical Standards for connectivity of the Distributed generation resources, Regulation, 2013) and its amendments thereof

18.2 KSERC (Grid interactive Distributed Solar Energy Systems) Regulations, 2014 and its amendments thereof

18.3 KSERC (Renewable Energy and Net Metering) Regulations, 2020 and its amendments thereof

18.4 CEA Regulation 2010 has to be followed safety and Electricity supply.

18.5 Metering should be as per CEA regulation 2006.

18.6 Any amendments thereof will also be applicable.

19. SYSTEM COMPONENTS- TECHNICAL COMPLIANCE FOR SYSTEM COMPONENTS

S/ N	System Component	Capacity/ rating	Minimum Technical Compliance
1.	Solar panel	As per the requirement	IS 14286 -Design Qualification and Type Approval for Crystalline Silicon Terrestrial Photovoltaic (PV) Modules
			IEC/IS61730: Part I& II;
			IS 16170: Part I
			IS/IEC 61701-Salt Mist Corrosion Testing of Photovoltaic (PV) Modules
3.	Grid Tied Inverter	As per the rating system selected	IS 16221: Part 1 &2- Safety of Power Converters for use in Photovoltaic Power Systems
			IS 16169 - Test Procedure of Islanding Prevention Measures for Utility-Interconnected Photovoltaic Inverters
5.	Cables	Max 15m in AC side and DC side as 25m.	IEC 60227 / IS 694
			IEC 60502 / IS 1554 (Pt. I & II)
7.	Switches/ Circuit Breakers/ Connectors	As required	IEC 60947 part I, II, III /
			IS 60947 Part I, II, III
			EN 50521
10.	Junction Boxes/Enclosures for Inverters and meters/ Charge Controllers	As required	IP 54 (for outdoor) or IP 65 / IP 21(for indoor) as per IEC 529
11.	Energy Meter for Recording Solar Electricity Generated		As per CEA regulations
12.	Two-way meter for Distribution Licensee grid connection		As per CEA regulations
13.	Electrical Grounding (Earthing)	As required	As per IS 3043

S/N	System Component	Capacity/ rating	Minimum Technical Compliance
14.	Remote Monitoring System(RMS)	As required	As per MNRE requirements.

20. SPV MODULES

20.1 Only crystalline silicon cell PV modules of 335$W_p$or higher capacity should be used in the power plant. It is necessary to use SPV modules with indigenously manufactured solar cells (DCR Content) and shall be listed under the approved list of ALMM issued by MNRE from time to time.

20.2 Shading correction/ bypass for optimizing array out to be incorporated in each solar module or panel level and shading optimization to be provided.

20.3 Each PV module used in any solar power project must use a RF identification tag (RFID), which must contain the following information. The RFID can be inside or outside the module laminate, but must be able to withstand harsh environmental conditions.

i. Name of the manufacturer of PV Module

ii. Name of the manufacturer of Solar cells

iii. Month and year of the manufacture (separately for solar cells and module)

iv. Country of origin (separately for solar cell and module)

v. I-V curve for the module

vi. Peak Wattage, I_m, V_m and FF for the module

vii. Unique Serial No. and Model No. of the module

viii. Date and year of obtaining IEC PV module qualification certificate

ix. Name of the test lab issuing IEC certificate

x. Other relevant information on traceability of solar cells and module as per ISO 9000 series

20.4 The following details should be provided on the module

i. Name of the manufacturer
ii. Month and year of manufacture
iii. Rated Power at STC
iv. V_{mp}, I_{mp}, V_{oc}, I_{sc}

20.5 The PV modules must qualify (enclose Test Reports/Certificates from IEC/NABL accredited laboratory) as per relevant IEC standard. The Performance of PV Modules at STC conditions must be tested and approved by one of the IEC/NABL Accredited Testing Laboratories.

20.6 PV modules used in solar power plants/ systems must be warranted for their output peak watt capacity, which should not be less than 90% at the end of 10 years and 80% at the end of 25 years.

21. POWER CONDITIONING UNIT (PCU)

Technical data sheet of the inverter proposed or the project indicating operating modes, protection, efficiency etc. should be provided by the bidder.

Common Technical Specification:

Output voltage	1 phase, 240 VAC; 3 phase, 415 VAC Inverter/ PCU should be capable of synchronise with grid voltage between 110% and 80% of the rated output. Beyond this system has to stop generating.
Over Voltage / Under Voltage trip	When Voltages reaches above 110% or below 80% respectively, with clearing time up to two seconds for reconnection.
Frequency	50 Hz. Inverter/ PCU should be capable to synchronise with grid for a variation of frequency between 50.5 Hz and 47.5 Hz. Beyond this system has to stop generating.
Over and Under frequency Trip	High frequency at 50.5 Hz and low frequency at 47.5 Hz clearing time up to 0.2 seconds.

Continuous rating	Rated capacity of the configuration.
Nominal Power	Rated power should not be less than the rated capacity of the SPV array at STC.
Communication capability	Should have RS 485 Communication mode so as to integrate with Remote Monitoring System.
Standard conformation	IS16221(Part 1,2)
	IS16169:2014 (Procedure for Islanding prevention measures for Utility Connected PV Inverters)
Total Harmonic Distortion	Less than 5%
Operating temperature Range	-50 to 600 C
Housing cabinet	PCU to be housed in suitable switch cabinet, Within IP 21 (Indoor)/ IP 54 (Outdoor)
PCU efficiency	95% and above at full load.
Power Control	MPPT
Harmonic Current Injections	Shall not exceed the limits specified in IEEE519
Direct Current Injection	Less than 0.5 % of the full rated output at the interconnection point.
Flicker	Should be within the limits specified in IEC 61000
Synchronisation	Automatic (Built into the inverter)
Hysteresis required for reenergizing	Sixty seconds at stabilized condition.
Power Factor	The PCU power factor at the point of distribution Licensee service connection shall be 0.95 lagging or leading when operating at above 25 percent of the rated output.
Maximum time for cease to Energise in the case of formation of an unintended Island	2 Seconds

21.1 The PCU shall not produce Electromagnetic interference (EMI) which may cause malfunctioning of electronic and electrical instruments including communication equipment, which are located within the facility in which the PCU is housed.

21.2 The PCU shall have an appropriate display on the front panel to display the instantaneous AC power output and the DC voltage, current and power input. Each of these measurement displays shall have an accuracy of 1 percent of full scale or better. The display shall be visible from outside the PCU enclosure. Operational status of the PCU, alarms, trouble indicators and AC and DC disconnect switch positions shall also be communicated by appropriate messages or indicator lights on the front of the PCU enclosure.

21.3 The PCU shall include an easily accessible emergency OFF button located at an appropriate position on the unit.

21.4 The PCU shall include ground lugs for equipment and PV array grounding.

21.5 All exposed surfaces of ferrous parts shall be thoroughly cleaned, primed, and painted or otherwise suitably protected to survive a nominal 30 years' design life of the unit.

21.6 The PCU enclosure shall be weather proof and capable of surviving climatic changes and should keep the PCU intact under all conditions in the room where it will be housed. The inverter shall be located indoor and should be either wall/ pad mounted. Moisture condensation and entry of rodents and insects shall be prevented in the PCC enclosure.

21.7 Components and circuit boards mounted inside the enclosures shall be clearly identified with appropriate permanent designations, which shall also serve to identify the items on the supplied drawings.

21.8 Maximum Power Point Tracker (MPPT) - MPPT shall be integrated in the PCU to maximize the energy drawn from the array. The MPPT should be microprocessor based to minimize the power losses.

22. ELECTRICAL SAFETY, EARTHING AND PROTECTION

22.1 Internal Faults: In built protection for internal faults including excess temperature, commutation failure, over load and cooling fan failure (if fitted) is obligatory.

22.2 Over Voltage Protection: Over Voltage Protection against atmospheric lightning discharge to the PV array is required. Protection is to be provided against voltage fluctuations in the grid itself and internal faults in the power conditioner, operational errors and switching transients.

22.3 Earth fault supervision: An integrated earth fault device shall have to be provided to detect eventual earth fault on DC side and shall send message to the supervisory system.

23. CABLING PRACTICE

23.1 Cable connections must be made using PVC Cu cables, as per BIS standards. All cable connections must be made using suitable terminations for effective contact. The PVC Cu cables must be run in GL trays with covers for protection.

24. FACTORY TESTING

24.1 PCU shall be tested prior to shipment and factory test certificate for relevant parameters should be provided with the PCU supplied. ANERT or authorised representative of ANERT may be allowed to witness the tests if required.

24.2 Factory testing shall not only be limited to measurement of phase currents, efficiencies, harmonic content and power factor, but shall also include all other necessary tests/simulation required and requested by the Purchasers Engineers. Tests may be performed at 25, 50, 75 and 100 percent of the rated nominal power.

25. PLANT METERING/ DATA LOGGING

25.1 Net meter as per CEA standards approved by the utility as per accuracy class has to be supplied and installed.

25.2 A separate Energy Meter shall be provided at the output of PCU to record the energy generation from the solar system. (This energy meter should not be integrated with PCU). This has to calibrate and installed nearer to the Consumer meter board so that meter reader from Electrical utility could access while.

25.3 All major parameters should be available on the digital bus and logging facility for energy auditing through the internal microprocessor and can be read on the digital front panel at any time the current values, previous values for up to a month and the average values.

14. REMOTE MONITORING SYSTEM

Remote Monitoring System (RMS) should have provision to monitor and upload all parameters required by MNRE under PM KUSUM Scheme to a specified server including:

a) Solar System Performance: DC Voltage, DC current, AC output Current, Power, Drive frequency, Energy, etc.

b) RMS Performance: Device Connectivity, Data Availability, etc.

c) Geo Location: Real time latitude and longitude should be captured. This is required to ensure that system is not moved from its original location.

d) Events and Notifications: Faults related to Pump Operation, Solar generation, Controller/Drive faults like overload, dry run, short circuit, etc.

e) Consumer Management: Name, Agriculture details, Service No. Contact Details, etc.

f) Asset Management: Ratings, Serial Number, Make, Model Number of Pump, Panel and Controller, Geo Location, IMEI number (of communication module) and ICCID (of SIM).

g) Complaint and Ticket Management: Complaint management system is a part of centralized monitoring software platform – State Level Solar Energy Management Platform to be operated and maintained by the State implementing agency (SIA).

h) Consumer Mobile Application: Generation, Complaint logging, etc.

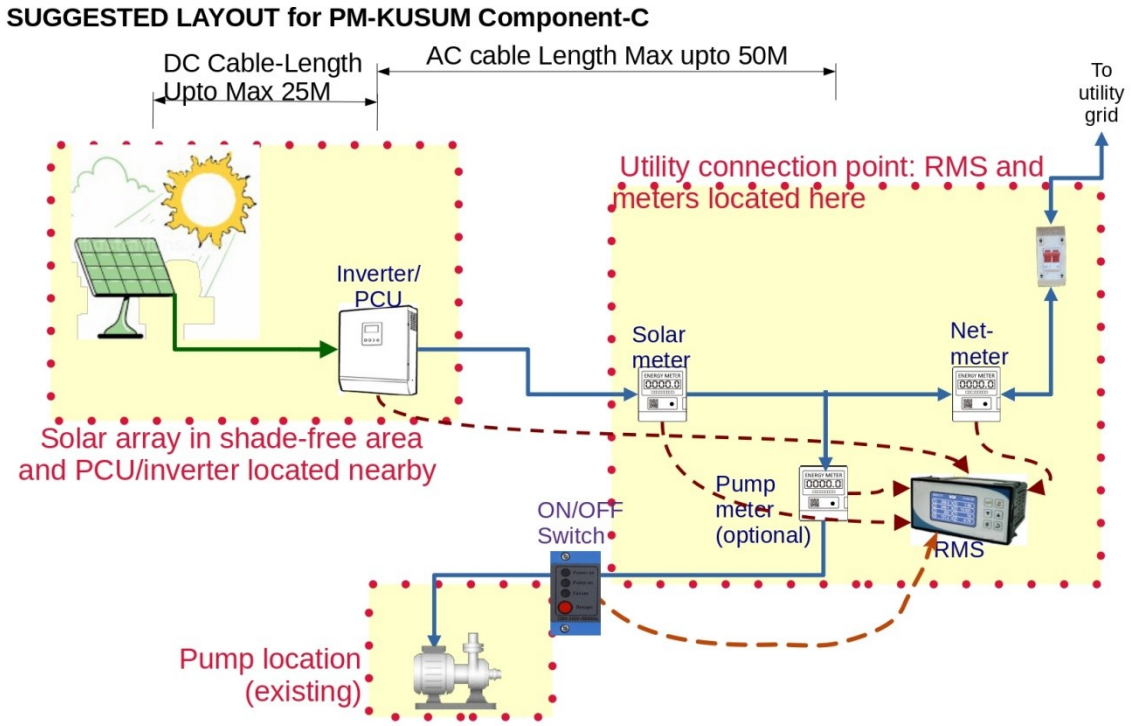
The RMS will be provided access to the interface with State Level Solar Energy Data Management platform i.e., ANERT will provide server infrastructure and shall maintain the same in the State Data Centre. The ANERT shall provide SIM card of suitable ISP having maximum Signal Strength in the respective locations.The bidder should ensure connectivity as well as pushing of data to centralized platform as mentioned in specifications.

Communication architecture should be as per following:

a) Communication Connectivity:

i. Remote monitoring system installed along with the system should be compatible with the connectivity to PCU, Controllers and meters of the system.

The proposed connectivity diagram is as follows.



ii. RMS should have provision to give remote On/Off command to pump through farmer mobile app. to save ground water.

b) Communication Modes:

i. Push Data on Event/Notification: such as pump on, pump off, protection operated, etc.

ii. Push Data Periodically: important parameters of solar pump (as mentioned above) should be pushed to central server on configurable interval. Interval should be configurable for 15 mins. However, if required, it should be possible to configure the periodic interval in multiple of 1 minute starting from 1 minute and up to 15 minutes. Further, in case of any abnormalities or event, RMS should push on event immediately.

iii. Command on Demand: It should be possible to send commands via GSM or GPRS to RMS either to control pump operations or to update configuration

c) Communication Protocol: RMS should provide data on MQTT protocol to establish communication with thousands of systems. The message formats and details shall be as per the MNRE requirement.

d) Security:

i. Communication between RMS and Server should be secured and encrypted using TLS/SSLcertificate etc.

ii. As a part of IoT protocol, Authentication and Authorization should be implemented using token/password mechanism

e) Message Format: RMS should provide data in a JSON message format as required by MNRE /ANERT.

f) Data Storage: In case of unavailability of cellular network, RMS should store data locally and on availability of network it should push data to central Server. Local data storage should be possible for at least one year in case of unavailability of cellular network.

Configuration update over the Air of multiple parameters such as IP, APN, Data logging Interval, Set Points etc. is essential. Software updating should be possible with 2G and even without the presence of SD card. Software updating process and/or failure to update software shouldn't disrupt pumping operations

15. Remote ON/OFF feature

15.1 The successful bidders shall arrange for the provision of remotely turning ON/OFF Featureand this must be integrated with system.

15.2 Necessary switch gear as well as communication structures should be done by the bidder so as the user can switch off/on the pump remotely.

15.3 The remote working system should be integrated with RMS.

16. ARRAY SUPPORT STRUCTURE.

16.1 Specification of module mounting structure shall be in line with specifications for SPV water pumping systems of MNRE vide Circular No. F. No. 41/3/2018-SPV Division dated17.7.2019 enclosed and any further amendment(s) issued by MNRE. However, considering the flooded scenario in Kerala the minimum height required under Group 1 category will be 50 cm for rooftop installations and 100 cm for ground mount installations and that of Group 2 will be 150cm.

16.2 Supply, installation, erection and acceptance of module mounting structure (MMS) with all necessary accessories, auxiliaries and spare part shall be in the scope of the Contractor.

16.3 The PV modules shall be mounted on fixed metallic structures having adequate strength and appropriate design, which can withstand the load of the modules and high wind velocities as per the wind zone and IS of the location of installation.

16.4 The MMS shall be designed and constructed such that it complies with the necessary mounting requirements of PV modules in order to maintain the PV module's warranty.

16.5 MMS and its foundation shall be designed considering life span of 25 years and withstand wind speeds of 150 kmph.

16.6 Design of the MMS shall take into consideration site conditions, soil report, loading data, wind data and design standards as per latest applicable IS standard.

16.7 The structure shall be designed for simple mechanical and electrical installation. It shall support SPV modules at a given orientation and tilt, absorb and transfer the mechanical loads to the ground properly.

16.8 The Contractor shall be fully responsible for any damages caused by high wind velocity within guarantee period. The parameters of prevailing wind speed, soil conditions, load, and upward lift shall be taken care of while preparing the design and the same is required to be mentioned on design.

16.9 MMS shall be made of hot dip Galvanized steel per ASTM A123/ IS4759. Minimum thickness of HDGI zinc coating shall be 80 microns at any point when measured. No averaging is allowed in the measurement of coating thickness. Necessary testing provision for MMS to be made available by Contractor at site.

16.10 All bolts, nuts, panel mounting clamps fasteners shall be of stainless steel of grade SS304/ 8.8 grade HDG and must sustain the adverse climatic conditions.

16.11 MMS shall be designed and positioned such that the PV modules are completely shadow-free solar during generation hours.

16.12 All solar panels shall be easily accessible for cleaning and the beneficiaries shall not be inclined to climb on the MMS or PV modules for cleaning the PV modules.

16.13 Junction boxes shall be mounted on the MMS such that they are easily accessible and are protected from direct sunlight and harsh weather.

16.14 Civil foundation design for MMS shall be made in accordance with the IS andprevailing soil conditions with the help of Chartered Structural Designer havingsubstantial experience in similar work.

16.15 All the cables shall be aesthetically tied to module mounting structure.

16.16 Cutting, Welding, drilling etc. at site is not allowed for MMS.Contractor shall carryout all correction in structure (if required) at his works. If any cutting, welding,drilling is required to be done after material arrived at site then material shall be again sent for hot dip galvanization. No zinc spray shall be allowed on the MMS.

16.17 Contractor shall submit the all the quality test documents and test certificates complying with the requirement of the structure.

16.18 Contractor shall submit detailed drawings of the MMS and its civil foundations, results of design computations and stability calculations for foundations, and structural fitness of PV module mountingstructures as per STADD Pro analysis. Such details shall include, but not limited to, the following;

a) Determination of true south at the site

b) Array tilt angle to the horizontal, with permitted tolerance

c) Details with drawings for fixing the modules

d) Details with drawings for fixing the junction/ terminal boxes

e) Interconnection details inside the junction/ terminal boxes

f) Structure installation details and drawings

g) Electrical grounding (earthling as per BIS specifications) and surge Protections.

h) Inter-panel/ inter-row distances with allowed tolerances; and

i) Lightning protection for PV array.

j) Safety precautions to be taken

16.19 Structures shall be supplied complete with all members to be compatible for allowing easy installation at the site. Additional Structures/Frames for required for the installation of modules if any need to be provided by the bidder.

16.20 It is necessary to use anti-theft bolts in Ground mounted installations, whereas the same need not be provided for rooftop installations, in which case easy replacement of modules are necessary.

16.21 Each structure shall have a provision to adjust its angle of inclination to the horizontal as per the site conditions. Solar module should be inclined towards south direction and installed at an angle of 10° to 15° from the horizontal.

26. SURGE PROTECTION AND EARTHING

26.1 The system should have installed with Surge Protection Device (SPD) for higher withstand of the continuous PV-DC voltage during earth fault condition. SPD shall have safe disconnection and short circuit interruption arrangements through integrated DC in-built bypass fuse (parallel) which should get tripped driving failure mode of MOV, extinguishing DC arc safely in order to protect the installation against fire hazards. The SPD should be provided in the AC Distribution Box as well.

26.2 Earthing for PV Array:

- The PV module, BOS and other components of power plants require adequate Earthing for protecting against any serious fault.
- The Earthing for array and LT power shall be made as per the provisions of IS:3043.
- Necessary provision shall be made for bolted isolating joints of each Earthing pit for periodic checking of earth resistance.
- Each String/Array and MMS of the plant shall be grounded properly. The array structure has to be connected to earth pit as per IS standards. Necessary provisions shall be made for bolted isolating joins of each earthing pit for periodic checking or earth resistance.
- The complete earthing system shall be mechanically & electrically connected to provide independent return to earth.
- For each earth pit, a necessary test point shall be provided.
- The bidder shall submit the detailed specification for the Earthing arrangements.

27. LIGHTNING PROTECTION FOR PV ARRAY

The SPV power plant should be provided with lightning and over voltage protection. The source of over voltage can be lightning or other atmospheric disturbance. The lightning conductors shall be made as per applicable Indian Standards in order to protect the entire array yard from lightning stroke.

The design and specification shall conform to **IS/IEC 62305, "Protection against lightning"** govern all lightning protection-related practices of a PV system.

27.1 The entire space occupying SPV array shall be suitably protected against lightning by deploying required number of lightning arresters. Lightning protection should be provided as per IS/ IEC 62305.

27.2 Lightning system shall comprise of air terminations, down conductors, test links, earth electrode etc. as per approved drawings.

27.3 The protection against induced high voltages shall be provided by the use of surge protection devices (SPDs) and the earthing terminal of the SPD shall be connected to the earth through the earthing system.

27.4 The EPC Contractor / Company shall submit the drawings and detailed specifications of the PV array lightning protection equipment to Employer for approval before installation of system.

28. AC DISTRIBUTION PANEL BOARD

28.1 AC Distribution Panel Board (DPB) shall control the AC power from inverter and should have necessary surge arrestors.

28.2 An ACDB panel shall be provided in between PCU and Utility grid. It shall have MCB/MCCB/ACB or circuit breaker of suitable rating for connection and disconnection of PCU from grid.

28.3 The connection between ACDB and Utility grid shall be of standard cable/ Conductor with suitable termination. It shall have provision to measure grid voltage, current and power.

28.4 The ACDB incomer shall be four (4) pole MCCB with thermal over current and earth fault releases. The incomer shall be selected at required rating.

29. DC DISTRIBUTION BOARD

29.1 DC bus/ cable which can handle the current and the voltage of inverter output safely with necessary surge arrester as per the relevant IS standards.

29.2 DC panel should be equipped with an adequate capacity indoor DC circuit breaker along with control circuit, protection relays, fuses, annunciations etc.

29.3 DCDB shall have sheet from enclosure of dust and vermin proof, the busbar/ cables are to be made of copper of desired size. DCDB shall be fabricated to comply with IP 65 protection.

30. SWITCHES AND GENERAL REQUIREMENTS

30.1 Switches/ circuit breakers/ connectors meeting general requirements and safety measurements as per IS 60947 Part I, II, III and EN 50521 for AC/ DC.

30.2 Junction boxes, enclosures for inverters/ charge controllers and meters shall meet IP 54 (for outdoor)/ IP 21 (for indoor) as per IEC 529.

31. AC/DC WIRING

Cabling is required for wiring from AC output of inverter/PCU to the Grid Interconnection point. It includes the DC cabling from Solar Array to AJB and from AJB to inverter input.

31.1 All cables of appropriate size to be used in the system shall have the following characteristic:

a. Shall conform to IEC 60227 / IS 694 & IEC 60502 / IS 1554 standards.
b. Temperature Range: -10 degree Celsius to +80 degree Celsius
c. Voltage rating: 660/1000V
d. Excellent resistance to heat, cold, water, oil, abrasion, UV radiation
e. Flexible

31.2 Sizes of cables between any array interconnections, array to junction boxes, junction boxes to inverter etc. shall be so selected to keep the voltage drop (power loss) of the entire solar system to the minimum (2%).

31.3 For the DC cabling, XLPE or XLPO insulated and sheathed, UV stabilized single core flexible copper cables shall be used; Multi-core cables shall not be used.

31.4 For the AC cabling, PVC or XLPE insulated and PVC sheathed single or, multi-core flexible copper cables shall be used. However, for above 25kWp systems, XLPE insulated Aluminium cable of suitable area of cross section can be used in the AC side subject to a minimum area of cross section of 10 sq.mm. Outdoor AC cables shall have a UV -stabilized outer sheath IS/IEC 69947.

31.5 All LT XLPE cables shall conform to IS:7098 part I&II.

31.6 The total voltage drop on the cable segments from the solar PV modules to the solar grid inverter shall not exceed 2.0%

31.7 The total voltage drop on the cable segments from the solar grid inverter to the building distribution board shall not exceed 2.0%

31.8 The DC cables from the SPV module array shall run through a UV-stabilized PVC conduit pipe of adequate diameter with a minimum wall thickness of 1.5mm

31.9 Cables and wires used for the interconnection of solar PV modules shall be provided with solar PV connectors (MC4) and couplers

31.10 All cables and conduit pipes shall be clamped to the rooftop, walls, and ceilings with thermo-plastic clamps at intervals not exceeding 50cm; the minimum DC cables size shall be 4.0mm^2 copper; the minimum AC cable size shall be 4.0mm^2 copper. In three phase systems, the size of the neutral wire size shall be equal to the size of the phase wires.

31.11 Cable Marking: All cable/wires are to be marked in proper manner by good quality ferule or by other means so that the cable can be easily identified. The following colour code shall be used for cable wires

a) DC positive: red (the outer PVC sheath can be black with a red line marking
b) DC negative: black
c) AC single phase: Phase: red; Neutral: black
d) AC three phase: phases: red, yellow, blue; neutral: black
e) Earth wires: green

31.12 Cables and conduits that have to pass through walls or ceilings shall be taken through PVC pipe sleeve.

31.13 Cable conductors shall be terminated with tinned copper end ferrules to prevent fraying and breaking of individual wire strands. The termination of the DC and AC cables at the Solar Grid Inverter shall be done as per instructions of the manufacturer, which in most cases will include the use of special connectors.

31.14 All cables and connectors used for installation of solar field must be of solar grade which can withstand harsh environment conditions including high temperatures, UV radiation, rain, humidity, dirt, salt, burial and attack by moss and microbes' for 25 years and voltages as per latest IEC standards. DC cables

used from solar modules to array junction box shall solar grade copper (Cu) with XLPO insulation and rated for 1.1 kV as per relevant standards only.

31.15 Bending radii for cables shall be as per manufactures recommendations and IS: 1255.

31.16 For laying/termination of cables latest BIS/IEC Codes/ standards shall be followed.

32. NET METERING AND UTILITY INTERCONNECTION

32.1 Net metering equipment (an Import-Export Energy Meter) approved and tested by the electrical utility based on the accuracy class required for the proposed capacity of the system must be provided with the necessary data cables if required.

32.2 Net Metering and Utility Interconnection should be accomplished according the Kerala State Electricity Regulatory Commission (Grid Interactive Distributed Solar Energy Systems) Regulations 2014 Clauses (8) & (9) (Notification No. 2096/KSERC/CT/2014 dt. 10th June 2014) as well as approved by the DISCOM (KSEBL).

32.3 Meters shall be microprocessor based conforming IEC 60687 / IEC 6205211 / IEC 62053-22 / IS 14697 and solar energy meter or its display shall be placed adjacent to net energy meter.

32.4 Display parameters: LCD test, kWh import, kWh export, MD in kW export, MD in kW import, Date & Time, AC current and voltages and power factor (Cumulative kWh will be indicated continuously by default & other parameters through push-button). The solar energy meters and net energy meters should be DLMS compliant and AMR compatible.

32.5 The solar energy meters shall be provided with two ports for communication of the measured / collected data. The provided both metersshall provide an optical port for DLMS communication to RMS using separate Optical (IR) to RS 232 converter complying with hardware specifications detailed in IEC 62056-21.

32.6 The provision of the Optical (IR) to RS 232 convertor shall be the part of the SPV system and should be provided by the bidder.

32.7 The bidders shall imply Virtual/Group metering facility with KSEBL as if it is found more suitable as per the site.

33. INTER CONNECTION OF INVERTER OUTPUT WITH UTILITY GRID

33.1 The interconnection of load with inverter output should be done after obtaining permission from Electrical Inspectorate and Electrical Utility.

33.2 The plan scheme and drawing related to interconnection details should be submitted to Electrical Inspectorate through a licensed Electrical contractor with the guidance appropriate Engineering Authority.

33.3 Licensed contractor has to be engaged for preparation of plan scheme to be submitted to the Kerala State Electricity Licensing Board and necessary fee should be remitted for energisation of Solar Power Plant.

33.4 The panel board and distribution board required for AC interconnection should be done as per specification/ instruction given appropriate Engineering Authority.

33.5 All the electrical works required for the interconnection of load with inverter output should be done by the successful bidder as a part of the Solar Power Plant installation.

33.6 Bidder should visit the actual site and ensure the exact place for providing Solar Modules and Inverter etc. in presence of technical representative from the ANERT.

33.7 Net Metering Equipment shall be installed and maintained in accordance with the provisions of The Central Electricity Authority (Installation and Operation of Meters) Regulations, 2006 as amended from time to time. The Contractor shall maintain the Metering System as per metering code and CEA guidelines. The defective meter shall be immediately tested and calibrated.

33.8 The accuracy class of the Net Metering Equipment will be selected so that all levels of energy produced or taken by the Solar Power Plant will be measured accurately, and this equipment has applicable accuracy class.

33.9 Net Metering Equipment shall be microprocessor-based conforming to the relevant IEC standards with Advanced Metering Infrastructure (AMI) with RS232 cable facility.

33.10 Net Metering Equipment shall measure active energy (both import and export) and reactive energy (import) by 3 ph, 4 wire principle suitable for balanced / un-balanced 3 phase load (With KVAr, KWh, KVA measuring registers). Tri-vector based energy meter shall have an accuracy class of energy measurement of at least Class 0.2 for active energy and at least 0.5 Class for reactive energy according to IEC 60687.

33.11 Display parameters: LCD test, kWh import, kWh export, MD in kW export, MD in kW import, Date & Time, AC current and voltages and power factor (Cumulative KWH will be indicated continuously by default)

34. PERMISSION FROM KSELB/ELECTRICAL INSPECTORATE BY BIDDER

34.1 The plan scheme and drawing related to interconnection details should be submitted to Kerala State Electricity Licensing Board through a licensed Electrical Contractor with the guidance of PWD Electrical wing/A.E, L.S.G.D/appropriate Engineering Authority.

34.2 The panel board and distribution board required for AC interconnection should be done as per specification/instruction given by PWD Electrical wing/Electrical Inspectorate Authorities /A.E, L.S.G.D. /appropriate Engineering Authorities

34.3 The fee for utility feasibility, plant registration fee etc if any is to be borne by the successful bidder. Also, the application and charges for Electrical Inspectorate are also under the scope of the bidder.

34.4 If additional wiring is required for segregating the load, then that work should also be done as a part of this project implementation.

34.5 It is mandatory to obtain Energisation certificate by bidder from Electrical Inspectorate for the installations of capacity above and including 10 kW.

34.6 It is mandatory to obtain pre scheme approval from Electrical inspectorate for the installations in Group 2.

35. WARRANTY

35.1 7years' warranty should be provided by the supplier for the system and components or part of the system must be provided as per the special conditions of the contract.

35.2 PV modules used in solar power plants/ systems must be warranted for their output peak watt capacity, which should not be less than 90 % at the end of 10 years and 80% at the end of 25 years

35.3 The Warranty Card to be supplied with the system must contain the details of all the components supplied.

36. OPERATION MANUAL

36.1 An Operation, Instruction and Maintenance Manual, in English and Malayalam should be provided with the system.

36.2 The following minimum details must be provided in the manual:

a) About solar power plant – its components and expected performance.

b) About PV module

c) About electronics

d) About charging and significance of indicators

e) DO's and DON'T's

f) Clear instructions on regular maintenance and troubleshooting of solar power plant

g) Name and address of the contract person in case of non-functionality of the solar power plant.

37. BILL OF MATERIAL

37.1 The bidder should provide the bill of material mentioning the quantity of each of the item consisting in the system, along with the offer.

Table 40.1

Sl. No.	Item	Make (if any)	Model & Individual Capacity (If any)	Qty (Nos)	Rating / Capacity
1.	PV Module				
2.	PCU/Inverter				
3.	Remote Monitoring Unit				
4.	DC Cables				
5.	AC Cables				
6.	AJB/SCB				
7.	Module Mounting Structure (MMS)				
8.	ACDB				
9.	Lightning Arrester				
10.	Earthing System Details and No. of Earth pits				

38. DISPLAY BOARD

38.1 The logo of ANERT and details of the scheme as specified in the work order.

39. INSURANCE

39.1 The power plant must be insured at every stage of operation – from Material dispatch, storage, completion of installation and till 7 years after commissioning.

39.2 The insurance coverage on handing over of the system must include all conditions of **Standard Fire and Special Perils as well as burglary and house break Policy (Material Damage as well as theft)**. The insurance premium for the 7years of warranty is to be paid by the bidder. On handing over of the system, the original insurance policy is to be handed over to the authorised person at the site of installation and a copy to ANERT District Office. The annual premium payment receipt must be handed to the authorised person at the site of installation.

40. ENGINEERING DRAWINGS

1.1 The bidder should submit and get the necessary approval of the following detailed Engineering Drawings as per the system described in 17.1 (a)&(b) of this document before execution of the project:

a. Schematic drawing showing the PV panels, Power conditioning Unit(s)/Inverter, Array Junction Boxes (AJBs)/String Combiner Boxes (SJB), AC and DC Distribution Box, Net meters, MSB etc.

b. Foundation ad structural diagram shall be approved by any of the IITs, NITs or other government universities.

c. Layout of solar PV Array

d. Single Line Diagram (SLD) with specification of all components.

e. Design document for Module Mounting Structure (MMS) including certificate showing wind speed withstanding capacity of the structure (STAAD/Equivalent).

f. Module Mounting Structure (MMS) drawing along with foundation details for the structure.

g. Sizes and specification of cables for PV Module interconnections, PV Array to Array Junction Boxes, Array Junction Boxes to Inverter, Inverter to ACDB/ Grid Connection point etc. shall be furnished.

44. SELECTION PROCEDURE

The Lead bidders need to get themselves graded

i. The eligibility of capacity for installation of single plant and total allocation per batch (allotment) will be based on the grading provided by the grading agency appointed by ANERT.
ii. The grading agency selected for this purpose is "ICRA Analytics Limited" Securities and Exchange Board of India (SEBI) approved Agency for "Assessing and Grading of Manufacturers / Contractors / Joint Venture of Manufacturers & integrators for submitting bids under PM KUSUM scheme – Component C Programme implemented in the state of Kerala. The grading is to be done with the same criteria set by ANERT for the Vendor Registration process.
iii. The grading will be done by M/s ICRA Analytics Ltd at the rates finalised by ANERT as below:

#	Rate For Undertaking Grading Services	AMOUNT (incl GST)
1	Initial Grading	23,600/-
2	Renewal of Grading post one year	9,440/-

The contact details of the ICRA Analytics Limited mentioned below and personnel dedicated for ANERT functionalities are as below:

ICRA Analytics Ltd
Infinity Benchmark, 17th Floor, Plot – G-1,

Block GP, Sector V, Salt Lake, Kolkata – 700091

Name	Contact Details	Email id
Mr. Mamun	+91 7304036988	anert.grading@icraanalytics.com
Mr. Indranil Chakraborty	+91 99033 77455	

The grading certificate issued only after 20/09/2022 will be considered under the tender. The EPC / System Integrators are to be graded in the same pattern for Registration of Vendors for Solar Program by M/s ICRA. This grading shall be submitted at the time of tender submission and failure on submission will lead to rejection of the bid. The same will be called for once the tender is opened and finalised during project implementation stage. Once the bids are opened, ANERT will evaluate all the proposals to determine whether these are complete in all respects as specified in the tender document. Evaluation of the proposals shall be done in three stages as:

i. Level - I (Technical Evaluation):

ANERT shall evaluate the technical bid(s) to determine whether these qualify the essential eligibility criteria, whether the bidder has submitted the EMD whether any computational errors have been made, whether all the documents have been properly signed & stamped, whether all the documents as mentioned / or required to submitted with technical bid are submitted and whether bids are completed and generally in order.

After evaluation of technical bid(s), a list of the qualifying bidder(s) shall be made. Short-listed bidder{s) shall be informed of the date, time and place of opening of ~~financial bid(s)~~ (online).

ii. Level - II (Ranking of qualified Bidders & elimination):

The ~~financial bid(s) of~~ Technically Qualified Bids shall be ranked in the ascending order of their respective financial bids (L1, L2, ..,Ln). The bids which have quoted the same amount shall be assigned the same rank.

If there are more than one L1 bidders quoting the same cost in Rs, tie breaking is based on the time of submission of the bid as recorded in the e-tender site. The bidder who has submitted the bid first will be the lowest bidder (L1 Bidder) and the other

bidders who have quoted the L1 rates will be ranked based on the time of submission of bids as L2 bidder, L3 bidder etc. After ranking bidders who have offered L1 rates, the next lowest bidders are assigned subsequent ranks based on the same criteria.

iii. Level – III (L1 Matching)

~~Under this process, all bidders other than L1 bidder/(s) within the price bracket (L1+25% of L1) will be asked to match the L1 rate discovered. Only those bidders within the above price bracket are considered for matching with L-1 rate, and if they match with L-1 rate, then they will be selected. If total no. of bidders within the above price bracket is less than 5, then those bidders who fall in (L1 + 30 % of L1) will also be considered for matching with the Lowest discovered rate ("L-1 Matching"). If they match, they will also be selected.~~

Rate arrived as per the Rate Contract Order No. 46/2023/ANERT dtd. 28/02/2023 is as given below.

Rate of power plants as arrived by tender		
Plant Capacity (kWp)	**Ground Mounted (in Rs.)**	**Roof Top (in Rs.)**
2	2,48,190	2,29,982
3	2,98,195	2,79,413
5	4,61,894	4,31,930
7	5,93,004	5,47,137
10	7,68,873	7,13,457
30	21,50,820	21,40,290
50	35,84,700	35,67,150
75	53,77,050	53,50,725
150	1,09,24,800	1,05,39,900

iv. Level – IV (Allocation of works)

i. ANERT will issue an order regarding the selection of bidders for each capacity and the total volume allotted to them based on the grading provided to the bidder by M/s ICRA. The rates including taxes will be included in the order and no requests for enhancement will be entertained.

ii. The L1 matched bidders are required to enter into an agreement with ANERT within 7 days from the date of issue of order.

iii. The capacity of Solar Power Plant that can be allotted to a particular vendor depends on their grading issued by M/s ICRA Analytics Limited, which is determined using the experience and financial strength of the vendor. Based on the grading, the vendors will be listed in certain categories as below:

Grading Scale		Financial Strength				
		Strong	**Above Average**	**Average**	**Below Average**	**Weak**
Performance capability	**Strong**	1A	1B	1C	1D	1E
	Above Average	2A	2B	2C	2D	2E
	Average	3A	3B	3C	3D	3E
	Below Average	4A	4B	4C	4D	4E
	Weak	5A	5B	5C	5D	5E

iv. Only agencies obtaining grades 3C and above are eligible for listing

v. With reference to the grading allotted, the single plant capacity and the total volume of works that can be allotted at a time is

Grade Allotted	Total Volume in kW in Batch
1A	5000
1B	3500
1C	1000

Grade Allotted	Total Volume in kW in Batch
1D	500
1E	100
2A	2500
2B	2000
2C	1000
2D	200
2E	100
3A	1000
3B	500
3C	300
3D	50
3E	50
4A	100
4B	100
4C	50
4D	25
4E	25
5A	25
5B	15
5C	10

45. CHANGE IN LAW

i. If as a result of Change in Law, the Successful bidder suffers any additional costs in the execution of the Works or in relation to the performance of its other obligations

under this Agreement, the Successful bidder shall, within 15 (fifteen) days from the date it becomes reasonably aware of such addition in cost, notify ANERT with a copy to ANERT's Engineer of such additional cost due to Change in Law.

ii. If as a result of Change in Law, the Successful bidder benefits from any reduction in costs for the execution of this Agreement or in accordance with the provisions of this Agreement, either Party shall, within 15 (fifteen) days from the date it becomes

reasonably aware of such reduction in cost, notify the other Party with a copy to the Authority's Engineer of such reduction in cost due to Change in Law.

iii. ANERT's Engineer shall, within 15 (fifteen) days from the date of receipt of the notice from the Successful bidder or ANERT, determine any addition or reduction to the Contract Price, as the case may be, due to the Change in Law.

46. FORCE MAJEURE

i. Notwithstanding the provisions of clauses contained in the tender document; the work awarded agency shall not be liable to forfeit
   a. Security deposit for delay and
   b. termination of contract; if he is unable to fulfill his obligation under this contract due to force majeure conditions.

ii. For purpose of this clause, "Force Majeure" means an event beyond the control of the work awarded agency and not involving the work awarded agency's fault or negligence and not foreseeable, either in its sovereign or contractual capacity. Such events may include but are not restricted to Acts of God, wars or revolutions, fires, floods, epidemics, quarantine restrictions and fright embargoes etc. Whether a "Force majeure" situation exists or not, shall be decided by ANERT and its decision shall be final and binding on the work awarded agency and all other concerned.

iii. In the event that the work awarded agency is not able to perform his obligations under this contract on account of force majeure, he will be relieved of his obligations during the force majeure period. In the event that such force majeure extends beyond six months, ANERT has the right to terminate the contract in which case, the security deposit shall be refunded to him.

iv. If a force majeure situation arises, the work awarded agency shall notify ANERT in writing promptly, not later than 14 days from the date such situation arises. The work awarded agency shall notify ANERT not later than 3 days of cessation of force majeure conditions. After examining the cases, ANERT shall decide and grant suitable additional time for the completion of the work, if required.

47. Limitation of Liability

Except in cases of criminal negligence or wilful misconduct,

a. The Successful bidder shall not be liable to the ANERT, whether incontract, tort, or otherwise, for any indirect or consequential loss or damage, loss of use, loss of production, or loss of profits or interest costs, provided that this exclusion shall not apply to any obligation of the Successful bidder to pay liquidated damages to the
ANERT

b. The aggregate liability of the Successful bidder to the ANERT, whetherunder the Contract, in tort or otherwise, shall not exceed the total Contract Price, provided that this limitation shall not apply to any obligation of the Successful bidder to indemnify the ANERT with respect to patent infringement

ANNEXURE A – SUMMARY OF BID QUALIFICATIONREQUIREMENTS

(To be filled in by the bidder)

1.	Name of the Applicant/Bidder						
2.	Address in full						
3.	Contact Details Mobile Land Phone Email						
4.	Name and Designation of the authorised signatory						
5.	GST Registration No.						
6.	Total number and Aggregate capacity of solar power plants installed for the last 5 Years (Off-Grid/On-Grid) *(proof to be enclosed, and flagged as Annexure)*		2017	2018	2019	2020	2021
		Number of systems :					
		Total capacity					
9.	Highest Capacity of individual PV Power Plant installed so far (With the details of Beneficiary/Institution name, Phone No, Email ID, Grama Panchayat, District, State etc.						
10.	Annual turnover of the firm during last three years (Rs.)						

11.	No. of service centres/Authorised service providers in Kerala	*(Proof or undertaking to be enclosed as Annexure)*
12.	Whether Bidder was/is de-barred by ANERT/Other State Nodal Agencies /MNRE/DISCOMs (Yes/No)?	
13.	Agreement submitted (Yes/ No)?	

Documentary evidence for the bid qualification requirements are submitted along with this document and the details furnished above are true and correct.

Signatureof authorised signatory

Name

Designation

Date: (office seal)

ANNEXURE B-AGREEMENT

ARTICLES OF AGREEMENT executed on this the . . . . . day of . . . . . Two thousand and . . . .between the **Agency for New & Renewable Energy Research and Technology** (hereinafter referred to as **ANERT**) of the one part and Sri . . . . . (Name and Address of the tenderer) hereinafter referred to as "the Bounden") of the other part.

WHEREAS in response to the Notification No. . . . . dated . . . . . the bounden has submitted to ANERT a e-tender for the ***EoI for additional Empanelment of vendors under the Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW - 150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala*** specified therein subject to the terms and conditions contained in the said e-tender.

AND WHEREAS the bounden has furnished to ANERT a sum of Rs. . . . . as Earnest Money Deposit for execution of an agreement undertaking the due fulfilment of the contract in case his e-tender is accepted by ANERT. NOW THESE PRESENTS WITNESS and it is hereby mutually agreed as follows: -

In case the e-tender submitted by the bounden is accepted by ANERT and the contract for . . . . . is awarded to the bounden, the bounden shall within Fifteen days of acceptance of this e-tender, execute an agreement with ANERT incorporating all the terms and conditions under which ANERT accepts this e-tender.

In case the bounden fails to execute the agreement as aforesaid incorporating the terms and conditions governing the contract, ANERT shall have power and authority to recover from the bounden any loss or damage caused to ANERT by such breach as may be

determined by ANERT by appropriating the moneys inclusive of Earnest Money deposited by the bounden and if the Earnest Money is found to be inadequate the deficit amount may be recovered from the bounden and his properties movable and immovable in the manner hereinafter contained.

All sums found due to ANERT under or by virtue of this agreement shall be recoverable from the bounden and his properties movable and immovable under the provisions of the Revenue Recovery Act for the time being in force as though such sums are arrears of land revenue and in such other manner as ANERT may deem fit.

In witness whereofSri . . . . . (Name and Designation) for and on behalf of the Agency for Non-conventional Energy and Rural Technology and Sri . . . . the bounden have hereunto set their hands the day and year shown against their respective signature.

Signed by Sri	Signed by Sri . . . . .
.	.
(Date)	(Date) . . . .
in the presence of witnesses	in the presence of witnesses
1.	1.
2.	2.

ANNEXURE C –DECLARATION BY THE BIDDER

e-Tender Notification No: ....., dtd ……..... for EoI for additional Empanelment of vendors under the Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW - 150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala

To

The CEO
ANERT

We, the undersigned, declare that:

1. We have examined and have no reservations to the Bidding Document, including Addenda No.: ..... (if any)
2. We offer to supply in conformity with the Bidding Document and in accordance with the delivery schedule
3. Our Bid shall be valid for a period of 12 months from the date fixed as deadline for the submission of tenders in accordance with the Bidding Document, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;
4. If our Bid is accepted, we commit to submit a Security Deposit in the amount of 3 percent of the Contract Price for the due performance of the Contract;
5. We are not participating, as Bidders, in more than one Bid in this bidding process;
6. Our firm, its affiliates, or subsidiaries, including any subcontractors or suppliers for any part of the Contract, has not been declared ineligible by the ANERT or Government of Kerala;
7. We understand that this Bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal Contract is prepared and executed.

8. Our firm has obtained the certifications from MNRE or NABL approved Test laboratories that the goods and services are satisfying the technical criteria specified in the bid.

Signature
Date Name

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ANNEXURE D– DECLARATION ON SUBSIDY CLAIM

(to be signed and submitted by the bidder along with the bid)

Tender Notification No.: ……..

EoI for additional Empanelment of vendors under the Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW - 150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala

To

The CEO
ANERT

I hereby declare that we will not apply directly to MNRE for claiming the subsidy for this SPV project with .....HP capacity and proposed to be installedat .....

Signature of Bidder:

Name :

Date:

Office Seal

ANNEXURE E – DECLARATION OF RELATIONSHIP WITH ANERT EMPLOYEE

(to be signed and submitted by the bidder along with the bid)

Tender Notification No.: ……..
EoI for additional Empanelment of vendors under the Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW - 150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala

To

The CEO
ANERT

Name of the ANERT employee with Designation:

Name of the bidder related to the employee:

This is to put on record that Shri/Smt …….. currently working as …….. in ANERT is related to ……., who is the bidder in the bid. We are aware of the Anti-corruption policy of ANERT and will observe the highest standards during the procurement and the execution of contract and shall retain from corrupt, fraudulent, collusive or coercive practices on competing for the contract.

Signature

Name

Date

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ANNEXURE F –SERVICE REPORT

(Format of Service Report to be submitted on Quarterly basis to respective District Offices)

SERVICE REPORT

Fault/ Quarterly Service
(Put ✓on the number of Periodic service & Month from the date of commissioning)

Periodic Service				Months after commissioning			
1	2	3	4	3	6	9	12
8	7	6	5	15	18	21	24
9	10	11	12	27	30	33	36
16	15	14	13	39	42	45	48
17	18	19	20	51	54	57	60
21	22	23	24	63	66	69	72
25	26	27	28	75	78	81	84

GENERAL INFORMATION			
Installation Site			
Address			
LSG			
Assembly Constituency			
District			
Service Executive Name & Contact :		Inspection Date & Time	

VISUAL INSPECTION DATA

SOLAR MODULE		
Total capacity Solar Array (kW):		
Solar Module size (Watt peak per module) Wp		
Brand of solar module :		
Model of solar module :		
Cracked glass of PV panel	☐ Yes	☐ No
White or Brown spot, bubble of air, moisture behind the glass	☐ Yes	☐ No
Junction boxes at backside loose or without cover?	☐ Yes	☐ No
Physical damage to any PV module	☐ Yes	☐ No
Check for loose cable terminations between PV modules	☐ Yes	☐ No
PV modules are properly grounded with lugs on each module	☐ Yes	☐ No
STRUCTURAL AND ROOF		
Are the modules mounted securely, and level?	☐ Yes	☐ No
Results of module hand lift test?	☐ Secure	☐ Not Secure
Are Conductors loose, touching roof surface or in contact with sharp or abrasive surfaces?	☐ Yes	☐ No
Conductor plug-and-receptacle connectors are fully engaged between junction boxes ?	☐ Yes	☐ No
Are any dissimilar metals being combined?	☐ Yes	☐ No
corrosion/evidence of rust, when encountered apply the cold galvanization spray	☐ Yes	☐ No
Check for proper earthing of structures	☐ Yes	☐ No
Check for physical damage of structures	☐ Yes	☐ No
INVERTER		
Inverter Make & Model		

Power output (kW / kVA) :		
Is the inverter located in an area which is exposed to direct sun?	☐ Yes	☐ No
Proper wire sizes ?	☐ Yes	☐ No
Check all meters and control wiring connected as per drawing	☐ Yes	☐ No
Enclosure cleaned and vacuumed out	☐ Yes	☐ No
Display and indications are working	☐ Yes	☐ No
Check for Noise levels of inverter	☐ Normal	☐ High
Check for ventilation condition (Exhaust fan is working properly or not)	☐ Yes	☐ No
Grounded ?	☐ Yes	☐ No
JUNCTION BOXES		
Check for tightness of clamps, supports, Nut- bolts used for combiner box	☐ Yes	☐ No
Check cables are secured from sharp edges	☐ Yes	☐ No
Check proper conduit fittings used and adequately tightened	☐ Yes	☐ No
Array box is Vermin and dust proof	☐ Yes	☐ No
MAIN ELECTRICAL DISTRIBUTION PANEL		
Electrical Concerns or Code Violations	☐ Yes	☐ No
Check cable terminals for burnt marks, hot spot or loose connection	☐ Yes	☐ No
Check for physical damage	☐ Yes	☐ No
REMOTE MONITORING SYSTEM		
Check whether RMS unit is functioning	☐ Yes	☐ No

SPV POWER PLANT MONITORING SHEET

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Parameters under Measurement	Data	Remarks if any
GENERATION		
Current Energy Meter Reading (C)		
Previous Energy Meter Reading (P)		
Quarterly Generation (C – P) kWh		
Inverter Cumulative Generation (kWh)		
Number of days without generation (*in case of fault*)		
PV MODULES (AJB Reading using Multimeter)		
i. Watt Peak (Wp)		
ii. Voltage (V)		
iii. Current (A)		
iv. Number of Series		
v. Number of Parallel		
POWER CONDITIONING UNIT (PCU)		
i. PV Voltage (V)		
ii. PV Current (A)		
iii. PV Power (kW)		
iv. AC Voltage (R Phase)		
v. AC Voltage (Y Phase)		
vi. AC Voltage (B Phase)		
vii. Frequency (Hz)		
viii. Error log/Warning log Details		

Special Remarks (if any) Customer / Service Executive:

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The above generation data are verified and the power plant is working satisfactorily. The periodic maintenance is regular and no default in inspection is noticed.

Signature with Seal

Authorised Representative of LSG

Name:

Designation:

Signature with Seal

Service Executive

Installed Agency

To be issued in Triplicate: Original to ANERT DO, copy to beneficiary& One for the installed agency

ANNEXURE G –GUARANTEED TECHNICAL PARAMETERS

PV Module			
#	**Particulars**	**Required**	**Offered**
1	PV Module Manufacture Name & Country of origin	manufacture name to be specified)	
2	PV Module type	Poly/Mono Crystalline, Mono/Poly PERC	
3	Product Code		
4	No. of PV cells per Module		
5	Total number of PV modules		
6	Max.Power, Pmp @STC	335 Wp or above	
7	Max. power tolerance (%)	Not more than 3%	
8	Max. Power voltage (Vmp)@STC	To be specified	
9	Max. Power current (Imp) @STC	To be specified	
10	Open circuit voltage, Voc@STC	To be specified	
11	Short circuit current, Isc@STC	To be specified	
12	Nominal voltage	To be specified	
13	Nominal Wattage	To be specified	
14	Fill Factor	Not less than 0.7	
15	Temp. coefficient of Voc (%/C)		
16	Temp. coefficient of Pmp (%/C)		

PV Module			
#	**Particulars**	**Required**	**Offered**
17	Temperature Co-efficient of Isc (%/°C)		
18	Normal Operating Cell Temperature (NOCT) (°C)		
19	Operating Temperature (°C)		
20	Max Temperature rise of solar cells under severe working conditions over Max. Ambient Temp.	To be specified	
21	Module is suitable to operate at 500 ambient	Yes/No	
22	Cell efficiency	%	
23	Module efficiency	>=17% (Document to prove efficiency shall be furnished with the offer)	
24	Maximum System Voltage		
25	No. of By-pass Diodes		
26	Mounting arrangement for Solar Module	Fixed Arrangement	
27	Solar Module frame material	Anodized Aluminum	
28	Finish		

PV Module			
#	**Particulars**	**Required**	**Offered**
29	Types of Sections used		
30	Module dimensions cms (LxWxH)	To be specified	
31	PV panel Weight (kg)	To be specified	
32	Module Life (minimum)	25 years	
33	PV array area(sqm)		
34	Standards/Approvals from International Agencies	IEC 61215/IEC 61730/ IEC 61701	
35	Guaranteed output confirm	Yes	
36	Output Cables	Polarized, UV protected &Weather Proof DC rated multi-contact connector	
37	Output Terminal	PV Connectors	
38	Junction Box	Weather resistant HDPE (IP65)	
39	Construction Front, Back	High transmittance glass. Polyester Ethyl Vinyl Acetate (EVA) encapsulate	

PV Module			
#	**Particulars**	**Required**	**Offered**
40	Glass	Low iron tempered	
43	Copies of test certificates	IS 14286/IEC 61215,61730 part 1&2, IEC 61701	

INVERTER (To be provided for each capacity)			
#	**Particulars**	**Required**	**Offered**
1	Manufacturer		
2	Model name/No.		
3	Number of units		
5	Nominal AC power		
6	Nominal AC voltage		
7	Nominal AC Current		
8	AC grid Frequency range	50Hz ± 0.5%	
9	AC grid voltage range		
10	Power Factor (+ and -)		
11	Total Harmonic Distortion	As per IEEE-519 2014	
12	AC over / under voltage over / under frequency protection		
13	Max PV input power		
14	Maximum DC voltage	Less than 1000 V	
15	MPPT voltage range		
16	Maximum DC current		

INVERTER (To be provided for each capacity)			
#	**Particulars**	**Required**	**Offered**
17	No. of DC input ports		
18	Maximum Efficiency	as perIEC61683	
19	DC voltage ripple		
20	Ambient temperature range		
21	Humidity (non-condensing)	95%, non-condensing	
22	Degree of protection		
23	Dimensions approx. (HxWxD)		
24	Weight		
25	Protective functions AC over/under voltage, ACover/under frequency, over-temperature, AC and DC overcurrent, DC over-voltage,against Islanding		
26	Communication Interface	RS485. MPI Profi Bus/Telephone Modem/ WiFi	
27	User-display standard	LCD panel with membrane Keypad	
28	Enclosure environment rating		
29	Safety and EMC		
30	Anti-islanding feature	IEEE1547/UL1741/ IEC62116	

Others

#	Particulars	Required	Offered			
1	Remote Monitoring Unit	IIOT-Compatible	☐	Yes	☐	No
2	Cables	UV Rated	☐	Yes	☐	No
3	Junction Boxes	IP 54 or IP 65 Rated	☐	Yes	☐	No

ANNEXURE H – BID SECURITY BANK GUARANTEE

BID SECURITY BANK GUARANTEE

BG No. :

Amount :

Date :

Valid up to :

This guarantee is made on this ..... day of ..... 20..... by ..... (Complete postal address of the bank) hereinafter called 'the **Bank**', which expression shall unless repugnant to the context or meaning thereof shall include its successors and assigns.

WHEREAS the **ANERT,** having its registered office at PMG-Law College Rd, Vikas Bhavan PO, Thiruvananthapuram, Kerala, PIN – 695 033, hereinafter called as **ANERT,** which expression shall unless repugnant to the context or meaning thereof shall include its successors and assigns in having agreed to exempt .....(hereinafter called "**contractor(s)**" which expression unless repugnant to the context and meaning thereof shall include its successors and assigns) from depositing with **ANERT,** a sum of Rs. ..... towards Security Deposit in lieu of the said **contractor(s)** having agreed to furnish a bank guarantee for the said sum of Rs. ..... as required under the terms and conditions of Tender No. ..... dated ..... (hereinafter referred as the 'bid') placed by the **ANERT.**, on the said **contractor(s)** and on specific request on the part of the said **Contractor**(s), we the **Bank** hereby unconditionally and irrevocably affirm and undertake-

On production of the Bank Guarantee for Rs..... (Rupees..... only) we, ...Bank having our Head Office at ..... (herein after referred to as "the Bank") at the request of M/s. .....(name of contractor) do hereby undertake to pay to the

ANERT an amount not exceeding Rs..... (Rupees ..... only), against any loss or damage caused to or suffered or would be caused to or suffered by the ANERT by reason of any breach by the said contractor of any of the terms and conditions contained in the said agreement

We, ...Bank, do hereby undertake to pay the amount due and payable under this Guarantee without any demur, merely on a demand from the ANERT stating that the amount claimed is due by way of loss or damage caused to or would be caused to or suffered by the ANERT by reasons of breach by the said contractor of any of the terms or conditions contained in the said agreement. Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. ..... (Rupees ..... only).

This guarantee will not be discharged due to change in the constitution of the bank or the contractor/supplier.

Notwithstanding anything contained hereinbefore:

1) Our liability under this Bank Guarantee shall not exceed Rs.....(Rupees .... only)
2) This Bank Guarantee shall be valid upto .....
3) We are liable to pay the guaranteed amount or any part thereof under this Bank Guarantee amount only and only if you serve us a written claim or demand on or before.....

Dated at ..... this .... day of 2021

SIGNATURE OF THE BANK _____

SEAL OF THE BANK _____

SIGNATURE OF THE WITNESS _____

Name and Address of the Witness _____

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The bank guarantee shall be issued by a bank (Nationalized/Scheduled) located in India

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ANNEXURE I – RATE CONTRACT ORDER

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FORMAT A –UNDERTAKING FOR NO BLACKLISTING & NO BANNING

(To be provided on Rs.200 Non-Judicial Stamp paper. In Case of JV the following format is to be provided by Each Member of the Joint Venturerespectevly)

Undertaking for No Blacklisting & No Banning

To

The CEO
ANERT

Sub: EoI for additional Empanelment of vendors under the Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW - 150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala

I / We hereby declare that presently our Company/Limited Liability Partnership/ Partnership Firm/ Sole Proprietorship is having unblemished record and is not declared ineligible for corrupt/fraudulent practices by any State/Central Government/PSU on the date of Bid Submission.

I / We further declare that presently our Company/Limited Liability Partnership/ Partnership Firm/ Sole Proprietorship is not blacklisted and not declared ineligible for reasons other than corrupt/fraudulent practices by any State/Central Government/PSU on the date of Bid Submission.

If this declaration is found to be incorrect then without prejudice to any other action that may be taken, our security may be forfeited in full and the tender if any to the extent accepted may be cancelled.

(Signature & Seal of Authorized Signatory for which POA attached)

Name of Authorized Signatory:

Designation:

Date:

Place:

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FORMAT B –POWER OF ATTORNEY IN FAVOUR OF AUTHORIZED SIGNATORY (IN CASE BIDDER IS JOINT VENTURE)

(On Non-Judicial Stamp Paper of Rs. 200/- attested by Notary Public / First Class Magistrate)

Power of Attorney in favour of Authorized Signatory

KNOW ALL MEN BY THESE PRESENTS THAT WE, the Partners whose details are given hereunder ..... have formed a Joint Venture under the laws of ..... and having our Registered Office(s)/Head Office(s) at ..... (hereinafter called the 'Joint Venture' which expression shall unless repugnant to the context or meaning thereof, include its successors, administrators and assigns) acting through M/s ..... being the Partner in-charge do hereby constitute, nominate and appoint M/s..... a Company incorporated under the laws of .... and having its Registered/Head Office at ..... as our duly constituted lawful Attorney (hereinafter called "Attorney" or "Authorised Representative" or "Partner In-charge") to exercise all or any of the powers for and on behalf of the Joint Venture in regard to “Bid Specification” for the Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9348 nos. under the PM-KUSUM scheme (Component-C) in the State of Kerala”, under NIT No: ANERT-TECH/45/2020-PE1(RTS) for which bids have been invited by ANERT undertake the following acts:

i. To submit proposal and participate in the aforesaid Bid Specification of ANERT on behalf of the "Joint Venture".

ii. To negotiate with ANERT the terms and conditions for award of the Contract pursuant to the aforesaid Bid and to sign the Contract with the ANERT for and on behalf of the "Joint Venture".

iii. To do any other act or submit any document related to the above.

iv. To receive, accept and execute the Contract for and on behalf of the "Joint Venture".

It is clearly understood that the Partner In-charge (Lead Partner) shall ensure performance of the Contract(s) and if one or more Partner fail to perform their respective

portions of the Contract(s), the same shall be deemed to be a default by all the Partners.

It is expressly understood that this Power of Attorney shall remain valid binding and irrevocable till completion of the period to complete all the Scope of Work awarded under the terms of Bid Specification/ Contract.

The Joint Venture hereby agrees and undertakes to ratify and confirm all the whatsoever the said Attorney/Authorised Representatives/Partner in-charge quotes in the bid and negotiates with ANERT and signs the Contract with ANERT and/or proposes to act on behalf of the Joint Venture by virtue of this Power of Attorney and the same shall bind the Joint Venture as if done by itself.

IN WITNESS THEREOF the Partners Constituting the Joint Venture as aforesaid have executed these presents on this ..... day of …….…..... under the Common Seal(s) of their Companies.

For and on behalf of the partners of Joint Venture

.....

.....

The Common Seal of the above Partners of the Joint Venture:

The Common Seal has been affixed there unto in the presence of:

WITNESS

1. Signature.....
   Name .....
   Designation .....
   Occupation .....
2. Signature.....
   Name .....
   Designation ..... Occupation .....

Note:

1. For the purpose of executing the Agreement, the non-judicial stamp papers of appropriate value shall be purchased in the name of Joint Venture.
2. The Agreement shall be signed on all the pages by the authorised representatives of each of the partners and shall invariably be witnessed.

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FORMAT D –CHECKLIST TO BE SUBMITTED ALONG WITH COVERING LETTER

Checklist to be submitted along with Covering letter					
Tender ID:				**Date:**	
Tender name: -Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 Nos ranging from 2kW- 150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala					
Name of Sole/ Lead Bidder					
Name of JV Partner					
Sl No	**Particular**	**Sole/Lead bidder**		**Partner in JV**	
		Pg No	**File Name**	**Pg No**	**File Name**
1	Proof for Tender fee Exemption, if any				
2	Proof for EMD fee Exemption, if any				
3	In case of JV, provide JV agreement defining lead member				
4	Copy of Registration/Incorporation Certificate				
5	Copy of GST Registration certificate				
6	Copy of Pan Card				
7	Power of Attorney in favour of authorized signatory in Rs 200 Stamp paper				
8	If Power of Attorney in favour of authorized signatory not applicable - need to submit self-declaration on authorized signatory				
9	Declaration by JV partner /Sole bidder on Manufacturing of Solar Panels				
10	Work orders as proof of Experience				
11	Completion certificate for the work orders				
12	Undertaking for Non-Black Listing in 200 Rs Stamp Paper				
13	Scanned copy of Tender Document Signed and Sealed				
14	Agreement in the Prescribed format Annexure B in 200Rs stamp paper				
15	Declaration by manufacturer to				

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	provide PV module from ALMM List & with DCR content				
16	Declaration from lead bidder to provide Inverter with IS1621, IS16169 certification				
17	Summary of Bid Qualification Re-quirement				
18	Bill of Material				
19	Guaranteed Technical Parameters				
20	Test Certificates as per GTP				
21	Datasheet as per GTP				
22	Declaration by the bidder				
23	Declaration on subsidy claim				
24	Declaration of relationship with AN-ERT Employee				
25	List of Service centres /Declaration to provide service centre in 200Rs Stamp Paper				
26	ICRA Grading Certificate				

Signed by
Narendra Nath Veluri I F S
Date: 20-10-2023 10:06:49

Tender Evaluation Sheet

TenderRef No. :ANERT-TECH/144/2022-T4 **Tender ID: 2023_ANERT _614977_1**

Tender name: -EoI for additional Empanelment of vendors under the Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW 150 kW under the PM KUSUM scheme (Component C) in the State of Kerala

Sl No	Criteria/Bidder	Wattsun Energy India Pvt ltd	Usha Electronics Systems	Soft rays Power solutions	K CP Solar Industry	Inforce Engneering solutions	Coopa Energy	BSS Community Industries	B S Energy Industries	A J Infra solutions	Adithya Innovations
	Partner Manufacturer	Pahal Solar	Pahal Solar	Pahal solar	Blue Bird Solar pvt ltd	Navitas Green Solutions pvt ltd	NO	Pahal Solar	Espen and Blue bird solar pvt ltd	BNK Energy Pvt ltd + Blue bird solar pvt	pahal Solar
1	2	3	4	5	6	7	8	9	10	11	12
1	Copy of Registration/Incorporation Certificate/ copy of Deed of partnership	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
2	Copy of GST Registration certificate	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
3	Copy of Pan Card	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
4	Undertaking for Non-Black Listing in Rs.200/- stamp Paper Format-A	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
5	JV with manufacturer of solar PV modules/ Solar Pumps	yes	yes	yes	yes	yes	no	yes	yes	yes	yes email reply

1	2	3	4	5	6	7	8	9	10	11	12
6	The bidder must have completed solar installations of at least 3 MW in India to be eligible for projects above 10 KW. In case of JV, all the members jointly may fulfil this requirement and submit the documents as per the Tender document. The bidder must have completed solar installations of at least 1 MW in India to be eligible for projects up to 10 KW In case of JV, all the members jointly must fulfil this requirement	Email reply dated 1/1/2024 No work orders in name of wattsun provided. Government projects connectivity certificate or Electrical Inspectorate sanction provided for 382kWp , Private projects connectivity certificate or Electrical Inspectorate sanction provided for 759.2kWp	895kW Governemnt Work order +593kW completion certificate	140kW Governm ent Work order only	263KW Governenm ent Work Order + Commissio ning certificate and 970kWp Subsidy order (TAGENCO) and handover certiificate signed by customer	1.45MW work order and Commssion ing certificate , cumulative of the EPC and JV partner	73kWor k Order submitt ed	322KW Governme nt Work order + commissio ning certificate	4MW Governeme nt Work Order+ Commsiioni ng certificate of JV Partner submitted	1MW Governemen t Work Order+ Commsiionin g certificate of JV Partner submitted	no
	1MW technical eligibility Governmet workorder and commissioning certificate	NO	NO	No	Yes	yes	NO	NO	Yes	Yes	NO
7	List of service centres /Declaration to provide service centre in Rs.200/- stamp paper	yes	yes	yes	yes	yes	yes	NO	yes	yes	NO
8	ICRA Grading Certificate(Indicate Grade	2C	2C	2C	1C	3C	Under Process	2B	Under Process	Under Process	3B

1	2	3	4	5	6	7	8	9	10	11	12
9	Whether PV module is from ALMM approved by MNRE and DCR content (Declaration)	yes	Yes	yes	yes	yes	no	yes	yes	yes	yes
10	Declaration on DCR inverter with IS certification	No	Yes	yes	yes	yes	no	no	yes	yes	no
	Evaluation result	Not passed	Not Passed	Not Passed	**Passed ***	**Passed**	Not Passed	Not Passed	**Passed****	**Passed****	Not Passed

*- Conditionally passed - Have to produce Consolidated Completion certificate with in 30 days

**- Conditionally Passed - Have to produce ICRA certificate with in 30 days

KiranKrishnan G (PE)

Manju S(DPE)

Jayakumar R

JAYAKUMAR R
Project Manager
PM KUSUM-NABARD (RIDF)
ANERT HQ
Thiruvananthapuram

R RAMUKAVAL
Project Manager
(EDII) GRAM-MUSIUM MP
ON DEPUTATION
Autonomous Body

Gmail Anert <anert033@gmail.com>

ANERT-EoI for additional Empanelment of vendors under the Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW 150 kW under the PM KUSUM scheme (Component C) in the State of Kerala scheme (Component-C) in the State of Kerala- M/s.Wattsun Energy India P Ltd-Clarification - reg

3 messages

anert <anert033@gmail.com> 11 December 2023 at 18:09
To: info@wattsun.in
Cc: Jayakumar R <jayakumar@anert.in>, ANERT Projects <projects@anert.in>

Sir,
While evaluating the technical bid you submitted against the tender mentioned above, we
are seeking some clarifications on the points mentioned below in order to avoid rejection of your bid. Your reply should reach us by e-mail on or before 13/12/2023 before 3.00pm.

1. If the bidder is not a manufacturer, JV needs to be formed with manufacturers as per tender clause # 10.1.3. JV agreement needs to be provided on Rs. 200/- Kerala stamp paper.
2. Need to produce Copy of Work orders and completion certificate from **SECI/PSU/SNA or GOVT departments** to prove eligibility of 3 MW / 1MWinstallation experience to meet qualification criteria (Refer Table 10.2-1.5 of Tender Document)
3. Need to declare that the Panel & cell to be supplied are indigenously manufactured (DCR Content) and from ALMM list.
4. Need a Declaration from lead bidder to provide Inverter with IS1621, IS16169 certification and must be indigenously manufactured
5. Bill of material needs to be provided as per the format provided in the tender document. RMS not provided, welded, GI GP not allowed, incomplete Submission .
6. Guaranteed Technical Parameters Annexure G (GTP) need to be submitted as per format provided in the tender document.
7. Information regarding service center or Declaration should be provided as per the tender clause # 10.1.5, clause # 15.1, and annexure A point #9.
8. Need to submit a document regarding authorised signatory for the tender .

Thanks and Regards,
TEAM PM-KUSUM
ANERT HQ

anert <anert033@gmail.com> 14 December 2023 at 09:53
To: info@wattsun.in

Sir
Ref:

ANERT-EoI for additional Empanelment of vendors under the Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW -150 kW under the PM KUSUM scheme (Component C) in the State of Kerala scheme (Component-C) in the State of Kerala

As per request from bidders the date of submission of clarification documents extended till 16-12-23 till 3pm .

On Mon, 11 Dec 2023 at 18:09, anert <anert033@gmail.com> wrote:

> Sir,
> While evaluating the technical bid you submitted against the tender mentioned above, we
> are seeking some clarifications on the points mentioned below in order to avoid rejection of your bid. Your reply should reach us by e-mail on or before 13/12/2023 before 3.00pm.
>
> 1. If the bidder is not a manufacturer, JV needs to be formed with manufacturers as per tender clause # 10.1.3. JV agreement needs to be provided on Rs. 200/- Kerala stamp paper.
> 2. Need to produce Copy of Work orders and completion certificate from **SECI/PSU/SNA or GOVT departments** to prove eligibility of 3 MW / 1MWinstallation experience to meet qualification criteria (Refer Table 10.2-1.5 of Tender Document)

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4. Need a Declaration from lead bidder to provide Inverter with IS1621, IS16169 certification and must be indigenously manufactured
5. Bill of material needs to be provided as per the format provided in the tender document. RMS not provided, welded, GI GP not allowed, incomplete Submission .
6. Guaranteed Technical Parameters Annexure G (GTP) need to be submitted as per format provided in the tender document.
7. Information regarding service center or Declaration should be provided as per the tender clause # 10.1.5, clause # 15.1, and annexure A point #9.
8. Need to submit a document regarding authorised signatory for the tender .

Thanks and Regards,
TEAM PM-KUSUM
ANERT HQ

--

Thanks and Regards,
TEAM PM-KUSUM
ANERT HQ

Tenders Wattsun <tenders@wattsun.in> 1 January 2024 at 16:26
To: WattSun Energy India Pvt Ltd <info@wattsun.in>, anert033@gmail.com, Terance Alex <terance.alex@wattsun.in>

Sir/Madam
Please find the documents attached with this mail.

Thanks & Regards,
Praveen S
Wattsun Energy India (P) Ltd
FF Aiswarya Towers
International Airport Road
Chackai- Thiruvananthapuram
Kerala-India-695024
Phone: 9388106363

On Tue, 26 Dec 2023 at 15:23, WattSun Energy India Pvt Ltd <info@wattsun.in> wrote:

---------- Forwarded message ---------
From: **anert** <anert033@gmail.com>
Date: Thu, 14 Dec 2023, 09:53
Subject: Re: ANERT-EoI for additional Empanelment of vendors under the Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW 150 kW under the PM KUSUM scheme (Component C) in the State of Kerala scheme (Component-C) in the State of Kerala- M/s.Wattsun Energy India P Ltd-Clarification -reg
To: <info@wattsun.in>

Sir
Ref:

ANERT-EoI for additional Empanelment of vendors under the Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW -150 kW under the PM KUSUM scheme (Component C) in the State of Kerala scheme (Component-C) in the State of Kerala

As per request from bidders the date of submission of clarification documents extended till 16-12-23 till 3pm .

On Mon, 11 Dec 2023 at 18:09, anert <anert033@gmail.com> wrote:

> Sir,
> While evaluating the technical bid you submitted against the tender mentioned above, we
> are seeking some clarifications on the points mentioned below in order to avoid rejection of your bid. Your reply should reach us by e-mail on or before 13/12/2023 before 3.00pm.

1. If the bidder is not a manufacturer, JV needs to be formed with manufacturers as per tender clause # 10.1.3. JV agreement needs to be provided on Rs. 200/- Kerala stamp paper.
2. Need to produce Copy of Work orders and completion certificate from **SECI/PSU/SNA or GOVT departments** to prove eligibility of 3 MW / 1MWinstallation experience to meet qualification criteria (Refer Table 10.2-1.5 of Tender Document)
3. Need to declare that the Panel & cell to be supplied are indigenously manufactured (DCR Content) and from ALMM list.
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8. Need to submit a document regarding authorised signatory for the tender .

Thanks and Regards,
TEAM PM-KUSUM
ANERT HQ

--

Thanks and Regards,
TEAM PM-KUSUM
ANERT HQ

7 attachments

- **3.pdf** 316K
- **5.pdf** 141K
- **8.pdf** 342K
- **2.pdf** 6009K
- **1.pdf** 3984K
- **7.pdf** 2709K
- **6.pdf** 11932K

भारतीय गैर न्यायिक

भारत

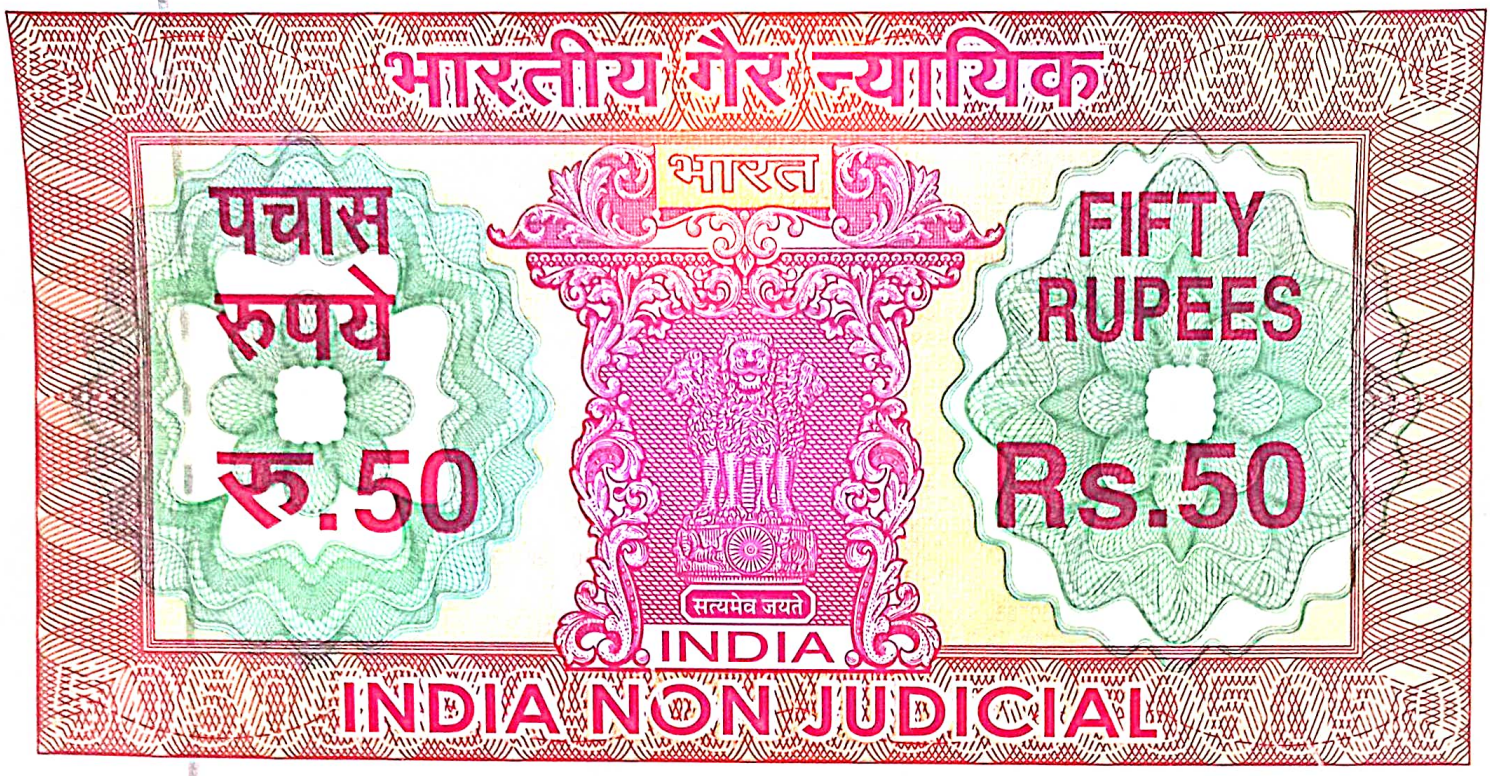
पचास रुपये रु.50

FIFTY RUPEES Rs.50

सत्यमेव जयते

INDIA

INDIA NON JUDICIAL



കേരളം केरल KERALA

CP 916025

JV AGREEMENT / MEMORANDUM OF UNDERSTANDING

This agreement is made on this 12th December 2023, **M/s.Watssun Energy India Private Limited** having registered office at FF Aiswarya towers,International airport Road, Chackai,Trivandrum District,Kerala- 679533 (hereinafter called the 1st Party) which expression shall unless repugnant to the context and meaning thereof mean and include its affiliates, successors-in-business and assigns.

AND

M/s. Pahal Solar having its registered office at 189 Block No71 Opp Shiv Shakti Estate, Olpad Sayan Road Olpad Surat:- 394540, Gujarat (hereinafter referred to as 2nd Party).

The 1st party and 2nd party together shall be referred to as "Parties" and individually as "Party".

WHEREAS on behalf of the The CEO, ANERT having its Head Quarters at PMG - Law College Road, Vikas Bhavan P.O.Thiruvananthapuram – 695 033. (hereinafter referred to as the "Bidding Authority" which expression shall, unless repugnant to the context or meaning thereof, include its administrators, successors and assigns) has invited bids (the "Bids") by its

WATTSUN ENERGY INDIA PVT. LTD. TRIVANDRUM

For PAHAL SOLAR

M/s.Wattsun Energy India Pvt Ltd

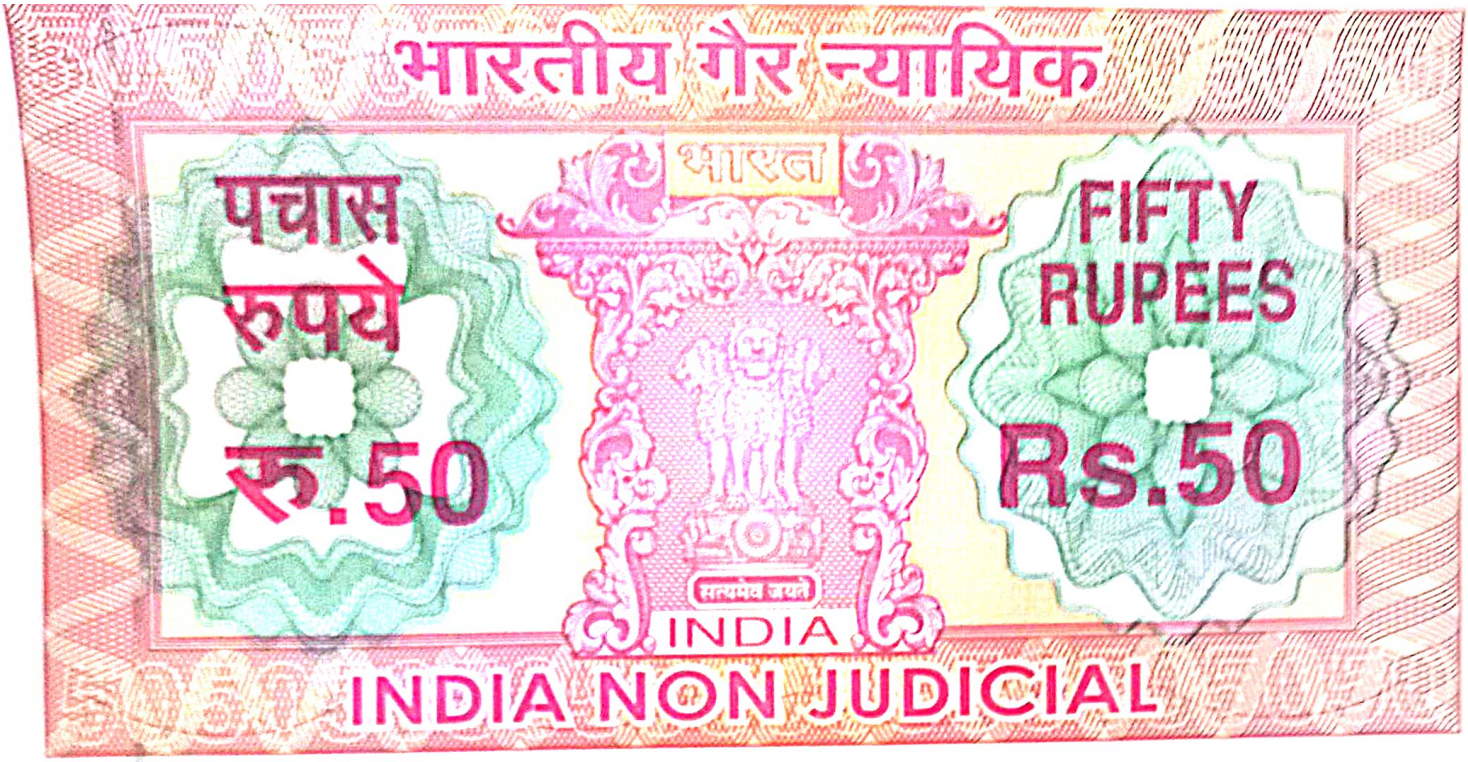
Authorised M/s. Pahal Solar

No. 65780 dt. 18-11-2023

Wattsun Energy India pvt Ltd Chackai Rs 50/-

A. SURESH KUMAR
STAMP VENDOR KARAMANA

PRINCIPAL SUB TREASURY 8 NOV 2023



കേരളം केरल KERALA

CR 779350

Request for ***Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9348 nos. under the PM-KUSUM scheme (Component-C) in the State of Kerala", under NIT No: ANERT-TECH/45/2020-PE1(RTS) dated 20/10/2023.***

AND WHEREAS the Parties are interested in jointly bidding for the Project as Joint Venture and in accordance with the terms and conditions of the bid document in respect of the Project, in implementing the Project on award of the Concession,

NOW IT IS HEREBY AGREED AS FOLLOWS:

1. Definitions and Interpretations

In this Agreement, the capitalized terms shall, unless the context otherwise requires, have the meaning ascribed there to under the bid.

For PAHAL SOLAR

Authorised

M/s.Wattsun Energy India Pvt Ltd

M/s. Pahal Solar

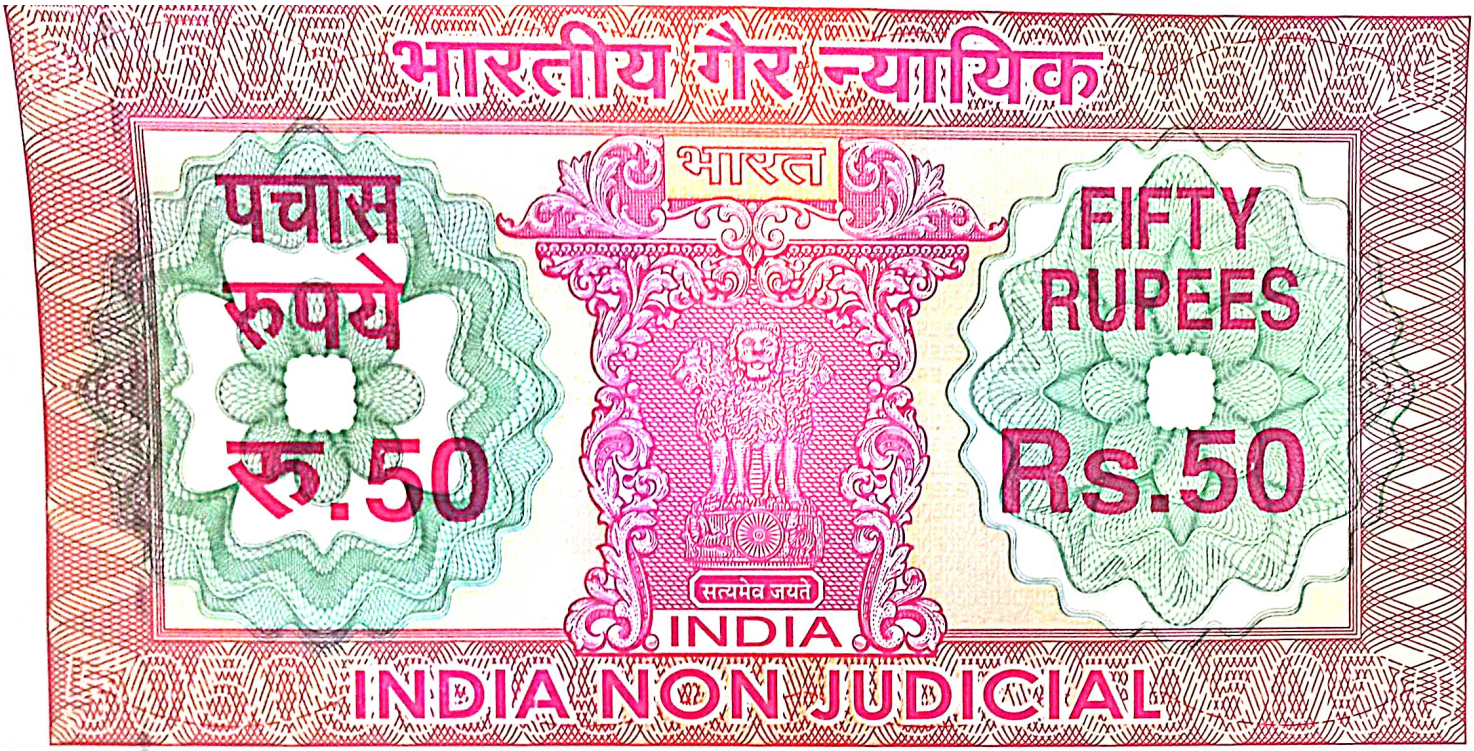
67475 23/11/23

Wattsun Energy India (P) Ltd

Chackai

Rs. 50/-

A. SURESH KUMAR
STAMP VENDOR KARAMANA



കേരളം केरल KERALA

CR 779353

2. Joint Venture

2.1. The Parties do hereby irrevocably constitute a Joint Venture (the "Joint Venture") for the purposes of jointly participating in the Bidding Process for the Project "Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9348 nos. under the PM-KUSUM scheme (Component-C) in the State of Kerala", under NIT No: ANERT-TECH/45/2020-PE1(RTS) dated 20/10/2023".

2.2. The Parties hereby undertake to participate in the Bidding Process only through this Joint Venture and not individually and/ or through any other Joint Venture constituted for this Project, either directly or indirectly or through any of their Associates.

3. Role of the Parties

The Parties hereby undertake to perform the roles and responsibilities as described below:

(a) Party of the First Part shall be the Lead member as well as Financial Member of the Joint Venture and shall have the power of attorney from all Parties for conducting all business for

67478 23/11/23 M/s Wattsun Energy India Pvt Ltd

For PAHAL SOLAR
M/s. Pahal Solar
Authorised

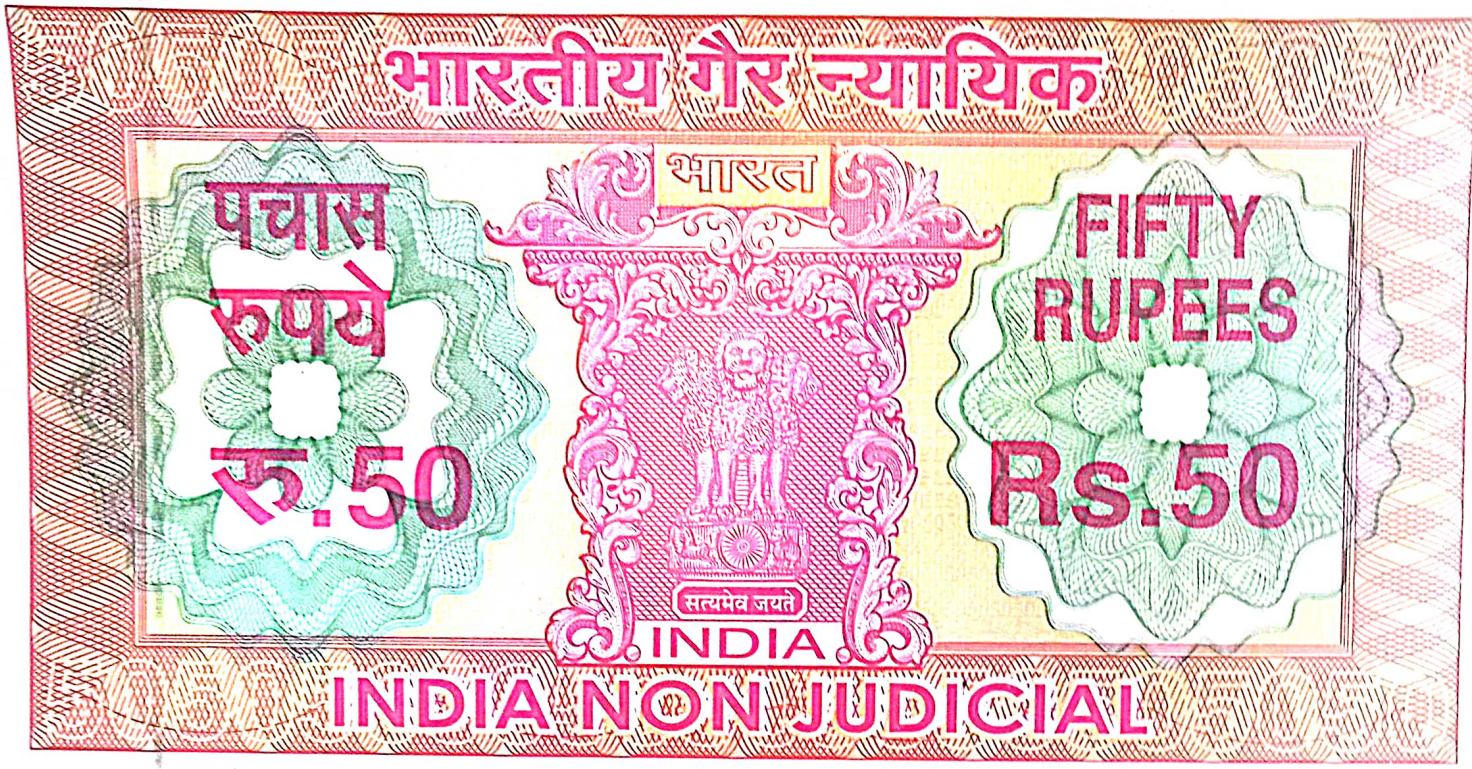
Wattsun Energy India (P) Ltd

Chackai

Rs. 50/-

A. SURESH KUMAR
STAMP VENDOR KARAMANA

PRINCIPAL STEAST FORT
2 NOV 2023



കേരളം केरल KERALA

CR 713845

and on behalf of the Joint Venture during the Bidding Process and in case the Project (Contract) is awarded to the Joint Venture, for implementing the Project

(b) Party of the Second Part might supply the Solar Panels for the Project based on mutual discussions and negotiations.

5. Joint and Several Liability

The Parties do hereby undertake to be jointly the BID and in accordance with this Agreement, till such time all the obligations of the Joint Venture are fully discharged.

6. Representation of the Parties

Each Party represents to the other Parties as of the date of this Agreement that:

(a) such Party is duly organized, validly existing and in good standing under the law and has all requisite power and authority to enter into this Agreement;

(b) the execution, delivery and performance by such Party of this Agreement has been authorized by all necessary and appropriate corporate or governmental action and a notarized copy of the extract of the charter documents and board resolution/ power of attorney

M/s.Wattsun Energy India Pvt Ltd

For PAHAL SOLAR
M/s. Pahal Solar
Authorised

A. SURESH KUMAR
STAMP VENDOR KARAMANA

13 NOV 2023

6399 dt 14-11-2023
Wattsun Energy India (P) Ltd
Chalem

(original/notarized) in favour of the person executing this Agreement for the delegation of power and authority to execute this Agreement on behalf of the Joint Venture Member is annexed to this Agreement, and will not, to the best of its knowledge:

i. require any consent or approval not already obtained;

ii. violate any Applicable Law presently in effect and having applicability to it;

iii. violate the memorandum and articles of association/partnership deed/ LLP agreement, by-laws or other applicable organizational/governing documents thereof;

iv. violate any clearance, permit, concession, grant, license or other governmental authorization, approval, judgment, order or decree or any mortgage agreement, indenture or any other instrument to which such Party is a party or by which such Party or any of its properties or assets are bound or that is otherwise applicable to such Party;

or

v. create or impose any liens, mortgages, pledges, claims, security interests, charges or encumbrances or obligations to create a lien, charge, pledge, security interest, encumbrances or mortgage in or on the property of such Party, except for encumbrances that would not, individually or in the aggregate, have a material adverse effect on the financial condition or prospects or business of such Party so as to prevent such Party from fulfilling its obligations under this Agreement;

(c) this Agreement is the legal and binding obligation of such Party, enforceable in accordance with its terms against it; and

(d) there is no litigation pending or, to the best of such Party's knowledge, threatened to which it or any of its Associates is a party that presently affects or which would have a material adverse effect on the financial condition or prospects or business of such Party in the fulfilment of its obligations under this Agreement.

7. Termination

This Agreement shall be effective from the date hereof and shall continue in full force and effect until such time all the obligations of the Joint Venture (Concessionaire) under the

WATTSUN ENERGY INDIA PVT. LTD. TRIVANDRUM

For PAHAL SOLAR

M/s.Wattsun Energy India Pvt Ltd

M/s. Pahal Solar Authorised

Concession Agreement are fully discharged, in case the Project is awarded to the Joint Venture. However, in case the Joint Venture is either not qualified or qualified for the Project and does not get selected for award of the Contract, the Agreement will stand terminated upon return of the Bid Security by the Bidding Authority to the Bidder.

8. Miscellaneous

8.1 This Joint Project Implementation Agreement shall be governed by laws of India

8.2 The Parties acknowledge and accept that this Agreement shall not be amended by the Parties without the prior written consent of the Bidding Authority / Concessioning Authority.

IN WITNESS WHEREOF THE PARTIES ABOVE NAMED HAVE EXECUTED AND DELIVERED THIS AGREEMENT AS OF THE DATE FIRST ABOVE WRITTEN.

SIGNED, SEALED AND DELIVERED

For and on behalf of LEAD MEMBER by:

M/s. **M/s.Wattsun Energy India Pvt Ltd**

(Signature) :

(Name) : Sreeja SS

(Designation) : Procurement Manager

(Address): Trivandrum

WATTSUN ENERGY INDIA PVT. LTD. TRIVANDRUM

SIGNED, SEALED AND DELIVERED

For and on behalf of SECOND PART by:

M/s. Pahal Solar,

(Signature) :

For PAHAL SOLAR

Authorised

(Name) : Mr Kiran

(Designation) :

(Address): Kollam

Witness

1. Signature
   Name: Praveen
   Address: Kazhakoolam

2. Signature
   Name: Akhil Raj R
   Address: Parassala

MATTSUN ENERGY INDIA PVT. LTD. TRIVANDRUM

Government of Kerala
Department of Electrical Inspectorate
Office of the Deputy Chief Electrical Inspector
3rd Floor, Revenue Tower, Park Avenue, Ernakulam-682011
Phone:- 0484-2976309, email Id: dyceiekm07@gmail.com

IS 15700
BUREAU OF INDIAN STANDARDS
SQMS
An IS 15700 : 2018 Certified Department

Proceedings of the
Electrical Inspector-in-charge, Ernakulam

(Present:- Ushakumari P. K.)

Subject:- Installation of 37kW solar plant & connected electrics at the premises of M/s.Federal Bank, Varapuzha - Sanction for energisation - orders issued – reg:-

Read:-
1. Scheme approval No. B3-22759/22/EIE dated 28-12-2022 of the Electrical Inspector
2. Completion report No. Nil received on 28-12-2022 of M/s.WattSun Energy (India) Pvt. Ltd, Chackai, Trivandrum
3. Inspection conducted on 10-01-2023

Order No. B3-22759/22/EIE dated 12-01-2023

Sanction under Section 54 of The Electricity Act, 2003 and Regulation 43(7) of the CEA (Measures relating to Safety and Electric Supply) Regulations, 2010 is hereby accorded for energisation of the electrical installation covered under the Completion Report read as 2nd above and installed at the premises of M/s.Federal Bank, Varapuzha with the following specifications subject to the conditions mentioned here under.

Specifications:-

Inverter

10kVA

Growatt 10KVA (8000 TL-3-S) Max Apparent Power 8.8KVA
Solar PV Module: 315Wp,32panels ,2 strings ,16 panels in each String,32 x 315Wp = 10.080KWp

27kVA

Inverter: Fronius make (Eco 27-3-S model)Pmax : 27000W

Solar PV Module: 535Wp,56panels ,3strings,19 panels in string 1 and 2 and 18 panels in string3
56 panels x 535Wp = 29960Wp

Earth Electrodes 4Nos.

MV Switch Gears

a.Metering panel 100A - 3Nos.

b. Solar combiner panel 100A - 1No. 50A - 1No. 25A - 1No.

Conditions:-

1. Any addition or alteration to the existing installation shall be carried out only after getting prior written approval from this office.
2. The owner should rectify any defects that may be pointed out during subsequent inspection of the installation by the undersigned.
3. All the pre-commissioning tests shall be recorded for ready reference.
4. Electricity duty for the units produced from the solar energy system should be remitted to the government when demanded.

5. The whole installation should be in conformity with CEA (Technical Standards for connectivity of the distributed generation resources) Regulation, 2013 and KSERC (Grid interactive distributed solar energy systems) Regulation, 2014.
6. Consent from Licensee shall be obtained in case of grid tied system.
7. NOC/Sanction from other agencies/departments/persons if any, shall be availed before energisation.

Electrical Inspector

To

M/s.Federal Bank,
Varapuzha

Copy to:

1. M/s.WattSun Energy (India) Pvt. Ltd, Chackal, Trivandrum [Lic. No.:- CB7909]
2. The Assistant Engineer, KSEB, Electrical Section:- Varappuzha (through:- The Deputy Chief Engineer, KSEB, Electrical Circle:- Porumbavoor)
3. Stock File/Computer Data
4. Office Copy

IIR Case No.52021 New Case

e.solutions-7.7

Government of Kerala
Department of Electrical Inspectorate
Office of the Deputy Chief Electrical Inspector
4th Floor, Corporation Buildings,
Vikas Bhavan P.O., Thiruvananthapuram 695 033.
Phone: 0471 2322934, Email : dceitvm@gmail.com

IS 15700
BUREAU OF INDIAN STANDARDS
SQMS
An IS 15700 : 2005 Certified Department

Proceedings of the
Deputy Chief Electrical Inspector, Thiruvananthapuram

(Present:- Rafiyuddin K K)

Subject:- Installation of 20kWp Solar and connected electrics at the premises of Sri.St. Mary's Institute for Vocational Training in Printing Technology, Pattom - Sanction for energisation - orders issued – reg:-

Read:-
1. Completion report No. Nil received on 09-06-2022 of M/s. Wattsun energy India Pvt Ltd Chackai, Trivandrum
2. Inspection conducted on 21-06-2022

Order No. B5-6264/22/EIT dated 28-06-2022

Sanction under Section 54 of The Electricity Act, 2003, Regulation 32 and 43(7) of the CEA (Measures relating to Safety and Electric Supply) Regulations-2010, Central Electricity Authority (Technical Standards for connectivity of the Distributed Generation Resources) Regulations-2013 and Kerala State Electricity Regulatory Commission (Renewable Energy and Net Metering) Regulations 2020 is hereby accorded for energisation of the electrical installation covered under the Completion Report read as 2nd above and installed at the premises of Sri.St. Mary's Institute for Vocational Training in Printing Technology, Pattom with the following specifications subject to the conditions mentioned here

Conditions:-

1. Supply from the Solar Panel should not be extended out of the premises.
2. Any addition or alteration to the existing installation shall be carried out only after getting prior written approval from this office.
3. The owner should rectify any defects that may be pointed out during subsequent inspection of the installation by the Electrical Inspector.
4. Electricity duty for the units produced from the solar energy system should be remitted to the government.
5. Only authorised person shall be in charge of the operation and maintenance of the installation
6. Power allocation for additional loads, if necessary, should be obtained from KSEB/Licensee
7. Consent from licensee shall be obtained for this Solar installation.
8. The whole installation should be in conformity with CEA (Technical Standards for connectivity of the distributed generation resources) Regulation, 2013 and Kerala State Electricity Regulatory Commission (Renewable Energy and Net Metering) Regulations 2020 to ensure the safety of associated equipments and operating personnel at the premises as well as the KSEB personnel working on their system after switching off the grid supply. The protection incorporated in the solar in restore, switching off the output when grid supply in a absent should be ensured by the owner of solar system and he/she would be safely responsible for any accident in case of failure violation of the same.

3.

Conditions:-

1. Supply from the Solar Panel should not be extended out of the premises.
2. Any addition or alteration to the existing installation shall be carried out only after getting prior written approval from this office.
3. The owner should rectify any defects that may be pointed out during subsequent inspection of the installation by the Electrical Inspector.
4. The whole installation should be in conformity with CEA (Technical Standards for connectivity of the distributed generation resources) Regulation, 2013 and and Kerala State Electricity Regulatory Commission (Renewable Energy and Net Metering) Regulations 2020 to ensure the safety of associated equipments and operating personnel at the premises as well as the KSEB personnel working on their system after switching off the grid supply. The protection incorporated in the solar in restore, switching off the output when grid supply in a absent should be ensured by the owner of solar system and he/she would be safely responsible for any accident in case of failure violation of the same
5. Only authorised person shall be in charge of the operation and maintenance of the installation.
6. Consent from licensee shall be obtained for this Solar installation

To

CMI Provincial House Chavara mount, Thiruvallam P.O, Thiruvananthapuram.

Deputy Chief Electrical Inspector

Copy to:

1. M/s.WattSun Energy(India) Pvt ltd., FF Aiswarya Towers,Internationala Airport Road, Chackai, Thiruvananthapuram (CB-7909)
2. The Assistant Engineer, KSEB, Electrical Section:- Thiruvallom
3. Stock File/Computer Data
4. Office Copy

Government of Kerala
Department of Electrical Inspectorate
Office of the Deputy Chief Electrical Inspector
3rd Floor, Revenue Tower, Park Avenue, Ernakulam-682011
Phone:- 0484-2976309, email Id: dyceiekm07@gmail.com

An IS 15700 : 2005 Certified Department

Proceedings of the
Deputy Chief Electrical Inspector, Ernakulam

(Present:- Sunny Mathew)

Subject:- Installation of 20kw Solar Power Plant and connected electrics at the premises of M/s.Federal Bank,Palarivattom - Sanction for energisation - orders issued – reg:-

Read:-
1. Completion report No. Nil received on 23-12-2021 of M/s.WattSun Energy (India) Pvt. Ltd, Chackai, Trivandrum
2. Inspection conducted on 05-01-2022
3. Nonconformities reported under letter number B3-22544/21/EIE dated 05-01-2022
4. Compliance report furnished under cover of letter No.Nil received on 01-02-2022 of M/s.WattSun Energy (India) Pvt. Ltd, Chackai, Trivandrum
5. Structural Stability Certificate from Jackson Vincent, Jack Construction(P) Ltd., Tvm-10

Order No. B3-22544/21/EIE dated 19-02-2022

Sanction under Section 54 of The Electricity Act, 2003 and Regulation 32 of the CEA (Measures relating to Safety and Electric Supply) Regulations, 2010 is hereby accorded for energisation of the electrical installation covered under the Completion Report read as 1st above and installed at the premises of M/s.Federal Bank,Palarivattom with the following specifications subject to the conditions mentioned here under.

Specifications:-

Inverter
20kVA
Sl. No.- 31087352
Model- Simo20.3-3M
Make- Fronius
Solar Panels:
540W, Make- Longi
12 panels - 2 srings
13 panels- 1 string

Earth Electrodes 4Nos.

MV Switch Gears

AC side switch	40A - 1No.	
DC switches	32A - 3Nos.	
KSEB & Solar Metering Panel	160A - 2Nos.	63A - 1No.

Conditions:-

1. Any addition or alteration to the existing installation shall be carried out only after getting prior written approval from this office.
2. The owner should rectify any defects that may be pointed out during subsequent inspection of the installation by the undersigned.
3. All t

Government of Kerala
Department of Electrical Inspectorate
Office of the Deputy Chief Electrical Inspector
4th Floor, Corporation Buildings,
Vikas Bhavan P.O., Thiruvananthapuram 695 033.
Phone: 0471-2934159, Email : dceitvm@gmail.com

भारतीय मानक ब्यूरो IS 15700
BUREAU OF INDIAN STANDARDS SQMS
An IS 15700 : 2018 Certified Department

Proceedings of the
Deputy Chief Electrical Inspector, Thiruvananthapuram

(Present:- Rafiyuddin K K)

Subject:- Installation of 1 No. 50.29kWp on Grid Solar Power Plant with 1 No. 55kVA three phase Solar Inverter and connected electrics at the premises of CMI Provincial House Chavara mount, Thiruvallam p.o, Thiruvananthapuram - Sanction for energisation - orders issued – reg:-

Read:- 1. Scheme approval No B5-5377/2022/EIT dated 09/06/2022.

2. Completion report No. Nil dated 25/07/2022 of M/s.WattSun Energy(India) Pvt ltd., FF Aiswarya Towers,Internationala Airport Road, Chackai, Thiruvananthapuram (CB-7909)

3.Inspection conducted on 04/08/2022

Order No. B5-5377/2022/EIT dated 12/08/2022

Sanction under Section 54 of The Electricity Act, 2003, Regulation 32 of the CEA (Measures relating to Safety and Electric Supply) Regulations-2010, Central Electricity Authority (Technical Standards for connectivity of the Distributed Generation Resources) Regulations-2013 and Kerala State Electricity Regulatory Commission (Renewable Energy and Net Metering) Regulations 2020 is hereby accorded for energisation of the electrical installation covered under the Completion Report read as 2nd above and installed at the premises of M/s CMI Provincial House Chavara mount, Thiruvallam p.o, Thiruvananthapuram owned by The Superior ,CMI Provincial House Chavara mount, Thiruvallam p.o, Thiruvananthapuram with the following specifications subject to the conditions mentioned here under.

Specifications:-

	Quantity (in numbers)
Solar Panel PV modules 535Wp Make : Adani Maximum Power Voltage : 41.64V Maximum Power Current : 12.86A Open Circuit Voltage : 48.72V Short Circuit Current : 13.74A	50.29kWp 94 Nos (6 Strings) 1st String-15 Nos 2nd String- 15Nos 3rd String-16 Nos 4rth string- 16Nos 5th string-16 Nos. 6th string-16 Nos
55kVA Inverter Inverter Details:- Make: Abb; Model: PVS-50-TL Sl No: 2104117829	1No.
DC DB Switches are Inbuilt	
AC DB 100A MCB	1 No
Earth Pits	3 Nos.

Petronet LNG Limited
Survey No. 347, Puthuvypu P.O.
Kochi - 682 508, India.
Tel: +91- 484 - 2757302 Fax: +91- 484-2502264
www.petronetlng.in
CIN L74899DL1998PLC093073
PAN: AAACP8148D. GST: 32AAACP8148D1ZP

COMPLETION CERTIFICATE

Name of Services/ Consultancy/Work	Design, Supply, Installation and Commissioning of 200 KWp Solar PV unit
Name of Contractor/ Consultant	M/s Wattsun Energy (India) Pvt Ltd
LOA No. and date	LOA: PLL/KOCHI/EL/SER/4852/ 2020-21/LOA dated 04.11.2020
Contractual Start Date	05.11.2020
Contractual Completion Date	19.12.2021
Actual Completion Date	31.03.2022
Awarded Value of Services/ consultancy/ Work	INR 1, 41, 93, 104/- (Rupees One Crore Forty One Lakhs Ninety Three Thousand One Hundred Four Only).
Executed Value of Services/ consultancy/ Work	INR 1, 34, 83, 448/- (Rupees One Crore Thirty Four Lakhs Eighty Three Thousand Four Hundred Forty Eight Only).

Place: Kochi
Date: 23.08.2022

Mithilesh Singh
General Manager (Electrical)

Government of Kerala
Department of Electrical Inspectorate
Office of the Deputy Chief Electrical Inspector
Forth Floor, Corporation Building Vikas Bhavan PO
Thiruvananthapuram 695033
Phone: 04712934159,
Email:dceitvm@gmail.com Website:
www.ceikerala.gov.in

भारतीय मानक ब्यूरो IS 15700
BUREAU OF INDIAN STANDARDS SQMS
An IS 15700 : 2005 Certified Department

Proceedings of the
Deputy Chief Electrical Inspector
Thiruvananthapuram
Present:Rafiyuddin K K

Subject: Installation of 200 kWp Grid connected solar installation at the premises of M/s PMS COLLEGE OF DENTAL SCIENCE AND RESEARCH,, Vattappara, Thiruvananthapuram, 695028 - Sanction for energisation orders issued - regarding.

Reference:

1. Scheme Approval No. B5-08104/22/EIT dated 27.08.2022
2. Completion report submitted by WATTSUN ENERGY INDIA PVT. LTD., INTERNATIONAL AIRPORT ROAD,CHACKAI,Kerala,695024 dated received on 27.10.2022
3. Inspection conducted on 03.11.2022

Order No: B5-08104/22/EIT Dated 09-11-2022

Sanction under Section 54 of The Electricity Act-2003, Regulation 32 of the CEA (Measures relating to Safety and Electric Supply) Regulations-2010, Central Electricity Authority (Technical Standards for connectivity of the Distributed Generation Resources) Regulations-2013 and Kerala State Electricity Regulatory Commission (Renewable Energy and Net Metering) Regulations 2020 is hereby accorded for energisation of the electrical installation covered under the Completion Report read as (2) above and installed at the premises of M/s PMS COLLEGE OF DENTAL SCIENCE AND RESEARCH,,Vattappara,Thiruvananthapuram,695028 subject to following conditions and as detailed in the annexure appended

WATTSUN ENERGY INDIA PVT. LTD. TRIVANDRUM

1. Supply from the Solar Panel should not be extended out of the premises.
2. Any addition or alteration to the existing installation shall be carried out only after getting prior written approval from this office.
3. The owner should rectify any defects that may be pointed out during subsequent inspection of the installation by the Electrical Inspector.
4. The whole installation should be in conformity with CEA (Technical Standards for connectivity of the distributed generation resources) Regulation, 2013 and and Kerala State Electricity Regulatory Commission (Renewable Energy and Net Metering) Regulations 2020 to ensure the safety of associated equipments and operating personnel at the premises as well as the KSEB personnel working on their system after switching off the grid supply. The protection incorporated in the solar in restore, switching off the output when grid supply iis absent should be ensured by the owner of solar system and he/she would be solely responsible for any accident in case of failure violation of the same
5. Only authorised person shall be in charge of the operation and maintenance of the installation
6. Consent from licensee shall be obtained for this Solar installation

Solar PV Module

Make - AXITEC; Pmax - 550W; Voc - 49.8V; Isc - 13.96A

No.of Modules = 364Nos

STRING DETAILS

10 Strings with 15 PV modules each and 2 Strings with 16 PV modules each

PV INVERTER - 2 Nos

1. Make - Fronius; Sl No.33422804; 100KVA

2.Make - Fronius: Sl No.33422803; 100KVA

Deputy Chief Electrical Inspector

To:

Administrator
PMS College of Dental Science and Research,

Copy To:

1 WATTSUN ENERGY INDIA PVT. LTD. , INTERNATIONAL AIRPORT ROAD , CHACKAI, Kerala , 695024

2 TERANCE ALEX , WATTSUN ENERGY INDIA PVT. LTD. AISWARYA TOWERS INTERNATIONAL AIRPORT ROAD, CHAKAI, THIRUVANANTHAPURAM ,

WATTSUN ENERGY INDIA PVT. LTD. TRIVANDRUM

Annexure (Order No: B5-08104/22/EIT Dated 10.11.2022)	
Items	Quantity(in numbers)
Solar Inverter (100 kVA)	
SB Panel Name : ISOLATOR 1	
Incomer Isolator 200 Amps	1
SB Panel Name : ISOLATOR 2	
Incomer Isolator 200 Amps	1
SSB Panel Name : Solar ACDB	
Incomer MCCB 200 Amps	2
Outgoing MCCB 400 Amps	1
Earth Electrodes	4
Inverter (150 kVA)	2

Load Details

HT Motor – 0 kW

HT Capacitor – 0 kVAr

Fire Pump Load – 0 kW

Lift Load – 0 kW

Other Load – 0 kW + 0 kVA + 0 kVAr

Deputy Chief Electrical Inspector

This is a computer generated document. Signature is not required.

WATTSUN ENERGY INDIA PVT. LTD. TRIVANDRUM

അനുബന്ധം-14

സോളാർ പ്ലാന്റ് കണക്ഷൻ റിപ്പോർട്ട്

സെക്ഷൻ : Vattiyoorkavu

കൺസ്യൂമർ നമ്പർ : 1145093017180 .(13 അക്കം)

പേര് : Raveendran

സ്പിൻ നമ്പർ : 45090048

സോളാർ കപ്പാസിറ്റി : 3Kwp കിലോവാട്ട്

കണക്ട് ചെയ്ത ദിവസം : 9-11-2020

സോളാർ മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

നെറ്റ് മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

തീയതി : അസിസ്റ്റന്റ് എഞ്ചിനീയർ പേര് ROSHIN ALBERT

ഒപ്പ് Roshin Albert 29/11/2021

Assistant Engineer
Electrical Section
Vattiyoorkavu
Thiruvananthapuram

പകർപ്പ് :

ഡെപ്യൂട്ടി ചീഫ് എഞ്ചിനീയർ .....

എക്സിക്യൂട്ടീവ് എഞ്ചിനീയർ .....

അനുബന്ധം-14

സോളാർ പ്ലാന്റ് കണക്ഷൻ റിപ്പോർട്ട്

സെക്ഷൻ : Cantonement

കൺസ്യൂമർ നമ്പർ : 1145065007027 .(13 അക്കം)

പേര് : FR. Mathew Kavier Stores Church

സ്പിൻ നമ്പർ : .....

സോളാർ കപ്പാസിറ്റി : 10KWP കിലോവാട്ട്

കണക്ട് ചെയ്ത ദിവസം : 3/09/2021

സോളാർ മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

നെറ്റ് മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

തീയതി : അസിസ്റ്റന്റ് എഞ്ചിനീയർ പേര് .....

ഒപ്പ് .....

Assistant Engineer
Electrical Section
Cantonment, Tvm-33

പകർപ്പ് :

ഡെപ്യൂട്ടി ചീഫ് എഞ്ചിനീയർ .....

എക്സിക്യൂട്ടീവ് എഞ്ചിനീയർ .....

അനുബന്ധം-14

സോളാർ പ്ലാന്റ് കണക്ഷൻ റിപ്പോർട്ട്

സെക്ഷൻ : Cantonement

കൺസ്യൂമർ നമ്പർ : 114063002220 (13 അക്കം)

പേര് : Hariboy Pereira

സ്പിൻ നമ്പർ : .....

സോളാർ കപ്പാസിറ്റി : 5Kwp കിലോവാട്ട്

കണക്ട് ചെയ്ത ദിവസം : 18-9-2021

സോളാർ മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

നെറ്റ് മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

തീയതി : അസിസ്റ്റന്റ് എഞ്ചിനീയർ പേര് Vimal.PN

ഒപ്പ് .....

Assistant Engineer
Electrical Section
Cantonment, Tvm-33

പകർപ്പ് :

ഡെപ്യൂട്ടി ചീഫ് എഞ്ചിനീയർ .....

എക്സിക്യൂട്ടീവ് എഞ്ചിനീയർ .....

അനുബന്ധം 14

സോളാർ പ്ലാന്റ് കണക്ഷൻ റിപ്പോർട്ട്

സെക്ഷൻ : Cantonment

കൺസ്യൂമർ നമ്പർ : 1145064013996 .(13 അക്കം)

പേര് : George Varghees

സ്പിൻ നമ്പർ : .....

സോളാർ കപ്പാസിറ്റി : 10 kWp കിലോവാട്ട്

കണക്ട് ചെയ്ത ദിവസം : 6-7-2021

സോളാർ മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

നെറ്റ് മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

തീയതി : അസിസ്റ്റന്റ് എഞ്ചിനീയർ പേര് Vimal.....

ഒപ്പ്.....

Assistant Engineer
Electrical Section
Cantonment, Tvm-33

പകർപ്പ് :

ഡെപ്യൂട്ടി ചീഫ് എഞ്ചിനീയർ .....

എക്സിക്യൂട്ടീവ് എഞ്ചിനീയർ .....

4. Office Copy

Annexure to Order No: B5-03983/2021/EIT dated 17 /12/2021

	Quantity (in numbers)
Solar Panel **50kWp** PV modules 540Wp Make : Trina Solar Maximum Power Voltage : 31.20V Maximum Power Current : 17.33A Open Circuit Voltage : 37.5V Short Circuit Current : 18.41A	94 Nos. (1st String= 18 Nos. 2Nd String= 18 Nos 3rd String= 18 Nos 4th String= 18 Nos 5th String= 22 Nos)
50kVA Inverter Inverter Details:- Make: ABB, Sl No: 2112115591, Vdc(Max) = (300-980)Vdc, Vdc(MPPT) =480Vdc- 800Vdc Idsc (Max) = 108A, Isc (Max) = 165A	1No.
DC DB, 32A DC Iso	5 Nos.
AC Isolator for Inverter, 100A	1 No
Solar Combiner Panel, 250A	2 Nos.
Solar Combiner Panel, 100A	1 No
Earth Pits	2 Nos.

Electrical Inspect

Government of Kerala
Department of Electrical Inspectorate
Office of the Deputy Chief Electrical Inspector
4th Floor, Corporation Buildings,
Vikas Bhavan P.O., Thiruvananthapuram 695 033.
Phone: 0471 2322934, Email : dceitvm@gmail.com

An IS 15700 : 2005 Certified Department

Proceedings of the
Electrical Inspector, Thiruvananthapuram

(Present:- P K Ushakumari)

Subject:- Installation of 1 No. 50kWp on Grid Solar Power Plant with 1 No. 50kVA Solar inverter and connected electrical in the existing HT installation at the premise of M/s. Christ Nagar Senior Secondary School, Thiruvallom, Thiruvananthapuram - Sanction for energisation - orders issued – reg.

Read:-
1. Scheme Approval No. B5-03983/2021/EIT dated 05/11/2021
2. Completion report No. Nil dated 05/07/2021 of M/s. Wattsun Energy (India) Pvt Ltd, FF, Aiswarya Towers, International Airport Road, Chackai, Thiruvananthapuram (CB-7909)
2. Inspection conducted on 09/12/2021
3. Balance fee remittance on 15/12/2021

Order No. B5-03983/2021/EIT dated 17/12/2021

Sanction under Section 54 of The Electricity Act, 2003, Regulation 32 and 43(7) of the CEA (Measures relating to Safety and Electric Supply) Regulations-2010, Central Electricity Authority (Technical Standards for connectivity of the Distributed Generation Resources) Regulations-2013 and Kerala State Electricity Regulatory Commission (Renewable Energy and Net Metering) Regulations 2020 is hereby accorded for energisation of the electrical installation covered under the Completion Report read as 2nd above and installed at the premises of M/s. Christ Nagar Senior Secondary School, Thiruvallom, Thiruvananthapuram with the following specifications subject to the conditions mentioned here under.

Conditions :-

1. Supply from the Solar Panel should not be extended out of the premises.
2. Any addition or alteration to the existing installation shall be carried out only after getting prior written approval from this office.
3. The owner should rectify any defects that may be pointed out during subsequent inspection of the installation by the Electrical Inspector.
4. Electricity duty for the units produced from the solar energy system should be remitted to the government.
5. Only authorised person shall be in charge of the operation and maintenance of the installation.
6. Power allocation for additional loads, if necessary, should be obtained from KSEB/Licensee.
7. Consent from licensee shall be obtained for this Solar installation.
8. The whole installation should be in conformity with CEA (Technical Standards for connectivity of the distributed generation resources) Regulation, 2013 and Kerala State Electricity Regulatory Commission (Renewable Energy and Net Metering) Regulations 2020 to ensure the safety of associated equipments and operating personnel at the premises as well as the KSEB personnel working on their system after switching off the grid supply. The protection incorporated in the solar in restore, switching off the output when grid supply in a absent should be ensured by the owner of solar system and he/she would be safely responsible for any accident in case of failure violation of the same.

Load Details: Appended

Electrical Inspector

To,

The Principal,
M/s. Christ Nagar Senior Secondary School, Thiruvallom, Thiruvananthapuram

Copy to:

1. M/s. Wattsun Energy (India) Pvt Ltd, FF, Aiswarya Towers, International Airport Road, Chackai

4. Office Copy

Annexure to Order No: B5-03983/2021/EIT dated 17 /12/2021

	Quantity (in numbers)
Solar Panel **50kWp** PV modules 540Wp Make : Trina Solar Maximum Power Voltage : 31.20V Maximum Power Current : 17.33A Open Circuit Voltage : 37.5V Short Circuit Current : 18.41A	94 Nos. (1st String= 18 Nos. 2Nd String= 18 Nos 3rd String= 18 Nos 4th String= 18 Nos 5th String= 22 Nos)
50kVA Inverter Inverter Details:- Make: ABB, Sl No: 2112115591, Vdc(Max) = (300-980)Vdc, Vdc(MPPT) =480Vdc- 800Vdc Idsc (Max) = 108A, Isc (Max) = 165A	1No.
DC DB, 32A DC Iso	5 Nos.
AC Isolator for Inverter, 100A	1 No
Solar Combiner Panel, 250A	2 Nos.
Solar Combiner Panel, 100A	1 No
Earth Pits	2 Nos.

Electrical Inspect

അനുബന്ധം 14

സോളാർ പ്ലാന്റ് കണക്ഷൻ റിപ്പോർട്ട്

സെക്ഷൻ : Cantonment

കൺസ്യൂമർ നമ്പർ : 1145064013996 .(13 അക്കം)

പേര് : George Varghees

സ്പിൻ നമ്പർ : .....

സോളാർ കപ്പാസിറ്റി : 10 kwp കിലോവാട്ട്

കണക്ട് ചെയ്ത ദിവസം : 6-7-2021

സോളാർ മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

നെറ്റ് മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

തീയതി : അസിസ്റ്റന്റ് എഞ്ചിനീയർ പേര് Vimal.....

ഒപ്പ്.....

Assistant Engineer
Electrical Section
Cantonment, Tvm-33

പകർപ്പ് :

ഡെപ്യൂട്ടി ചീഫ് എഞ്ചിനീയർ .....

എക്സിക്യൂട്ടീവ് എഞ്ചിനീയർ .....

അനുബന്ധം-14

സോളാർ പ്ലാന്റ് കണക്ഷൻ റിപ്പോർട്ട്

സെക്ഷൻ : Vattiyoorkavu

കൺസ്യൂമർ നമ്പർ : 1145093017180 .(13 അക്കം)

പേര് : Raveendran

സ്പിൻ നമ്പർ : 45090048

സോളാർ കപ്പാസിറ്റി : 3Kwp കിലോവാട്ട്

കണക്ട് ചെയ്ത ദിവസം : 9-11-2020

സോളാർ മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

നെറ്റ് മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

തീയതി : അസിസ്റ്റന്റ് എഞ്ചിനീയർ പേര് ROSHIN ALBERT

ഒപ്പ് Roshin Albert 29/11/2021

Assistant Engineer
Electrical Section
Vattiyoorkavu
Thiruvananthapuram

പകർപ്പ് :

ഡെപ്യൂട്ടി ചീഫ് എഞ്ചിനീയർ .....

എക്സിക്യൂട്ടീവ് എഞ്ചിനീയർ .....

അനുബന്ധം-14

സോളാർ പ്ലാന്റ് കണക്ഷൻ റിപ്പോർട്ട്

സെക്ഷൻ : Mavelikara

കൺസ്യൂമർ നമ്പർ : 1155225001338 (13 അക്കം)

പേര് : Pritipal Bishopmore College

സ്റ്റിൻ നമ്പർ : ..... കിലോവാട്ട്

സോളാർ കപ്പാസിറ്റി : 50kwp

കണക്ട് ചെയ്ത ദിവസം : 12-11-2021

സോളാർ മീറ്റർ ഇൻഷ്യൽ റീഡിംഗ് : -0-

നെറ്റ് മീറ്റർ ഇൻഷ്യൽ റീഡിംഗ് : -0-

തീയതി : 12-11-2021

അസിസ്റ്റന്റ് എഞ്ചിനീയർ പേര് SUNIL KUMAR. S
ASSISTANT ENGINEER
ELECTRICAL SECTION
MAVELIKARA

ഒപ്പ്

ഡെപ്യൂട്ടി ചീഫ് എഞ്ചിനീയർ .....

എക്സിക്യൂട്ടീവ് എഞ്ചിനീയർ .....

അനുബന്ധം-14

സോളാർ പ്ലാന്റ് കണക്ഷൻ റിപ്പോർട്ട്

സെക്ഷൻ : Pettah

കൺസ്യൂമർ നമ്പർ : 1145144017425 (13 അക്കം)

പേര് : John Antony Rodricks

സ്പിൻ നമ്പർ : .....

സോളാർ കപ്പാസിറ്റി : 5 Kwp കിലോവാട്ട്

കണക്ഷൻ ചെയ്ത ദിവസം : 19-03-2021

സോളാർ മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

നെറ്റ് മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

തീയതി :

അസിസ്റ്റന്റ് എഞ്ചിനീയർ പേര് Ajayakumar.K.S

ഒപ്പ്

ASSISTANT ENGINEER
Electrical Section, Pettah
KSEB
Thiruvananthapuram

പകർപ്പ് :

ഡെപ്യൂട്ടി ചീഫ് എഞ്ചിനീയർ .....

എക്സിക്യൂട്ടീവ് എഞ്ചിനീയർ .....

അനുബന്ധം-14

സോളാർ പ്ലാന്റ് കണക്ഷൻ റിപ്പോർട്ട്

സെക്ഷൻ : Vattiyoorkavu

കൺസ്യൂമർ നമ്പർ : 1145093005402 .(13 അക്കം)

പേര് : Vikramanalin

സ്പിൻ നമ്പർ : 4509 00047

സോളാർ കപ്പാസിറ്റി : 3kwp കിലോവാട്ട്

കണക്ട് ചെയ്ത ദിവസം : 9-11-2020

സോളാർ മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

നെറ്റ് മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

തീയതി : അസിസ്റ്റന്റ് എഞ്ചിനീയർ പേര് Rushi Albert

ഒപ്പ് Rushi Albert 20/4/2021

Assistant Engineer
Electrical Section
Vattiyoorkavu
Thiruvananthapuram

പകർപ്പ് :

ഡെപ്യൂട്ടി ചീഫ് എഞ്ചിനീയർ .....

എക്സിക്യൂട്ടീവ് എഞ്ചിനീയർ .....

അനുബന്ധം-14

സോളാർ പ്ലാന്റ് കണക്ഷൻ റിപ്പോർട്ട്

സെക്ഷൻ : Vellayambalam

കൺസ്യൂമർ നമ്പർ : 1145072004790 (13 അക്കം)

പേര് : Kp Thomas

സ്പിൻ നമ്പർ :

സോളാർ കപ്പാസിറ്റി : 7.5 KW കിലോവാട്ട്

കണക്ട് ചെയ്ത ദിവസം : ~~12-11-2021~~ 2/12/2021

സോളാർ മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

നെറ്റ് മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

തീയതി : അസിസ്റ്റന്റ് എഞ്ചിനീയർ പേര്

ENGINEER
Electrical Section
Vellayambalam

ഒപ്പ് Prakash Kumar PT

പകർപ്പ് :

ഡെപ്യൂട്ടി ചീഫ് എഞ്ചിനീയർ

എക്സിക്യൂട്ടീവ് എഞ്ചിനീയർ

അനുബന്ധം-14

സോളാർ പ്ലാന്റ് കണക്ഷൻ റിപ്പോർട്ട്

സെക്ഷൻ : Ulloor

കൺസ്യൂമർ നമ്പർ : 1145177016729 .(13 അക്കം)

പേര് : Rakhi. S. Nair

സ്പിൻ നമ്പർ : .....

സോളാർ കപ്പാസിറ്റി : 2.5 KW കിലോവാട്ട്

കണക്ട് ചെയ്ത ദിവസം : 10.06.2021

സോളാർ മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

നെറ്റ് മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

തീയതി : അസിസ്റ്റന്റ് എഞ്ചിനീയർ പേര് Vibith. V.S.

ഒപ്പ്

Assistant Engineer
Electrical Section
KSEB - Ulloor

പകർപ്പ് :

ഡെപ്യൂട്ടി ചീഫ് എഞ്ചിനീയർ .....

എക്സിക്യൂട്ടീവ് എഞ്ചിനീയർ .....

അനുബന്ധം-14

സോളാർ പ്ലാന്റ് കണക്ഷൻ റിപ്പോർട്ട്

സെക്ഷൻ : Villoor

കൺസ്യൂമർ നമ്പർ : 1141200011558 .(13 അക്കം)

പേര് : Oommen Raju Jacob

സ്പിൻ നമ്പർ : .....

സോളാർ കപ്പാസിറ്റി : 5 kwp കിലോവാട്ട്

കണക്ട് ചെയ്ത ദിവസം : 8-01-2020

സോളാർ മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

നെറ്റ് മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

തീയതി : അസിസ്റ്റന്റ് എഞ്ചിനീയർ പേര് Vibin. VG

ഒപ്പ്

Assistant Engineer
Electrical Section
KSEB - Villoor

പകർപ്പ് :

ഡെപ്യൂട്ടി ചീഫ് എഞ്ചിനീയർ .....

എക്സിക്യൂട്ടീവ് എഞ്ചിനീയർ .....

സോളാർ പ്ലാന്റ് കണക്ഷൻ റിപ്പോർട്ട്

സെക്ഷൻ : Kaniyapuram

കൺസ്യൂമർ നമ്പർ : 1145222015204 (13 അക്കം)

പേര് : Rosmini Convent

സ്പിൻ നമ്പർ : .....

സോളാർ കപ്പാസിറ്റി : 15 kwp കിലോവാട്ട്

കണക്ട് ചെയ്ത ദിവസം : .....

സോളാർ മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

നെറ്റ് മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

തീയതി : അസിസ്റ്റന്റ് എഞ്ചിനീയർ പേര് Jaldy. V

ഒപ്പ് .....

Assistant Engineer
Electrical Section
KSEB Ltd.
Kaniyapuram

പകർപ്പ് :

ഡെപ്യൂട്ടി ചീഫ് എഞ്ചിനീയർ .....

എക്സിക്യൂട്ടീവ് എഞ്ചിനീയർ .....

അനുബന്ധം-14

സോളാർ പ്ലാന്റ് കണക്ഷൻ റിപ്പോർട്ട്

സെക്ഷൻ : Cantonement

കൺസ്യൂമർ നമ്പർ : 1145068002 40 .(13 അക്കം)

പേര് : Roger Oscar Christian

സ്പിൻ നമ്പർ : .....

സോളാർ കപ്പാസിറ്റി : 10 Kwp കിലോവാട്ട്

കണക്ട് ചെയ്ത ദിവസം : 08/03/2021

സോളാർ മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

നെറ്റ് മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

തീയതി :

അസിസ്റ്റന്റ് എഞ്ചിനീയർ പേര് Vimal.S.R

ഒപ്പ്

Assistant Engineer
Electrical Section
Cantonment, Tvm-33

പകർപ്പ് :

ഡെപ്യൂട്ടി ചീഫ് എഞ്ചിനീയർ .....

എക്സിക്യൂട്ടീവ് എഞ്ചിനീയർ .....

അനുബന്ധം-14

സോളാർ പ്ലാന്റ് കണക്ഷൻ റിപ്പോർട്ട്

സെക്ഷൻ : Contonement

കൺസ്യൂമർ നമ്പർ : 1145066011209 .(13 അക്കം)

പേര് : Sabu

സ്പിൻ നമ്പർ : .....

സോളാർ കപ്പാസിറ്റി : 5 Kwp കിലോവാട്ട്

കണക്ട് ചെയ്ത ദിവസം : 9/12/2020

സോളാർ മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

നെറ്റ് മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

തീയതി : അസിസ്റ്റന്റ് എഞ്ചിനീയർ പേര് Vimal .pv

ഒപ്പ് Assistant Engineer Electrical Section Cantonment, Tvm-33

പകർപ്പ് :

ഡെപ്യൂട്ടി ചീഫ് എഞ്ചിനീയർ .....

എക്സിക്യൂട്ടീവ് എഞ്ചിനീയർ .....

സോളാർ പ്ലാന്റ് കണക്ഷൻ റിപ്പോർട്ട്

സെക്ഷൻ : Vattiyoorkavu

കൺസ്യൂമർ നമ്പർ : 1145095032126 .(13 അക്കം)

പേര് : Raghu

സ്പിൻ നമ്പർ : 450900059

സോളാർ കപ്പാസിറ്റി : 5 kwp കിലോവാട്ട്

കണക്ട് ചെയ്ത ദിവസം : 5-3-2020

സോളാർ മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

നെറ്റ് മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

തീയതി : അസിസ്റ്റന്റ് എഞ്ചിനീയർ പേര് ROSHIN ALBERT

ഒപ്പ് Rosh Albert 30/4/2021

Assistant Engineer
Electrical Section
Vattiyoorkavu
Thiruvananthapuram

പകർപ്പ് :

ഡെപ്യൂട്ടി ചീഫ് എഞ്ചിനീയർ .....

എക്സിക്യൂട്ടീവ് എഞ്ചിനീയർ .....

അനുബന്ധം-14

സോളാർ പ്ലാന്റ് കണക്ഷൻ റിപ്പോർട്ട്

സെക്ഷൻ : Vattiyoorkavu

കൺസ്യൂമർ നമ്പർ : 1145095032126 .(13 അക്കം)

പേര് : Raghu

സ്പിൻ നമ്പർ : 450900059

സോളാർ കപ്പാസിറ്റി : 5kwp കിലോവാട്ട്

കണക്ട് ചെയ്ത ദിവസം : 5-3-2020

സോളാർ മീറ്റർ ഇനീഷ്യൽ റീഡിംഗ് : -0-

നെറ്റ് മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

തീയതി : അസിസ്റ്റന്റ് എഞ്ചിനീയർ പേര് ROSHIN ALBERT

ഒപ്പ് Rosh. Albert 29/4/2021

Assistant Engineer
Electrical Section
Vattiyoorkavu
Thiruvananthapuram

പകർപ്പ് :

ഡെപ്യൂട്ടി ചീഫ് എഞ്ചിനീയർ .....

എക്സിക്യൂട്ടീവ് എഞ്ചിനീയർ .....

സോളാർ പ്ലാന്റ് കണക്ഷൻ റിപ്പോർട്ട്

സെക്ഷൻ : Ulloor

കൺസ്യൂമർ നമ്പർ : 1145172002424 .(13 അക്കം)

പേര് : C.K. George

സ്പിൻ നമ്പർ : 3

സോളാർ കപ്പാസിറ്റി : 5 Kwp കിലോവാട്ട്

കണക്ട് ചെയ്ത ദിവസം : 31.03.2021

സോളാർ മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

നെറ്റ് മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

തീയതി :

അസിസ്റ്റന്റ് എഞ്ചിനീയർ പേര് Vibish. VG

ഒപ്പ്

Assistant Engineer
Electrical Section
KSEB - Ulloor

പകർപ്പ് :

ഡെപ്യൂട്ടി ചീഫ് എഞ്ചിനീയർ .....

എക്സിക്യൂട്ടീവ് എഞ്ചിനീയർ .....

അനുബന്ധം-14

സോളാർ പ്ലാന്റ് കണക്ഷൻ റിപ്പോർട്ട്

സെക്ഷൻ : Contonement

കൺസ്യൂമർ നമ്പർ : 1145066011209 (13 അക്കം)

പേര് : Sabu

സ്പിൻ നമ്പർ : .....

സോളാർ കപ്പാസിറ്റി : 5Kwp കിലോവാട്ട്

കണക്ട് ചെയ്ത ദിവസം : 9/12/2020

സോളാർ മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

നെറ്റ് മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

തീയതി : അസിസ്റ്റന്റ് എഞ്ചിനീയർ പേര് Vimal .pv

ഒപ്പ് Assistant Engineer Electrical Section Cantonment, Tvm-33

പകർപ്പ് :

ഡെപ്യൂട്ടി ചീഫ് എഞ്ചിനീയർ .....

എക്സിക്യൂട്ടീവ് എഞ്ചിനീയർ .....

അനുബന്ധം-14

സോളാർ പ്ലാന്റ് കണക്ഷൻ റിപ്പോർട്ട്

സെക്ഷൻ : Varkala

കൺസ്യൂമർ നമ്പർ : 1145254000985 (13 അക്കം)

പേര് : Head Master Varkala Lp School

സ്പിൻ നമ്പർ : .....

സോളാർ കപ്പാസിറ്റി : 5kwp കിലോവാട്ട്

കണക്ട് ചെയ്ത ദിവസം : 8-04-2021

സോളാർ മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

നെറ്റ് മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

തീയതി : 8/4/2021 അസിസ്റ്റന്റ് എഞ്ചിനീയർ പേര് .....

അനിത. എസ്
അസിസ്റ്റന്റ് എഞ്ചിനീയർ
ഇലക്ട്രിക്കൽ സെക്ഷൻ
കെ.എസ്.ഇ.ബി. ലിമിറ്റഡ്
വർക്കല

Office of the Assistant Engineer KSEBL Electrical Section Varkala

ഒപ്പ് .....

പകർപ്പ് :

ഡെപ്യൂട്ടി ചീഫ് എഞ്ചിനീയർ .....

എക്സിക്യൂട്ടീവ് എഞ്ചിനീയർ .....

അനുബന്ധം-14

സോളാർ പ്ലാന്റ് കണക്ഷൻ റിപ്പോർട്ട്

സെക്ഷൻ : Cantonement

കൺസ്യൂമർ നമ്പർ : 1145068002 40 .(13 അക്കം)

പേര് : Roger Oscar Christian

സ്പിൻ നമ്പർ : .....

സോളാർ കപ്പാസിറ്റി : 10 Kwp കിലോവാട്ട്

കണക്ട് ചെയ്ത ദിവസം : 08/03/2021

സോളാർ മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

നെറ്റ് മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

തീയതി : അസിസ്റ്റന്റ് എഞ്ചിനീയർ പേര് Vimal.G.R

ഒപ്പ്

Assistant Engineer
Electrical Section
Cantonment, Tvm-33

പകർപ്പ് :

ഡെപ്യൂട്ടി ചീഫ് എഞ്ചിനീയർ .....

എക്സിക്യൂട്ടീവ് എഞ്ചിനീയർ .....

അനുബന്ധം-14

സോളാർ പ്ലാന്റ് കണക്ഷൻ റിപ്പോർട്ട്

സെക്ഷൻ : Fort - TVM

കൺസ്യൂമർ നമ്പർ : 1145039007364 (13 അക്കം)

പേര് : Govt. up School Chalai

സ്പിൻ നമ്പർ : 4503000.30

സോളാർ കപ്പാസിറ്റി : 5kwp കിലോവാട്ട്

കണക്ട് ചെയ്ത ദിവസം : 03-04-2021

സോളാർ മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

നെറ്റ് മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

തീയതി : 7/4/21. അസിസ്റ്റന്റ് എഞ്ചിനീയർ പേര്

ഒപ്പ്

ASSISTANT ENGINEER
ELECTRICAL SECTION, FORT
THIRUVANANTHAPURAM

പകർപ്പ് :

ഡെപ്യൂട്ടി ചീഫ് എഞ്ചിനീയർ

എക്സിക്യൂട്ടീവ് എഞ്ചിനീയർ

KERALA STATE ELECTRICITY BOARD
FORT
THIRUVANANTHAPURAM
695 036
ELECTRICAL SECTION, FORT

അനുബന്ധം-14

സോളാർ പ്ലാന്റ് കണക്ഷൻ റിപ്പോർട്ട്

സെക്ഷൻ : Pettah

കൺസ്യൂമർ നമ്പർ : 1145140024267 (13 അക്കം)

പേര് : Sujeendra prasad

സ്പിൻ നമ്പർ : .....

സോളാർ കപ്പാസിറ്റി : 10 Kwp കിലോവാട്ട്

കണക്ട് ചെയ്ത ദിവസം : 19-03-2021

സോളാർ മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

നെറ്റ് മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

Name . Ajayakumar.L.J

തീയതി : അസിസ്റ്റന്റ് എഞ്ചിനീയർ ~~പേര്~~ .....

ASSISTANT ENGINEER
Electrical Section, Pettah
ASEB Ltd. Pattoor
Vanchiyoor P.O.
Thiruvananthapuram-35

ഒപ്പ് .....

പകർപ്പ് :

ഡെപ്യൂട്ടി ചീഫ് എഞ്ചിനീയർ .....

എക്സിക്യൂട്ടീവ് എഞ്ചിനീയർ .....

സോളാർ പ്ലാന്റ് കണക്ഷൻ റിപ്പോർട്ട്

സെക്ഷൻ : Kaniyapuram

കൺസ്യൂമർ നമ്പർ : 1145222015204 (13 അക്കം)

പേര് : Rosnini Convent

സ്പിൻ നമ്പർ : .....

സോളാർ കപ്പാസിറ്റി : 15 kwp കിലോവാട്ട്

കണക്ട് ചെയ്ത ദിവസം : .....

സോളാർ മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

നെറ്റ് മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

തീയതി : അസിസ്റ്റന്റ് എഞ്ചിനീയർ പേര് Jaldy. V

ഒപ്പ് .....

Assistant Engineer
Electrical Section
KSEB Ltd.
Kaniyapuram

പകർപ്പ് :

ഡെപ്യൂട്ടി ചീഫ് എഞ്ചിനീയർ .....

എക്സിക്യൂട്ടീവ് എഞ്ചിനീയർ .....

സോളാർ പ്ലാന്റ് കണക്ഷൻ റിപ്പോർട്ട്

സെക്ഷൻ : Villoor

കൺസ്യൂമർ നമ്പർ : 1141200011558 .(13 അക്കം)

പേര് : Oommen Raju Jacob

സ്പിൻ നമ്പർ : .....

സോളാർ കപ്പാസിറ്റി : 5 kwp കിലോവാട്ട്

കണക്ട് ചെയ്ത ദിവസം : 8-01-2020

സോളാർ മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

നെറ്റ് മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

തീയതി : അസിസ്റ്റന്റ് എഞ്ചിനീയർ പേര് Vibin. VG

ഒപ്പ്

Assistant Engineer
Electrical Section
KSEB - Villoor

പകർപ്പ് :

ഡെപ്യൂട്ടി ചീഫ് എഞ്ചിനീയർ .....

എക്സിക്യൂട്ടീവ് എഞ്ചിനീയർ .....

അനുബന്ധം-14

സോളാർ പ്ലാന്റ് കണക്ഷൻ റിപ്പോർട്ട്

Minu Shaji

സെക്ഷൻ : Vilodr

കൺസ്യൂമർ നമ്പർ : 1145126005977 .(13 അക്കം)

പേര് : Shaji m.s

സ്പിൻ നമ്പർ : .....

സോളാർ കപ്പാസിറ്റി : 5kw കിലോവാട്ട്

കണക്ട് ചെയ്ത ദിവസം : 26.08.2021

സോളാർ മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

നെറ്റ് മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

തീയതി : അസിസ്റ്റന്റ് എഞ്ചിനീയർ പേര് Vibith. V.S

ഒപ്പ്

Assistant Engineer
Electrical Section
KSEB - Limited

പകർപ്പ് :

ഡെപ്യൂട്ടി ചീഫ് എഞ്ചിനീയർ .....

എക്സിക്യൂട്ടീവ് എഞ്ചിനീയർ .....

അനുബന്ധം-14

സോളാർ പ്ലാന്റ് കണക്ഷൻ റിപ്പോർട്ട്

സെക്ഷൻ : Ulloon

കൺസ്യൂമർ നമ്പർ : 1145177016779 (13 അക്കം)

പേര് : Rakhi. S Nair

സ്പിൻ നമ്പർ : .....

സോളാർ കപ്പാസിറ്റി : 7.5 KW കിലോവാട്ട്

കണക്ട് ചെയ്ത ദിവസം : 10.06.2021

സോളാർ മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

നെറ്റ് മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

തീയതി : അസിസ്റ്റന്റ് എഞ്ചിനീയർ പേര് Vibith. V.J.

ഒപ്പ് .....

Assistant Engineer
Electrical Section
KSEB - Ulloor

പകർപ്പ് :

ഡെപ്യൂട്ടി ചീഫ് എഞ്ചിനീയർ .....

എക്സിക്യൂട്ടീവ് എഞ്ചിനീയർ .....

അനുബന്ധം-14

സോളാർ പ്ലാന്റ് കണക്ഷൻ റിപ്പോർട്ട്

സെക്ഷൻ : Vattiyoorkavu

കൺസ്യൂമർ നമ്പർ : 1145097020764 .(13 അക്കം)

പേര് : Shekaran

സ്പിൻ നമ്പർ : 4509000049

സോളാർ കപ്പാസിറ്റി : 3 kwp കിലോവാട്ട്

കണക്ട് ചെയ്ത ദിവസം : 15/12/2020

സോളാർ മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

നെറ്റ് മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

തീയതി : അസിസ്റ്റന്റ് എഞ്ചിനീയർ പേര് ROSHIN ALBERT

ഒപ്പ് Roshi Albert 20/12/202

Assistant Engineer
Electrical Section
Vattiyoorkavu
Thiruvananthapuram

പകർപ്പ് :

ഡെപ്യൂട്ടി ചീഫ് എഞ്ചിനീയർ .....

എക്സിക്യൂട്ടീവ് എഞ്ചിനീയർ .....

അനുബന്ധം-14

സോളാർ പ്ലാന്റ് കണക്ഷൻ റിപ്പോർട്ട്

സെക്ഷൻ : Vellayambalam

കൺസ്യൂമർ നമ്പർ : 1145072004790 (13 അക്കം)

പേര് : Kp Thomas

സ്പിൻ നമ്പർ :

സോളാർ കപ്പാസിറ്റി : 7.5 KW കിലോവാട്ട്

കണക്ട് ചെയ്ത ദിവസം : ~~12-11-2021~~ 2/12/2021

സോളാർ മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

നെറ്റ് മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

തീയതി : അസിസ്റ്റന്റ് എഞ്ചിനീയർ പേര്

ഒപ്പ് Prakash Kumar PT

ENGINEER
Electrical Section
Vellayambalam

പകർപ്പ് :

ഡെപ്യൂട്ടി ചീഫ് എഞ്ചിനീയർ

എക്സിക്യൂട്ടീവ് എഞ്ചിനീയർ

അനുബന്ധം-14

സോളാർ പ്ലാന്റ് കണക്ഷൻ റിപ്പോർട്ട്

സെക്ഷൻ : Vilioon

കൺസ്യൂമർ നമ്പർ : 1145122002424 (13 അക്കം)

പേര് : C.K. George

സ്പിൻ നമ്പർ :

സോളാർ കപ്പാസിറ്റി : 5 kwp കിലോവാട്ട്

കണക്ട് ചെയ്ത ദിവസം : 1-4-2021

സോളാർ മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

നെറ്റ് മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

തീയതി :

അസിസ്റ്റന്റ് എഞ്ചിനീയർ പേര് Vibish. VJ

ഒപ്പ്

Assistant Engineer
Electrical Section
KSEB - Vilioor

പകർപ്പ് :

ഡെപ്യൂട്ടി ചീഫ് എഞ്ചിനീയർ

എക്സിക്യൂട്ടീവ് എഞ്ചിനീയർ

അനുബന്ധം-14

സോളാർ പ്ലാന്റ് കണക്ഷൻ റിപ്പോർട്ട്

സെക്ഷൻ : Vattiyoorkavu

കൺസ്യൂമർ നമ്പർ : 1145893005402 .(13 അക്കം)

പേര് : Vikramanalin

സ്പിൻ നമ്പർ : 4509 00047

സോളാർ കപ്പാസിറ്റി : 3 kwp കിലോവാട്ട്

കണക്ട് ചെയ്ത ദിവസം : 9-11-2020

സോളാർ മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

നെറ്റ് മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

തീയതി : അസിസ്റ്റന്റ് എഞ്ചിനീയർ പേര് Rishi Albert

ഒപ്പ് Rishi Albert 2021

20/4/2021

Assistant Engineer
Electrical Section
Vattiyoorkavu
Thiruvananthapuram

പകർപ്പ് :

ഡെപ്യൂട്ടി ചീഫ് എഞ്ചിനീയർ .....

എക്സിക്യൂട്ടീവ് എഞ്ചിനീയർ .....

സോളാർ പ്ലാന്റ് കണക്ഷൻ റിപ്പോർട്ട്

OFFICE OF THE ASSISTANT ENGINEER * KSEB ATTINGAL * ELECTRICAL SECTION

സെക്ഷൻ : Attingal - 45531

കൺസ്യൂമർ നമ്പർ : 1145314008031 .(13 അക്കം)

പേര് : Principal Govt College

സ്പിൻ നമ്പർ : .....

സോളാർ കപ്പാസിറ്റി : 20 KWP കിലോവാട്ട്

കണക്ട് ചെയ്ത ദിവസം : 28/09/19

സോളാർ മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : 23 kWh

നെറ്റ് മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : Import - 8.27 kWh
Export - 3.27 kWh

തീയതി : അസിസ്റ്റന്റ് എഞ്ചിനീയർ പേര് [illegible]

ഒപ്പ് .....

പകർപ്പ് :

ഡെപ്യൂട്ടി ചീഫ് എഞ്ചിനീയർ .....

എക്സിക്യൂട്ടീവ് എഞ്ചിനീയർ .....

ASSISTANT ENGINEER
KSEB LTD. ELECTRICAL SE
ATTINGAL . TVM

അനുബന്ധം-14

സോളാർ പ്ലാന്റ് കണക്ഷൻ റിപ്പോർട്ട്

സെക്ഷൻ : Vilvon

കൺസ്യൂമർ നമ്പർ : 1145120008634 (13 അക്കം)

പേര് : Girija

സ്പിൻ നമ്പർ : .....

സോളാർ കപ്പാസിറ്റി : 5 kwp കിലോവാട്ട്

കണക്ട് ചെയ്ത ദിവസം : .....

സോളാർ മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

നെറ്റ് മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

തീയതി : അസിസ്റ്റന്റ് എഞ്ചിനീയർ പേര് Vibin. V.S

ഒപ്പ്

Assistant Engineer
Electrical Section
KSEB - Vilvon

പകർപ്പ് :

ഡെപ്യൂട്ടി ചീഫ് എഞ്ചിനീയർ .....

എക്സിക്യൂട്ടീവ് എഞ്ചിനീയർ .....

അനുബന്ധം-14

സോളാർ പ്ലാന്റ് കണക്ഷൻ റിപ്പോർട്ട്

സെക്ഷൻ : Pettah

കൺസ്യൂമർ നമ്പർ : 1145144017425 (13 അക്കം)

പേര് : John Antony Rodricks

സ്പിൻ നമ്പർ : .....

സോളാർ കപ്പാസിറ്റി : 5 Kwp കിലോവാട്ട്

കണക്ഷൻ ചെയ്ത ദിവസം : 19-03-2021

സോളാർ മീറ്റർ ഇമ്പോർട്ട് റീഡിംഗ് : -0-

നെറ്റ് മീറ്റർ ഇമ്പോർട്ട് റീഡിംഗ് : -0-

തീയതി : അസിസ്റ്റന്റ് എഞ്ചിനീയർ പേര് Ajayakumar.K.S

ഒപ്പ് .....

ASSISTANT ENGINEER
Electrical Section, Pettah
KSEB
Vanchiyoor P.O
Thiruvananthapuram

പകർപ്പ് :

ഡെപ്യൂട്ടി ചീഫ് എഞ്ചിനീയർ .....

എക്സിക്യൂട്ടീവ് എഞ്ചിനീയർ .....

അനുബന്ധം-14

സോളാർ പ്ലാന്റ് കണക്ഷൻ റിപ്പോർട്ട്

സെക്ഷൻ : Ulloor

കൺസ്യൂമർ നമ്പർ : 1145177005367 .(13 അക്കം)

പേര് : Sam George

സ്പിൻ നമ്പർ : .....

സോളാർ കപ്പാസിറ്റി : 5Kwp കിലോവാട്ട്

കണക്ട് ചെയ്ത ദിവസം : 22-09-2021

സോളാർ മീറ്റർ ഇമ്പോർട്ട് റീഡിംഗ് : -0-

നെറ്റ് മീറ്റർ ഇമ്പോർട്ട് റീഡിംഗ് : -0-

Nibil. V S

തീയതി : അസിസ്റ്റന്റ് എഞ്ചിനീയർ പേര് .....

ഒപ്പ് .....

Assistant Engineer
Elec. Section
KSEB - Ulloor

പകർപ്പ് :

ഡെപ്യൂട്ടി ചീഫ് എഞ്ചിനീയർ .....

എക്സിക്യൂട്ടീവ് എഞ്ചിനീയർ .....

അനുബന്ധം-14

സോളാർ പ്ലാന്റ് കണക്ഷൻ റിപ്പോർട്ട്

സെക്ഷൻ : Mavelikara

കൺസ്യൂമർ നമ്പർ : 1155225001338 (13 അക്കം)

പേര് : Pritipal Bishopmare College

സ്റ്റിൻ നമ്പർ : ..... കിലോവാട്ട്

സോളാർ കപ്പാസിറ്റി : 50kwp

കണക്ട് ചെയ്ത ദിവസം : 12-11-2021

സോളാർ മീറ്റർ ഇൻഷ്യൽ റീഡിംഗ് : -0-

ഒന്റ് മീറ്റർ ഇൻഷ്യൽ റീഡിംഗ് : -0-

തീയതി : 12-11-2021

അസിസ്റ്റന്റ് എഞ്ചിനീയർ പേര് SUNIL KUMAR. S
ASSISTANT ENGINEER
ELECTRICAL SECTION
MAVELIKARA

ഒപ്പ്

ഡെപ്യൂട്ടി ചീഫ് എഞ്ചിനീയർ .....

എക്സിക്യൂട്ടീവ് എഞ്ചിനീയർ .....

സോളാർ പ്ലാന്റ് കണക്ഷൻ റിപ്പോർട്ട്

സെക്ഷൻ : Ranni

കൺസ്യൂമർ നമ്പർ : 1146072016353 .(13 അക്കം)

പേര് : The Secretary Pazhavangadi Grama panchayathu

സ്പിൻ നമ്പർ : .....

സോളാർ കപ്പാസിറ്റി : 20 kWp കിലോവാട്ട്

കണക്ട് ചെയ്ത ദിവസം : 6-01-2021

സോളാർ മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

നെറ്റ് മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

തീയതി :

അസിസ്റ്റന്റ് എഞ്ചിനീയർ പേര് റോണി വർഗ്ഗീസ്

ASSISTANT ENGINEER
ഒപ്പ് KSEB LTD.
ELECTRICAL SECTION
RANNY NORTH

പകർപ്പ് :

ഡെപ്യൂട്ടി ചീഫ് എഞ്ചിനീയർ .....

എക്സിക്യൂട്ടീവ് എഞ്ചിനീയർ .....

അനുബന്ധം 14

സോളാർ പ്ലാന്റ് കണക്ഷൻ റിപ്പോർട്ട്

സെക്ഷൻ : Neyyattinkara

കൺസ്യൂമർ നമ്പർ : 1145376001395 (13 അക്കം)

പേര് : The Head Master IBS School

സ്പിൻ നമ്പർ :

സോളാർ കപ്പാസിറ്റി : 5Kwp കിലോവാട്ട്

കണക്ട് ചെയ്ത ദിവസം : 9-4-2021

സോളാർ മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

നെറ്റ് മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

തീയതി : അസിസ്റ്റന്റ് എഞ്ചിനീയർ പേര് Sanil kumar S R

ഒപ്പ്

ASSISTANT ENGINEER
KSEB Ltd.
ELECTRICAL SECTION
NEYYATTINKARA

പകർപ്പ് :

ഡെപ്യൂട്ടി ചീഫ് എഞ്ചിനീയർ

എക്സിക്യൂട്ടീവ് എഞ്ചിനീയർ

അനുബന്ധം-14

സോളാർ പ്ലാന്റ് കണക്ഷൻ റിപ്പോർട്ട്

സെക്ഷൻ : Varkala

കൺസ്യൂമർ നമ്പർ : 1145254000985 (13 അക്കം)

പേര് : Head Master Varkala Lp School

സ്പിൻ നമ്പർ : .....

സോളാർ കപ്പാസിറ്റി : 5kwp കിലോവാട്ട്

കണക്ട് ചെയ്ത ദിവസം : 8-04-2021

സോളാർ മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

നെറ്റ് മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

തീയതി : 8/4/2021 അസിസ്റ്റന്റ് എഞ്ചിനീയർ പേര് .....

അനിത. എസ്
അസിസ്റ്റന്റ് എഞ്ചിനീയർ
ഇലക്ട്രിക്കൽ സെക്ഷൻ
കെ.എസ്.ഇ.ബി. ലിമിറ്റഡ്
വർക്കല

Office of the Assistant Engineer KSEBL Electrical Section Varkala

ഒപ്പ് .....

പകർപ്പ് :

ഡെപ്യൂട്ടി ചീഫ് എഞ്ചിനീയർ .....

എക്സിക്യൂട്ടീവ് എഞ്ചിനീയർ .....

അനുബന്ധം 14

സോളാർ പ്ലാന്റ് കണക്കൻ റിപ്പോർട്ട്

സെക്ഷൻ : Vellanadu

കൺസ്യൂമർ നമ്പർ : 1145519018463 (13 അക്കം)

പേര് : The Head Master Vellanadu Lp School

സ്ഥിൽ നമ്പർ :

സോളാർ ചെയ്യാസിറ്റി : 5 Kwp കിലോവാട്ട്

കണക്ട് ചെയ്ത ദിവസം : 31/3/2021

സോളാർ മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

ഗ്രിഡ് മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

തീയതി 5/4/2022 അസിസ്റ്റന്റ് എഞ്ചിനീയർ പേര് Dhanapal. P

ഒപ്പ്

SEFICE OF THE ASST. ENGINEER ELE SECTION VELLANADU

ASSISTANT ENGINEER ELECTRICAL SECTION VELLANAD

പകർപ്പ്

സൊപ്പൂട്ടി ചീഫ് എഞ്ചിനീയർ .....

എക്സിക്യൂട്ടീവ് എഞ്ചിനീയർ .....

അനുബന്ധം-14

സോളാർ പ്ലാന്റ് കണക്ഷൻ റിപ്പോർട്ട്

സെക്ഷൻ : Thalayolaparambu

കൺസ്യൂമർ നമ്പർ : 1146505020488 (13 അക്കം)

പേര് : The Manager Federal Bank

സ്പിൻ നമ്പർ : .....

സോളാർ കപ്പാസിറ്റി : 10 Kwp കിലോവാട്ട്

കണക്ട് ചെയ്ത ദിവസം : 13/07/2021

സോളാർ മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

നെറ്റ് മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

തീയതി : 13/07/21 അസിസ്റ്റന്റ് എഞ്ചിനീയർ പേര് .....

ഒപ്പ് .....

ASSISTANT ENGINEER
ELECTRICAL SECTION
THALAYOLAPARAMBU

പകർപ്പ് :

ഡെപ്യൂട്ടി ചീഫ് എഞ്ചിനീയർ .....

എക്സിക്യൂട്ടീവ് എഞ്ചിനീയർ .....

Government of Kerala
Department of Electrical Inspectorate
Office of the Electrical Inspector
Ninan's Complex Palakkad
Palakkad 678001
Phone: 04912548023,
Email:eipkd@ceikerala.gov.in Website:
www.ceikerala.gov.in

Proceedings of the
Electrical Inspector
Palakkad
Present:ARIA O K

Subject: MV addition of 240kWp On-Grid Solar Power Plant at the premises of M/s Indian Products Private Limited, Pathinalangal, Palakkad, Pin-678624 - Sanction for energisation orders issued - regarding.

Reference:

1. Scheme Approval No. B1-02550/21/EIP dated 29.04.2021
2. Completion report submitted by M/s. WATTSUN ENERGY (INDIA) PVT. LTD., International Airport Road, Chackai, Kerala, Pin- 695024 dated 30.06.2021 and received on 05.07.2021
3. Inspection conducted on 19.07.2021
4. Non conformity report dated 19.07.2021
5. Compliance report submitted by M/s. WATTSUN ENERGY (INDIA) PVT. LTD., International Airport Road, Chackai, Kerala, Pin- 695024 dated 13.08.2021 and received on 17.08.2021

Order No: B1-02550/21/EIP Dated 02-09-2021

Sanction is hereby accorded under section 54 of The Electricity Act, 2003 and Regulation 32 and 43(7) of the Central Electricity Authority (Measures Relating to Safety and Electric Supply) Regulations, 2010 for the energisation of the installations covered under completion report read as (2) above, installed at the premises of M/s Indian Products Private Limited, Pathinalangal, Palakkad, Pin-678624 subject to following conditions and as detailed in the annexure appended.

Specifications:

PV Modules : Make: WAAREE, 335Wp, 46.8 Voc, 9.3 Isc, 8.8 Imp, 38.1 Vmp, Total no. of strings per Inverter: 14, No. of PV modules in Inverter-1&2: 308 each , No. of PV modules in Inverter-3: 294.

Solar Inverter-1: Make: GOODWE, 80kW, 1100 Vdc, S/N. 9080KMTU211W0087.

Solar Inverter-2: Make: GOODWE, 80kW, 1100 Vdc, S/N. 9080KMTU211W0187.

Solar Inverter-3: Make: GOODWE, 80kW, 1100 Vdc, S/N. 9080KMTU211W0185.

1. Date of energization shall be intimated.
2. Operation and maintanence of electrical installation shall be done only by authorized persons.
3. All the maintenence works shall be recorded in the maintenance register.
4. Addition/alteration in the existing installation shall be carried out only with prior approval from the electrical inspectorate.
5. Consent from the Licensee shall be obtained.

Electrical Inspector

To:

Karunakar Narayan- General Manager,
Indian Products Private Limited; Door No : IX / 721-728, 14th mile stone, Coimbatore-Walayar National Highway,Pathinalangal, Walayar Dam (P.O), Palakkad

Copy To:

1 WATTSUN ENERGY INDIA PVT. LTD. , INTERNATIONAL AIRPORT ROAD , CHACKAI, Kerala , 695024

2 TERANCE ALEX , WATTSUN ENERGY INDIA PVT. LTD. AISWARYA TOWERS INTERNATIONAL AIRPORT ROAD, CHAKAI, THIRUVANANTHAPURAM ,

3 Assistant Engineer, , KSEB Ltd; Electrical section- WALAYAR ,

Annexure (Order No: B1-02550/21/EIP Dated 02.09.2021)	
Items	Quantity(in numbers)
Solar Inverter (80 kVA)	
SSB Panel Name : AC DB	
Incomer MCCB 160 Amps	3
Outgoing MCCB 500 Amps	1
Earth Electrodes	6
MSB Panel Name : MSB	
Outgoing MCCB 500 Amps	1
SSB Panel Name : AJB	
Incomer MCB 25 Amps	12

Load Details

HT Motor – 0 kW

HT Capacitor – 0 kVAr

Fire Pump Load – 0 kW

Lift Load – 0 kW

Other Load – 0 kW + 0 kVA + 0 kVAr

Electrical Inspector

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സോളാർ പ്ലാന്റ് കണക്ഷൻ റിപ്പോർട്ട്

സെക്ഷൻ : Nalamchira

കൺസ്യൂമർ നമ്പർ : 1145186010981 (13 അക്കം)

പേര് : George Mathew

സ്പിൻ നമ്പർ : .....

സോളാർ കപ്പാസിറ്റി : 5 kwp കിലോവാട്ട്

കണക്ട് ചെയ്ത ദിവസം : 6-1-2020

സോളാർ മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

നെറ്റ് മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

തീയതി : അസിസ്റ്റന്റ് എഞ്ചിനീയർ പേര് .....

ഒപ്പ് .....

പകർപ്പ് :

ഡെപ്യൂട്ടി ചീഫ് എഞ്ചിനീയർ .....

എക്സിക്യൂട്ടീവ് എഞ്ചിനീയർ .....

അനുബന്ധം-14

സോളാർ പ്ലാന്റ് കണക്ഷൻ റിപ്പോർട്ട്

സെക്ഷൻ : Attingal

കൺസ്യൂമർ നമ്പർ : 1145310022869 (13 അക്കം)

പേര് : Jaleelndeens

സ്പിൻ നമ്പർ : .....

സോളാർ കപ്പാസിറ്റി : 5 kwp കിലോവാട്ട്

കണക്ട് ചെയ്ത ദിവസം : 4-12-2024

സോളാർ മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

നെറ്റ് മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

തീയതി : അസിസ്റ്റന്റ് എഞ്ചിനീയർ പേര് Binu Kumar.

ഒപ്പ്

ASSISTANT ENGINEER
ELECTRICAL SECTION
ATTINGAL

പകർപ്പ് :

ഡെപ്യൂട്ടി ചീഫ് എഞ്ചിനീയർ .....

എക്സിക്യൂട്ടീവ് എഞ്ചിനീയർ .....

അനുബന്ധം 14

സോളാർ പ്ലാന്റ് കണക്ഷൻ റിപ്പോർട്ട്

സെക്ഷൻ : Ulloor

കൺസ്യൂമർ നമ്പർ : 1145170001158 (13 അക്കം)

പേര് : Oommen Raju Jacob

സ്പിൻ നമ്പർ :

സോളാർ കപ്പാസിറ്റി : 5 kwp കിലോവാട്ട്

കണക്ട് ചെയ്ത ദിവസം : 8-01-2021

സോളാർ മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

നെറ്റ് മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

തീയതി : അസിസ്റ്റന്റ് എഞ്ചിനീയർ പേര്

ഒപ്പ്

Assistant Engineer
Electrical Section
KSEB - Ulloor

പകർപ്പ് :

ഡെപ്യൂട്ടി ചീഫ് എഞ്ചിനീയർ

എക്സിക്യൂട്ടീവ് എഞ്ചിനീയർ

അനുബന്ധം-14

സോളാർ പ്ലാന്റ് കണക്ഷൻ റിപ്പോർട്ട്

സെക്ഷൻ : Valanchira

കൺസ്യൂമർ നമ്പർ : 1145185019469 (13 അക്കം)

പേര് : Sanu

സ്പിൻ നമ്പർ : .....

സോളാർ കപ്പാസിറ്റി : 5 kwp കിലോവാട്ട്

കണക്ട് ചെയ്ത ദിവസം : .....

സോളാർ മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

നെറ്റ് മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

തീയതി : അസിസ്റ്റന്റ് എഞ്ചിനീയർ പേര് .....

ഒപ്പ് .....

ASSISTANT ENGINEER
ELECTRICAL SECTION
KSEBL,VALANCHIRA

പകർപ്പ് :

ഡെപ്യൂട്ടി ചീഫ് എഞ്ചിനീയർ .....

എക്സിക്യൂട്ടീവ് എഞ്ചിനീയർ .....

അനുബന്ധം-14

സോളാർ പ്ലാന്റ് കണക്ഷൻ റിപ്പോർട്ട്

സെക്ഷൻ : Nalanchira

കൺസ്യൂമർ നമ്പർ : 1145181023780 (13 അക്കം)

പേര് : Treesa Alex

സ്പിൻ നമ്പർ : .....

സോളാർ കപ്പാസിറ്റി : 5kwp കിലോവാട്ട്

കണക്ട് ചെയ്ത ദിവസം : 24-12-2020

സോളാർ മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

നെറ്റ് മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

തീയതി : അസിസ്റ്റന്റ് എഞ്ചിനീയർ പേര് .....

ഒപ്പ് .....

ASSISTANT ENGINEER
ELECTRICAL SECTION
KSEBL, NALANCHIRA

പകർപ്പ് :

ഡെപ്യൂട്ടി ചീഫ് എഞ്ചിനീയർ .....

എക്സിക്യൂട്ടീവ് എഞ്ചിനീയർ .....

അനുബന്ധം 14

സോളാർ പ്ലാന്റ് കണക്ഷൻ റിപ്പോർട്ട്

സെക്ഷൻ : Valanchira

കൺസ്യൂമർ നമ്പർ : 1145180502924 5 (13 അക്കം)

പേര് : Managing Director Veena projects

സ്പിൻ നമ്പർ :

സോളാർ കപ്പാസിറ്റി : 5 kwp കിലോവാട്ട്

കണക്ട് ചെയ്ത ദിവസം : 4-11-2020

സോളാർ മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

നെറ്റ് മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

തീയതി :

അസിസ്റ്റന്റ് എഞ്ചിനീയർ പേര്

ഒപ്പ്

ASSISTANT ENGINEER
ELECTRICAL SECTION
KSEBL,VALANCHIRA

പകർപ്പ് :

ഡെപ്യൂട്ടി ചീഫ് എഞ്ചിനീയർ

എക്സിക്യൂട്ടീവ് എഞ്ചിനീയർ

അനുബന്ധം 14

സോളാർ പ്ലാന്റ് കണക്കൻ റിപ്പോർട്ട്

സെക്ഷൻ : Vellanadu

കൺസ്യൂമർ നമ്പർ : 1145519018463 (13 അക്കം)

പേര് : The Head Master Vellanadu Lp School

സ്ഥിൽ നമ്പർ :

സോളാർ ചെയ്യാസിറ്റി : 5 Kwp കിലോവാട്ട്

കണക്ട് ചെയ്ത ദിവസം : 31/3/2021

സോളാർ മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

ഗ്രിഡ് മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

തീയതി 5/4/2022 അസിസ്റ്റന്റ് എഞ്ചിനീയർ പേര് Dhanapal. P

ഒപ്പ്

SEFICE OF THE ASST. ENGINEER ELE SECTION VELLANADU

ASSISTANT ENGINEER ELECTRICAL SECTION VELLANAD

പകർപ്പ്

സൊപ്പുട്ടി ചീഫ് എഞ്ചിനീയർ .....

എക്സിക്യൂട്ടീവ് എഞ്ചിനീയർ .....

അനുബന്ധം-14

സോളാർ പ്ലാന്റ് കണക്ഷൻ റിപ്പോർട്ട്

സെക്ഷൻ : Varkala

കൺസ്യൂമർ നമ്പർ : 1145254000985 (13 അക്കം)

പേര് : Head Master Varkala Lp School

സ്പിൻ നമ്പർ : .....

സോളാർ കപ്പാസിറ്റി : 5kwp കിലോവാട്ട്

കണക്ട് ചെയ്ത ദിവസം : 8-04-2021

സോളാർ മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

നെറ്റ് മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

തീയതി : 8/4/2021 അസിസ്റ്റന്റ് എഞ്ചിനീയർ പേര് .....

അനിത. എസ്
അസിസ്റ്റന്റ് എഞ്ചിനീയർ
ഇലക്ട്രിക്കൽ സെക്ഷൻ
കെ.എസ്.ഇ.ബി. ലിമിറ്റഡ്
വർക്കല

Office of the Assistant Engineer KSEBL Electrical Section Varkala

ഒപ്പ് .....

പകർപ്പ് :

ഡെപ്യൂട്ടി ചീഫ് എഞ്ചിനീയർ .....

എക്സിക്യൂട്ടീവ് എഞ്ചിനീയർ .....

അനുബന്ധം-14

സോളാർ പ്ലാന്റ് കണക്ഷൻ റിപ്പോർട്ട്

സെക്ഷൻ : Fort - TVM

കൺസ്യൂമർ നമ്പർ : 1145039007364 .(13 അക്കം)

പേര് : Govt. up School Chalai

സ്പിൻ നമ്പർ : 4503000.30

സോളാർ കപ്പാസിറ്റി : 5kwp കിലോവാട്ട്

കണക്ട് ചെയ്ത ദിവസം : 03-04-2021

സോളാർ മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

നെറ്റ് മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

തീയതി : 7/4/21. അസിസ്റ്റന്റ് എഞ്ചിനീയർ പേര്.....

ഒപ്പ്.....

ASSISTANT ENGINEER
ELECTRICAL SECTION, FORT
THIRUVANANTHAPURAM

പകർപ്പ് :

ഡെപ്യൂട്ടി ചീഫ് എഞ്ചിനീയർ .....

എക്സിക്യൂട്ടീവ് എഞ്ചിനീയർ .....

KERALA STATE ELECTRICITY BOARD
FORT
THIRUVANANTHAPURAM
695 036
ELECTRICAL SECTION, FORT

അനുബന്ധം 14

സോളാർ പ്ലാന്റ് കണക്ഷൻ റിപ്പോർട്ട്

സെക്ഷൻ : Palode

കൺസ്യൂമർ നമ്പർ : 1145487023049 (13 അക്കം)

പേര് : The Head Master palode Lp school

സ്പിൻ നമ്പർ : 454800007

സോളാർ കപ്പാസിറ്റി : 5 kwp കിലോവാട്ട്

കണക്ട് ചെയ്ത ദിവസം : 31.03.21

സോളാർ മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

നെറ്റ് മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

തീയതി : അസിസ്റ്റന്റ് എഞ്ചിനീയർ പേര് Vinod. S/R.

ഒപ്പ്

OFFICE OF THE ASST. ENGINEER PALODE

ASSISTANT ENGINEER ELECTRICAL SECTION PALODE

പകർപ്പ് :

ഡെപ്യൂട്ടി ചീഫ് എഞ്ചിനീയർ .....

എക്സിക്യൂട്ടീവ് എഞ്ചിനീയർ .....

അനുബന്ധം 14

സോളാർ പ്ലാന്റ് കണക്ഷൻ റിപ്പോർട്ട്

സെക്ഷൻ : Neyyattinkara

കൺസ്യൂമർ നമ്പർ : 1145376001395 (13 അക്കം)

പേര് : The Head Master IBS School

സ്പിൻ നമ്പർ :

സോളാർ കപ്പാസിറ്റി : 5Kwp കിലോവാട്ട്

കണക്ട് ചെയ്ത ദിവസം : 9-4-2021

സോളാർ മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

നെറ്റ് മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

തീയതി : അസിസ്റ്റന്റ് എഞ്ചിനീയർ പേര് Sanil kumar S R

ഒപ്പ്

ASSISTANT ENGINEER
KSEB Ltd.
ELECTRICAL SECTION
NEYYATTINKARA

പകർപ്പ് :

ഡെപ്യൂട്ടി ചീഫ് എഞ്ചിനീയർ

എക്സിക്യൂട്ടീവ് എഞ്ചിനീയർ

സോളാർ പ്ലാന്റ് കണക്ഷൻ റിപ്പോർട്ട്

സെക്ഷൻ : Ranni

കൺസ്യൂമർ നമ്പർ : 1146072016353 .(13 അക്കം)

പേര് : The Secretary Pazhavangadi Grama panchayathu

സ്പിൻ നമ്പർ : .....

സോളാർ കപ്പാസിറ്റി : 20 kWp കിലോവാട്ട്

കണക്ട് ചെയ്ത ദിവസം : 6-01-2021

സോളാർ മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

നെറ്റ് മീറ്റർ ഇനിഷ്യൽ റീഡിംഗ് : -0-

തീയതി :

അസിസ്റ്റന്റ് എഞ്ചിനീയർ പേര് റോണി വർഗ്ഗീസ്

ASSISTANT ENGINEER
ഒപ്പ് KSEB LTD.
ELECTRICAL SECTION
RANNY NORTH

പകർപ്പ് :

ഡെപ്യൂട്ടി ചീഫ് എഞ്ചിനീയർ .....

എക്സിക്യൂട്ടീവ് എഞ്ചിനീയർ .....

6. M.V Installation should conform to I.S.732.
7. Installation of all cables should be as per standards.
8. Only materials with I.S certification as required under Quality Control Order should be used.
9. Only energy efficient equipments shall be used in the installation.
10. The validity of the scheme approval is upto 31.10.2023.
11. The acoustic enclosure of DG set shall be of CPCB approved type.
12. Energy meters should be provided in the generators circuits which may be tested and sealed with CTs, if any by the KSEB / Meter Testing and standards Laboratory attached to this Department and copy of the test report shall be forwarded to the Office of the Deputy Chief Electrical Inspector,Thiruvananthapuram.
13. All relays & meters shall be tested in Meter Testing and Standards Laboratory Thiruvananthapuram / Labs in District Office and test certificate shall be submitted along with completion report.
14. Completion report should be submitted to the Office of the Deputy Chief Electrical Inspector,Thiruvananthapuram for arranging inspection.

If the installation is found defective in actual practice such additions or alterations as may be found necessary by the Electrical Inspectorate at the time of inspection or subsequently shall be carried out by the owner

Yours Faithfully

Deputy Chief Electrical Inspector

Scrutiny Fee Details				
Sl No	Challan No	Date	Amount	Treasury
1	0101-2021-16609	16.09.2021	690.00	Friends
2	0101202118412	18.10.2021	190.00	Friends

Copy to:

1 WATTSUN ENERGY INDIA PVT. LTD. , INTERNATIONAL AIRPORT ROAD , CHACKAI, Kerala , 695024

2 TERANCE ALEX , WATTSUN ENERGY INDIA PVT. LTD. AISWARYA TOWERS INTERNATIONAL AIRPORT ROAD, CHAKAI THIRUVANANTHAPURAM ,

This is a computer generated document. Signature is not required

Government of Kerala
Department of Electrical Inspectorate
Office of the Deputy Chief Electrical Inspector
Palayam , Vikas Bhavan PO
Thiruvananthapuram , 695033
Phone: 04712934159,
Email:dceitvm@gmail.com
Website: www.ceikerala.gov.in

An IS 15700 : 2005 Certified Department

Application No: 0220048092021
File No : B5-06083/21/EIT

Thiruvananthapuram
, 01.11.2021

From

Deputy Chief Electrical Inspector

To

P.K.SUKUMARAN
POORNNA PRINTING & PUBLISHING HOUSE PALACHIRA,VARKALA

Sir,

Subject: Scheme for the installation of 50KW solar power plant and connected electrics at the premises of M/s. POORNNA PRINTING & PUBLISHING HOUSE, VARKALA,Thiruvananthapuram,695143 - Issue of scheme approval - regarding.

Reference:

1. Scheme submitted by WATTSUN ENERGY INDIA PVT. LTD., INTERNATIONAL AIRPORT ROAD,CHACKAI,Kerala,695024 received on 17.09.2021
2. Non conformity report dated 12.10.2021
3. Compliance report submitted by WATTSUN ENERGY INDIA PVT. LTD., INTERNATIONAL AIRPORT ROAD,CHACKAI,Kerala,695024 dated 19.10.2021

Scheme for the installation of 50KW solar power plant and connected electrics at the premises of M/s. POORNNA PRINTING & PUBLISHING HOUSE ,VARKALA,Thiruvananthapuram,695143 is approved subject to following conditions :

1. Power allocation sanction should be obtained from the Kerala State Electricity Board/Licensee and a copy of the same forwarded to the Office of the Deputy Chief Electrical Inspector,Thiruvananthapuram.
2. Installation of all switch boards and distribution boards should be in conformity with Regulation 37 (iii) of the Central Electricity Authority (Measures relating to safety and Electric Supply) Regulation, 2010.
3. Fuses should be graded properly and selected based on the rating of cables. Low watt loss fuses shall be selected.
4. Earthing of the installation should conform to IS 3043/1987.
5. Isolation facility should be provided for all equipments within a distance of 3 meters from equipments conforming to Regulation 35(5) of the Central Electricity Authority (Measures relating to Safety and Electric Supply) Regulations 2010.

PAHAL® SOLAR

TO
ANERT
Thiruvananthapuram

Date:- 28/12/2023

Subject: - Declaration Regarding Manufacturing of Solar Panels

We hereby declare that Pahal Solar a company duly incorporated and registered under the Indian Companies act with it register office 189, Block No 71 Opp Shiv Shakti Estate Olpad Sayan Road, Olpad Surat :- 394540, is a Manufacturer of Solar Panels and has been engaged in the manufacturing of solar panels for___ Years .

We further declare that Pahal Solar has all necessary licenses and permits to manufacturer and sell solar panels. The solar panels manufactured by Pahal Solar are of the highest Quality and comply all Standards.

We hereby declare that Solar Photovoltaic Modules of DCR Contents & we are listed in ALMM.

Pahal solar will not engage in any unfair trade practices or make any false about its products and services. Pahal Solar will comply with all applicable laws and regulation related to the manufacturing and sales of solar panels and will provide all necessary information to the regulatory authorities as and when required.

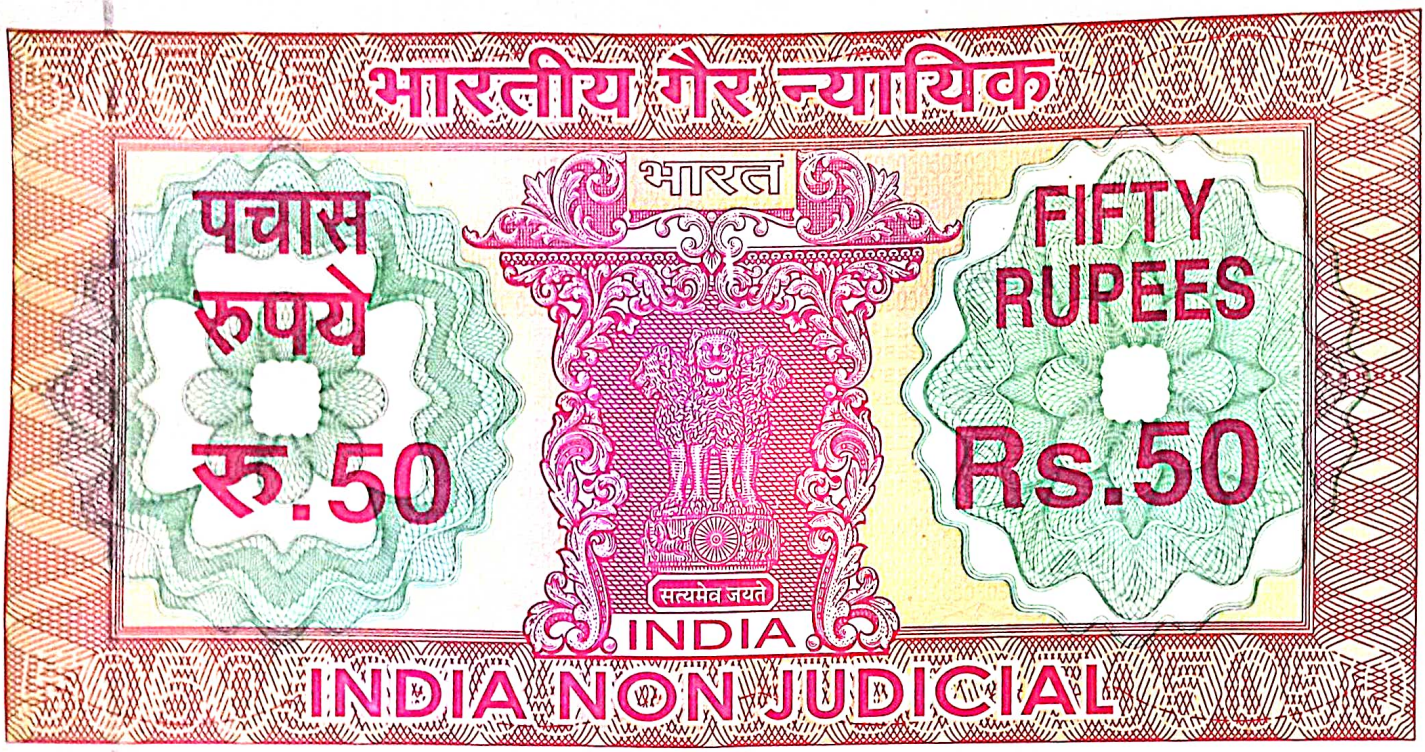
For Pahal Solar

For PAHAL SOLAR

Authorized Signatory

Authorise

PAHAL SOLAR
OFFICE : 312, Laxmi Enclave, Opp. Gajera School, Katargam, Surat - 395004. (Guj.) India.
MFG. UNIT : 189, Block No.71, Opp Shiv Shakti Estate, Olpad Sayan Road, Olpad, Surat - 394540 (Gui.) India
info@pahalsolar.com
www.pahalsolar.com
1800 274 6500 (Toll Free)



കേരളം केरल KERALA

CN 882207

Service Centre Declaration

Representative of agency	:Sreeja SS
Name of the agency	: Wattsun Energy India Private Limited
Address in Full	: FF Aiswarya towers, International Airport Road Chackai Trivandrum

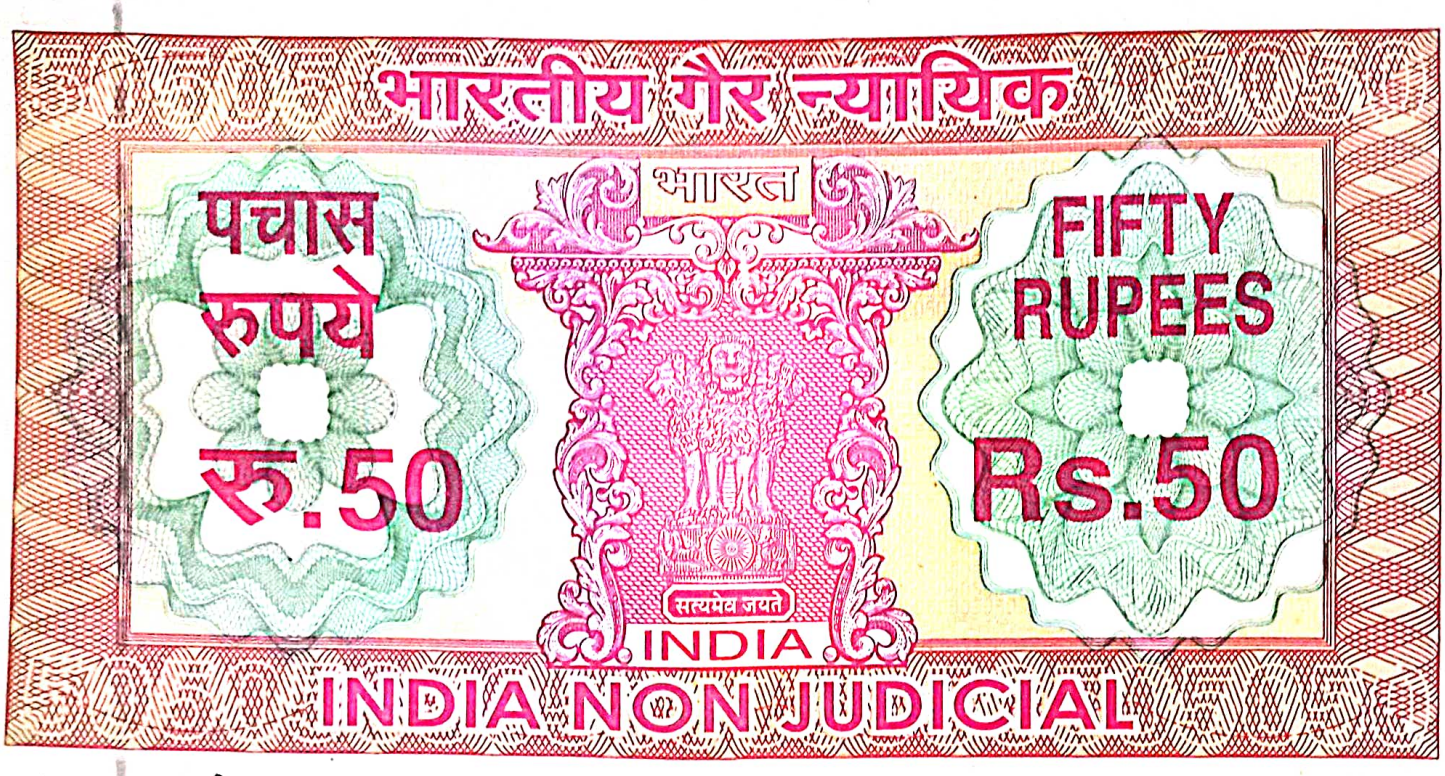
WATTSUN ENERGY INDIA PVT. LTD. TRIVANDRUM

No: 82491 dt: 1-1-2024
Wattsun Energy India pvt Ltd
Chackai

A. SURESH KUMAR
STAMP VENDOR KARAMANA

PRINCIPAL SUB T... 4 JAN 2024

R-50/-



കേരളം केरल KERALA

CN 882224

As an agency submitted bid for EoI for additional Empanelment of vendors under the Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW - 150 kW under the PM KUSUM scheme (Component C) in the State of Kerala scheme

WATTSUN ENERGY INDIA PVT. LTD. TRIVANDRUM

NU182508 dt. 1-1-2024
Wattsun Energy India
pvt ltd, Chalai

A. SURESH KUMAR
STAMP VENDOR KARAMANA

PRINCIPAL SUB TR
1 JAN 2024

भारतीय गैर न्यायिक

भारत

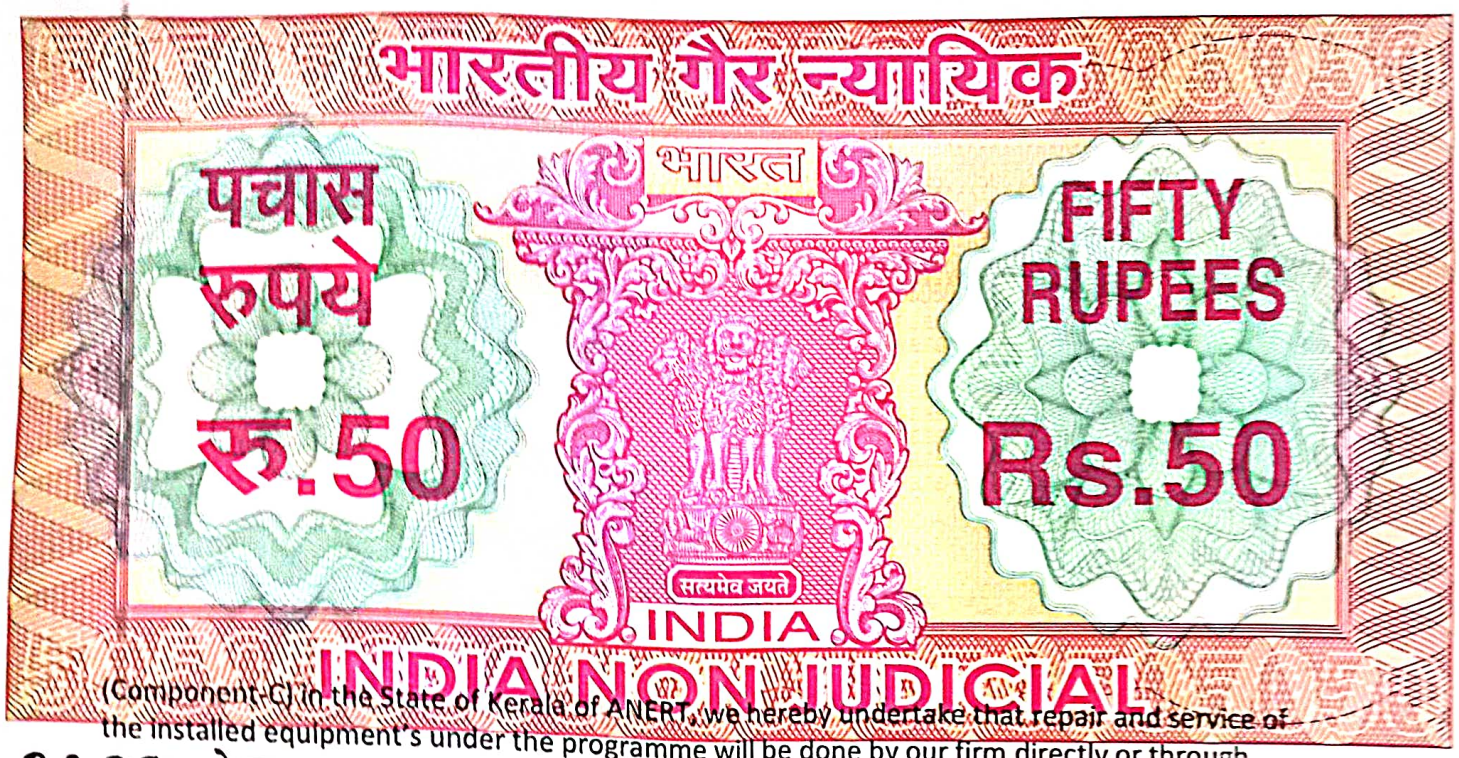
पचास रुपये रु.50

FIFTY RUPEES Rs.50

सत्यमेव जयते

INDIA

INDIA NON JUDICIAL



(Component-C) in the State of Kerala of ANERT, we hereby undertake that repair and service of the installed equipment's under the programme will be done by our firm directly or through service centre appointed by us detailed below.

കേരളം केरल KERALA

CN 882225

Sl.No.	Name and Address of Service Centre	Contact no	District
1.	Wattsun Energy India Pvt Ltd FF Aiswarya towers, International Airport Road Chackai Trivandrum	8943345748	Trivandrum
2	Wattsun Energy India Pvt Ltd Mayanad Kollam	8943345748	Kollam

WATTSUN ENERGY INDIA PVT. LTD. TRIVANDRUM

No 182509 dt. 1-1-2024
Wattsun Energy India
Pvt Ltd. Chackai

A. SURESH KUMAR
STAMP VENDOR KARAMANA

R50/-

PRINCIPAL SUB TREASURY
JAN 2024
Date

भारतीय गैर न्यायिक

भारत

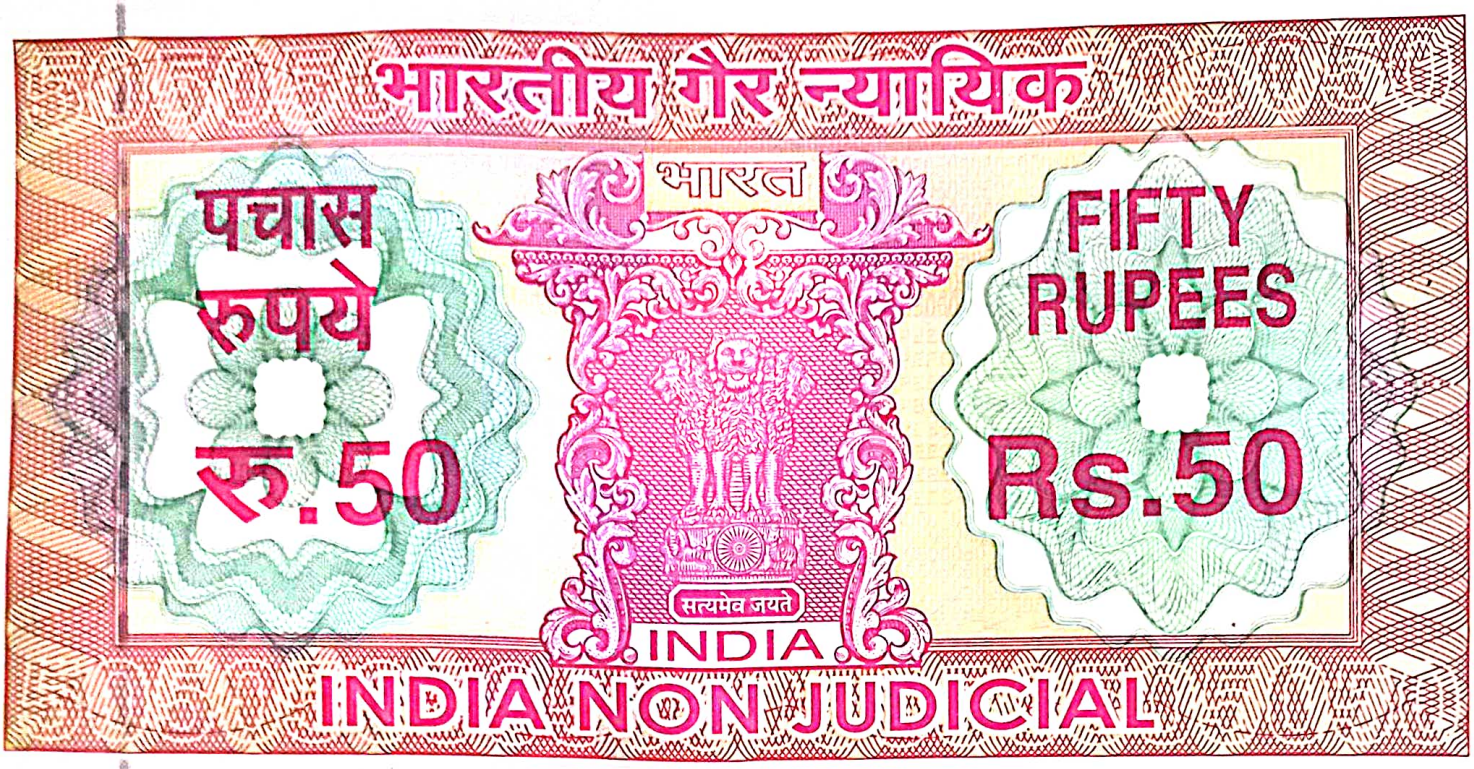
पचास रुपये रु.50

FIFTY RUPEES Rs.50

सत्यमेव जयते

INDIA

INDIA NON JUDICIAL



കേരളം केरल KERALA

CN 882226

We will set up such facility in other districts and intimate the same within 15 days of letter of intent.

Office Seal

Signature

Name: Sreeja SS

WATTSUN ENERGY INDIA PVT. LTD. TRIVANDRUM

No: 82510 dt: 1-1-2024
Wattsun Energy India
Pvt Ltd, Chackai

A. SURESH KUMAR
STAMP VENDOR, KARAMANA

R-50/-

PRINCIPAL SUB TREASURY
1 JAN 2024

Bill Of Material

2KW

Sl. No.	Item	Make (if any)	Model & Individual Capacity (If any)	Qty (Nos)	Rating / Capacity
1.	PV Module	Pahal		4	545
2.	PCU/Inverter	Ksolare		1	2KW
3.	Remote Monitoring Unit	Ksolare		1	
4.	DC Cables	Polycab		As req	
5.	AC Cables	RR kabel		As req	
6.	AJB/SCB	Customized(Mersen, elmax)		1	
7.	Module Mounting Structure (MMS)	HDGI		As per capacity	80 Microns
8.	ACDB	Customized(ABB)		1	
9.	Lightning Arrester	OBO		1	
10.	Earthing System	-			
11.	Details and number of earth pits	3		3	

3KW

Sl. No.	Item	Make (if any)	Model & Individual Capacity (If any)	Qty (Nos)	Rating / Capacity
1.	PV Module	Pahal		6	545
2.	PCU/Inverter	Ksolare		1	3KW
3.	Remote Monitoring Unit	Ksolare		1	
4.	DC Cables	Polycab		As req	
5.	AC Cables	RR kabel		As req	
6.	AJB/SCB	Customized(Mersen, elmax)		1	

7.	Module Mounting Structure (MMS)	HDGI		As per capacity	80 Microns
8.	ACDB	Customized(ABB)		1	
9.	Lightning Arrester	OBO		1	
10.	Earthing System	-			
11.	Details and number of earth pits	3		3	

5KW

Sl. No.	Item	Make (if any)	Model & Individual Capacity (If any)	Qty (Nos)	Rating / Capacity
1.	PV Module	Pahal		10	545
2.	PCU/Inverter	Ksolare		1	5KW
3.	Remote Monitoring Unit	Ksolare		1	
4.	DC Cables	Polycab		As req	
5.	AC Cables	RR kabel		As req	
6.	AJB/SCB	Customized(Mersen, elmax)		1	
7.	Module Mounting Structure (MMS)	HDGI		As per capacity	80 Microns
8.	ACDB	Customized(ABB)		1	
9.	Lightning Arrester	OBO		1	
10.	Earthing System	-			
11.	Details and number of earth pits	3		3	

7KW

Sl. No.	Item	Make (if any)	Model & Individual Capacity (If any)	Qty (Nos)	Rating / Capacity
1.	PV Module	Pahal		13	545
2.	PCU/Inverter	Ksolare		1	7KW

3.	Remote Monitoring Unit	Ksolare		1	
4.	DC Cables	Polycab		As req	
5.	AC Cables	RR kabel		As req	
6.	AJB/SCB	Customized(Mersen, elmax)		1	
7.	Module Mounting Structure (MMS)	HDGI		As per capacity	80 Microns
8.	ACDB	Customized(ABB)		1	
9.	Lightning Arrester	OBO		1	
10.	Earthing System	-			
11.	Details and number of earth pits	3		3	

10KW

Sl. No.	Item	Make (if any)	Model & Individual Capacity (If any)	Qty (Nos)	Rating / Capacity
1.	PV Module	Pahal		19	545
2.	PCU/Inverter	Ksolare		1	10KW
3.	Remote Monitoring Unit	Ksolare		1	
4.	DC Cables	Polycab		As req	
5.	AC Cables	RR kabel		As req	
6.	AJB/SCB	Customized(Mersen, elmax)		1	
7.	Module Mounting Structure (MMS)	HDGI		As per capacity	80 Microns
8.	ACDB	Customized(ABB)		1	
9.	Lightning Arrester	OBO		1	
10.	Earthing System	-			
11.	Details and number of earth pits	3		3	

WATTSUN
ENERGY (INDIA) PVT. LTD.
Never ending energy

ISO 50001
ENERGY MANAGEMENT

AIAO-BAR
EnMS
ACCREDITED
USA

Date: 01/03/2023

BOARD RESOLUTION

Reference No.: WS031/2023

CERTIFIED TRUE COPY OF THE RESOLUTION PASSED AT THE MEETING OF THE BOARD OF **"WATTSUN ENERGY INDIA (P) LTD"** held on 01/03/2023 at FF Aiswarya Towers, International Airport Road, Chackai, Trivandrum.

RESOLVED THAT the board of directors have decided to authorize, **Mrs. Sreeja SS** and is hereby authorized to sign and submit all the necessary documents to be submitted Wattsun Energy India Private in connection with tenders published by all Government and Non-Government Organizations.

Specimen signature of power of Attorney

.....

Name: Mrs. Sreeja SS
Designation: Purchase Manager

For Wattsun Energy India(P) Ltd

.....

Name: Mr. Terance Alex
Designation: Managing Director

WATTSUN ENERGY INDIA PVT. LTD. TRIVANDRUM Seal

www.wattsun.in
info@wattsun.in
+91 938 810 6363

WATTSUN
ENERGY (INDIA) PVT. LTD.
Never ending energy

WattSun Energy (India) Pvt. Ltd.
FF Aiswarya Towers
International Airport Road
Chackai, Trivandrum, Kerala 695 024
CIN: U40300KL2014PTC036294

Gmail Anert <anert033@gmail.com>

Fwd: ANERT-EoI for additional Empanelment of vendors under the Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW 150 kW under the PM KUSUM scheme (Component C) in the State of Kerala scheme (Component-C) in the State of Kerala-Clarification-reg

1 message

ANERT Projects <projects@anert.in> 3 January 2024 at 11:45
To: anert033@gmail.com, Jayakumar R <jayakumar@anert.in>

---------- Forwarded message ---------
From: **ASHOK KUMAR** <kcpashok@kcpsolar.com>
Date: Tue, 2 Jan 2024 at 18:58
Subject: ANERT-EoI for additional Empanelment of vendors under the Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW 150 kW under the PM KUSUM scheme (Component C) in the State of Kerala scheme (Component-C) in the State of Kerala-Clarification-reg
To: ANERT Projects <projects@anert.in>
Cc: kcp solar <rsm@kcpsolar.com>, KCP SOLAR <admin@kcpsolar.com>

To Date:02.01.2024

The CEO, ANERT
Law College Road, Vikas Bhavan. PO,
Thiruvananthapuram - 695 033,
Kerala

Dear Sir,

Sub: EoI for additional Empanelment of vendors under the Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW - 150 kW under the PM- KUSUM scheme (Component-C) in the State of Kerala

Ref :1. Tender No: ANERT—TECH/144/2022-T4
2. Our undertaking letter Dated 21.12.2023

With the reference to above E.Tender we had submitted our bid on 18.11.2023. Based on your mail dated 11.12.2023 we had submitted the detail of work done through TEDA under GCRT phase-I-304KW and GCRT Phase-II-854 KW with work order received form TEDA and performance certificate received form concern beneficiary

For the same we had submitted the request letter to TEDA to issue the consolidated completion report at an earliest date. From TEDA we understand stad they need direct mail from you asking for the clarification.So we kindly request you to send the mail to TEDA

1. cmd@teda.in
2. gm1@teda.in
3. dgm2@teda.in

for the clarification with respect to the above subject.

With Regards,
P.Ashok Kumar
Director,
KCP Solar Industry,
India.
www.kcpsolar.com
+91 9443310409,

---------- Forwarded message ---------
From: **ADMIN KCP** <admin@kcpsolar.com>
Date: Sat, Dec 30, 2023 at 8:43 PM
Subject: Requested for the issue of consolidated certificate for the work done by us under GCRT phase-I and Phase to II programme MNRE subsidy Scheme
To: <cmd@teda.in>
Cc: <gm1@teda.in>, <dgm2@teda.in>, ASHOK KUMAR <kcpashok@kcpsolar.com>

KCP/SLM/061/23-24 Date: 30.12.2023

To

The Chairman & Managing Director
TamilNadu Energy Development Agency
5 th floor, EVK Sampth Malaigai,
68, College Road,
Chennai-600008

Dear Sir,

Sub: Requested for the issue of consolidated certificate for the work done by us under GCRT phase-I and Phase to II programme MNRE subsidy Scheme-reg

Ref: 1. Your Order no: TEDA/4706/100MW/GCRT-SPV/201-18 dated25.09.2017

2. Your Order No:1469/Phase II GCRTS/2021-22

3. Our Lr to ANERT : Dt:21.12.2023

With the reference to the above subject, we would like to inform you that we had participate in the tender for additional empanelment of venders by ANERT for the supply of 9348 grid connected Agricultural pumps under PM-KUSUM scheme (Component-C) in the start of Kerala.

For the qualification criteria, we had submitted the work order issued by TEDA/TANGEDCO and end user certificate of 304KW work done by us under GCRT Phase I and 854KW GCRT phase –II programme

As per the ANERT requirement we have to submit the consolidated report from TEDA for work executed by us under GCRTS phase-I and Phase- II programme.

So we kindly request you to issue the consolidated certificate for the work execute by us under the above said programme

For the same we herewith attached the work order issued by TEDA/TANGDCO and user certificate for your kind reference by mail.

Expecting your valuable certificate at an earliest

Thanking you,

Yours faithfully

For KCP Solar Industry

304kw and 854kw.pdf

Thanking You
For Kcp Solar Industry
With Regard,
S.Srinivasan
9842769799

--

With Regards,
P.Ashok Kumar
Director,
KCP Solar Industry,
India.
www.kcpsolar.com
+91 9443310409,+91 9942935599.

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Thanks & Regards

Projects Team
ANERT

Letter.pdf
372K

SINCE 1986
KCP SOLAR

KCP/SLM/061/23-24

Date: 30.12.2023

To

The Chairman & Managing Director
TamilNadu Energy Development Agency
5 th floor, EVK Sampth Malaigai,
68, College Road,
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Expecting your valuable certificate at an earliest

Thanking you,

Yours faithfully

For KCP Solar Industry

P.Ashokkumar.B.E.MS (EDP)
Proprietor

Head Office : 5/228-A, Arumugapillai Garden, Annathanapatti, Salem-636 006. Tamilnadu, India
Ph. : 99429 58899 | 80120 13333 | 98427 69799 E-mail : admin@kcpsolar.com

Reg. Office : TS 105, Hindustan Teleprinters Staff Quarters, SIDCO Industrial Estate, Ekkatuthangal Chennai - 600 032
Mob. : + 91 80120 13333 | E-mail:tcchennai@kcpsolar.com | Web.www.kcpsolar.com

'BNRA' 88A, JAWAHAR NAGAR, KOWDIAR (PO), THIRUVANANTHAPURAM, KERALA - 695003.
Mob. : + 91 99429 77599 | E-mail : rsm@kcpsolar.com

VENDOR GRADING IN RENEWABLE ENERGY SECTOR FOR ANERT

ICRA ANALYTICS
A Group ICRA Company

THIS IS TO INFORM THAT

B S ENERGY INNOVATIONS

has been assigned a grade of '3C' indicating 'Average Performance Strength' and 'Average Financial Strength'

DECEMBER 20, 2023

Authorized signatory

This certificate must be read in conjunction with the Grading letter dated Dec 19, 2023, issued to B S Energy Innovations

CONFIDENTIAL

Ref: Email from B S Energy Innovations for ANERT Vendor Grading,
Dated: December 06, 2023

Date: December 20, 2023

Mr. L. Mohamed Shoaib
B S Energy Innovations,
No.17, Jayaselvi Nagar, Metangadu,
Madukkarai Market,
Coimbatore – 641105,
India

Dear Sir / Ma'am,

Sub: Grading of your organization under vendor grading in renewable energy sector for ANERT

Please refer to your email dated December 06, 2023, for assigning vendor grading of your organization.

ICRA Analytics (ICRA-A), after due consideration, has assigned **3C** to **B S Energy Innovations**. The grading indicates that performance parameters the entity has got Grade 3 [Average Performance Strength] and based on financial parameters the entity has got Grade C [Average Financial Strength] of the Manufacturers / System Integrators / EPC contractor in the Renewable Energy sector space. Our grading symbols are annexed.

We thank you for your kind cooperation extended during the grading exercise. Please let us know if you need any clarification. We look forward to further strengthening our existing relationship and assure you of our best services.[1]

With kind regards,

Yours sincerely,

for ICRA Analytics Limited

Authorised signatory

e-Copy to ANERT (Manager-in-charge)

[1]ICRA-A reserves the right to suspend/withdraw/revise the grading assigned on the basis of new information or in the event of failure on the part of the entity to furnish such information, material or clarifications as may be required by ICRA-A. ICRA-A shall also be entitled to publicize/disseminate such suspension/withdrawal/revision in the assigned grading in any manner considered appropriate by it, without reference to you.

The grading scale is as follows:

Performance capability	Financial Strength					
		Strong	Above average	Average	Below average	Weak
	Strong	1A	1B	1C	1D	1E
	Above average	2A	2B	2C	2D	2E
	Average	3A	3B	3C	3D	3E
	Below average	4A	4B	4C	4D	4E
	Weak	5A	5B	5C	5D	5E

DISCLAIMER: An ICRA Analytics' Manufacturers / System Integrators (SI) / EPC contractor grade reflects ICRA Analytics' opinion on the ability of the company to undertake renewable energy projects. ICRA Analytics or its affiliates or group companies and its respective officers, directors, personnel and employees, shall not be liable for or accept any liability for any loss, damage of any nature, including but not limited to direct, indirect, punitive, special, exemplary, consequential, and also any loss of profit in any way arising from the use of this document or its contents in any manner. This grading does not constitute an audit by ICRA Analytics of the SI / Manufacturer / EPC contractor. The gradings are solely based on the information provided by the company or obtained by ICRA Analytics from sources it considers reliable. ICRA Analytics does not guarantee the completeness or accuracy of the information on which the grading is based and therefore shall not be responsible for any liability incurred by the users of such grading. An ICRA Analytics' Manufacturers / System Integrators / EPC contractor grading is not a recommendation to use the services of the company, or to invest in any project undertaken by the company, or to lend to the company or invest in any financial instrument issued by the company. ICRA Analytics has the right to revise gradings as and when circumstances so warrant. At the same time ICRA Analytics is not under any obligation to review or revise the gradings assigned at any later period of time. The grading(s) provided are based on the data and circumstances that it believes to be in existence at the time of conducing the assignment. ICRA Analytics is not responsible for any errors and especially states that it has no financial liability whatsoever to the subscribers / users / transmitters / distributors of its gradings.

VENDOR GRADING IN RENEWABLE ENERGY SECTOR FOR ANERT

ICRA ANALYTICS
A Group ICRA Company

THIS IS TO INFORM THAT

BNK ENERGY PVT LTD

has been assigned a grade of '2C' indicating 'Above – average Performance Strength' and 'Average Financial Strength'

JANUARY 12, 2024

Sonar Kanti Das

Authorized signatory

This certificate must be read in conjunction with the Grading letter dated Jan 12, 2024, issued to BNK Energy Pvt Ltd

ICRA ANALYTICS
A Group ICRA Company

ICRA ANALYTICS LIMITED

CONFIDENTIAL

Ref: Email from BNK Energy Pvt Ltd for ANERT Vendor Grading,
Dated: December 20, 2023

Date: January 12, 2024

Shailesh Ram Rajgarhia
BNK Energy Pvt Ltd
8/1, A-1 Site -4,
Sahibabad Industrial Area,
Ghaziabad,
Uttar Pradesh - 201010

Dear Sir / Ma'am,

Sub: Grading of your organization under vendor grading in renewable energy sector for ANERT

Please refer to your email dated December 20, 2023, for assigning vendor grading of your organization.

ICRA Analytics (ICRA-A), after due consideration, has assigned **2C** to **BNK Energy Pvt Ltd**. The grading indicates that performance parameters the entity has got Grade 2 [Above – average Performance Strength] and based on financial parameters the entity has got Grade C [Average Financial Strength] of the Manufacturers / System Integrators / EPC contractor in the Renewable Energy sector space. Our grading symbols are annexed.

We thank you for your kind cooperation extended during the grading exercise. Please let us know if you need any clarification. We look forward to further strengthening our existing relationship and assure you of our best services.[1]

With kind regards,

Yours sincerely,

for ICRA Analytics Limited

Somen Kanti Das

Authorised signatory

e-Copy to ANERT (Manager-in-charge)

[1]ICRA-A reserves the right to suspend/withdraw/revise the grading assigned on the basis of new information or in the event of failure on the part of the entity to furnish such information, material or clarifications as may be required by ICRA-A. ICRA-A shall also be entitled to publicize/disseminate such suspension/withdrawal/revision in the assigned grading in any manner considered appropriate by it, without reference to you.

The grading scale is as follows:

Performance capability	Financial Strength					
		Strong	Above average	Average	Below average	Weak
	Strong	1A	1B	1C	1D	1E
	Above average	2A	2B	2C	2D	2E
	Average	3A	3B	3C	3D	3E
	Below average	4A	4B	4C	4D	4E
	Weak	5A	5B	5C	5D	5E

DISCLAIMER: An ICRA Analytics' Manufacturers / System Integrators (SI) / EPC contractor grade reflects ICRA Analytics' opinion on the ability of the company to undertake renewable energy projects. ICRA Analytics or its affiliates or group companies and its respective officers, directors, personnel and employees, shall not be liable for or accept any liability for any loss, damage of any nature, including but not limited to direct, indirect, punitive, special, exemplary, consequential, and also any loss of profit in any way arising from the use of this document or its contents in any manner. This grading does not constitute an audit by ICRA Analytics of the SI / Manufacturer / EPC contractor. The gradings are solely based on the information provided by the company or obtained by ICRA Analytics from sources it considers reliable. ICRA Analytics does not guarantee the completeness or accuracy of the information on which the grading is based and therefore shall not be responsible for any liability incurred by the users of such grading. An ICRA Analytics' Manufacturers / System Integrators / EPC contractor grading is not a recommendation to use the services of the company, or to invest in any project undertaken by the company, or to lend to the company or invest in any financial instrument issued by the company. ICRA Analytics has the right to revise gradings as and when circumstances so warrant. At the same time ICRA Analytics is not under any obligation to review or revise the gradings assigned at any later period of time. The grading(s) provided are based on the data and circumstances that it believes to be in existence at the time of conducing the assignment. ICRA Analytics is not responsible for any errors and especially states that it has no financial liability whatsoever to the subscribers / users / transmitters / distributors of its gradings.

Gmail PMKUSUM <pmkusum9348docsaving@gmail.com>

TEDA - Completion Certificate - M/s. KCP Solar Industry - reg.

1 message

dgm2 . <dgm2@teda.in> Thu, Jan 11, 2024 at 5:12 PM
To: PMKUSUM <pmkusum9348docsaving@gmail.com>

Sir,

This is with reference to the e-mail dated 03.01.2024, wherein it has been informed that M/s. KCP Solar Industry, Salem have applied for a tender. In this regard, it has been requested to verify if they have done 304 kW work under GCRTS Phase-I and 854 kW under GCRTS Phase II and to furnish a completion certificate stating the same.

The completion certificate as requested is attached herewith.

Thanks and Regards,
O.Karamallayan,
Deputy General Manager,
Tamilnadu Energy Development Agency (TEDA),
E.V.K. Sampath Maaligai, 5th Floor, No. 68, College Road, Chennai - 600006.
Phone : 044 - 28242800, Fax : 044 - 28222971,
Email: dgm2@teda.in Web www.teda.in

On Wednesday, January 3, 2024 at 02:17:47 PM GMT+5:30, PMKUSUM <pmkusum9348docsaving@gmail.com> wrote:

Sir
Greetings !

Ref: Tender No: ANERT—TECH/144/2022-T4
ANERT- had floated a tender as per ref for -EoI for additional Empanelment of vendors under the Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW 150 kW under the PM KUSUM scheme (Component C) in the State of Kerala scheme (Component-C) in the State of Kerala.

M/s KCP Solar had applied for the tender. To Qualify the eligibility for the tender Minimum of 1MW should be executed and completed under SECI/GOVT/SNA/PSU . They have submitted documents of their letterhead claiming to have done 304KW work under GCRT Phase I and 854KW in GCRT phase –II programmes under TEDA/TANGEDCO . In relation to this Kindly verify if they have done the particular volume of project under your organisation and provide a completion certificate stating the same . Your document in the relation will be used for the evaluation for the tender .
Kindly provide the document at the earliest.

Mr Kiran Krishnan G
PE
PM KUSUM DEPT
ANERT -HQ
Trivandrum

completion certificate Ms. KCP Solar Industry.pdf
225K

தமிழ்நாடு எரிசக்தி மேம்பாட்டு முகமை
தமிழ்நாடு அரசு சார்பு நிறுவனம்
TEDA
Tamilnadu Energy Development Agency
Government of Tamilnadu Enterprise

11.01.2024

Completion Certificate

This is to certify that M/s KCP Solar Industry, Salem has satisfactorily completed the following works entrusted to them.

Name the scheme	Capacity	Remarks
Grid Connected Rooftop Solar – Phase-I	702 kW	The work has been satisfactorily completed and commissioned.
Grid Connected Rooftop Solar – Phase-II	760 kw / 902 kW	The Grid Connected Rooftop Solar system to a cumulative capacity of 902 kW has been completed by the vendor and outof which 760 kW has been commissioned.

This certificate is issued based on the request of ANERT, Kerala with reference to Tender No.ANERT – TECH/144/2022-T4

11.1.24

General Manager(FAC)

E.V.K. Sampath Maaligai, 5th Floor, No. 68, College Road, Chennai - 600 006.
Tel: 044 - 2842 2800 | Fax: 044 - 2822 2971
Email: cmd@teda.in; gm1@teda.in; gm@teda.in; admnteda@gmail.com

I/18726/2024

അനെർട്ട്
ANERT
Agency for New and renewable Energy Research and Technology
നവീനവും പുനരുപയോഗയോഗ്യവുമായ ഊർജ്ജ ഗവേഷണങ്ങൾക്കും സാങ്കേതിക വിദ്യകൾക്കുമുള്ള ഏജൻസി
DEPARTMENT OF POWER, GOVERNMENT OF KERALA
Law College Road, PMG, Thiruvananthapuram 695033 • director@anert.in • www.anert.gov.in
Tel.: (+91-471) 2338077, 2334122, 2333124, 2331803 • Fax: (+91-471) 2329853

No. ANERT-TECH/144/2022-T4 04-01-2024

TENDER EVALUATION REPORT

Tender ID: 2023_ANERT _614977_1
Tender REF No:ANERT-TECH/144/2022-T4

TENDER NAME: - EoI for additional Empanelment of vendors under the Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW 150 kW under the PM KUSUM scheme (Component C) in the State of Kerala.

TENDER OPENING DATE: 18/11/2023

As per the tender details mentioned above, e tender was invited dated 20/10/2023. Against that we have received bids from the following ten firms:

1. M/s. Adithya Innovations.
2. M/s. A J Infra solutions.
3. M/s. B S Energy Industries
4. M/s. BSS Community Industries.
5. M/s. Coopa Energy.
6. M/s. Inforce Engneering solutions.
7. M/s. K CP Solar Industry.
8. M/s. Soft rays Power solutions.
9. M/s. Usha Electronics Systems.
10. M/s. Wattsun Energy India Pvt ltd

Scrutinized all the documents and found that none of the firms submitted all the relevant documents. Hence sought clarification from 10 companies, and evaluated the tender and final conclusion arrived as follows:-

- The 6 of them found disqualified due to the following reason(s)-

Sl No	Bidder	Reasons	Tender Clause
1.	1. M/s. Adithya Innovations.	They are not a manufacturer and failed to provide valid JV agreement with any manufacturers. No work orders to substantiate	As per the guidelines of PM KUSUM, only Manufacturers of PV module or Manufacturers solar pump or a joint venture of an EPC with a Manufacturer of solar

		the work experience of 1MW in Govt Sector. Service centre Declaration not provided	module are eligible to undertake works under the scheme. Copy of work orders and a certificate issued by SNA/Govt. Organization/ SECI/PSUs towards the satisfactory work completion to be furnished by the bidder.
2.	M/s. BSS Community Industries.	No work orders to substantiate the work experience of 1MW in Govt Sector. Service centre Declaration not provided	Copy of work orders and a certificate issued by SNA/Govt. Organization/ SECI/PSUs towards the satisfactory work completion to be furnished by the bidder.
3.	M/s. Coopa Energy	They are not a manufacturer and failed to provide valid JV agreement with any manufacturers. No work orders to substantiate the work experience of 1MW in Govt Sector.	As per the guidelines of PM KUSUM, only Manufacturers of PV module or Manufacturers solar pump or a joint venture of an EPC with a Manufacturer of solar module are eligible to undertake works under the scheme. Copy of work orders and a certificate issued by SNA/Govt. Organization/ SECI/PSUs towards the satisfactory work completion to be furnished by the bidder.
4.	M/s. Soft rays Power solutions.	No work orders to substantiate the work experience of 1MW in Govt Sector	Copy of work orders and a certificate issued by SNA/Govt. Organization/ SECI/PSUs towards the satisfactory work completion to be furnished by the bidder.
5.	M/s. Usha Electronics Systems.	No work orders to substantiate the work experience of 1MW in Govt Sector	Copy of work orders and a certificate issued by SNA/Govt. Organization/ SECI/PSUs towards the satisfactory work completion to be furnished by the bidder.
6.	M/s. Wattsun Energy India Pvt ltd	They are not a manufacturer and failed to provide valid JV	As per the guidelines of PM KUSUM, only

I/18726/2024

		agreement with any manufacturers. No work orders to substantiate the work experience of 1MW in Govt Sector. Service centre Declaration not provided	Manufacturers of PV module or Manufacturers solar pump or a joint venture of an EPC with a Manufacturer of solar module are eligible to undertake works under the scheme. Copy of work orders and a certificate issued by SNA/Govt. Organization/ SECI/PSUs towards the satisfactory work completion to be furnished by the bidder.

- Found 4 of them as successful bidders, passed the technical evaluation.

They are

1. M/s. A J Infra solutions. C onditionally qualified and needs to produce the ICRA certificate within 30 days
2. M/s. B S Energy Industries. Conditionally qualified and needs to produce the ICRA certificate within 30 days
3. M/s. K CP Solar Industry. Conditionally qualified and needs to produce the consolidated completion certificate from TEDA within 30 days.
4. M/s. Inforce Engineering solutions.

Decision

THE ABOVE BIDDERS ARE RECOMMENDED FOR CONSIDERATION WITH Tender ID: 2023_ANERT _614977_1

Signed by
Narendra Nath Veluri I F S
Date: 04-01-2024 17:18:25

NARENDRA NATH VELURI I F S
CHIEF EXECUTIVE OFFICER

A.O. No. 13/2024/ANERT

അനെർട്ട്
ANERT
Agency for New and renewable Energy Research and Technology
നവീനവും പുനരുപയോഗയോഗ്യവുമായ ഊർജ്ജ ഗവേഷണങ്ങൾക്കും സാങ്കേതിക വിദ്യകൾക്കുമുള്ള ഏജൻസി
DEPARTMENT OF POWER, GOVERNMENT OF KERALA
Law College Road, PMG, Thiruvananthapuram 695033 • director@anert.in • www.anert.gov.in
Tel.: (+91-471) 2338077, 2334122, 2333124, 2331803 • Fax: (+91-471) 2329853

PROCEEDINGS OF THE CHIEF EXECUTIVE OFFICER

(Present: NARENDRA NATH VELURI I F S)

Abstract

ANERT - Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 no's ranging from 2kW-150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala (NABARD-RIDF-Scheme)-Amendment - orders issued

File no.: ANERT-TECH/144/2022-T4

A.O. No. 13/2024/ANERT 18-01-2024

Read: 1. A.O. No. 46/2023/ANERT 28-02-2023

2. Tender ID: -2023_ANERT_614977_1 Published in Kerala Tender portal

RATE CONTRACT ORDER

1. ANERT published a tender for the Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 no's ranging from 2kW-150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala (NABARD-RIDF-Scheme). As per A. O. No. 46/2023/ANERT 28-02-2023 the following 7 companies were qualified.

Sl No	Company Name	ICRA rating	Total capacity in kW by batch
1	M/s. Tata Power Solar Systems LIMITED	1B	3500
2	M/s.Moopens Energy Solutions Pvt Ltd	1B	3500
3	M/s. INKEL Limited	1C	1000
4	M/s. Kondaas Automation Private Limited	2B	2000
5	M/s. Suryam International Private Ltd	2B	2000
6	M/s Suntastic Engineering Pvt.Limited	2C	1000
7	M/s. K C KOPAR Energy Solutions Private Limited	2C	1000

ANERT had invited EoI for additional Empanelment of vendors under the Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 no's ranging from 2kWp-150kWp under the PM-KUSUM scheme (Component-C) in the State of Kerala through the Kerala tenders portal, as reference cited 2nd and there were 10 bidders who participated in the tender. After the evaluation, 4 companies were qualified.

Table no 1

Sl No	Company Name	ICRA rating	Total capacity in kW by batch
1	M/s. Inforce Engineering solutions	3C	300
2	M/s. K C P Solar Industry	1C	1000
3	M/s. B S Energy Innovations	3C	300
4	M/s. A J Infra solutions	2C	1000

The rates for various capacity range of the rooftop system and ground mounded systems, as per the terms and conditions of the tender, are as follows:

Table no 2

Rate for lower capacity power plants		
	Ground Mounted (Inclusive of GST in Rs)	Rooftop (Inclusive of GST in Rs)
Cost for the SIC of 2 kW SPV power plant	2,48,190	2,29,982
Cost for the SIC of 3 kW SPV power plant	2,98,195	2,79,413
Cost for the SIC of 5 kW SPV power plant	4,61,894	4,31,930
Cost for the SIC of 7 kW SPV power plant	5,93,004	5,47,137
Cost for the SIC of 10 kW SPV power plant	7,68,873	7,13,457
Per kW Rate for higher capacity power plants		
Cost per kW for the SIC of SPV power plants in the range of 30 kW - 99 kW	71,694	71,343
Cost per kW for the SIC of SPV power plants in the range of 100 kW - 150 kW	72,832	70,266

*SIC-Supply Installation and Commissioning

Rates inclusive of delivery of materials, the cost of materials and labour for the civil works, all the necessary approvals from Electrical utility/Electrical inspectorate, feasibility study, mounting of standard module structures, PV module installation, Inverter installation, DC cabling (max 25 m), AC CABLING (MAX 15m) and interconnections, installation of lightning arresters, Remote Monitoring System and earthing system as per standards, net metering, arranging all the necessary inspections from KSEBL/Electrical Inspectorate/ANERT district office as part of pre-commissioning, commissioning of the power plant, 7 year warranty, fee for approval from KSEBL including application and registration fees, fee for approval from the Electrical inspectorate if any, net meter, Insurance, GST and all other expenses deemed necessary for the proper implementation of the condition and specification as per the tender cited under reference on a flat RCC roof or slanting roof or ground mounted which have accessibility.

1. **ACCEPTNCE AGREEMENT AND PERFORMANCE SECURITY**

a. An LoA will be issued to companies on the basis of this order. Upon acceptance of LoA the agencies are to enter into an agreement with ANERT along with performance security.

b. Work order or NTP will be issued for feasible sites

c. Allotment will be done as and when the allotted quantity is diminished (completed and commissioned).

2. **SCHEDULE OF SUPPLY**

a. The items should be delivered and installed for which work orders given as specified by ANERT, under prior intimation and supervision of ANERT for the solarisation of the existing Agricultural Pumps in five districts (Ernakulam, thrissur, Palakkda, Malappuram and Kasargpode) in Kerala.

b. The Supply, Installation and Commissioning of each of the work allotted shall be completed within **2 months of the date of supply order.** This is the time period for handing over the system to ANERT and no time extension in this regard without valid reasons will be entertained.

c. The capacity of pumps to be solarised and the max allowed capacity of SPV power plant is as given below.

Table no 3

Pump Capacity	Capacity of PV Plant
below 2 hp	2kWp
2-3 hp	3 kWp
>3-5hp	5kWp
>5-7hp	7kWp
>7-10hp	10kWp
20 hp	30 kWp
30 hp	50 kWp
50 hp	75 kWp
100 hp	150kWp

d. Supply of the main components such as SPV module, PCU and charge controller should be from the approved component list published by MNRE and ANERT websites or as per tender conditions.

e. The agency should submit the BoM of the projects including make model and manufacture, relevant documents & drawing related to structure and electrical interconnection as per tender document/ before release of NTP/work order.

f. Penalty for delay in supply and installation will be imposed at 0.5 % per week up to

a maximum 10 %. In case of delay in supply and installation, CEO, ANERT may cancel the contract and take recourse to other action as deemed appropriate.

3 PAYMENT

a) No advance payment will be given

b) the terms of the payment shall be:

a. 50% of the contract value shall be released upon the delivery of the major components at all the sites mentioned in the work order to be issued.
b. 30% of the contract value shall be released on completion of installation by all means, commissioning of the system (by DISCOM) and on submitting documents such as completion reports to ANERT
c. 20% of the contract value will be released as and when the funds for the project is received from MNRE for the particular installation.The Performance Bank Guarantee (PBG) will be 3% of the final project cost and the PBG shall be submitted on or before the final releasing of the payment. The validity of PBG shall be rolled over every year for first seven years or till the warranty period of the last installation is completed. The rolling over or release of this PBG shall be based on the clearance of pending penalties/fines imposed by ANERT.Income tax, contribution to workers' welfare fund which will be applicable to installations which involve civil construction work and other statutory deductions shall be made from the payment as per prevailing norms.

4. WARRANTY

1.

a. 7years' warranty should be provided by the supplier for the system as per the special conditions of the contract.
b. P V modules used in solar power plants/ systems must be warranted for their output peak watt capacity, which should not be less than 90 % at the end of 10 years and 80% at the end of 25 years.
c. The Warranty Card of the total system issued by the agency and the warranty issued by OEMs for PV modules & solar inverter must be handed over to the beneficiary along with a copy to ANERT district office. The warranty card issued by the vendor should include all the details of the system supplied including serial Nos.

5 OPERATION MANUAL

1. An Operation, Instruction and Maintenance Manual, in English and Malayalam should be provided with the system.

6 SERVICE AND MAINTENANCE

Empanelled agency should have at least one service centre at each district where their

system is installed. Also, there should be an additional service centre for each 500 installations per district.

1. The faulty system or components should be replaced/ repaired within 7 days of fault reporting.
2. Delay in servicing beyond 7 days of fault reporting would attract penalty at the rates decided by CEO, ANERT and further actions will be initiated against the agency.
3. The service personnel should visit the installations at least once in 3 months for preventive maintenance even if no faults are reported. **Reports of these preventive maintenance visits and generation data should be submitted to the concerned ANERT District Offices on a quarterly basis**. The delay beyond a period of 15 days may lead to penalty as decided by CEO ANERT.

A designated Helpline (in Malayalam language) address should be indicated on the inverter/controller at suitable location easily visible to the user for reporting faults during the warranty period.

7. INSURANCE

1. The power plant must be insured at every stage of operation – from Material dispatch, storage, completion of installation and till 7 years after commissioning.

2.The insurance coverage on handing over of the system must include all conditions of **Standard Fire and Special Perils as well as burglary and house break Policy (Material Damage as well as theft)**. The insurance **premium for the 7years of warranty is to be paid by the bidder.** On handing over of the system, the original insurance policy is to be handed over to the authorized person at the site of installation and a copy to ANERT District Office. The annual premium payment receipt must be handed to the authorized person at the site of installation

8. **RATES FOR SITE SPECEFIC COMPONENT**

a. For the installations in Group 2 (Higher capacity pumps) - in case of installation of additional/new transformer is required, the bidder shall install through KSEBL at their expenses. The amount shall be recouped by ANERT afterwards upon submission of the proper documents.
b. In case of installations under Group No.2 as per tender document, additional site- specific costs if any required for structure works, pathway, ladder for accessing PV modules etc. will be considered separately.
c. The rates accepted vide table No 2 is for the standard installation and for a maximum of 25 m cabling at DC side and 15 m cabling at AC side.
d. Additional cist required for cabling and structural work.

   Additional cost required for cabling, structural works etc for any excess quantity other than the standard installation mentioned in the tender document, is as given below :-

A.O. No. 13/2024/ANERT

Additional Cost for cabling

Sl No	Description	Rate/meter (in Rs)
1	Cost for DC cable for installation under Group 1 category	200/-
2	Cost for DC cable for installation under Group 2 category	250/-
3	Cost for AC cable for installation under Group 1 category	350/-
4	Cost for AC cable for installation under Group 2 category (30kW -99kW)	960/-
5	Cost for AC cable for installation under Group 2 category(100kW-150kW)	1420/-

Cost for additional structure

Sl No	Description	Rate/meter
1	Cost for additional structure for increase in height of above 1M from the standard height/kW	2000/-
2	Cost for additional structure for increase in height of above 2M from the standard height/kW	3400/-
3	Cost for additional structure for rooftop installation in slanting GI or Aluminium sheet roof /kW	5500/-

9. TERMS AND CONDITIONS FOR THE RATE CONTRACT

The rate contract shall be governed by the terms and conditions of the tender vide Tender I D 2023_ANERT_614977_1 and A.O. No. 46/2023/ANERT 28-02-2023 all corrigendum issued thereof. All the terms and conditions as per the bid document is part of this rate contract. The CEO, ANERT solely reserves the right to cancel/modify/extend this rate contract without assigning any reason.

Signed by
Narendra Nath Veluri I F S
Date: 18-01-2024 15:45:50
NARENDRA NATH VELURI I F S
CHIEF EXECUTIVE OFFICER

1. All District Ofices
2. All Selected vendors (as above) through email
3. ANERT web site

Minutes of the PM KUSUM meeting held at ANERT HQ on 07-05-2024 at 11:00 AM:

Participants:

- Shri Narendranath Veluri IFS - CEO ANERT
- Sri Aneesh S Prasad CTM ANERT
- Sri Jayakumar R. ACTM ANERT
- Shri Priyesh KV - DPE, Thrissur
- Shri Manu M Venu, DPE, Ernakulam
- Shri Dilshad – DPE, Malappuram
- Shri Vishnu Jayan - DPE, Kasargode
- Shri Vijeesh Kumar - DPE, Palakkad
- Mr. Sachin Munot, Project Manager, HKRP Innovations Ltd.
- Representatives from 11 EPCs

The CEO of ANERT outlined the meeting agenda focused on the PM KUSUM Project's implementation status and steps to expedite progress. The CEO expressed dissatisfaction with the current project pace and highlighted solutions to overcome funding and rooftop installation issues, collaborating with HKRP for faster solutions. It was emphasized that the solarisation of 8000 pumps should be completed by December 2024, necessitating the inclusion of more agencies. To facilitate this, a tender will be reissued, relaxing prequalification criteria to allow new companies to participate.

EPC representatives shared updates on their installation progress and expressed various concerns. Notably, M/s. Tata Power Solar Systems P. Ltd declared a halt on pump projects across the country, leading to a decision to terminate contracts with M/s. Tata Solar and M/s. Inkel Ltd. M/s. Moopans Energy Solutions were given a two-month deadline to complete pending projects, with future decisions contingent on their performance.

The meeting also addressed the MNRE's directive for 19.5% panel efficiency, which affects panel selection. The EPCs proposed using ALMM panels with Non DCR content as an alternative. Challenges such as inverter availability and issues with KSEB during commissioning were discussed, prompting future engagements with MNRE and KSEB.

Regarding virtual net metering, DEs were tasked with identifying feasible sites (public places like purambokku Bhoomi, panchayath building, school buildings, agricultural departments building/land farms) for installations. Integration of O&M and generation details into the portal was discussed, along with addressing agricultural department issues.

Mr. Sachin Munot presented changes to RMS installations for rooftop systems, highlighting a price difference (~ Rs.3500/system and bus bar box cost will be in the scope of EPC) and the need for SEDM portal configuration improvements.

In conclusion, the CEO stressed the need for increased installation rates for project viability. Higher capacity pump installations were encouraged, with plans for a grand launch after completing 1000 projects. Additionally, publicity efforts including videos and press meets were recommended for program promotion.

The meeting concluded at 01:00 PM.

AGENCY FOR NEW AND RENEWABLE ENERGY RESEARCH AND TECHNOLOGY ★ ANERT TVM

NARENDRA NATH VELURI IFS
NARENDRA NATH VELURI IFS
CHIEF EXECUTIVE OFFICER, ANERT

Date : 26-Jul-2024 01:38 PM

Print

Organisation Chain :	ANERT
Tender ID :	2023_ANERT_614977_2
Tender Ref No :	ANERT-TECH/144/2022-T4
Tender Title :	EoI for additional Empanelment of vendors under the Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW - 150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala

Bids List

S.No	Bid Number	Bidder Name	Submitted Date	Status	Remarks	Status Updated On
1	1889136	AADITHYA INNOVATIONS	06-Jul-2024 03:28 PM	Admitted-Fee/PreQual/Technical/Finance		26-Jul-2024 12:47 PM
2	1894078	BSS Community Industries	23-Jul-2024 05:31 PM	Admitted-Fee/PreQual/Technical/Finance		26-Jul-2024 12:47 PM
3	1893907	COOPA ENERGY	16-Jul-2024 09:51 PM	Admitted-Fee/PreQual/Technical/Finance		26-Jul-2024 12:47 PM
4	1896179	Maxgreen Infrastructure and Renewables Private Limited	25-Jul-2024 01:36 PM	Admitted-Fee/PreQual/Technical/Finance		26-Jul-2024 12:47 PM
5	1897524	POM SYSTEMS AND SERVICES PVT LTD	24-Jul-2024 05:23 PM	Admitted-Fee/PreQual/Technical/Finance		26-Jul-2024 12:47 PM
6	1891634	SOFT RAYS POWER SOLUTIONS	25-Jul-2024 01:29 PM	Admitted-Fee/PreQual/Technical/Finance		26-Jul-2024 12:47 PM
7	1893447	SOLGEN ENERGY PVT LTD	25-Jul-2024 12:06 PM	Admitted-Fee/PreQual/Technical/Finance		26-Jul-2024 12:47 PM
8	1897573	USHA ELECTRONICS SYSTEMS	25-Jul-2024 07:10 AM	Admitted-Fee/PreQual/Technical/Finance		26-Jul-2024 12:47 PM

Bid Opening Summary

Type :	**Finance**
Summary :	**Bids are opened for evaluation**
Updated By :	**Kala K G**
Updated On :	**26-Jul-2024 12:47 PM**
Document :	None

Tendering Inviting Authority

Gmail ANERT PM KUSUM <anertpmkusum@gmail.com>

Time extension for Clarification submission - ANERT-PMKUSUM

6 messages

ANERT PM KUSUM <anertpmkusum@gmail.com> Mon, Aug 19, 2024 at 12:57 PM
To: bsssolarkerala@gmail.com, COOPA Energy <coopaenergy@gmail.com>, gm@pompower.in, pompower@pompower.in, Jini <tenderdiv@solgenindia.com>, softrayspowersolutions@gmail.com, pradeep payyazhi <pradeepues101@gmail.com>, purchase@ushaelectronicssystems.com, md@maxgreeninfra.com, info@aadithyainnovations.com, projects@aadityainnovations.com
Cc: Jayakumar R <jayakumar@anert.in>, anert <anert033@gmail.com>

Sir

Tender :

ANERT-PMKUSUM- EoI of vendors under the Rate Contract for the Solarization of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos ranging from 2kW-150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala vide Ref no. ANERT-TECH/144/2022-T4

As per the request from various bidders , the last date of submission for clarification is extended upto **4 PM 24-8-2024 .**

--
Thanks and Regards,

TEAM PM-KUSUM

ANERT HQ

Dept. of Power, Govt .of Kerala .

Department of Power
Government of Kerala
ANERT
Agency for New and Renewable Energy Research and Technology (ANERT)

Mail Delivery Subsystem <mailer-daemon@googlemail.com> Mon, Aug 19, 2024 at 12:57 PM
To: anertpmkusum@gmail.com

Address not found

Your message wasn't delivered to **projects@aadityainnovations.com** because the domain aadityainnovations.com couldn't be found. Check for typos or unnecessary spaces and try again.

LEARN MORE

The response was:

```
DNS Error: DNS type 'mx' lookup of aadityainnovations.com responded with code NXDOMAIN Domain name not found: aadityainnovations.com For more information, go to https://support.google.com/mail/?p=BadRcptDomain
```

Final-Recipient: rfc822; projects@aadityainnovations.com
Action: failed
Status: 5.1.2
Diagnostic-Code: smtp; DNS Error: DNS type 'mx' lookup of aadityainnovations.com responded with code NXDOMAIN
Domain name not found: aadityainnovations.com For more information, go to https://support.google.com/mail/?p=BadRcptDomain
Last-Attempt-Date: Mon, 19 Aug 2024 00:27:35 -0700 (PDT)

---------- Forwarded message ----------
From: ANERT PM KUSUM <anertpmkusum@gmail.com>
To: bsssolarkerala@gmail.com, COOPA Energy <coopaenergy@gmail.com>, gm@pompower.in, pompower@pompower.in, Jini <tenderdiv@solgenindia.com>, softrayspowersolutions@gmail.com, pradeep payyazhi <pradeepues101@gmail.com>, purchase@ushaelectronicssystems.com, md@maxgreeninfra.com, info@aadithyainnovations.com, projects@aadityainnovations.com
Cc: Jayakumar R <jayakumar@anert.in>, anert <anert033@gmail.com>
Bcc:
Date: Mon, 19 Aug 2024 12:57:07 +0530
Subject: Time extension for Clarification submission - ANERT-PMKUSUM

Sir

Tender :

ANERT-PMKUSUM- EoI of vendors under the Rate Contract for the Solarization of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos ranging from 2kW-150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala vide Ref no. ANERT-TECH/144/2022-T4

As per the request from various bidders , the last date of submission for clarification is extended upto **4 PM 24-8-2024 .**

--

Thanks and Regards,

TEAM PM-KUSUM

ANERT HQ

Dept. of Power, Govt .of Kerala .

Department of Power
Government of Kerala
ANERT
Agency for New and Renewable Energy
Research and Technology (ANERT)

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info@maxgreeninfra.com <info@maxgreeninfra.com> Thu, Aug 22, 2024 at 5:35 PM
To: anertpmkusum@gmail.com, Jayakumar R <jayakumar@anert.in>, anert <anert033@gmail.com>

Dear sir,

We hereby attaching the Power Of Attorney in stamp paper. Notarised copy of POA will submit as soon we receive the original. The notary advocate need the original copy for attestation.

Thanks &Regards

Sreekumar.

On 2024-08-19 15:46, md@maxgreeninfra.com wrote:

> -------- Original Message --------
>
> **Subject:** Time extension for Clarification submission - ANERT-PMKUSUM
> **Date:** 2024-08-19 12:57
> **From:** ANERT PM KUSUM <anertpmkusum@gmail.com>
> **To:** bsssolarkerala@gmail.com, COOPA Energy <coopaenergy@gmail.com>, gm@pompower.in, pompower@pompower.in, Jini <tenderdiv@solgenindia.com>, softrayspowersolutions@gmail.com, pradeep payyazhi <pradeepues101@gmail.com>, purchase@ushaelectronicssystems.com, md@maxgreeninfra.com, info@aadithyainnovations.com, projects@aadityainnovations.com
> **Cc:** Jayakumar R <jayakumar@anert.in>, anert <anert033@gmail.com>
> [Quoted text hidden]

Power of Attorney Agreement (2) (1).pdf
1894K

COOPA Energy <coopaenergy@gmail.com> Sat, Aug 24, 2024 at 3:47 PM
To: ANERT PM KUSUM <anertpmkusum@gmail.com>, ANJU SIJANTH <anjusijanth@gmail.com>

CERTIFICATION OF WORK COMPLETION.pdf

CLARIFICATION.pdf

COMMISIONING CERTIFICATE.pdf

COMMISSIONING CETIFICATE 2.pdf

JV AND SUPPORTING DOCUMENTS.pdf

JV SUBMITED.pdf

MNRE AGREEMENT 2.pdf

MNRE AGREEMENT 3.pdf

MNRE AGREEMENTS 1.pdf

PRIVATE WORK CONNECTION REPORT, COMMISSIONING CERTIFICATE .pdf

To

CEO

Anert

Sub:- Clarification in connection with Technical Bid submitted against KUSUM scheme. Ref :-

Anert e-Mail dated 19/08/2024 on the subject cited above.

Sir,

In response to your e-Mail dated 09/08/2024, clarification of this firm furnished as under :-

1	Exemption of tender fee and EMD is possible only if the firm comes under the MSME category, but no document is submitted to substantiate the claim. Need to provide the same as per Tender document point no.4 or 11.11a.	Submitted
2.	Need to produce a Copy of Registration/Incorporation Certificate in the case of M/s. Coopa Energy	Submitted
3.	Power of Attorney in favour of authorized signatory in Rs. 200 /- stamp Paper (Format B).	Please find attached the Joint Venture (JV) and supporting documents for your reference. The notary-attested documents will be submitted within one week. Yours
4.	Power of Attorney in favour of authorized signatory not applicable - need to submit self-declaration on authorized signatory.	Please find attached the Joint Venture (JV) and supporting documents for your reference. The notary-attested documents will be submitted within one week. Yours
5.	Need to produce Copy of Work order and completion certificate to prove eligibility of 3 MW / 500kWinstallation experience to meet qualification criteria (Refer Table 10.2-1.5 of Tender Document). The documents should be proper one with sign seal of respective authorities.	The following below noted documents are 1. Govt projects Certification's of Work Completion 2. Govt projects Work orders 3. MNRE Projects Agreements& Commission Reports

		Submitting the company's MNRE username and password here for further verification. https://www.pmsuryaghar.gov.in/vendor-login User Name: coopaenergy@gmail.com Password : Coopa@123 Connectivity certificates of the rest of private works will be submitted within a week of time 4. Private Work Connection Reports from KSEB 5. Commissioning Certificate The documents should be proper one with sign seal of respective authorities.
6.	Undertaking for Non-blacklisting as per format A for both the JV partners onRs.200/- non-Judicial Stamp paper.	Please find attached the Joint Venture (JV) and supporting documents for your reference. The notary-attested documents will be submitted within one week. Yours
7.	Agreement in the Prescribed format Annexure B in Rs.200/- stamp Paper needs to be submitted.	Submitted.
8.	Summary of Bid Qualification Requirement- Annexure A needs to be submitted.	Submitted
9.	Need a Declaration from lead bidder to provide DCR Inverter with IS1621, IS16169 certification.	Submitted
10.	Bill of material as per format provided in the tender needs to be provided.	Submitted
11.	Guaranteed Technical Parameters Annexure G (GTP) as per format provided in the tender needs to be provided.	Submitted
12.	Test certificates for indigenously made DCR content inverter and panels as per (GTP) needs to be provided.	Submitted
13.	Data sheet for indigenously made DCR content inverter and panels as per GTP needs to be provided.	Submitted
14.	Declaration by the bidder Annexure C needs to be provided	Submitted
15.	Annexure D- Declaration of Subsidy claim needs to be provided.	Submitted
16.	Annexure E- Declaration of Relationship with ANERT Employee need to be submitted as per the format provided in the Tender document	Submitted
17.	Information regarding service centres should be provided as per the tender clause # 10.1.5, clause # 15.1, and annexure A point #9(Declaration on setting up service centres in the desired districts within fifteen days of issue of LoA)	Submitted
18.	ICRA grading certificate need to be submitted to qualify the bid as per tender clause # 10.1.4 & 44.iii	Submitted

Submitted for kind consideration please.

[Quoted text hidden]

--

Thanks and Regards,

Anju Sijanth

COOPA ENERGY

Malappuram.

---

info@maxgreeninfra.com <info@maxgreeninfra.com> Sat, Aug 24, 2024 at 5:07 PM
To: anertpmkusum@gmail.com, Jayakumar R <jayakumar@anert.in>, anert <anert033@gmail.com>
Cc: Md <md@maxgreeninfra.com>, Admin <admin@maxgreeninfra.com>

Dear Sir,

We are hereby forwarding the notary attested copy of POA.

Thanks & Regards

Sreekumar P.O

[Quoted text hidden]

Notary attested Copy.pdf
2612K

COOPA Energy <coopaenergy@gmail.com> Thu, Aug 29, 2024 at 11:55 AM
To: ANERT PM KUSUM <anertpmkusum@gmail.com>, ANJU SIJANTH <anjusijanth@gmail.com>

Dear Sir/ Madam

Please find attached the Joint Venture (JV) and supporting documents for your reference. The notary-attested documents are also included.

On Mon, 19 Aug 2024 at 12:57, ANERT PM KUSUM <anertpmkusum@gmail.com> wrote:
[Quoted text hidden]

[Quoted text hidden]

4 attachments

POWER OF ATTORNEY.pdf
1494K

MOU.pdf
1503K

MOU..pdf
1918K

FORMAT-A.pdf
1826K

Gmail ANERT PM KUSUM <anertpmkusum@gmail.com>

ANERT-PMKUSUM- EoI of vendors under the Rate Contract for the Solarization of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos ranging from 2kW-150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala vide Ref no. ANERT-TECH/144/2022-T4-Clarification from M/s. Coopa Energyreg

4 messages

ANERT PM KUSUM <anertpmkusum@gmail.com> Fri, Aug 9, 2024 at 3:04 PM
To: COOPA Energy <coopaenergy@gmail.com>
Cc: Jayakumar R <jayakumar@anert.in>

Sir,
While evaluating the technical bid you submitted against the tender mentioned above, we are seeking some clarifications on the points given below. Your reply should reach us by e-mail on or before 17th August 2024, 4 pm.

1. Exemption of tender fee and EMD is possible only if the firm comes under the MSME category, but no document is submitted to substantiate the claim. Need to provide the same as per Tender document point no.4 or 11.11a.
2. Need to produce a Copy of Registration/Incorporation Certificate in the case of M/s. Coopa Energy.
3. Power of Attorney in favour of authorized signatory in Rs. 200 /- stamp Paper (Format B).
4. Power of Attorney in favour of authorized signatory not applicable - need to submit self-declaration on authorized signatory.
5. Need to produce Copy of Work order and completion certificate to prove eligibility of 3 MW / 500kWinstallation experience to meet qualification criteria (Refer Table 10.2-1.5 of Tender Document). The documents should be proper one with sign seal of respective authorities.
6. Undertaking for Non-blacklisting as per format A for both theJV partners onRs.200/- non-Judicial Stamp paper.
7. Agreement in the Prescribed format Annexure B in Rs.200/- stamp Paper needs to be submitted.
8. Summary of Bid Qualification Requirement- Annexure A needs to be submitted.
9. Need a Declaration from lead bidder to provide DCR Inverter with IS1621, IS16169 certification.
10. Bill of material as per format provided in the tender needs to be provided.
11. Guaranteed Technical Parameters Annexure G (GTP) as per format provided in the tender needs to be provided.
12. Test certificates for indigenously made DCR content inverter and panels as per (GTP) needs to be provided.
13. Data sheet for indigenously made DCR content inverter and panels as per GTP needs to be provided.
14. Declaration by the bidder Annexure C needs to be provided.
15. Annexure D- Declaration of Subsidy claim needs to be provided.
16. Annexure E- Declaration ofRelationship with ANERT Employee need to be submitted as per the format provided in the Tender document.

17. Information regarding service centres should be provided as per the tender clause # 10.1.5, clause # 15.1, and annexure A point #9(Declaration on setting up service centres in the desired districts within fifteen days of issue of LoA).
18. ICRA grading certificate need to be submitted to qualify the bid as per tender clause # 10.1.4 & 44.iii.

Thanks and Regards,

TEAM PM-KUSUM

ANERT HQ

Dept. of Power, Govt .of Kerala .

Department of Power
Government of Kerala
ANERT
Agency for New and Renewable Energy
Research and Technology (ANERT)

COOPA Energy <coopaenergy@gmail.com> Sat, Aug 17, 2024 at 3:44 PM
To: ANERT PM KUSUM <anertpmkusum@gmail.com>, ANJU SIJANTH <anjusijanth@gmail.com>

To

Anert,

Sub:- Clarification in connection with Technical Bid submitted against KUSUM scheme.

Ref :- Anert e-Mail dated 09/08/2024 on the subject cited above.

Sir,

In response to your e-Mail dated 09/08/2024, clarification of this firm furnished as under :-

1	Exemption of tender fee and EMD is possible only if the firm comes under the MSME category, but no document is submitted to substantiate the claim. Need to provide the same as per Tender document point no.4 or 11.11a.	Requisite MSME attached.
2.	Need to produce a Copy of Registration/Incorporation Certificate in the case of M/s. Coopa Energy	Attached a Copy of Registration/Incorporation Certificate in the case of M/s. Coopa Energy
3.	Power of Attorney in favour of authorized signatory in Rs. 200 /- stamp Paper (Format B).	Power of Attorny on Rs.200/- stamp paper is enclosed as desired please.
4.	Power of Attorney in favour of authorized signatory not applicable - need to submit self-declaration on authorized signatory.	Attached self-declaration on authorized signatory
5.	Need to produce Copy of Work order and completion certificate to prove eligibility of 3 MW / 500kWinstallation experience to meet qualification criteria (Refer Table 10.2-1.5 of Tender Document). The documents should	coopa energy Attached 2023 March to 2024 august mnre projects, private work sale bill and copy of govt projects PCR and work orders produced to prove eligibility of 500kW installation experience to

	be proper one with sign seal of respective authorities.	meet qualification criteria . The documents are proper one with sign seal of respective authorities.
6.	Undertaking for Non-blacklisting as per format A for both the JV partners onRs.200/- non-Judicial Stamp paper.	Attached Non-blacklisting as per format A for both the JV partners onRs.200/- non-Judicial Stamp paper.
7.	Agreement in the Prescribed format Annexure B in Rs.200/- stamp Paper needs to be submitted.	Prescribed format Annexure B in Rs.200/- stamp Paper (agreement) Attached.
8.	Summary of Bid Qualification Requirement-Annexure A needs to be submitted.	Attached as desired please.
9.	Need a Declaration from lead bidder to provide DCR Inverter with IS1621, IS16169 certification.	Certificate attached herewith please.
10.	Bill of material as per format provided in the tender needs to be provided.	Attached as 2kw, 3kw, 5kw, 7kw and 10kw bill of materials .
11.	Guaranteed Technical Parameters Annexure G (GTP) as per format provided in the tender needs to be provided.	Attached Annexure G GTP(Guaranteed Technical Parameters)
12.	Test certificates for indigenously made DCR content inverter and panels as per (GTP) needs to be provided.	Certificate attached herewith please.
13.	Data sheet for indigenously made DCR content inverter and panels as per GTP needs to be provided.	Data Sheet attached herewith please.
14.	Declaration by the bidder Annexure C needs to be provided	declaration Attached herewith.
15.	Annexure D- Declaration of Subsidy claim needs to be provided.	Annexure D - Attached herewith.
16.	Annexure E- Declaration of Relationship with ANERT Employee need to be submitted as per the format provided in the Tender document	Annexure E - Attached herewith.
17.	Information regarding service centres should be provided as per the tender clause # 10.1.5, clause # 15.1, and annexure A point #9(Declaration on setting up service centres in the desired districts within fifteen days of issue of LoA)	Currently, Coopa Energy has service centers in the Malappuram and Ernakulam districts. We are attaching the agreements along with this. Additionally, we hereby undertake to open and operate the required number of service centers at the required locations as per the requirements of the bid within 15 days of entering into the contract. This is to ensure service support for our products during the warranty period. These facts are documented on a 200-rupee stamp paper, which is attached along with this."
18.	ICRA grading certificate need to be submitted to qualify the bid as per tender clause # 10.1.4 & 44.iii	Declaration as desired is Attached herewith.

ALL DOCUMENTS.zip

[Quoted text hidden]

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Thanks and Regards,

Anju Sijanth

COOPA ENERGY

Malappuram.

2 attachments

MOU.pdf
2551K

11. ANNEXURE G-merged.pdf
4820K

COOPA Energy <coopaenergy@gmail.com> Sat, Aug 17, 2024 at 3:56 PM
To: ANERT PM KUSUM <anertpmkusum@gmail.com>, ANJU SIJANTH <anjusijanth@gmail.com>

To

Anert,

Sub:- Clarification in connection with Technical Bid submitted against KUSUM scheme.

Ref :- Anert e-Mail dated 09/08/2024 on the subject cited above.

Sir,

In response to your e-Mail dated 09/08/2024, clarification of this firm furnished as under :-

1	Exemption of tender fee and EMD is possible only if the firm comes under the MSME category, but no document is submitted to substantiate the claim. Need to provide the same as per Tender document point no.4 or 11.11a.	Requisite MSME attached.
2.	Need to produce a Copy of Registration/Incorporation Certificate in the case of M/s. Coopa Energy	Attached a Copy of Registration/Incorporation Certificate in the case of M/s. Coopa Energy
3.	Power of Attorney in favour of authorized signatory in Rs. 200 /- stamp Paper (Format B).	Power of Attorny on Rs.200/- stamp paper is enclosed as desired please.
4.	Power of Attorney in favour of authorized signatory not applicable - need to submit self-declaration on authorized signatory.	Attached self-declaration on authorized signatory
5.	Need to produce Copy of Work order and completion certificate to prove eligibility of 3 MW / 500kWinstallation experience to meet qualification criteria (Refer Table 10.2-1.5 of Tender Document). The documents should be proper one with sign seal of respective authorities.	coopa energy Attached 2023 March to 2024 august mnre projects, private work sale bill and copy of govt projects PCR and work orders produced to prove eligibility of 500kW installation experience to meet qualification criteria . The documents are proper one with sign seal of respective authorities.
6.	Undertaking for Non-blacklisting as per format A for both the JV partners onRs.200/- non-Judicial Stamp paper.	Attached Non-blacklisting as per format A for both the JV partners onRs.200/- non-Judicial Stamp paper.
7.	Agreement in the Prescribed format Annexure B in Rs.200/- stamp Paper needs to be submitted.	Prescribed format Annexure B in Rs.200/- stamp Paper (agreement) Attached.
8.	Summary of Bid Qualification Requirement-Annexure A needs to be submitted.	Attached as desired please.
9.	Need a Declaration from lead bidder to provide DCR Inverter with IS1621, IS16169 certification.	Certificate attached herewith please.
10.	Bill of material as per format provided in the tender needs to be provided.	Attached as 2kw, 3kw, 5kw, 7kw and 10kw bill of materials .
11.	Guaranteed Technical Parameters Annexure G (GTP) as per format provided in the tender	Attached Annexure G GTP(Guaranteed Technical Parameters)

	needs to be provided.	
12.	Test certificates for indigenously made DCR content inverter and panels as per (GTP) needs to be provided.	Certificate attached herewith please.
13.	Data sheet for indigenously made DCR content inverter and panels as per GTP needs to be provided.	Data Sheet attached herewith please.
14.	Declaration by the bidder Annexure C needs to be provided	declaration Attached herewith.
15.	Annexure D- Declaration of Subsidy claim needs to be provided.	Annexure D - Attached herewith.
16.	Annexure E- Declaration of Relationship with ANERT Employee need to be submitted as per the format provided in the Tender document	Annexure E - Attached herewith.
17.	Information regarding service centres should be provided as per the tender clause # 10.1.5, clause # 15.1, and annexure A point #9(Declaration on setting up service centres in the desired districts within fifteen days of issue of LoA)	Currently, Coopa Energy has service centers in the Malappuram and Ernakulam districts. We are attaching the agreements along with this. Additionally, we hereby undertake to open and operate the required number of service centers at the required locations as per the requirements of the bid within 15 days of entering into the contract. This is to ensure service support for our products during the warranty period. These facts are documented on a 200-rupee stamp paper, which is attached along with this."
18.	ICRA grading certificate need to be submitted to qualify the bid as per tender clause # 10.1.4 & 44.iii	Declaration as desired is Attached herewith.

ALL DOCUMENTS.zip

On Fri, 9 Aug 2024 at 15:04, ANERT PM KUSUM <anertpmkusum@gmail.com> wrote:
[Quoted text hidden]

[Quoted text hidden]

MOU.pdf
2551K

COOPA Energy <coopaenergy@gmail.com> Sat, Aug 17, 2024 at 5:14 PM
To: ANERT PM KUSUM <anertpmkusum@gmail.com>, ANJU SIJANTH <anjusijanth@gmail.com>

Sir/Madam

Sub:- Clarification in connection with Technical Bid submitted against KUSUM scheme.

Ref :- Anert e-Mail dated 09/08/2024 on the subject cited above.

Sir,

In response to your e-Mail dated 09/08/2024, clarification of this firm furnished as under :-

1	Exemption of tender fee and EMD is possible only if the firm comes under the MSME category, but no document is submitted to substantiate the claim. Need to provide the same as per Tender document point no.4 or 11.11a.	Requisite MSME attached.

2.	Need to produce a Copy of Registration/Incorporation Certificate in the case of M/s. Coopa Energy	Attached a Copy of Registration/Incorporation Certificate in the case of M/s. Coopa Energy
3.	Power of Attorney in favour of authorized signatory in Rs. 200 /- stamp Paper (Format B).	Power of Attorny on Rs.200/- stamp paper is enclosed as desired please.
4.	Power of Attorney in favour of authorized signatory not applicable - need to submit self-declaration on authorized signatory.	Attached self-declaration on authorized signatory
5.	Need to produce Copy of Work order and completion certificate to prove eligibility of 3 MW / 500kWinstallation experience to meet qualification criteria (Refer Table 10.2-1.5 of Tender Document). The documents should be proper one with sign seal of respective authorities.	coopa energy Attached 2023 March to 2024 august mnre projects, private work sale bill and copy of govt projects PCR and work orders produced to prove eligibility of 500kW installation experience to meet qualification criteria . The documents are proper one with sign seal of respective authorities.
6.	Undertaking for Non-blacklisting as per format A for both the JV partners onRs.200/- non-Judicial Stamp paper.	Attached Non-blacklisting as per format A for both the JV partners onRs.200/- non-Judicial Stamp paper.
7.	Agreement in the Prescribed format Annexure B in Rs.200/- stamp Paper needs to be submitted.	Prescribed format Annexure B in Rs.200/- stamp Paper (agreement) Attached.
8.	Summary of Bid Qualification Requirement-Annexure A needs to be submitted.	Attached as desired please.
9.	Need a Declaration from lead bidder to provide DCR Inverter with IS1621, IS16169 certification.	Certificate attached herewith please.
10.	Bill of material as per format provided in the tender needs to be provided.	Attached as 2kw, 3kw, 5kw, 7kw and 10kw bill of materials .
11.	Guaranteed Technical Parameters Annexure G (GTP) as per format provided in the tender needs to be provided.	Attached Annexure G GTP(Guaranteed Technical Parameters)
12.	Test certificates for indigenously made DCR content inverter and panels as per (GTP) needs to be provided.	Certificate attached herewith please.
13.	Data sheet for indigenously made DCR content inverter and panels as per GTP needs to be provided.	Data Sheet attached herewith please.
14.	Declaration by the bidder Annexure C needs to be provided	declaration Attached herewith.
15.	Annexure D- Declaration of Subsidy claim needs to be provided.	Annexure D - Attached herewith.
16.	Annexure E- Declaration of Relationship with ANERT Employee need to be submitted as per the format provided in the Tender document	Annexure E - Attached herewith.
17.	Information regarding service centres should be provided as per the tender clause # 10.1.5, clause # 15.1, and annexure A point #9(Declaration on setting up service centres in the desired districts within fifteen days of issue of LoA)	Currently, Coopa Energy has service centers in the Malappuram and Ernakulam districts. We are attaching the agreements along with this. Additionally, we hereby undertake to open and operate the required number of service centers at the required locations as per the requirements of the bid within 15 days of entering into the contract. This is to ensure service support for our products during the warranty period. These facts are documented on a 200-rupee stamp paper, which is attached along with this."

18.	ICRA grading certificate need to be submitted to qualify the bid as per tender clause # 10.1.4 & 44.iii	Declaration as desired is Attached herewith.

CLARIFICATION FILES.zip

Thanks & Regards,

ANJU SIJANTH

+91 9447158758 / +914832731111 | info@coopaenergy.com | www.coopaenergy.com

COOPA ENERGY
#19/5,A,B,C, NEAR CENTRAL SCHOOL, BYPASS ROAD
DOWN HILL-Po, MALAPPURAM-Dt, KERALA-676519

On Fri, 9 Aug 2024 at 15:04, ANERT PM KUSUM <anertpmkusum@gmail.com> wrote:
[Quoted text hidden]

[Quoted text hidden]

CLARIFICATION FILES.zip
17849K

Gmail **ANERT PM KUSUM <anertpmkusum@gmail.com>**

ANERT-PMKUSUM- EoI of vendors under the Rate Contract for the Solarization of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos ranging from 2kW-150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala vide Ref no. ANERT-TE

1 message

Jini <tenderdiv@solgenindia.com> Wed, Aug 14, 2024 at 11:50 AM
To: ANERT PM KUSUM <anertpmkusum@gmail.com>
Cc: Jayakumar R <jayakumar@anert.in>, ceo@solgenindia.com, finance1@elitehomesindia.co.in

Dear Sir,

With reference to the trailing mail, we hereby attach the following documents:

1. FORMAT A (UNDERTAKING FOR NO BLACKLISTING & NO BANNING) of both JV partners
2. Undertaking for Service Centre

Regards

JINI DEVASSY

Tender Executive

Solgen Energy Pvt Ltd

Contact: +91 7025076662

: ANERT PM KUSUM [mailto:anertpmkusum@gmail.com]
Sent: 08 August 2024 17:19
To: tenderdiv@solgenindia.com
Cc: Jayakumar R <jayakumar@anert.in>
Subject: ANERT-PMKUSUM- EoI of vendors under the Rate Contract for the Solarization of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos ranging from 2kW-150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala vide Ref no. ANERT-TE

Sir,
While evaluating the technical bid you submitted against the tender mentioned above, we are seeking some clarifications on the points given below. Your reply should reach us by e-mail on or before 17th August 2024, 4 pm.

1. Undertaking for Non-blacklisting as per format A for both the JV partners on Rs.200/- non-Judicial Stamp paper.

2. Information regarding service centres should be provided as per the tender clause # 10.1.5, clause # 15.1, and annexure A point #9(declaration on agreement paper).

Thanks and Regards,

TEAM PM-KUSUM

ANERT HQ

Dept. of Power, Govt .of Kerala .

---

3 attachments

No blacklisting & No banning - Sunbond.pdf
2408K

No blacklisting & No banning- Solgen.PDF
583K

Service Centre.PDF
330K

Gmail

ANERT PM KUSUM <anertpmkusum@gmail.com>

ANERT-PMKUSUM- EoI of vendors under the Rate Contract for the Solarization of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos ranging from 2kW-150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala vide Ref no. ANERT-TECH/144/2022-T4-Clarification from M/s. BSS Community industries

9 messages

ANERT PM KUSUM <anertpmkusum@gmail.com> Fri, Aug 9, 2024 at 3:06 PM
To: bsssolarkerala@gmail.com
Cc: Jayakumar R <jayakumar@anert.in>

Sir,
While evaluating the technical bid you submitted against the tender mentioned above, we are seeking some clarifications on the points given below. Your reply should reach us by e-mail on or before 17th August 2024, 4 pm.
1. Power of Attorney in favour of authorized signatory in Rs. 200 /- stamp Paper (Format B) needs to be produced.
2. Need to produce Copy of corresponding completion certificate to prove eligibility of 3 MW / 500kWinstallation experience to meet qualification criteria (Refer Table 10.2-1.5 of Tender Document). Only 322kw completion certificate provided along with work order. Remaining completion certificate corresponding to the work order needs to be produced.
3.Undertaking for Non-blacklisting as per format A for both the partners with to be provided on a date after the date of publishing of the tender on Rs.200/- non-Judicial Stamp paper.
4. Agreement in the Prescribed format Annexure B in Rs.200/- stamp Paper provided on a date after the date of publishing of the tender and needs to be filled and signed.
5. Need a Declaration from lead bidder to provide DCR indigenously manufactured Inverter with IS1621, IS16169 certification.
6. GTP (Annexure G) is not as per the format provided in the tender document. RMS unit details not filled. indigenously made DCR content inverter and panels to be used.
7. Information regarding service center/ declaration should be provided as per the tender clause # 10.1.5, clause # 15.1, and annexure A point #9(Declaration on setting up service centres in the desired districts within fifteen days of issue of LoA).
Any declaration or agreements submitted on stamp paper should be dated on or after the tender publishing date.

Thanks and Regards,

TEAM PM-KUSUM

ANERT HQ

Dept. of Power, Govt .of Kerala .

Department of Power
Government of Kerala
ANERT
Agency for New and Renewable Energy
Research and Technology (ANERT)

ANERT PM KUSUM <anertpmkusum@gmail.com> Fri, Aug 16, 2024 at 4:35 PM
To: bsssolarkerala@gmail.com

Sir

Undertaking for service Centres(in 200 Rs stamp paper)

Name of work

Tender ref No.

We, ---------- hereby undertake to open and operate the required number of service centres at the required locations as per the requirements of the bid with in 15 days of entering into contract(or LoA) . This is for providing service support for products supplied by us during the warranty period.

Sign and Seal

Declaration on Inverter

Name of work

Tender ref No.

..... as the lead bidder here by agree to to provide DCR indigenously manufactured Inverter with IS1621, IS16169 certification for the works under the above said tender project .

Sign and Seal

On Fri, Aug 9, 2024 at 3:06 PM ANERT PM KUSUM <anertpmkusum@gmail.com> wrote:

> Sir,
> While evaluating the technical bid you submitted against the tender mentioned above, we are seeking some clarifications on the points given below. Your reply should reach us by e-mail on or before 17th August 2024, 4 pm.
> 1. Power of Attorney in favour of authorized signatory in Rs. 200 /- stamp Paper (Format B) needs to be produced.
> 2. Need to produce Copy of corresponding completion certificate to prove eligibility of 3 MW / 500kWinstallation experience to meet qualification criteria (Refer Table 10.2-1.5 of Tender Document). Only 322kw completion certificate provided along with work order. Remaining completion certificate corresponding to the work order needs to be produced.
> 3.Undertaking for Non-blacklisting as per format A for both the partners with to be provided on a date after the date of publishing of the tender on Rs.200/- non-Judicial Stamp paper.
> 4. Agreement in the Prescribed format Annexure B in Rs.200/- stamp Paper provided on a date after the date of publishing of the tender and needs to be filled and signed.
> 5. Need a Declaration from lead bidder to provide DCR indigenously manufactured Inverter with IS1621, IS16169 certification.
> 6. GTP (Annexure G) is not as per the format provided in the tender document. RMS unit details not filled. indigenously made DCR content inverter and panels to be used.
> 7. Information regarding service center/ declaration should be provided as per the tender clause # 10.1.5, clause # 15.1, and annexure A point #9(Declaration on setting up service centres in the desired districts within fifteen days of issue of LoA).

> Any declaration or agreements submitted on stamp paper should be dated on or after the tender publishing date.
>
> *Thanks and Regards,*
>
> **TEAM PM-KUSUM**
>
> **ANERT HQ**
>
> **Dept. of Power, Govt .of Kerala .**
>
> Department of Power
> Government of Kerala
> ANERT
> Agency for New and Renewable Energy
> Research and Technology (ANERT)

--

Thanks and Regards,

TEAM PM-KUSUM

ANERT HQ

Dept. of Power, Govt .of Kerala .

Department of Power
Government of Kerala
ANERT
Agency for New and Renewable Energy
Research and Technology (ANERT)

Mail Delivery Subsystem <mailer-daemon@googlemail.com> Fri, Aug 16, 2024 at 4:36 PM
To: anertpmkusum@gmail.com

Message blocked

Your message to **bsssolarkerala@gmail.com** has been blocked. See technical details below for more information.

LEARN MORE

The response was:

```
Message rejected. For more information, go to https://support.google.com/mail/answer/69585
```

Final-Recipient: rfc822; bsssolarkerala@gmail.com
Action: failed
Status: 5.7.1
Diagnostic-Code: smtp; Message rejected. For more information, go to https://support.google.com/mail/answer/69585
Last-Attempt-Date: Fri, 16 Aug 2024 04:06:20 -0700 (PDT)

---------- Forwarded message ----------
From: ANERT PM KUSUM <anertpmkusum@gmail.com>
To: bsssolarkerala@gmail.com
Cc:
Bcc:
Date: Fri, 16 Aug 2024 16:35:53 +0530
Subject: Re: ANERT-PMKUSUM- EoI of vendors under the Rate Contract for the Solarization of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos ranging from 2kW-150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala vide Ref no. ANERT-TECH/144/2022-T4-Clarification from M/s. BSS Community industries
----- Message truncated -----

ANERT PM KUSUM <anertpmkusum@gmail.com> Fri, Aug 16, 2024 at 4:40 PM
To: bsssolarkerala@gmail.com

---------- Forwarded message ---------
From: **ANERT PM KUSUM** <anertpmkusum@gmail.com>
Date: Fri, Aug 16, 2024 at 4:35 PM
Subject: Re: ANERT-PMKUSUM- EoI of vendors under the Rate Contract for the Solarization of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos ranging from 2kW-150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala vide Ref no. ANERT-TECH/144/2022-T4-Clarification from M/s. BSS Community industries
To: <bsssolarkerala@gmail.com>

Sir

Undertaking for service Centres(in 200 Rs stamp paper)

Name of work

Tender ref No.

We, ---------- hereby undertake to open and operate the required number of service centres at the required locations as per the requirements of the bid with in 15 days of entering into contract(or LoA) . This is for providing service support for products supplied by us during the warranty period.

Sign and Seal

Declaration on Inverter

Name of work

Tender ref No.

..... as the lead bidder here by agree to to provide DCR indigenously manufactured Inverter with IS1621, IS16169 certification for the works under the above said tender project .

Sign and Seal

On Fri, Aug 9, 2024 at 3:06 PM ANERT PM KUSUM <anertpmkusum@gmail.com> wrote:

> Sir,
> While evaluating the technical bid you submitted against the tender mentioned above, we are seeking some clarifications on the points given below. Your reply should reach us by e-mail on or before 17th August 2024, 4 pm.
> 1. Power of Attorney in favour of authorized signatory in Rs. 200 /- stamp Paper (Format B) needs to be produced.
> 2. Need to produce Copy of corresponding completion certificate to prove eligibility of 3 MW / 500kWinstallation experience to meet qualification criteria (Refer Table 10.2-1.5 of Tender Document). Only 322kw completion certificate provided along with work order. Remaining completion certificate corresponding to the work order needs to be produced.
> 3.Undertaking for Non-blacklisting as per format A for both the partners with to be provided on a date after the date of publishing of the tender on Rs.200/- non-Judicial Stamp paper.
> 4. Agreement in the Prescribed format Annexure B in Rs.200/- stamp Paper provided on a date after the date of publishing of the tender and needs to be filled and signed.
> 5. Need a Declaration from lead bidder to provide DCR indigenously manufactured Inverter with IS1621, IS16169 certification.
> 6. GTP (Annexure G) is not as per the format provided in the tender document. RMS unit details not filled. indigenously made DCR content inverter and panels to be used.
> 7. Information regarding service center/ declaration should be provided as per the tender clause # 10.1.5, clause # 15.1, and annexure A point #9(Declaration on setting up service centres in the desired districts within fifteen days of issue of LoA).
> Any declaration or agreements submitted on stamp paper should be dated on or after the tender publishing date.
>
> *Thanks and Regards,*
>
> **TEAM PM-KUSUM**
>
> **ANERT HQ**

> **Dept. of Power, Govt .of Kerala .**
>
> Department of Power
> Government of Kerala
> ANERT
> Agency for New and Renewable Energy
> Research and Technology (ANERT)

--

Thanks and Regards,

TEAM PM-KUSUM

ANERT HQ

Dept. of Power, Govt .of Kerala .

Department of Power
Government of Kerala
ANERT
Agency for New and Renewable Energy
Research and Technology (ANERT)

--

Thanks and Regards,

TEAM PM-KUSUM

ANERT HQ

Dept. of Power, Govt .of Kerala .

Department of Power
Government of Kerala
ANERT
Agency for New and Renewable Energy
Research and Technology (ANERT)

Mail Delivery Subsystem <mailer-daemon@googlemail.com> Fri, Aug 16, 2024 at 4:41 PM
To: anertpmkusum@gmail.com

Message blocked

Your message to **bsssolarkerala@gmail.com** has been blocked. See technical details below for more information.

LEARN MORE

The response was:

```
Message rejected. For more information, go to https://support.google.com/mail/answer/69585
```

Final-Recipient: rfc822; bsssolarkerala@gmail.com
Action: failed
Status: 5.7.1
Diagnostic-Code: smtp; Message rejected. For more information, go to https://support.google.com/mail/answer/69585
Last-Attempt-Date: Fri, 16 Aug 2024 04:11:26 -0700 (PDT)

---------- Forwarded message ----------
From: ANERT PM KUSUM <anertpmkusum@gmail.com>
To: bsssolarkerala@gmail.com
Cc:
Bcc:
Date: Fri, 16 Aug 2024 16:40:59 +0530
Subject: Fwd: ANERT-PMKUSUM- EoI of vendors under the Rate Contract for the Solarization of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos ranging from 2kW-150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala vide Ref no. ANERT-TECH/144/2022-T4-Clarification from M/s. BSS Community industries
----- Message truncated -----

ANERT PM KUSUM <anertpmkusum@gmail.com> Fri, Aug 16, 2024 at 5:00 PM
To: bsssolarkerala@gmail.com

---------- Forwarded message ---------
From: **ANERT PM KUSUM** <anertpmkusum@gmail.com>
Date: Fri, Aug 16, 2024 at 4:35 PM
Subject: Re: ANERT-PMKUSUM- EoI of vendors under the Rate Contract for the Solarization of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos ranging from 2kW-150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala vide Ref no. ANERT-TECH/144/2022-T4-Clarification from M/s. BSS Community industries
To: <bsssolarkerala@gmail.com>

Sir

Undertaking for service Centres(in 200 Rs stamp paper)

Name of work

Tender ref No.

We, ---------- hereby undertake to open and operate the required number of service centres at the required locations as per the requirements of the bid with in 15 days of entering into contract(or LoA) . This is for providing service support for products supplied by us during the warranty period.

Sign and Seal

Declaration on Inverter

Name of work

Tender ref No.

..... as the lead bidder here by agree to to provide DCR indigenously manufactured Inverter with IS1621, IS16169 certification for the works under the above said tender project .

Sign and Seal

On Fri, Aug 9, 2024 at 3:06 PM ANERT PM KUSUM <anertpmkusum@gmail.com> wrote:

> Sir,
> While evaluating the technical bid you submitted against the tender mentioned above, we are seeking some clarifications on the points given below. Your reply should reach us by e-mail on or before 17th August 2024, 4 pm.
> 1. Power of Attorney in favour of authorized signatory in Rs. 200 /- stamp Paper (Format B) needs to be produced.
> 2. Need to produce Copy of corresponding completion certificate to prove eligibility of 3 MW / 500kWinstallation experience to meet qualification criteria (Refer Table 10.2-1.5 of Tender Document). Only 322kw completion certificate provided along with work order. Remaining completion certificate corresponding to the work order needs to be produced.
> 3.Undertaking for Non-blacklisting as per format A for both the partners with to be provided on a date after the date of publishing of the tender on Rs.200/- non-Judicial Stamp paper.
> 4. Agreement in the Prescribed format Annexure B in Rs.200/- stamp Paper provided on a date after the date of publishing of the tender and needs to be filled and signed.
> 5. Need a Declaration from lead bidder to provide DCR indigenously manufactured Inverter with IS1621, IS16169 certification.

6. GTP (Annexure G) is not as per the format provided in the tender document. RMS unit details not filled. indigenously made DCR content inverter and panels to be used.
7. Information regarding service center/ declaration should be provided as per the tender clause # 10.1.5, clause # 15.1, and annexure A point #9(Declaration on setting up service centres in the desired districts within fifteen days of issue of LoA).
Any declaration or agreements submitted on stamp paper should be dated on or after the tender publishing date.

Thanks and Regards,

TEAM PM-KUSUM

ANERT HQ

Dept. of Power, Govt .of Kerala .

Department of Power
Government of Kerala
ANERT
Agency for New and Renewable Energy
Research and Technology (ANERT)

--
Thanks and Regards,

TEAM PM-KUSUM

ANERT HQ

Dept. of Power, Govt .of Kerala .

Department of Power
Government of Kerala
ANERT
Agency for New and Renewable Energy
Research and Technology (ANERT)

--
Thanks and Regards,

TEAM PM-KUSUM

ANERT HQ

Dept. of Power, Govt .of Kerala .

Department of Power
Government of Kerala
ANERT
Agency for New and Renewable Energy
Research and Technology (ANERT)

Mail Delivery Subsystem <mailer-daemon@googlemail.com> Fri, Aug 16, 2024 at 5:00 PM
To: anertpmkusum@gmail.com

Message blocked

Your message to **bsssolarkerala@gmail.com** has been blocked. See technical details below for more information.

LEARN MORE

The response was:

```
Message rejected. For more information, go to https://support.google.com/mail/answer/69585
```

Final-Recipient: rfc822; bsssolarkerala@gmail.com
Action: failed
Status: 5.7.1
Diagnostic-Code: smtp; Message rejected. For more information, go to https://support.google.com/mail/answer/69585
Last-Attempt-Date: Fri, 16 Aug 2024 04:30:50 -0700 (PDT)

---------- Forwarded message ----------
From: ANERT PM KUSUM <anertpmkusum@gmail.com>
To: bsssolarkerala@gmail.com
Cc:
Bcc:
Date: Fri, 16 Aug 2024 17:00:23 +0530
Subject: Fwd: ANERT-PMKUSUM- EoI of vendors under the Rate Contract for the Solarization of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos ranging from 2kW-150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala vide Ref no. ANERT-TECH/144/2022-T4-Clarification from M/s. BSS Community industries
----- Message truncated -----

Bharath Sevak Samaj Kerala <bsssolarkerala@gmail.com> Sat, Aug 17, 2024 at 4:01 PM
To: ANERT PM KUSUM <anertpmkusum@gmail.com>
Cc: Jayakumar R <jayakumar@anert.in>

We are attaching here with missed documents

Bharat Sevak Samaj Solar Division

Brahmins colony, Kowdiar PO, TVM

Ph : +91 9048001332, 0471- 2439322

Website: http://bsssolar.com/

Email: bsssagrihorti@gmail.com

bsssolarkerala@gmail.com

On Fri, Aug 9, 2024 at 3:07 PM ANERT PM KUSUM <anertpmkusum@gmail.com> wrote:

> Sir,
> While evaluating the technical bid you submitted against the tender mentioned above, we are seeking some clarifications on the points given below. Your reply should reach us by e-mail on or before 17th August 2024, 4 pm.
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> 4. Agreement in the Prescribed format Annexure B in Rs.200/- stamp Paper provided on a date after the date of publishing of the tender and needs to be filled and signed.
> 5. Need a Declaration from lead bidder to provide DCR indigenously manufactured Inverter with IS1621, IS16169 certification.
> 6. GTP (Annexure G) is not as per the format provided in the tender document. RMS unit details not filled. indigenously made DCR content inverter and panels to be used.
> 7. Information regarding service center/ declaration should be provided as per the tender clause # 10.1.5, clause # 15.1, and annexure A point #9(Declaration on setting up service centres in the desired districts within fifteen days of issue of LoA).
> Any declaration or agreements submitted on stamp paper should be dated on or after the tender publishing date.
>
> *Thanks and Regards,*
>
> **TEAM PM-KUSUM**
>
> **ANERT HQ**
>
> **Dept. of Power, Govt .of Kerala .**
>
> Department of Power
> Government of Kerala
> ANERT
> Agency for New and Renewable Energy
> Research and Technology (ANERT)

Power of Attorney and other documents.pdf
8983K

Bharath Sevak Samaj Kerala <bsssolarkerala@gmail.com> Sat, Aug 17, 2024 at 4:46 PM
To: ANERT PM KUSUM <anertpmkusum@gmail.com>
Cc: Jayakumar R <jayakumar@anert.in>

Undertaking for Non-Blacklisting as per Format A

Sir,

As per the tender format A needs to produce Rs.200/- stamp paper but present condition stamp paper is not available so we are producing on company letterhead . So we are
requesting you to please accept this document now and the stamp paper when available on market at the same time will be produced on stamp paper.
With Regards

BSS Community Industries

Bharat Sevak Samaj Solar Division

Brahmins colony, Kowdiar PO, TVM

Ph : +91 9048001332, 0471- 2439322

Website: **http://bsssolar.com/**

Email: **bsssagrihorti@gmail.com**

bsssolarkerala@gmail.com

On Sat, Aug 17, 2024 at 4:01 PM Bharath Sevak Samaj Kerala <bsssolarkerala@gmail.com> wrote:

> We are attaching here with missed documents

Bharat Sevak Samaj Solar Division

Brahmins colony, Kowdiar PO, TVM

Ph : +91 9048001332, 0471- 2439322

Website: **http://bsssolar.com/**

Email: **bsssagrihorti@gmail.com**

bsssolarkerala@gmail.com

On Fri, Aug 9, 2024 at 3:07 PM ANERT PM KUSUM <anertpmkusum@gmail.com> wrote:

> Sir,
> While evaluating the technical bid you submitted against the tender mentioned above, we are seeking some clarifications on the points given below. Your reply should reach us by e-mail on or before 17th August 2024, 4 pm.
> 1. Power of Attorney in favour of authorized signatory in Rs. 200 /- stamp Paper (Format B) needs to be produced.
> 2. Need to produce Copy of corresponding completion certificate to prove eligibility of 3 MW / 500kWinstallation experience to meet qualification criteria (Refer Table 10.2-1.5

of Tender Document). Only 322kw completion certificate provided along with work order. Remaining completion certificate corresponding to the work order needs to be produced.
3.Undertaking for Non-blacklisting as per format A for both the partners with to be provided on a date after the date of publishing of the tender on Rs.200/- non-Judicial Stamp paper.
4. Agreement in the Prescribed format Annexure B in Rs.200/- stamp Paper provided on a date after the date of publishing of the tender and needs to be filled and signed.
5. Need a Declaration from lead bidder to provide DCR indigenously manufactured Inverter with IS1621, IS16169 certification.
6. GTP (Annexure G) is not as per the format provided in the tender document. RMS unit details not filled. indigenously made DCR content inverter and panels to be used.
7. Information regarding service center/ declaration should be provided as per the tender clause # 10.1.5, clause # 15.1, and annexure A point #9(Declaration on setting up service centres in the desired districts within fifteen days of issue of LoA).
Any declaration or agreements submitted on stamp paper should be dated on or after the tender publishing date.

Thanks and Regards,

TEAM PM-KUSUM

ANERT HQ

Dept. of Power, Govt .of Kerala .

Department of Power
Government of Kerala
ANERT
Agency for New and Renewable Energy
Research and Technology (ANERT)

Non -Blacklisting pahal.pdf
247K

Gmail ANERT PM KUSUM <anertpmkusum@gmail.com>

ANERT-PMKUSUM- EoI of vendors under the Rate Contract for the Solarization of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos ranging from 2kW-150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala vide Ref no. ANERT-TECH/144/2022-T4 from M/s. AADITHYA INNOVATIONS.-Clarification reg

11 messages

ANERT PM KUSUM <anertpmkusum@gmail.com> Fri, Aug 9, 2024 at 3:15 PM
To: projects@aadityainnovations.com
Cc: Jayakumar R <jayakumar@anert.in>, info@aadithyainnovations.com

Sir,
While evaluating the technical bid you submitted against the tender mentioned above, we are seeking some clarifications on the points given below. Your reply should reach us by e-mail on or before 17th August 2024, 4 pm.

1. In the JV agreement the details of signatories are not mentioned. Please clarify and provide the document with proper name and designation etc
2. Power of Attorney in favour of authorized signatory in Rs. 200 /- stamp Paper (Format B) not signed and filled.
3. If Power of Attorney in favour of authorized signatory or self-declaration in case of proprietorship needs to be submitted.
4. Declaration by JV partner /Sole bidder on Manufacturing of Solar Panels.
5. Need to produce Copy of Work order and completion certificate to prove eligibility of 3 MW / 500kWinstallation experience to meet qualification criteria (Refer Table 10.2-1.5 of Tender Document).
6. Undertaking for Non-blacklisting as per format A for both the JV partners on Rs.200/- non-Judicial Stamp paper.
7. Provided old tender document for Scanned copy of Tender Document Signed and Sealed. Need to submit the present tender document signed and sealed.
8. Need to declare that the Panel & cell are indigenously manufactured (DCR Content) and frm ALMM list.
9. Need a Declaration from lead bidder to provide indigenously made DCR content inverter Inverter with IS1621, IS16169 certification.
10. Bill of material as per format provided in the tender needs to be provided.
11. Test certificates for indigenously made DCR content inverter and panels as per (GTP) needs to be provided.
12. Data sheet for indigenously made DCR content inverter and panels as per GTP needs to be provided.
13. Declaration by the bidder Annexure C needs to be provided.
14. Annexure D- Declaration of Subsidy claim needs to be provided.
15. Annexure E- Declaration ofRelationship with ANERT Employee need to be submitted as per the format provided in the Tender document.
16. Information regarding service centre should be provided as per the tender clause # 10.1.5, clause # 15.1, and annexure A point #9 (Declaration on setting up service centres in the desired districts within fifteen days of issue of LoA).

Any declaration , agreement etc submitted on stamp paper should be dated on or after the date of tender publishing.

Thanks and Regards,

TEAM PM-KUSUM

ANERT HQ

Dept. of Power, Govt .of Kerala .

Department of Power
Government of Kerala
ANERT
Agency for New and Renewable Energy
Research and Technology (ANERT)

Mail Delivery Subsystem <mailer-daemon@googlemail.com> Fri, Aug 9, 2024 at 3:15 PM
To: anertpmkusum@gmail.com

Address not found

Your message wasn't delivered to **projects@aadityainnovations.com** because the domain aadityainnovations.com couldn't be found. Check for typos or unnecessary spaces and try again.

LEARN MORE

The response was:

```
DNS Error: DNS type 'mx' lookup of aadityainnovations.com responded with code NXDOMAIN Domain name not found: aadityainnovations.com For more information, go to https://support.google.com/mail/?p=BadRcptDomain
```

Final-Recipient: rfc822; projects@aadityainnovations.com
Action: failed
Status: 5.1.2
Diagnostic-Code: smtp; DNS Error: DNS type 'mx' lookup of aadityainnovations.com responded with code NXDOMAIN
Domain name not found: aadityainnovations.com For more information, go to https://support.google.com/mail/?p=BadRcptDomain
Last-Attempt-Date: Fri, 09 Aug 2024 02:45:32 -0700 (PDT)

---------- Forwarded message ----------
From: ANERT PM KUSUM <anertpmkusum@gmail.com>

To: projects@aadityainnovations.com
Cc: Jayakumar R <jayakumar@anert.in>, info@aadithyainnovations.com
Bcc:
Date: Fri, 9 Aug 2024 15:15:04 +0530
Subject: ANERT-PMKUSUM- EoI of vendors under the Rate Contract for the Solarization of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos ranging from 2kW-150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala vide Ref no. ANERT-TECH/144/2022-T4 from M/s. AADITHYA INNOVATIONS.- Clarification reg
----- Message truncated -----

ANERT PM KUSUM <anertpmkusum@gmail.com> Fri, Aug 9, 2024 at 4:02 PM
To: projects@aadithyainnovations.com

[Quoted text hidden]
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[Quoted text hidden]

AADITHYA INNOVATIONS SOLAR <info@aadithyainnovations.com> Fri, Aug 16, 2024 at 6:08 PM
To: ANERT PM KUSUM <anertpmkusum@gmail.com>, projects@aadityainnovations.com
Cc: Jayakumar R <jayakumar@anert.in>

Good Evening Sir,

The given points been noted and all the documents are taken and a request for consideration is the unavailability of Stamp paper.

Kindly consider the same.Rest all documents are shared via mail shortly.

Thanks & Regards

Aadithya Innovations

9747984800

[Quoted text hidden]

Virus-free.www.avast.com

AADITHYA INNOVATIONS SOLAR <info@aadithyainnovations.com> Sat, Aug 17, 2024 at 3:27 PM
To: ANERT PM KUSUM <anertpmkusum@gmail.com>, projects@aadityainnovations.com
Cc: Jayakumar R <jayakumar@anert.in>

Sir/Madam,

Please find the attached documents.

Kindly let us know in case of clarifications required.

Thanks & Regards

Sunil Raj S

Project Manager

Aadithya Innovations

9745484800

9747984800

On 09-08-2024 15:15, ANERT PM KUSUM wrote:
[Quoted text hidden]

Virus-free.www.avast.com

FINAL DOC PM KUSUM_compressed.pdf
7321K

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info@aadithyainnovations.com <info@aadithyainnovations.com> Mon, Aug 19, 2024 at 11:05 AM
To: anertpmkusum@gmail.com

[Quoted text hidden]

AADITHYA INNOVATIONS SOLAR <projects@aadithyainnovations.com> Fri, Sep 13, 2024 at 1:09 PM
To: ANERT PM KUSUM <anertpmkusum@gmail.com>, info@aadithyaainnovations.com

Sir,

Annexure -B(JV) will be submitted within 10 days.

Thanks & Regards

AADITHYA INNOVATIONS

[Quoted text hidden]

2 attachments

ANERT WO._.pdf
5663K

MNRE AND CR_.pdf
9556K

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projects@aadithyainnovations.com <projects@aadithyainnovations.com> Fri, Sep 13, 2024 at 1:22 PM
To: ANERT PM KUSUM <anertpmkusum@gmail.com>, info@aadithyaainnovations.com

Sir,

As per the requirement the JV which we submitted previously was out dated so we are going through the process for the new one.
Once we receive the same, will submit.
We are expecting the JV with in 7 to 10 days.
We will make sure it's submitted with in the time.

Thanks & Regards
Anand KS
Projects
9747984800
Aadithya Innovations
[Quoted text hidden]

---

projects@aadithyainnovations.com <projects@aadithyainnovations.com> Wed, Sep 18, 2024 at 11:53 AM
To: ANERT PM KUSUM <anertpmkusum@gmail.com>, info@aadithyaainnovations.com

Sir,

Please find the attached MOU for PM KUSUM.

Please revert if require any further clarifications.

Regards
Anand KS
Projects
Aadithya Innovations

On 13-Sept-2024 13:09, AADITHYA INNOVATIONS SOLAR <projects@aadithyainnovations.com> wrote:
[Quoted text hidden]

---

projects@aadithyainnovations.com <projects@aadithyainnovations.com> Wed, Sep 18, 2024 at 1:19 PM
To: ANERT PM KUSUM <anertpmkusum@gmail.com>, info@aadithyaainnovations.com

[Quoted text hidden]

MOU SOVA Adithya Innovation.pdf
15897K

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projects@aadithyainnovations.com <projects@aadithyainnovations.com> Wed, Sep 18, 2024 at 4:12 PM
To: ANERT PM KUSUM <anertpmkusum@gmail.com>, info@aadithyaainnovations.com

Sir,

Please find the attached JV document.

Thanks
Anand KS
9747984800
Projects
Aadithya Innovations
[Quoted text hidden]

JV DOCS SOVA ADITHYA Innovation SIGNED.pdf
1049K

Gmail **ANERT PM KUSUM <anertpmkusum@gmail.com>**

Submission of ICRA Certificate Renewal Details

1 message

COOPA Energy <coopaenergy@gmail.com> Wed, Sep 18, 2024 at 11:53 AM
To: ANERT PM KUSUM <anertpmkusum@gmail.com>, ANJU SIJANTH <anjusijanth@gmail.com>

Sir,

I am writing to inform you that Coopa Energy is participating in the tender process. However, our ICRA grading certificate is currently under renewal. We expect the renewal to be completed soon, and we will submit the new certificate within 15 days.

In the meantime, we have attached the old ICRA certificate and the new payment details for the renewal. We kindly request your cooperation and support during the tender process.

--

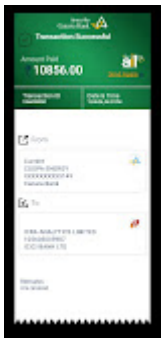
Thanks and Regards,

Anju Sijanth

COOPA ENERGY

Malappuram.

2 attachments



Payment Deteils.jpg
39K

ICRA Analytics_Grading Letter to Coopa Energy (1).pdf
567K

Gmail ANERT PM KUSUM <anertpmkusum@gmail.com>

ANERT-PMKUSUM- EoI of vendors under the Rate Contract for the Solarization of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos ranging from 2kW-150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala vide Ref no. ANERT-TECH/144/2022-T4-Clarification from M/s. POM SYSTEMS & SERVICES PVT LTD-reg

3 messages

ANERT PM KUSUM <anertpmkusum@gmail.com> Fri, Aug 9, 2024 at 3:01 PM
To: gm@pompower.in, pompower@pompower.in
Cc: Jayakumar R <jayakumar@anert.in>

Sir,
While evaluating the technical bid you submitted against the tender mentioned above, we are seeking some clarifications on the points given below. Your reply should reach us by e-mail on or before 17th August 2024, 4 pm.

1. Power of Attorney in favour of authorized signatory in Rs. 200 /- stamp Paper (Format B) needs to be submitted.
2. If Power of Attorney in favour of authorized signatory or self-declaration in case of proprietorship needs to be submitted.
3. Declaration by JV partner /Sole bidder on Manufacturing of Solar Panels need s to be submitted.
4. Need to produce Copy of Work order and completion certificate to prove eligibility of 3 MW / 500kW installation experience to meet qualification criteria (Refer Table 10.2-1.5 of Tender Document). For 775nos 5hp solar pumps only completion certificate is provided. need to produce a work order for the same.
5. Undertaking for Non-blacklisting as per format A for both theJV partners on Rs.200/- non-Judicial Stamp paper.
6. Need to declare whether the Panel & cell are indigenously manufactured (DCR Content) or not and from the ALMM list.
7. Need a Declaration from lead bidder to provide DCR- indigenously manufactured Inverter with IS1621, IS16169 certification.
8. Bill of material for all components as per format provided in the tender needs to be provided.
9. Need to produce copy of Kerala GST registration as per tender document 10.2 Sl no.1.3

--
Thanks and Regards,

TEAM PM-KUSUM

ANERT HQ

Dept. of Power, Govt .of Kerala .

Department of Power
Government of Kerala
ANERT

Agency for New and Renewable Energy
Research and Technology (ANERT)

POM TVPM <nicheesh@pompower.in> Sat, Aug 17, 2024 at 2:41 PM
To: anertpmkusum@gmail.com
Cc: GM Pompower <gm@pompower.in>, jayakumar@anert.in

Dear sir,

Please find the attached documents. We are in the process of finalizing balance documents and ensuring all necessary details are accurately included.

We understand the importance of these documents and are working diligently to complete them. We anticipate that they will be ready to send soon.

Regards

Nicheesh

On Fri, Aug 9, 2024 at 4:26 PM GM Pompower <gm@pompower.in> wrote:

> DO THE NEEDFUL.
>
> Begin forwarded message:
> [Quoted text hidden]

5 attachments

BOM.pdf
153K

1.pdf
5659K

6.pdf
6796K

4.pdf
10845K

AA320824015148GR16082024.pdf
93K

POM TVPM <nicheesh@pompower.in> Sat, Aug 24, 2024 at 12:20 PM
To: anertpmkusum@gmail.com
Cc: GM Pompower <gm@pompower.in>, jayakumar@anert.in

Dear Sir,

Please find the attached documents

Regards

Nicheesh
9035032567
[Quoted text hidden]

7 attachments

NO BLACKSTING CERT PAHAL SOLAR.PDF
405K

POA & MOU.pdf
3407K

Non -Blacklisting.pdf
247K

Declaration For Make In India.pdf
251K

Manufacturing Authorisation.pdf
366K

letter of authorised signatory pahal.pdf
533K

GTP (Bifacial) Merged.pdf
4498K

Gmail ANERT PM KUSUM <anertpmkusum@gmail.com>

ANERT-PMKUSUM- EoI of vendors under the Rate Contract for the Solarization of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos ranging from 2kW-150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala vide Ref no. ANERT-TECH/144/2022-T4 from M/s. Maxgreen infrastucture and renewables Pvt. Ltd. -Clarification

2 messages

ANERT PM KUSUM <anertpmkusum@gmail.com> Fri, Aug 9, 2024 at 3:08 PM
To: md@maxgreeninfra.com
Cc: Jayakumar R <jayakumar@anert.in>

Sir,
While evaluating the technical bid you submitted against the tender mentioned above, we are seeking some clarifications on the points given below. Your reply should reach us by e-mail on or before 17th August 2024, 4 pm.

1. Power of Attorney in favour of authorized signatory in Rs. 200 /- stamp Paper (Format B) needs to be submitted.
2. Declaration by JV partner /Sole bidder on Manufacturing of Solar Panels needs to be submitted.
3. Need to produce Copy of corresponding completion certificate to prove eligibility of 3 MW / 500kWinstallation experience to meet qualification criteria (Refer Table 10.2-1.5 of Tender Document).
4. Need to declare that the Panel & cell are indigenously manufactured (DCR Content) and from ALMM list.
5. Need a Declaration from lead bidder to provide indigenously made DCR content inverter with IS1621, IS16169 certification.
6. Guaranteed Technical Parameters Annexure G (GTP) as per format provided in the tender needs to be provided.
7. Bill of material as per format provided in the tender needs to be provided.
8. Test certificates indigenously made DCR content inverter and panels as per (GTP) needs to be provided.
9. Data sheet for indigenously made DCR content inverter and panels as per GTP needs to be provided.
10. Information regarding service centres should be provided as per the tender clause # 10.1.5, clause # 15.1, and annexure A point #9 (Declaration on setting up service centres in the desired districts within fifteen days of issue of LoA).
11.ICRA grading certificate need to be submitted to qualify the bid as per tender clause # 10.1.4 & 44.iii

Thanks and Regards,

TEAM PM-KUSUM

ANERT HQ

Dept. of Power, Govt .of Kerala .

Department of Power
Government of Kerala
ANERT

Agency for New and Renewable Energy
Research and Technology (ANERT)

---

info@maxgreeninfra.com <info@maxgreeninfra.com> Sat, Aug 17, 2024 at 2:32 PM
To: ANERT PM KUSUM <anertpmkusum@gmail.com>, "Cc: Jayakumar R" <jayakumar@anert.in>, Md <md@maxgreeninfra.com>, Admin <admin@maxgreeninfra.com>

Dear sir,

we hereby attaching the shortfall documents as you requested on 09th August 2024.

Thanks and Regards

Sreekumar

-------- Original Message --------

Subject: Fwd: ANERT-PMKUSUM- EoI of vendors under the Rate Contract for the Solarization of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos ranging from 2kW-150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala vide Ref no. ANERT-TECH/144/2022-T4 from M/s. Maxgreen infrastucture and renewables Pvt. Ltd. -Clarification
Date: 2024-08-13 14:36
From: md@maxgreeninfra.com
To: Info <info@maxgreeninfra.com>, Admin <admin@maxgreeninfra.com>

Subject: ANERT-PMKUSUM- EoI of vendors under the Rate Contract for the Solarization of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos ranging from 2kW-150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala vide Ref no. ANERT-TECH/144/2022-T4 from M/s. Maxgreen infrastucture and renewables Pvt. Ltd. -Clarification
Date: 2024-08-09 15:08
From: ANERT PM KUSUM <anertpmkusum@gmail.com>
To: md@maxgreeninfra.com
Cc: Jayakumar R <jayakumar@anert.in>
[Quoted text hidden]

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shortfalldoc.pdf
18514K

Gmail ANERT PM KUSUM <anertpmkusum@gmail.com>

ANERT -PMKUSUM-EoI of vendors under the Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos ranging from 2kW-150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala vide Ref no. ANERT-TECH/144/2022-T4-.Clarification from M/s. USHA ELECTRONICS SYSTEMS- reg

2 messages

ANERT PM KUSUM <anertpmkusum@gmail.com> Thu, Aug 8, 2024 at 4:52 PM
To: pradeep payyazhi <pradeepues101@gmail.com>, purchase@ushaelectronicssystems.com
Cc: Jayakumar R <jayakumar@anert.in>

Sir,
While evaluating the technical bid you submitted against the tender mentioned above, we are seeking some clarifications on the points given below . Your reply should reach us by e-mail on or before 17th August 2024, 4 pm.

1. Need to produce a copy of Registration/Incorporation Certificate as per table 10.2
2. Scanned copy of Tender Document Signed and Sealed needs to be submitted.
3. Bill of material as per format provided in the tender needs to be provided.
4. Summary of Bid Qualification Requirement- Annexure A needs to be signed and sealed and submitted.
5. GTP (Annexure G) is not as per the format provided in the tender document. RMS unit details not filled. EPC should submit a declaration to provide inverters with DCR content(indigenously manufactured) and with IS certification.
6. Test certificates for indigenously made DCR content inverter and panels as per (GTP) needs to be provided.
7. Data sheet for indigenously made DCR content inverter and panels as per GTP needs to be provided.

Thanks and Regards,

TEAM PM-KUSUM

ANERT HQ

Dept. of Power, Govt .of Kerala .

Department of Power
Government of Kerala
ANERT
Agency for New and Renewable Energy Research and Technology (ANERT)

Chief Technical Officer Usha Electronics Systems <consultancy@ushaelectronicssystems.com> Sat, Aug 17, 2024 at 3:56 PM
To: anertpmkusum@gmail.com
Cc: pradeep payyazhi <pradeepues101@gmail.com>, jayakumar@anert.in, Rajan KK <rajanues@gmail.com>, managing director <md@ushaelectronicssystems.com>

Dear Sir,

With respect to your trailing email we hereby send the required documents of PM Kusum (Component C) tender for your reference and perusal.

Please see the link below.

https://drive.google.com/drive/folders/14azfbOkfkiSz5JNBgDNg4wAKGI69_wWD?usp=drive_link

On Thu, Aug 8, 2024 at 5:28 PM pradeep payyazhi <pradeepues101@gmail.com> wrote:
[Quoted text hidden]

--

GRINSON GREGORY

Chief Technical Officer

(Chartered Engineer in Electrical Engineering Division under IEI)

Usha Electronics Systems

(An ISO 9001-2015 Company. ISO & BIS certified high quality/durable solar and other LED lighting Systems Manufactures. Government approved Solar Rooftop Project Providers under Government subsidy scheme)

Gmail ANERT PM KUSUM <anertpmkusum@gmail.com>

ANERT-PMKUSUM- EoI of vendors under the Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos ranging from 2kW-150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala vide Ref no. ANERT-TECH/144/2022-T4-Clarification from M/s. Softrays Power Solutions-reg

7 messages

ANERT PM KUSUM <anertpmkusum@gmail.com> Thu, Aug 8, 2024 at 5:09 PM
To: "softrayspowersolutions@gmail.com" <softrayspowersolutions@gmail.com>
Cc: Jayakumar R <jayakumar@anert.in>

Sir,
While evaluating the technical bid you submitted against the tender mentioned above, we are seeking some clarifications on the points given below. Your reply should reach us by e-mail on or before 17th August 2024, 4 pm.

1. Need to produce a copy of Registration/Incorporation Certificate as per table 10.2.
2. Power of Attorney in favour of authorized signatory in Rs. 200 /- stamp Paper (Format B) needs to be submitted.
3. Power of Attorney in favour of authorized signatory / self-declaration on authorized signatory in case of proprietorship need to be submitted.
4. Need to produce Copy of Work order and completion certificate to prove eligibility of 3 MW / 500kW installation experience to meet qualification criteria (Refer Table 10.2-1.5 of Tender Document). 222kw capacity work orders provided and 257kW completion certificate provided. For only 350kW Electrical Inspectorate approval submitted, no work order and commissioning certificate is provided.
5. Undertaking for Non-blacklisting as per format A for both the partners to be provided on a date after the date of publishing of the tender on Rs.200/- non-Judicial Stamp paper.
6. Need a Declaration from lead bidder to provide DCR Inverter with IS1621, IS16169 certification.
7. GTP (Annexure G) is not as per the format provided in the tender document. Inverter and RMS unit details not filled.
8. Test certificates for indigenously manufactured DCR content inverter and panels as per (GTP) needs to be provided.
9. Data sheet for indigenously manufactured DCR content inverter and panels as per GTP needs to be provided.
10. Information regarding service centres should be provided as per the tender clause # 10.1.5, clause # 15.1, and annexure A point #9(declaration needs to be provided in agreement paper).

Any document submitted in Agreement paper should be dated after the date of tender publishing .

--
Thanks and Regards,

TEAM PM-KUSUM

ANERT HQ

Dept. of Power, Govt .of Kerala .

Department of Power
Government of Kerala
ANERT
Agency for New and Renewable Energy
Research and Technology (ANERT)

Softrays Power Solutions <softrayspowersolutions@gmail.com> Fri, Aug 16, 2024 at 5:04 PM
To: ANERT PM KUSUM <anertpmkusum@gmail.com>
Cc: Jayakumar R <jayakumar@anert.in>

Dear Sir

We are enclosing the Documents herewith.
[Quoted text hidden]
--
Kind regards,
Lalprasad B

Softrays POWER SOLUTIONS

Authorised Distributor

Cummins Diesel Generators | JAKSON Solar Power | NUMERIC legrand UPS

HT & LT Electrical Consultants & Contractors
All HT Electrification • Genset - Solar - Transformer Installations • Panel Board Fabrication

Sangeetha Building, TC 13/1943(1),
Kannammoola, Medical College P.O, Trivandrum - 695011
+91 9387 803291, 8078 092440, +91 4712 550723, 4712 440723
info@softrays.in • www.softrays.in

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11 attachments

- **PROPRIETORY AFFIDAVIT.PDF** 354K
- **POWER OF ATTORNEY PAHAL.PDF** 767K
- **NON BLACK LISTING PAHAL & SOFTRAYS.pdf** 1082K
- **DCR DECALARATION FOR INVERTER.pdf** 955K
- **GTP PANELS.pdf** 7197K
- **GTP INVERTER.pdf** 3412K
- **PAHAL SOLAR DATASHEET 525-550 W.pdf** 1413K
- **PAHAL TEST CERTIFICATE.pdf** 2485K
- **INVERTER IEC CERTIFICATES.pdf** 638K
- **BIS CERTIFICATE INVERTER.pdf** 751K
- **Service Centre details.PDF** 361K

Softrays Power Solutions <softrayspowersolutions@gmail.com> Sat, Aug 17, 2024 at 1:56 PM
To: ANERT PM KUSUM <anertpmkusum@gmail.com>
Cc: Jayakumar R <jayakumar@anert.in>

Dear Sir

We require one more week time for submitting the work completion certificate.

With Regards

Softrays Power Solutions

[Quoted text hidden]

Softrays Power Solutions <softrayspowersolutions@gmail.com> Sat, Aug 24, 2024 at 1:56 PM
To: ANERT PM KUSUM <anertpmkusum@gmail.com>
Cc: Jayakumar R <jayakumar@anert.in>

Sir

Enclosing the Work completion Certificate and Joint Venture details of EPC Zivah International herewith.

WORK COMPLETION.pdf

[Quoted text hidden]

3 attachments

75 KWP Ratnagiri.jpeg
67K

Vision Exports.jpeg
60K

ZIVAH INTERNATIONAL JOINT VENTURE DETAILS.pdf
1180K

Softrays Power Solutions <softrayspowersolutions@gmail.com> Fri, Sep 13, 2024 at 12:24 PM
To: ANERT PM KUSUM <anertpmkusum@gmail.com>
Cc: Jayakumar R <jayakumar@anert.in>

Dear Sir,

The JV (Format B) between Softrays Power Solutions, Pahal Solar and Ziva International is under process and it will be submitted within a week. Please consider our request.

[Quoted text hidden]

Softrays Power Solutions <softrayspowersolutions@gmail.com> Thu, Sep 19, 2024 at 4:37 PM
To: ANERT PM KUSUM <anertpmkusum@gmail.com>
Cc: Jayakumar R <jayakumar@anert.in>

Dear Sir

Enclosing the pending documents herewith

1. Non blacklisting affidavit of Softrays
2. Combined POA.

[Quoted text hidden]

2 attachments

POA COMBINED.PDF
297K

SOFTRAYS NON BLACKLISTING AFFIDAVIT.PDF
231K

Softrays Power Solutions <softrayspowersolutions@gmail.com> Fri, Sep 20, 2024 at 6:23 PM
To: ANERT PM KUSUM <anertpmkusum@gmail.com>
Cc: Jayakumar R <jayakumar@anert.in>

Dear Sir,

We are enclosing the undertaking for the provision of service centers herewith.

[Quoted text hidden]

SERVICE CENTRE UNDERTAKING.PDF
190K

Tender Evaluation Sheet

Tender ID:ANERT-TECH/144/2022-T4

Tender name: -EoI for additional Empanelment of vendors under the Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW 150 kW under the PM KUSUM scheme (Component C) in the State of Kerala

Date of Opening : 25/07/2024

Sl No	Criteria/Bidder	Adithya	BSS	Coopa	Maxgreen	POM systems	Soft rays	Solgen	Usha
	Partner Manufacturer	**Sova Solar Ltd**	NOVASYS & PAHAL solar	**Pahal Solar**	**M/s. Sunbond Energy Pvt. Ltd.**	**M/s. Solar systems and M/s. PAHAL**	**M/s. Pahal solar and ZIVAH**	**M/s. SUNBOND energy Pvt.Ltd**	**PAHAL solar**
1	2	3	4	5	6	7	8	9	10
1	Copy of Registration/Incorporation Certificate/ copy of Deed of partnership	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	Copy of GST Registration certificate	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	Copy of Pan Card	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	Undertaking for Non-Black Listing in Rs.200/- stamp Paper Format-A	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	Letter of support/ Authorization from manufacturere of solar PV modules/ Solar Pumps	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	The bidder must have completed solar installations of at least 3 MW in India to be eligible for projects above 10 KW. In case of JV, all the members jointly may fulfil this requirement and submit the documents as per the Tender document. The bidder must have completed solar installations of at least 500kW in India to be eligible for projects up to 10 KW In case of JV, all the members jointly must fulfil this requirement	708kW work order and 514kW completion certifiates provided	916.4kW work order and 597kW completion certifiates provided	564kW work order and 564kW completion certifiates provided	1.29 kW govt. work order and 4.6054MW private completion provided#	603kW workorder and 3.8MWcompletion certificate	587kW work order and completion certifiates provided	587kW work order and 587kW completion certifiates provided	863kW work order and 543kW completion certificaes
7	List of service centres /Declaration to provide service centre in Rs.200/- stamp paper	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8	ICRA Grading Certificate(Indicate Grade	3B	2B	**3B**	2C	2C	2C	2C	2C
9	Whether PV module is from ALMM approved by MNRE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
10	**Evaluation result**	Passed	Passed	Passed*	Passed	Passed	Passed	Passed	Passed

*Conditionally Passed. ICRA certificate is under renewal (3B -Previous). Have to produce Fresh ICRA within 30 days

Elegible for higher (greater than 10kW) capacity

AGENCY FOR NEW & RENEWABLE ENERGY RESEARCH AND TECHNOLOGY (ANERT)
Department of Power, Government of Kerala
Thiruvananthapuram, Kerala – 695 033;
www.anert.gov.in , projects@anert.in | anert033@gmail

E-TENDER DOCUMENT

EoI for additional Empanelment of vendors under the Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW - 150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala

Ref. No. ANERT-TECH/144/2022-T4

Date of Publishing of Bids : - 24/06/2024

Last Date of Submission of Bids : - 18/07/2024

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E-TENDER NOTICE

Competitive e-tenders in two cover system with Earnest Money Deposit (EMD) ~~and Price Bid~~ in accordance with the ANERT approved technical specifications are invited from ***Manufacturers of Solar PV Modules OR Joint Venture of SPV Module Manufacturer & EPC contractor for the EoI for additional Empanelment of vendors under the Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW - 150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala***. The e-tender documents can be downloaded from the e-tendering website of Govt. of Kerala. Tender form will not be available in any other form.

Thiruvananthapuram Sd/-

24/06/2024 CEO

USHA ELECTRONICS SYSTEMS PALAKKAD 679533 KOOTTANAD

TENDER ABSTRACT

Table A

Ref. No.	**ANERT-TECH/144/2022-T4**
Name of Work	**EoI for additional Empanelment of vendors under the Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW - 150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala**
Building Site and Requirements	**All over Kerala**
Download of Tender Form	http://www.etenders.kerala.gov.in
Last date of submission of Tender	**18/07/2024, 03.00 PM**
Date and Time of opening the Tender	**18/07/2024, 04.00 PM**
Cost of Tender form	**Rs. 17,700/- (Including GST)**
EMD	**Rs. 5,00,000/-**
Warranty period	7 years from the date of commissioning the system.
Location of Sites	More than 80% of sites are in Thrissur, Kasaragod, Malappuram, Palakkad, Ernakulum districts.
Availability of Tender Forms	Website http://www.etenders.kerala.gov.in
Place of opening of tender	Office of CEO, ANERT Law College Road, Vikas Bhavan. PO, Th Website http://www.etenders.kerala.gov.iniruvananthapuram – 695 033, Kerala
Contact Details for clarifications	Shri. Jayakumar R Nodal Officer PM- KUSUM Scheme, ANERT +91 9188119425; jayakumar@anert.in
Thiruvananthapuram 24/06/2024	Sd/- CEO

USHA ELECTRONICS SYSTEMS PALAKKAD 679533 KOOTTANAD

GENERAL TERMS AND CONDITIONS FOR E-PROCUREMENT

This e-Tender is being published for theEoI for additional Empanelment of vendors under the Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW - 150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala. The tender is invited in two cover system through e-procurement portal of Government of Kerala(www.etenders.kerala.gov.in). Prospective bidders willing to participate in this tender shall necessarily register themselves with above mentioned e-procurement portal.

The tender timeline is available in the critical date section of this tender published in www.etenders.kerala.gov.in

1. ONLINE BIDDER REGISTRATION PROCESS:

1.1 Bidders should have a Class III or above Digital Signature Certificate (DSC) to be procured from any Registration Authorities (RA) under the Certifying Agency of India. Details of RAs will be available on www.cca.gov.in. Once, the DSC is obtained, bidders have to register on www.etenders.kerala.gov.in website for participating in this tender. Website registration is a one-time process without any registration fees. However, bidders have to procure DSC at their own cost.

1.2 Bidders may contact e-Procurement support desk of Kerala State IT Mission over telephone at 0471- 2577088, 2577188, 2577388 or 0484 – 2336006, 2332262 - through email: helpetender@gmail.com/etendershelp@kerala.gov.in for assistance in this regard

2. ONLINE TENDER PROCESS:

The tender process shall consist of the following stages:

i. Downloading of tender document: Tender document will be available for free download on www.etenders.kerala.gov.in. However, tender document fees shall be payable at the time of bid submission as stipulated in this tender document.

ii. Pre-bid meeting: (not applicable).

iii. Publishing of Corrigendum: All corrigenda shall be published on www.etenders.kerala.gov.in and shall not be available elsewhere.

iv. Bid submission: Bidders have to submit their bids along with supporting documents to support their eligibility, as required in this tender document on www.etenders.kerala.gov.in. No manual submission of bid is allowed and manual bids shall not be accepted under any circumstances.

v. In case bidder encounters any technical issues pertaining to e-Procurement system while acting on the tender, computer screen shot of the error message with date & time stamp on the web-browser along with the query shall be e-mailed by the bidder to the help desk **(helpetender@gmail.com/ etendershelp@kerala.gov.in)**, for resolution of the problem. At the same time, problem must be intimated to the concerned Tender Inviting Authority via email.

vi. The time taken to ascertain, evaluate and suggest a solution for the problem reported by bidder may vary from case to case. Hence bidders are advised to submit the bid **at least 2 working days before the due date** and time of bid submission to avoid any last-minute issues that may come up.

vii. Opening of Bid and Bidder short-listing: The single cover bids will be opened, evaluated and shortlisted as per the eligibility. Failure to submit the required documents online will attract disqualification. ~~Price bids of the eligible bidder's will open the same day of opening and the work will be awarded.~~

3. DOCUMENTS COMPRISING BID:

3.1 (a) The First Stage - Part-I Pre- Qualification cum Technical Bid with Commercial terms ~~without Price Bid~~

Technical proposal shall contain the scanned copies of the following documents which every bidder has to upload:

Envelop -1 shall contain, Part-I (this document in PDF form)/scanned copies as below order along with the checklist provided

File No	Name of the file	Documents to up uploaded

File No	Name of the file	Documents to up uploaded
1	Pre bid agreement and signed tender doc	1. ANNEXURE B-Agreement on stamp paper worth Rs.200/- 2. Signed and sealed tender document along with corrigendum 3. Exemption document in case of EMD and Tender fee exemption /Proof of Online payment of EMD and Tender fees/In case of EMD paid as BG, Format Hto be submitted
2	PQ Documents	1. A Joint venture Agreement clearly mentioning the name of the lead bidder, in case the bid is submitted by an EPC contractor / vendor in Rs. 200 Stamp paper 2. Copy of work order and corresponding completion certificate for meeting eligibility criteria (Document should be submitted as Work order along with its own completion certificate for each project)
3	Technical Documents	1. ANNEXURE G–Guaranteed Technical Parameters 2. Bill of material 3. Data sheet 4. Test certificates 5. ICRA Solar Grading Certificate
4	Annexures and format	1. Copy of Registration Certificate of firm 1 2. In case of JV, Copy of Registration Certificate of firm 2 3. Copy of GST Certificate of firm 1 4. In case of JV, Copy of GST of firm 2 5. Copy of PAN card of bidder/TAN of firm 1 6. Copy of PAN card of bidder/TAN of firm 2 7. Proof and declaration regarding manufacturing of solar panel 8. Under taking by the manufacturer to supply DCR solar panel as per tender. 9. Under taking by the bidder to supply indigenously manufactured solar on grid Inverter with IS certifications.

File No	Name of the file	Documents to up uploaded
		10. ANNEXURE A– Summary of Bid Qualification Requirement. 11. ANNEXURE C– Declaration by the bidder 12. ANNEXURE D– Declaration on subsidy claim 13. ANNEXURE E–Declaration of relationship with ANERT employee 14. FORMAT A– Undertaking for no blacklisting and no banning (To be provided on Rs.200 Non-Judicial Stamp paper. In Case of JV the same to be provided by Each Member of the Joint Venture shall submit the same) 15. FORMAT B – Power of attorney in favor of authorized signatory (In case bidder is JV). If it is not applicable, need to submit self-declaration on authorized signatory. 16. Undertaking by the agency regarding service centre to be provided on Rs.200 Non-Judicial Stamp paper else details of service center as per tender. 17. Any other document which is relevant to this tender shall be included here.

Note: In case of JV, Firm 1 will be the lead member and Firm 2 will be the second partner. In case of the bidder being both EPC and Manufacturer, documents shall be submitted accordingly.

3.1 (b) ~~The Second Stage (Financial Cover as per two cover system):~~

~~**Envelop -2:** shall contain the Price Schedule as per BOQ in Excel format for this tender to be downloaded from e-tender website, duly digitally signed by the tenderer/authorized signatory of the tender.~~

3.2 The department doesn't take any responsibility for any technical snag or failure that has taken place during document upload.

3.3 ~~The Bidder shall complete the Price bid as per format given for download along with this tender~~.

~~Note: The blank price bid should be downloaded and saved on bidder's computer without changing file-name otherwise price bid will not get uploaded. The bidder should fill in the details in the same file and upload the same back to the website.~~

~~3.4 Fixed price: Prices quoted by the Bidder shall be fixed during the bidder's performance of the contract and not subject to variation on any account. A bid submitted with an adjustable/ variable price quotation will be treated as non - responsive and rejected.~~

4. TENDER DOCUMENT FEES AND EARNEST MONEY DEPOSIT (EMD)

4.1 The Bidder shall pay, a Tender document fee of Rs.15,000/- and Earnest Money Deposit or Bid Security of Rs.5,00,000/-. The Bid security is required to protect the purchaser against risk of Bidder's conduct, which would warrant the forfeiture of security.

4.2 Online Payment modes: The tender document fees can be paid in through e-Payment facility provided by the e-Procurement system. Bidders can make payment only via Internet banking facility. EMD is to be paid as FD/Bank Guarantee/Online Payment Mode.

State Bank of India Multi Option Payment System (SBI MOPS Gateway): Bidders are required to avail Internet Banking Facility in any of below banks for making tender remittances in e Procurement System.

Table 4.2

A) Internet Banking Options (Retail)			
1	Allahabad Bank	32	Kotak Mahindra Bank
2	Axis Bank	33	Lakshmi Vilas Bank
3	Andhra Bank	34	Mehsana Urban Co-op Bank
4	Bandan Bank	35	NKGSB Co-operative Bank
5	Bank of Bahrain and Kuwait	36	Oriental Bank of Commerce
6	Bank of Baroda	37	Punjab and Maharashtra Cooperative Bank
7	Bank of India	38	Punjab National Bank

8	Bank of Maharashtra	39	Punjab and Sind Bank
9	Bassein Catholic Co-operative Bank	40	RBL Bank
10	BNP Paribas	41	Saraswat Cooperative Bank
11	Canara Bank	42	ShamraoVithal Cooperative Bank
12	Catholic Syrian Bank	43	South Indian Bank
13	Central Bank of India	44	Standard Chartered Bank
14	City Union Bank	45	State Bank of India
15	Corporation Bank	46	Syndicate Bank
16	Cosmos Bank	47	Tamilnad Mercantile Bank
17	DCB Bank	48	Tamilnadu Cooperative Bank
18	Dena Bank	49	The Kalyan Janata Sahakari Bank
19	Deutsche Bank	50	TJSB Bank
20	Dhanalaxmi Bank	51	UCO Bank
21	Federal Bank	52	Union Bank of India
22	HDFC Bank	53	United Bank of India
23	ICICI Bank	54	Vijaya Bank
24	IDBI Bank	55	YES Bank
25	Indian Bank		
26	Indian Overseas Bank		
27	IndusInd Bank		
28	Jammu & Kashmir Bank		
29	Janata Sahakari Bank		
30	Karnataka Bank		
31	Karur Vysya Bank		
B) Internet Banking Options (Corporate)			
1	Bank of Baroda	21	Laxmi Vilas Bank
2	Bank of India	22	Oriental Bank of Commerce
3	Bank of Maharashtra	23	Punjab & Maharashtra Coop Bank
4	BNP Paribas	24	Punjab & Sind Bank
5	Canara Bank	25	Punjab National Bank
6	Catholic Syrian Bank	26	RBL Bank

7	City Union Bank	27	ShamraoVitthal Co-operative Bank
8	Corporation Bank	28	South Indian Bank
9	Cosmos Bank	29	State Bank of India
10	Deutsche Bank	30	Syndicate Bank
11	Development Credit Bank	31	UCO Bank
12	Dhanalaxmi Bank	32	Union Bank of India
13	Federal Bank	33	UPPCL
14	HDFC Bank	34	Vijaya Bank
15	ICICI Bank	35	Axis Bank
16	Indian Overseas Bank		
17	Janta Sahakari Bank		
18	Jammu & Kashmir Bank		
19	Karur Vysya Bank		
20	Kotak Bank		

During the online bid submission process, bidder shall select ***SBI MOPS*** option and submit the page, to view the ***Terms and Conditions*** page. On further submitting the same, the e-Procurement system will re-direct the bidder to MOPS Gateway, where two options namely ***SBI*** and ***Other Banks***** will be shown. Here, Bidder may proceed as per below:

a) *SBI Account Holders*shall click ***SBI*** option to with its Net Banking Facility., where bidder can enter their internet banking credentials and transfer the Tender Fee and EMD amount.

b) *Other Bank Account Holders* may click ***Other Banks*** optionto view the bank selection page. Here, bidders can select from any of the 54 Banks to proceed with its Net Banking Facility, for remitting tender payments.

**Transaction Charges for Other Banks vide SBI Letter No. LHO/TVM/AC/2016-17/47 – 1% of transaction value subject to a minimum of Rs. 50/- and maximum of Rs. 150/-*

** Bidders who are using Other Banks option under SBI MOPS Payment Gateway, are advised by SBI to make online payment 72 hours in advance before tender closing time.*

5. SUBMISSION PROCESS:

5.1 For submission of bids, all interested bidders have to register online as explained above in this document. After registration, bidders shall submit their Technical bid and ~~financial bid~~ online on www.etenders.kerala.gov.in along with online payment of tender document fees and EMD.

5.2 For page-by-page instructions on bid submission process, please visit www.etenders.kerala.gov.in and click "Bidders Manual Kit" link on the home page.

5.3 It is necessary to click on "Freeze bid" link/ icon to complete the process of bid submission otherwise the bid will not get submitted online and the same shall not be available for viewing/ opening during bid opening process.

6. VALIDITY

6.1 The tender offer shall be kept valid for acceptance for a period of 6months from the date of opening of offers. The offers with lower validity period are liable for rejection.

6.2 Further, the tenderer may extend the validity of the Bids without altering the substance and prices of their Bid for further periods, if so required

7. DEVIATIONS

7.1 The offers of the Tenderers with Deviations in Commercial terms and Technical Terms of the Tender Document are liable for rejection.

8. BLACK LIST

8.1 All the intending tenderers shall agree that in the event of the documents furnished with the offer being found to be bogus or the documents contain

false particulars, they shall be black listed for future tenders/ association with ANERT and EMD shall be forfeited against any losses incurred by ANERT

9. BIDDER'S LOCATION

9.1 The tenderers are requested to furnish the exact location of their factories/go down with detailed postal address and pin code, telephone n sand email id. etc. In their tenders to arrange inspection by ANERT, if considered necessary.

9.2 All communication shall be made to the registered email of the bidder in the e-tendering systems and ANERT shall not be responsible for non-receipt or delay of any such communication.

10. BID QUALIFICATION REQUIREMENTS

10.1 General Requirements

10.1.1 Every tenderer should submit along with his e-tender an Earnest Money Deposit (EMD). This may be done electronically from any of the Nationalized/Schedule Banks. The EMD of the disqualified tenderers will be returned automatically through e-procurement system. The EMD of the successful tenderers may be adjusted towards the security deposit. No interest shall be paid for the earnest money deposited.

10.1.2 An agreement in Rs.200/- Stamp Paper as per the format given in Annexure B must be submitted along with e-tender document.

10.1.3 **As per the guidelines of PM-KUSUM, only Manufacturers of PV Modules OR manufactures of Solar pumps OR a Joint Venture of an EPC with a Manufacturer of Solar Module are eligible to undertake works under the scheme.**

10.1.4 The bidder / Lead bidder should have a Solar Grading certificate issued by M/s ICRA Analytics and this will be considered as Pre-Qualification criteria for the tender

10.1.5 The bidder should have service centres/authorised service providers in all districts of Kerala. Detailed list with address, contact details and proof has to be submitted. If the bidder does not have such facility at the time of tendering, an undertaking should be submitted along with the tender on Stamp paper worth Rs. 200/-agreeing to set up such facility and intimate the same within 15 days of letter of intent.

10.1.6 ~~Price Bid in excel format, for this tender to be downloaded from e-tender website, duly digitally signed by the tenderer/authorized signatory of the tender~~.

10.2 Eligibility Requirement

USHA ELECTRONICS SYSTEMS PALAKKAD 679533 KOOTTANAD

10.2.1 The detail of eligibility requirements is provided in the table below. The bidders are required to furnish the required supporting documents along with the Technical Bid.

Table 10.2

S. No.	Criteria	Documents Required
1.1.	Bidder can be sole/ single bidder OR, Joint Venture (JV) of up to 2 (two) members, with one of the members as a Lead Member	In case of JV, Deed of Undertaking
1.2.	The Bidder should have any of the following legal status: a) Body incorporated in India under the Companies Act, 2013 including any amendment thereto, OR b) Body incorporated in India under the Limited Liability Partnership (LLP) Act, 2008 including any amendment thereto, OR c) Firm registered under Partnership Act, 1932 in India, OR d) Sole Proprietor In case of JV, all the members must fulfil this requirement and submit the documents as per the Tender Document.	a) In case of Company – Copy of Registration/Incorporation Certificate b) In case of LLP – Copy of Deed of Partnership c) In case of Partnership – Copy of Deed of Partnership d) In case of Sole Proprietor – Duly notarized Undertaking from Sole proprietor
1.3.	The Bidder must have the required GST Registration in **Kerala** In case of JV, all the members must fulfil this requirement.	Copy of GST registration certificate with legible GSTIN.
1.4.	The Bidder must have valid PAN Number In case of JV, all the members must fulfil this requirement.	Copy of Pan Card
1.5.	The bidder must have completed solar installations of at least 500kW in India to be eligible for projects up to 10 kW and for capacity above 10kW they must have completed solar installations of at least 3 MW In case of JV, all the members jointly must fulfil this requirement and submit the documents as per the Tender document.	Copy of work order and completion certificate.

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1.6.	The bidder should be having unblemished record and must not be blacklisted or declared ineligible for corrupt & fraudulent practices by "any state/ central government" department/ company / entity" as on date of bid opening. In case of JV, all the members must fulfil this requirement.	The bidder shall provide an Undertaking as per the format provided as Format A. In case of JV, all the members must submit the undertaking as per the format provided in Format A.
1.7.	The bidder must submit a Power of Attorney (POA) authorizing a person to sign the documents on behalf of the Bidder, submit technical, commercial information and attend meetings on behalf of the Bidder.	Sole Bidder to provide POA in the format as per the applicable Law. In case of JV, Agreement by JV as per the clause # 11.23. and POA as per the format provided in Format B.

11. GENERAL CONDITIONS

11.1 The tenders should be submitted online at www.etenders.kerala.gov.in

11.2 The tenders should be as per the prescribed form which should be downloaded from the e-tender website. The cost of tender forms should be paid online, and once paid will not be refunded. Tender forms are not transferable. Tenders that are not in the prescribed form are liable to be rejected.

11.3 Intending tenderers should submit their tenders on or before the due date and time mentioned in the tender abstract. Late tender will not be accepted.

11.4 The rates quoted should be only in Indian currency. Tenders in any other currency are liable to rejection. The rates quoted should be for the unit specified in the schedule attached.

11.5 The tenderer shall submit a copy of PAN card of the authorised signatory along with tender.

11.6 Tenders subject to conditions will not be considered. They are liable to be rejected on that sole ground.

11.7 The tenders will be opened on the specified day and time in the office of the CEO, ANERT in the presence of such of those tenderer's representatives who may be present with proper authorisation issued by the tenderer.

11.8 Every tenderer should send along with his tender an Earnest Money Deposit. This may be paid online at the e-tenders website.

11.9 If any tenderer withdraws from his e-tender before the expiry of the period fixed for keeping the rates firm for acceptance, the earnest money if any, deposited by him, will be forfeited.

11.10 The final acceptance/rejection of the tenders rests entirely with CEO, ANERT who do not bind themselves to accept the lowest or any tender.

11.11 In the case of materials of technical nature, the successful tenderer should be prepared to guarantee satisfactory performance for a period of guarantee under a definite penalty. Communication of acceptance of the e-tender normally constitutes a concluded contract. Nevertheless, the successful tenderer shall also

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execute an agreement for the due fulfilment of the contract within the period to be specified in the letter of acceptance. The contractor shall have to pay all stamp duty, Lawyer's charges and other expenses incidental to the execution of the agreement. Failure to execute the agreement within the period specified will entail the penalties set out below:

a. The successful tenderer shall before sign the agreement and within the period specified in the letter of acceptance of his tender, deposit a sum equivalent to 3% of the value of the contract as security for the satisfactory fulfilment of the contract less the amount of money deposited by him along with his tender. Bidders having a MSME / NSIC / Udhyog Aadhar registration are exempted from paying Tender Fee and requisite EMD. In case of joint venture, all the bidders should meet these criteria. The format of Bank Guarantee for EMD as mentioned in the tender document is attached as annexure – H. If the successful tenderer fails to deposit the security and execute the agreement as stated above, the earnest money deposited by him will be forfeited to ANERT and contract arranged elsewhere at the defaulter's risk and any loss incurred by ANERT on account of the purchase will be recovered from the defaulter who will however not be entitled to any gain accruing thereby.
b. In cases where a successful tenderer, after having made partial supplies fails to fulfil the contracts in full, all or any of the materials not supplied may at the discretion of the Purchasing Officer be purchased by means of another tender/quotation or by negotiation or from the next higher tenderer who had offered to supply already, and the loss if any caused to ANERT shall thereby together with such sums as may be fixed by ANERT towards damages be recovered from the defaulting tenderer.
c. If the contractor fails to deliver all or any of the stores or perform the service within the time/period(s) specified in the contract, the purchaser shall without prejudice to its other remedies under the contract, deduct from the contract prices, as liquidated damages, a sum equivalent to 0.5 % of the delivered price of the delayed stores or unperformed services for each week of delay until actual delivery or performance, up to a maximum

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deduction of 10% of the contract price of the delayed stores and services. Once the maximum is reached, the purchaser may consider termination of the contract at the risk and cost of the contractor.

11.12 The Security deposit shall, subject to the conditions specified herein be returned to the contractor within three months after the expiration of the contract but in the event of any dispute arising between ANERT and the contractor, ANERT shall be entitled to deduct out of the deposits or the balance thereof, until such dispute is determined the amount of such damages, costs, charges and expenses as may be claimed. The same may also be deducted from any other sum which may be due at any time from ANERT to the contractor. In all cases where there are guarantee for the goods supplied, the security deposit will be released only after the expiry of the guarantee period.

(a) All payments to the contractors will be made in due course via NEFT only

(b) All incidental expenses incurred by ANERT for making payments outside the State in which the claim arises shall be borne by the contractor.

11.13 Payments will be made only after the supply, Installation and Commissioning of the items and certification by the competent technical personnel of ANERT.

11.14 The contractor shall not assign or make over the contract on the benefits or burdens thereof to any other person or body corporate. The contractor shall not underlet or sublet to any person or persons or body corporate the execution of the contract or any part thereof without the consent in writing of the purchasing officer who shall have absolute power to refuse such consent or to rescind such consent (if given) at any time if he is not satisfied with the manner in which the contract is being executed and no allowance or compensation shall be made to the contractor or the subcontractor upon such rescission. Provided always that if such consent be given at any time, the contractor shall not be relieved from any obligation, duty or responsibility under this contract.

11.15 In case the contractor becomes insolvent or goes into liquidation, or makes or proposes to make any assignment for the benefit of his creditors or proposes any composition with his creditors for the settlement of his debts, carries on his business or the contract under inspection or behalf of or his creditors or in case any receiving order(s) for the administration of his estate are made against him

or in case the contractor shall commit any act of insolvency or in case in which under any clause or clauses any act of insolvency or in case in which under any clause(s) of this contract the contractor shall have rendered himself liable to damages amounting to the whole of his security deposits, the contract shall, thereupon, after notice given by the Purchasing Officer to the contractor, be determined and ANERT may complete the contract in such time and manner and by such persons as ANERT shall think fit. But such determination of the contract shall be without any prejudice to any right or remedy of ANERT against the contractor or his sureties in respect of any breach of contract committed by the contractor. All expenses and damages caused to ANERT by any breach of contract by the contractor shall be paid by the contractor to ANERT and may be recovered from him under the provisions of the Revenue Recovery Act in force in the State.

11.16 In case the contractor fails to supply and deliver any of the said articles and things within the time provided for delivery of the same, or in case the contractor commits any breach of any of the covenants, stipulations and agreements herein contained, and on his part to be observed and performed, then and in any such case, it shall be lawful for ANERT (if they shall think fit to do so) to arrange for the purchase of the said articles and things from elsewhere of on behalf of ANERT by an order in writing under *the* hand of the CEO put an end to this contract and in case ANERT shall have incurred sustained or been put to any costs, damages or expenses by reason of such purchase or by reason of this contract having been so put an end to or in case any difference in price, compensation, loss, costs, damages, expenses or other moneys shall then or any time during the continuance of this contract be payable by the contractor to ANERT under and by virtue of this contract, it shall be lawful for ANERT from and out of any moneys for the time being payable or owing to the contractor from ANERT under or by virtue of this contract or otherwise to pay and reimburse to ANERT all such costs, damages and expenses they may have sustained, incurred or been put to by reason of the purchase made elsewhere or by reason of this contract having been so put an end to as aforesaid and also all

such difference in price, compensation, loss, costs, damages, expenses and other moneys as shall for the time being payable by the contractor aforesaid.

11.17 Any sum of money due and payable to the contractor (including security deposit returnable to him) under this contract may be appropriated by the CEO or any other person authorised by ANERT and set off against any claim of ANERT for the payment of a sum of money arising out of or under any other contract made by the contractor with ANERT or any other person authorised by ANERT. Any sum of money due and payable to the successful tenderer or contractor from ANERT shall be adjusted against any sum of money due to ANERT from him under any other contracts.

11.18 Every notice hereby required or authorised to be given may be either given to the contractor personally or left at his residence or last known place of abode or business, or may be handed over to his agent personally, or may be addressed to the contractor by post at his usual or last known place of abode or business and if so addressed and posted, shall be deemed to have been served on the contractor on the date on which in the ordinary course of post, a letter so addressed and posted would reach his place of abode or business.

11.19 The tenderer shall undertake the installation and commissioning of the system according to the standards and specification.

11.20 No representation for enhancement of rate once accepted will be considered.

11.21 The prices quoted should be inclusive ofGST and all other expenses which are or may become payable by the contractor under existing or future laws or rules of the country of origin/supply or delivery during execution of the contract.

11.22 Special conditions, if any, of the tenderers attached with the tenders will not be applicable to the contract unless they are expressly accepted in writing by the purchaser.

11.23 Bidders are requested to submit the JV agreement in Rs. 200 stamp paper, clearly mentioning the tender details and lead bidder. Tenders without the agreement in stamped paper will be rejected outright.

11.24 The documents such as Annexure B (Rs. 200/- stamp paper), undertaking of service centres (200/- stamp paper),JV agreement (in case of JV) (200/- stamp paper), Format-B-Power of Attorney in favour of authorised signatory(200/-

stamp paper) and Format-A- Undertaking for No Blacklisting & No Banning (200/- stamp paper) need not be submitted for those who already submitted for tender id vide.2022_ANERT_504042_1. These documents must be clear and complete in all aspects, failing which the bid will be duly rejected.

11.25 All other documents other than listed in the clause 11.24 need to be submitted with valid date and signatures.

11.26 Conditions in the technical document, technical specifications and special conditions of this tender document would override these general conditions, wherever applicable.

11.27 ANERT, by notice sent to the supplier, may terminate the contract, in whole or in part, at any time for its convenience. The notice of termination shall specify that termination is for ANERT's convenience, the extent to which performance of the Supplier under the contract is terminated, and the date upon which such termination becomes effective.

11.28 E-tender shall be opened at the time and date announced in the tender notice, and the ~~price bid~~ will be evaluated on the same day.

11.29 In case any difference or dispute arises in connection with the contract, all legal proceedings relating to the matter shall be instituted in the Court within whose jurisdiction the CEO, ANERT voluntarily resides.

11.30 The Courts situated at the place where the headquarters of ANERT is situated viz, Thiruvananthapuram alone will have jurisdiction to entertain civil suits and all other legal pertaining to this contract.

12. SPECIAL CONDITIONS

12.1 The entire quantity of 9,348Nos of systems in two groups as below: -

Group Number	PV capacity (kW)	Nos	Total quantity
1	2	5000*	9,248
	3	3000*	
	5	1000*	
	7	100*	
	10	148*	
2	30-150*		100

- The individual no of pumps may vary according to the NABARD allocation and field survey

12.2 It is mandatory for all bidders to quote in both the groups

12.3 Each bidder should submit only one (1) bid. Any bidder who submits/participates in more than one bid for the work shall be disqualified.

~~**12.4 Price bid for the installation in SPV system inclusive of all requirements as per the document is to be quoted by the bidders and for the Group 1, the L1 rate for each system (2-10kW) will be considered separately. In case of Group2, prices are to be quoted in terms of Rate/kW(rates for PV capacity 30-100 kW and capacity above 100 kW shall be quoted separately).**~~

~~**12.5 For evaluating the L1 price, only the rates quoted by the bidder having ICRA Grading of 1A, 1B, 1C, 2A& 2B will be considered. Vendors having lower grade are also eligible for participation in the tender, whereas their rates will not be considered for L1 rate finalisation. The allotment of works will also be based on the ICRA grading mentioned in this document.**~~

12.6 It will be mandatory to use indigenously manufactured solar panels with indigenous solar cells and modules. Further, inverters/controllers and the Balance of System should also be manufactured indigenously. The contractor must declare the list of imported components used in the solarisation system.

12.7 If the bidder has NOT submitted the requisite EMD OR Agreement~~, OR if the price bid is not submitted along with the tender,~~ such tenders will be summarily rejected.

12.8 During the tender evaluation, ANERT may seek more clarifications/details from any or all the tenderers, if felt necessary.

~~12.9 The price bids of the tenderers, who are technically qualified, will be opened and the L1 bidder as mentioned in clause #12.5 will be awarded the work of supply and installation of items after fulfilling all the requirements.~~

12.10 If found essential, ANERT reserves the right, in the interest of completion of work within the time limit, to award portion/portions of the work order to next

higher bidders, called for negotiation in the increasing order of their price offers, if they agree to supply at the L1 price.

~~12.11 L1 bidder will get priority on allotting the work order.~~

~~12.12 The tenderer should use the PV modules available in the ALMM list issued by MNRE vide order No.F.No. 283/54/2018-GRID Solar – Part (1) dtd 29/09/2021(New one) or latest issued by MNRE as specifications.~~

12.13 The tenderer should provide inverters meeting all the specifications stipulated in this document.

12.14 The agency can take approval for the new components except PV modules by submitting a request with relevant certificates.

12.15 For the installations in Group 2 (Higher capacity pumps)- in case of installation of additional/new transformer is required, the bidder shall install through KSEBL at their expenses. The amount shall be recouped by ANERT afterwards upon submission of the proper documents.

12.16 The rate quoted should be all inclusive including delivery of materials at the locations to be specified including transportation, loading, unloading etc, and the cost of materials and labour for the civil works, installation and commissioning, Remote Monitoring System excluding the SIM cost, warranties, all fees for approval from KSEBL and Electrical Inspectorate, application fees, GST and all other expenses. *In case of installations under Group No.2 as per tender document, additional site-specific costs if any required for structure works, pathway, ladder for accessing PV modules etc will be considered separately.*

12.17 **The price quotes should be inclusive of initial cost of supply, installation and commissioning and support during the warranty period of 7-years. The rates for the installation in Rooftop and Ground mounted system under Group 1 is to be quoted**

~~12.18 The additional costs required for cabling, structural works etc for any excess quantity other than the standard installation mentioned in the tender document is to be quoted separately in letter head and is to be uploaded in the provision provided for uploading PDF document in the finance cover, The additional rates for each capacity range are to be quoted as follows:~~

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~~i. Per meter cost for DC Cable for Installations under Group 1 & 2 category~~

~~ii. Per meter cost for AC Cabling for Installations under Group 1 category~~

~~iii. Per meter cost for AC Cabling for Installations under Group 2 category~~

~~iv. Cost for additional Structure for increase in height of above 1m from the standard height / kW~~

~~v. Cost for additional Structure for increase in height of above 2m from the standard height / kW~~

~~vi. Cost for additional Structure for Rooftop installation in slanting GI or Aluminium sheet roof / kW~~

~~Any other component required in excess to be quoted in per unit cost of that component~~

12.19 The tender offer shall be kept valid for acceptance for a period of 12 months from the date of opening of bid. The offers with lower validity period are liable for rejection.

12.20 **Bidder should not apply directly to MNRE for claiming the subsidy/ incentive amount. ANERT will be responsible for claiming the subsidy/ incentive from MNRE for onward distribution to the agency once sanctioned from MNRE. Also, bidder should submit a separate declaration stating that they would not apply separately to MNRE for claiming the subsidy/ incentive for the project.**

12.21 ~~The evaluation of the price bid will be based on the grand total of all-inclusive amount quoted excluding GST. However, the estimated cost mentioned in the Tender will be inclusive of GST.~~

13. SCHEDULE OF SUPPLY

13.1 The items should be delivered and installed for which work orders given as specified by ANERT, under prior intimation and supervision of ANERT for the solarisation of the existing Agricultural Pumps all over Kerala.

13.2 The Supply, Installation and Commissioning of each of the work allottedshall be completed within **2 months of the date of supply order.** This is the time period for handing over the system to ANERT and no time extension in this regard without valid reasons will be entertained.

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13.3 The capacity of pumps to be solarised and the max allowed capacity of SPV power plant is as given below.

Pump Capacity	Capacity of PV Plant
below 2 HP	2kW
2-3 HP	2-3kW
>3-5HP	5kW
>5-7HP	7kW
>7-10HP	10kW
20 HP	30 kW
30 HP	50 kW
50 HP	75 kW
100 HP	150 kW

13.5 Supply of the main components such as SPV module, Inverter must be as per tender

13.6 Penalty for delay in supply and installation will be imposed at 0.5 % per week up to a maximum 10 %. In case of delay in supply and installation, CEO, ANERT may cancel the contract and take recourse to other action as deemed appropriate.

14. PAYMENT

14.1 No advance payment will be given. The payment will be released for each work order on completion of entire systems upon the report submitted by the respective District Engineer, ANERT.

14.2 The terms of payment shall be:

a. 50% of the contract value shall be released upon the delivery of the major components at all the sites mentioned in the work order to be issued.

b. 30% of the contract value shall be released on commissioning of installation on submitting documents such as completion reports to ANERT

c. 20% of the contract value will be released as and when the funds for the project is received from MNRE for the particular installation. ThePerformance Bank Guarantee (PBG) will be 3% of the final project cost

and the PBG shall be submitted on or before the final releasing of the payment. The validity of PBG shall be rolled over every year for first seven years or till the warranty period of the last installation is completed. The rolling over or release of this PBG shall be based on the clearance of pending penalties/fines imposed by ANERT.

14.3 Income tax, contribution to workers' welfare fund which will be applicable to installations which involve civil construction work and other statutory deductions shall be made from the payment as per prevailing norms.

15. SERVICE AND MAINTENANCE

15.1 Empanelled agency should have at least one service centre at each district where their system is installed. Also, there should be an additional service centre for each 500 installations per district.

15.2 The faulty system or components should be replaced/ repaired within 7 days of fault reporting.

15.3 Delay in servicing beyond 7 days of fault reporting would attract penalty at the rates decided by CEO, ANERT and further actions will be initiated against the agency.

15.4 The service personnel should visit the installations at least once in 3 months for preventive maintenance even if no faults are reported. **Reports of these preventive maintenance visits and generation data should be submitted to the concerned ANERT District Offices on a quarterly basis**. The delay beyond a period of 15 days may lead to penalty as decided by CEO ANERT.

15.5 A designated Helpline (in Malayalam language) address should be indicated on the inverter/controller at suitable location easily visible to the user for reporting faults during the warranty period.

16. SCOPE OF THE WORK

The scope covers the Solarisation of existing Agricultural Pumps in the State under Component C of the Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyaan (PM KUSUM) scheme. This includes the Supply, Installation and Commissioning of **SPV Power Plants with Grid connectivity for solarising the following capacity of Agricultural pumps:**

Pump Capacity	Capacity of PV Plant
below 2 HP	2kW
2-3 Hp	2-3kW
>3-5HP	5kW
10HP	10 kW
20 HP	30 kW
30 HP	50 kW
50 HP	75 kW
100 HP	150 kW

All the necessary approvals from KSEBL(Electrical Utility)/Electrical Inspectorate, feasibility study, necessary civil work, Mounting of Module Structures, PV Module Installation, Inverter Installation, DC/AC Cabling and interconnections, Installation of Lightning Arresters and Earthing System as per the standards, Net Metering, arranging all the necessary inspections from KSEBL/Electrical Inspectorate/ ANERT District Office as part of Pre-Commissioning, if any, Commissioning of the PV Power Plant, are coming under the scope of the bidder.

i. **Location**

The proposed location for installation of the SPV modules will be on the Roof top of existing building rooftop / vacant land available with Farmers/WUAs (Water User Association) spread across the 14 Districts in the State of Kerala. Majority of the installations under Group 1 will be concentrated on 5 districts of Kerala ie. Thrissur, Kasaragod, Malappuram, Palakkad& Ernakulum. In the case of Group 2, the installations will be on the agricultural fields (mostly paddy) in the kole wet lands of Thrissur and

Ponnani. Individual Krishibhavan/part will be provided to vendors for conducting site study and feasible site will be allotted as project for issuing work order throughBuyMySun.com

17. DEFINITION

17.1 Solar Plant systems tendered through this document includes installation as follows

a. For GROUP 1, it shall include installations of Roof Top as well as Ground mount SPV Power plants with based on site survey.

b. For GROUP 2, the Ground mount structures are preferred to install.

17.2 Solar PV power plant system comprises of C-Si (Crystalline Silicon)/ Thin Film Solar PV modules with intelligent Inverter having MPPT technology and Anti-Islanding feature and associated power electronics, which feeds generated AC power to the Grid. Other than PV Modules and Inverter/Inverters, the system consists of Module Mounting Structures, appropriate DC and AC Cables, Array Junction Boxes (AJB) / String Combiner Boxes (SCB), AC and DC Distribution Box, Lightning Arrester, Earthing Systems, Net meter, etc.

17.3 The system should be capable for exporting the generated AC power to the Grid, whenever the Grid is available with all System Protection facilities.

18. STANDARDS AND REGULATIONS TO BE COMPLIED

18.1 The connectivity should be as per (Technical Standards for connectivity of the Distributed generation resources, Regulation, 2013) and its amendments thereof

18.2 KSERC (Grid interactive Distributed Solar Energy Systems) Regulations, 2014 and its amendments thereof

18.3 KSERC (Renewable Energy and Net Metering) Regulations, 2020 and its amendments thereof

18.4 CEA Regulation 2010 has to be followed safety and Electricity supply.

18.5 Metering should be as per CEA regulation 2006.

18.6 Any amendments thereof will also be applicable.

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19. SYSTEM COMPONENTS- TECHNICAL COMPLIANCE FOR SYSTEM COMPONENTS

S/N	System Component	Capacity/ rating	Minimum Technical Compliance
1.	Solar panel	As per the requirement	IS 14286 -Design Qualification and Type Approval for Crystalline Silicon Terrestrial Photovoltaic (PV) Modules
			IEC/IS61730: Part I& II;
			IS 16170: Part I
			IS/IEC 61701-Salt Mist Corrosion Testing of Photovoltaic (PV) Modules
2.	Grid Tied Inverter	As per the rating system selected	IS 16221: Part 1 &2- Safety of Power Converters for use in Photovoltaic Power Systems
			IS 16169 - Test Procedure of Islanding Prevention Measures for Utility-Interconnected Photovoltaic Inverters
3.	Cables	Max 15m in AC side and DC side as 25m.	IEC 60227 / IS 694
			IEC 60502 / IS 1554 (Pt. I & II)
4.	Switches/ Circuit Breakers/ Connectors	As required	IEC 60947 part I, II, III /
			IS 60947 Part I, II, III
			EN 50521
5.	Junction Boxes/Enclosures for Inverters and meters/ Charge Controllers	As required	IP 54 (for outdoor) or IP 65 / IP 21(for indoor) as per IEC 529
6.	Energy Meter for Recording Solar Electricity Generated		As per CEA regulations
7.	Two-way meter for Distribution Licensee grid connection		As per CEA regulations
8.	Electrical Grounding (Earthing)	As required	As per IS 3043
9.	Remote Monitoring System (RMS)	As required	As per MNRE requirements.
10.	Rooftop PM KUSUM Installations	KSERC order	In case of Rooftop sites The Kerala State Electricity Regulatory Commission order dated 11-4-2024 (In the matter of relaxation in KSERC (Renewable Energy & Net metering) Regulations, 2020 for implementation of PM-KUSUM Component-C project in Kerala) shall be followed

20. SPV MODULES

20.1 Only crystalline silicon cell PV modules of 500$W_p$or higher capacity should be used in the power plant. It is necessary to use SPV modules with indigenously manufactured solar cells (DCR Content) and shall be from the Approved List of Module Manufacturers (ALMM) issued by MNRE from time to time. MNRE has issued an OM vide - F no. 283/54/2018-GRID SOLAR - Part (1) 22/03/2024 making it mandatory for solar Panels used in Pump projects to have minimum efficiency of 19.5%. A revised ALMM list was also provided along this order. Along with DCR content this efficiency requirement also needs to be followed in the installation.

20.2 Shading correction/ bypass for optimizing array out to be incorporated in each solar module or panel level and shading optimization to be provided.

20.3 Each PV module used in any solar power project must use a RF identification tag (RFID), which must contain the following information. The RFID can be inside or outside the module laminate but must be able to withstand harsh environmental conditions.

i. Name of the manufacturer of PV Module
ii. Name of the manufacturer of Solar cells
iii. Month and year of the manufacture (separately for solar cells and module)
iv. Country of origin (separately for solar cell and module)
v. I-V curve for the module
vi. Peak Wattage, I_m, V_m and FF for the module
vii. Unique Serial No. and Model No. of the module
viii. Date and year of obtaining IEC PV module qualification certificate
ix. Name of the test lab issuing IEC certificate
x. Other relevant information on traceability of solar cells and module as per ISO 9000 series

20.4 The following details should be provided on the module

i. Name of the manufacturer
ii. Month and year of manufacture
iii. Rated Power at STC

iv. V_{mp}, I_{mp}, V_{oc}, I_{sc}

20.5 The PV modules must qualify (enclose Test Reports/Certificates from IEC/NABL accredited laboratory) as per relevant IEC standard. The Performance of PV Modules at STC conditions must be tested and approved by one of the IEC/NABL Accredited Testing Laboratories.

20.6 PV modules used in solar power plants/ systems must be warranted for their output peak watt capacity, which should not be less than 90% at the end of 10 years and 80% at the end of 25 years.

21. POWER CONDITIONING UNIT (PCU)

Technical data sheet of the inverter proposed or the project indicating operating modes, protection, efficiency etc. should be provided by the bidder. **Inverters used for the project should be manufactured indigenously.**

Common Technical Specification:

Output voltage	1 phase, 240 VAC; 3 phase, 415 VAC Inverter/ PCU should be capable of synchronise with grid voltage between 110% and 80% of the rated output. Beyond this system has to stop generating.
Over Voltage / Under Voltage trip	When Voltages reaches above 110% or below 80% respectively, with clearing time up to two seconds for reconnection.
Frequency	50 Hz. Inverter/ PCU should be capable to synchronise with grid for a variation of frequency between 50.5 Hz and 47.5 Hz. Beyond this system has to stop generating.
Over and Under frequency Trip	High frequency at 50.5 Hz and low frequency at 47.5 Hz clearing time up to 0.2 seconds.
Continuous rating	Rated capacity of the configuration.
Nominal Power	Rated power should not be less than the rated capacity of the SPV array at STC.
Communication capability	Should have RS 485 Communication mode so as to integrate with Remote Monitoring System.
Standard conformation	IS16221(Part 1,2)
	IS16169:2014 (Procedure for Islanding prevention measures for Utility Connected PV Inverters)
Total Harmonic Distortion	Less than 5%
Operating temperature Range	-50 to 600 C

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Housing cabinet	PCU to be housed in suitable switch cabinet, Within IP 21 (Indoor)/ IP 54 (Outdoor)
PCU efficiency	95% and above at full load.
Power Control	MPPT
Harmonic Current Injections	Shall not exceed the limits specified in IEEE519
Direct Current Injection	Less than 0.5 % of the full rated output at the interconnection point.
Flicker	Should be within the limits specified in IEC 61000
Synchronisation	Automatic (Built into the inverter)
Hysteresis required for reenergizing	Sixty seconds at stabilized condition.
Power Factor	The PCU power factor at the point of distribution Licensee service connection shall be 0.95 lagging or leading when operating at above 25 percent of the rated output.
Maximum time for cease to Energise in the case of formation of an unintended Island	2 Seconds

21.1 The PCU shall not produce Electromagnetic interference (EMI) which may cause malfunctioning of electronic and electrical instruments including communication equipment, which are located within the facility in which the PCU is housed.

21.2 The PCU shall have an appropriate display on the front panel to display the instantaneous AC power output and the DC voltage, current and power input. Each of these measurement displays shall have an accuracy of 1 percent of full scale or better. The display shall be visible from outside the PCU enclosure. Operational status of the PCU, alarms, trouble indicators and AC and DC disconnect switch positions shall also be communicated by appropriate messages or indicator lights on the front of the PCU enclosure.

21.3 The PCU shall include an easily accessible emergency OFF button located at an appropriate position on the unit.

21.4 The PCU shall include ground lugs for equipment and PV array grounding.

21.5 All exposed surfaces of ferrous parts shall be thoroughly cleaned, primed, and painted or otherwise suitably protected to survive a nominal 30 years' design life of the unit.

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21.6 The PCU enclosure shall be weather proof and capable of surviving climatic changes and should keep the PCU intact under all conditions in the room where it will be housed. The inverter shall be located indoor and should be either wall/ pad mounted. Moisture condensation and entry of rodents and insects shall be prevented in the PCC enclosure.

21.7 Components and circuit boards mounted inside the enclosures shall be clearly identified with appropriate permanent designations, which shall also serve to identify the items on the supplied drawings.

21.8 Maximum Power Point Tracker (MPPT) - MPPT shall be integrated in the PCU to maximize the energy drawn from the array. The MPPT should be microprocessor based to minimize the power losses.

22. ELECTRICAL SAFETY, EARTHING AND PROTECTION

22.1 Internal Faults: In built protection for internal faults including excess temperature, commutation failure, overload and cooling fan failure (if fitted) is obligatory.

22.2 Over Voltage Protection: Over Voltage Protection against atmospheric lightning discharge to the PV array is required. Protection is to be provided against voltage fluctuations in the grid itself and internal faults in the power conditioner, operational errors and switching transients.

22.3 Earth fault supervision: An integrated earth fault device shall have to be provided to detect eventual earth fault on DC side and shall send message to the supervisory system.

23. CABLING PRACTICE

23.1 Cable connections must be made using PVC Cu cables, as per BIS standards. All cable connections must be made using suitable terminations for effective contact. The PVC Cu cables must be run in GL trays with covers for protection.

24. FACTORY TESTING

24.1 PCU shall be tested prior to shipment and factory test certificate for relevant parameters should be provided with the PCU supplied. ANERT or authorised representative of ANERT may be allowed to witness the tests if required.

24.2 Factory testing shall not only be limited to measurement of phase currents, efficiencies, harmonic content and power factor, but shall also include all other necessary tests/simulation required and requested by the Purchasers Engineers. Tests may be performed at 25, 50, 75 and 100 percent of the rated nominal power.

25. PLANT METERING/ DATA LOGGING

25.1 Net meter as per CEA standards approved by the utility as per accuracy class must be supplied and installed.

25.2 A separate Energy Meter shall be provided at the output of PCU to record the energy generation from the solar system. (This energy meter should not be integrated with PCU). This has to calibrate and installed nearer to the Consumer meter board so that meter reader from Electrical utility could access while.

25.3 All major parameters should be available on the digital bus and logging facility for energy auditing through the internal microprocessor and can be read on the digital front panel at any time the current values, previous values for up to a month and the average values.

26. REMOTE MONITORING SYSTEM

Remote Monitoring System (RMS) should have provision to monitor and upload all parameters required by MNRE under PM KUSUM Scheme to a specified server including:

a) Solar System Performance: DC Voltage, DC current, AC output Current, Power, Drive frequency, Energy, etc.

b) RMS Performance: Device Connectivity, Data Availability, etc.

c) Geo Location: Real time latitude and longitude should be captured. This is required to ensure that system is not moved from its original location.

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d) Events and Notifications: Faults related to Pump Operation, Solar generation, Controller/Drive faults like overload, dry run, short circuit, etc.

e) Consumer Management: Name, Agriculture details, Service No. Contact Details, etc.

f) Asset Management: Ratings, Serial Number, Make, Model Number of Pump, Panel and Controller, Geo Location, IMEI number (of communication module) and ICCID (of SIM).

g) Complaint and Ticket Management: Complaint management system is a part of centralized monitoring software platform – State Level Solar Energy Management Platform to be operated and maintained by the State implementing agency (SIA).

h) Consumer Mobile Application: Generation, Complaint logging, etc.

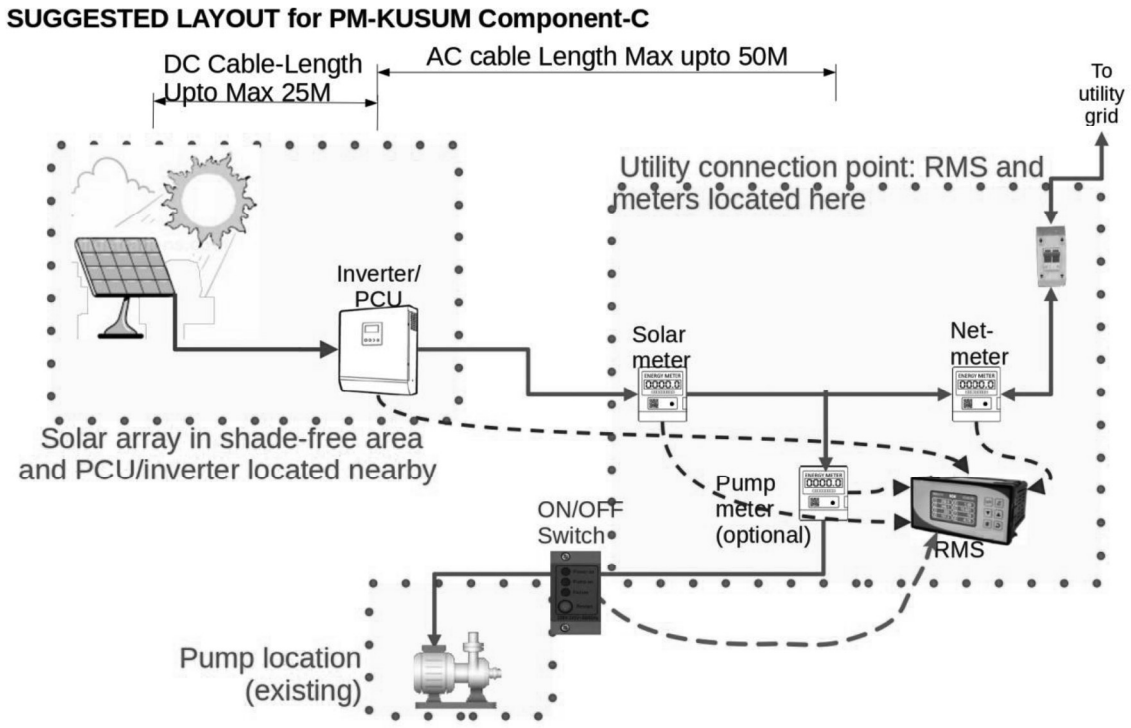
The RMS will be provided access to the interface with State Level Solar Energy Data Management platform i.e., ANERT will provide server infrastructure and shall maintain the same in the State Data Centre. The ANERT shall provide SIM card of suitable ISP having maximum Signal Strength in the respective locations.The bidder should ensure connectivity as well as pushing of data to centralized platform as mentioned in specifications.

Communication architecture should be as per following:

a) Communication Connectivity:

i. Remote monitoring system installed along with the system should be compatible with the connectivity to PCU, Controllers and meters of the system.

The proposed connectivity diagram is as follows.



ii. RMS should have provision to give remote On/Off command to pump through farmer mobile app. to save ground water.

b) Communication Modes:

i. Push Data on Event/Notification: such as pump on, pump off, protection operated, etc.

ii. Push Data Periodically: important parameters of solar pump (as mentioned above) should be pushed to central server on configurable interval. Interval should be configurable for 15 mins. However, if required, it should be possible to configure the periodic interval in multiple of 1 minute starting from 1 minute and up to 15 minutes. Further, in case of any abnormalities or event, RMS should push on event immediately.

iii. Command on Demand: It should be possible to send commands via GSM or GPRS to RMS either to control pump operations or to update configuration

c) Communication Protocol: RMS should provide data on MQTT protocol to establish communication with thousands of systems. The message formats and details shall be as per the MNRE requirement.

d) Security:

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i. Communication between RMS and Server should be secured and encrypted using TLS/SSLcertificate etc.

ii. As a part of IoT protocol, Authentication and Authorization should be implemented using token/password mechanism

e) Message Format: RMS should provide data in a JSON message format as required by MNRE /ANERT.

f) Data Storage: In case of unavailability of cellular network, RMS should store data locally and on availability of network it should push data to central Server. Local data storage should be possible for at least one year in case of unavailability of cellular network.

Configuration update over the Air of multiple parameters such as IP, APN, Data logging Interval, Set Points etc. is essential. Software updating should be possible with 2G and even without the presence of SD card. Software updating process and/or failure to update software shouldn't disrupt pumping operations

27. Remote ON/OFF feature

27.1 The successful bidders shall arrange for the provision of remotely turning ON/OFF Featureand this must be integrated with system.

27.2 Necessary switch gear as well as communication structures should be done by the bidder so as the user can switch off/on the pump remotely.

27.3 The remote working system should be integrated with RMS.

28. ARRAY SUPPORT STRUCTURE.

28.1 Specification of module mounting structure shall be in line with specifications for SPV water pumping systems of MNRE vide Circular No. F. No. 41/3/2018-SPV Division dated17.7.2019 enclosed and any further amendment(s) issued by MNRE. However, considering the flooded scenario in Kerala the minimum height required under Group 1 category will be 50 cm for rooftop installations and 100 cm for ground mount installations and that of Group 2 will be 150cm.

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28.2 Supply, installation, erection and acceptance of module mounting structure (MMS) with all necessary accessories, auxiliaries and spare part shall be in the scope of the Contractor.

28.3 The PV modules shall be mounted on fixed metallic structures having adequate strength and appropriate design, which can withstand the load of the modules and high wind velocities as per the wind zone and IS of the location of installation.

28.4 The MMS shall be designed and constructed such that it complies with the necessary mounting requirements of PV modules in order to maintain the PV module's warranty.

28.5 MMS and its foundation shall be designed considering life span of 25 years and withstand wind speeds of 150 kmph.

28.6 Design of the MMS shall take into consideration site conditions, soil report, loading data, wind data and design standards as per latest applicable IS standard.

28.7 The structure shall be designed for simple mechanical and electrical installation. It shall support SPV modules at a given orientation and tilt, absorb and transfer the mechanical loads to the ground properly.

28.8 The Contractor shall be fully responsible for any damages caused by high wind velocity within guarantee period. The parameters of prevailing wind speed, soil conditions, load, and upward lift shall be taken care of while preparing the design and the same is required to be mentioned on design.

28.9 MMS shall be made of hot dip Galvanized steel per ASTM A123/ IS4759. Minimum thickness of HDGI zinc coating shall be 80 microns at any point when measured. No averaging is allowed in the measurement of coating thickness. Necessary testing provision for MMS to be made available by Contractor at site.

28.10 All bolts, nuts, panel mounting clamps fasteners shall be of stainless steel of grade SS304/ 8.8 grade HDG and must sustain the adverse climatic conditions.

28.11 MMS shall be designed and positioned such that the PV modules are completely shadow-free solar during generation hours.

28.12 All solar panels shall be easily accessible for cleaning and the beneficiaries shall not be inclined to climb on the MMS or PV modules for cleaning the PV modules.

28.13 Junction boxes shall be mounted on the MMS such that they are easily accessible and are protected from direct sunlight and harsh weather.

28.14 Civil foundation design for MMS shall be made in accordance with the IS and prevailing soil conditions with the help of Chartered Structural Designer having substantial experience in similar work.

28.15 All the cables shall be aesthetically tied to module mounting structure.

28.16 Cutting, Welding, drilling etc. at site is not allowed for MMS. Contractor shall carryout all correction in structure (if required) at his works. If any cutting, welding, drilling is required to be done after material arrived at site then material shall be again sent for hot dip galvanization. No zinc spray shall be allowed on the MMS.

28.17 Contractor shall submit the all the quality test documents and test certificates complying with the requirement of the structure.

28.18 Contractor shall submit detailed drawings of the MMS and its civil foundations, results of design computations and stability calculations for foundations, and structural fitness of PV module mounting structures as per STADD Pro analysis. Such details shall include, but not limited to, the following;

a) Determination of true south at the site
b) Array tilt angle to the horizontal, with permitted tolerance
c) Details with drawings for fixing the modules
d) Details with drawings for fixing the junction/ terminal boxes
e) Interconnection details inside the junction/ terminal boxes
f) Structure installation details and drawings
g) Electrical grounding (earthling as per BIS specifications) and surge Protections.
h) Inter-panel/ inter-row distances with allowed tolerances, and
i) Lightning protection for PV array.
j) Safety precautions to be taken

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28.19 Structures shall be supplied complete with all members to be compatible for allowing easy installation at the site. Additional Structures/Frames for required for the installation of modules if any need to be provided by the bidder.

28.20 It is necessary to use anti-theft bolts in Ground mounted installations, whereas the same need not be provided for rooftop installations, in which case easy replacement of modules are necessary.

28.21 Each structure shall have a provision to adjust its angle of inclination to the horizontal as per the site conditions. Solar module should be inclined towards south direction and installed at an angle of 10° to 15° from the horizontal.

29. SURGE PROTECTION AND EARTHING

29.1 The system should have installed with Surge Protection Device (SPD) for higher withstand of the continuous PV-DC voltage during earth fault condition. SPD shall have safe disconnection and short circuit interruption arrangements through integrated DC in-built bypass fuse (parallel) which should get tripped driving failure mode of MOV, extinguishing DC arc safely in order to protect the installation against fire hazards. The SPD should be provided in the AC Distribution Box as well.

29.2 Earthing for PV Array:

- The PV module, BOS and other components of power plants require adequate Earthing for protecting against any serious fault.
- The Earthing for array and LT power shall be made as per the provisions of IS:3043.
- Necessary provision shall be made for bolted isolating joints of each Earthing pit for periodic checking of earth resistance.
- Each String/Array and MMS of the plant shall be grounded properly. The array structure has to be connected to earth pit as per IS standards. Necessary provisions shall be made for bolted isolating joins of each earthing pit for periodic checking or earth resistance.

- The complete earthing system shall be mechanically & electrically connected to provide independent return to earth.
- For each earth pit, a necessary test point shall be provided.
- The bidder shall submit the detailed specification for the Earthing arrangements.

30. LIGHTNING PROTECTION FOR PV ARRAY

The SPV power plant should be provided with lightning and over voltage protection. The source of over voltage can be lightning or other atmospheric disturbance. The lightning conductors shall be made as per applicable Indian Standards in order to protect the entire array yard from lightning stroke.

The design and specification shall conform to **IS/IEC 62305, "Protection against lightning"** govern all lightning protection-related practices of a PV system.

30.1 The entire space occupying SPV array shall be suitably protected against lightning by deploying required number of lightning arresters. Lightning protection should be provided as per IS/ IEC 62305.

30.2 Lightning system shall comprise of air terminations, down conductors, test links, earth electrode etc. as per approved drawings.

30.3 The protection against induced high voltages shall be provided by the use of surge protection devices (SPDs) and the earthing terminal of the SPD shall be connected to the earth through the earthing system.

30.4 The EPC Contractor / Company shall submit the drawings and detailed specifications of the PV array lightning protection equipment to Employer for approval before installation of system.

31. AC DISTRIBUTION PANEL BOARD

31.1 AC Distribution Panel Board (DPB) shall control the AC power from inverter and should have necessary surge arrestors.

31.2 An ACDB panel shall be provided in between PCU and Utility grid. It shall have MCB/MCCB/ACB or circuit breaker of suitable rating for connection and disconnection of PCU from grid.

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31.3 The connection between ACDB and Utility grid shall be of standard cable/ Conductor with suitable termination. It shall have provision to measure grid voltage, current and power.

31.4 The ACDB incomer shall be four (4) pole MCCB with thermal over current and earth fault releases. The incomer shall be selected at required rating.

32. DC DISTRIBUTION BOARD

32.1 DC bus/ cable which can handle the current and the voltage of inverter output safely with necessary surge arrester as per the relevant IS standards.

32.2 DC panel should be equipped with an adequate capacity indoor DC circuit breaker along with control circuit, protection relays, fuses, annunciations etc.

32.3 DCDB shall have sheet from enclosure of dust and vermin proof, the busbar/ cables are to be made of copper of desired size. DCDB shall be fabricated to comply with IP 65 protection.

33. SWITCHES AND GENERAL REQUIREMENTS

33.1 Switches/ circuit breakers/ connectors meeting general requirements and safety measurements as per IS 60947 Part I, II, III and EN 50521 for AC/DC.

33.2 Junction boxes, enclosures for inverters/ charge controllers and meters shall meet IP 54 (for outdoor)/ IP 21 (for indoor) as per IEC 529.

34. AC/DC WIRING

Cabling is required for wiring from AC output of inverter/PCU to the Grid Interconnection point. It includes the DC cabling from Solar Array to AJB and from AJB to inverter input.

34.1 All cables of appropriate size to be used in the system shall have the following characteristic:

a. Shall conform to IEC 60227 / IS 694 & IEC 60502 / IS 1554 standards.
b. Temperature Range: -10 degree Celsius to +80 degree Celsius
c. Voltage rating: 660/1000V
d. Excellent resistance to heat, cold, water, oil, abrasion, UV radiation

e. Flexible

34.2 Sizes of cables between any array interconnections, array to junction boxes, junction boxes to inverter etc. shall be so selected to keep the voltage drop (power loss) of the entire solar system to the minimum (2%).

34.3 For the DC cabling, XLPE or XLPO insulated and sheathed, UV stabilized single core flexible copper cables shall be used; Multi-core cables shall not be used.

34.4 For the AC cabling, PVC or XLPE insulated, and PVC sheathed single or, multi-core flexible copper cables shall be used. However, for above 25kWp systems, XLPE insulated Aluminium cable of suitable area of cross section can be used in the AC side subject to a minimum area of cross section of 10 sq.mm. Outdoor AC cables shall have a UV -stabilized outer sheath IS/IEC 69947.

34.5 All LT XLPE cables shall conform to IS:7098 part I&II.

34.6 The total voltage drop on the cable segments from the solar PV modules to the solar grid inverter shall not exceed 2.0%

34.7 The total voltage drop on the cable segments from the solar grid inverter to the building distribution board shall not exceed 2.0%

34.8 The DC cables from the SPV module array shall run through a UV-stabilized PVC conduit pipe of adequate diameter with a minimum wall thickness of 1.5mm

34.9 Cables and wires used for the interconnection of solar PV modules shall be provided with solar PV connectors (MC4) and couplers

34.10 All cables and conduit pipes shall be clamped to the rooftop, walls, and ceilings with thermo-plastic clamps at intervals not exceeding 50cm; the minimum DC cables size shall be 4.0mm^2 copper; the minimum AC cable size shall be 4.0mm^2 copper. In three phase systems, the size of the neutral wire size shall be equal to the size of the phase wires.

34.11 Cable Marking: All cable/wires are to be marked in proper manner by good quality ferule or by other means so that the cable can be easily identified. The following colour code shall be used for cable wires

a) DC positive: red (the outer PVC sheath can be black with a red line marking
b) DC negative: black
c) AC single phase: Phase: red; Neutral: black
d) AC three phase: phases: red, yellow, blue; neutral: black

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e) Earth wires: green

34.12 Cables and conduits that have to pass through walls or ceilings shall be taken through PVC pipe sleeve.

34.13 Cable conductors shall be terminated with tinned copper end ferrules to prevent fraying and breaking of individual wire strands. The termination of the DC and AC cables at the Solar Grid Inverter shall be done as per instructions of the manufacturer, which in most cases will include the use of special connectors.

34.14 All cables and connectors used for installation of solar field must be of solar grade which can withstand harsh environment conditions including high temperatures, UV radiation, rain, humidity, dirt, salt, burial and attack by moss and microbes' for 25 years and voltages as per latest IEC standards. DC cables used from solar modules to array junction box shall solar grade copper (Cu) with XLPO insulation and rated for 1.1 kV as per relevant standards only.

34.15 Bending radii for cables shall be as per manufactures recommendations and IS: 1255.

34.16 For laying/termination of cables latest BIS/IEC Codes/ standards shall be followed.

35. NET METERING AND UTILITY INTERCONNECTION

35.1 Net metering equipment (an Import-Export Energy Meter) approved and tested by the electrical utility based on the accuracy class required for the proposed capacity of the system must be provided with the necessary data cables if required.

35.2 Net Metering and Utility Interconnection should be accomplished according the Kerala State Electricity Regulatory Commission (Grid Interactive Distributed Solar Energy Systems) Regulations 2014 Clauses (8) & (9) (Notification No. 2096/KSERC/CT/2014 dt. 10th June 2014) as well as approved by the DISCOM (KSEBL).

35.3 Meters shall be microprocessor based conforming IEC 60687 / IEC 6205211 / IEC 62053-22 / IS 14697 and solar energy meter or its display shall be placed adjacent to net energy meter.

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35.4 Display parameters: LCD test, kWh import, kWh export, MD in kW export, MD in kW import, Date & Time, AC current and voltages and power factor (Cumulative kWh will be indicated continuously by default & other parameters through push-button). The solar energy meters and net energy meters should be DLMS compliant and AMR compatible.

35.5 The solar energy meters shall be provided with two ports for communication of the measured / collected data. The provided both meters shall provide an optical port for DLMS communication to RMS using separate Optical (IR) to RS 232 converter complying with hardware specifications detailed in IEC 62056-21.

35.6 The provision of the Optical (IR) to RS 232 convertor shall be the part of the SPV system and should be provided by the bidder.

35.7 The bidders shall imply Virtual/Group metering facility with KSEBL as if it is found more suitable as per the site.

36. INTER CONNECTION OF INVERTER OUTPUT WITH UTILITY GRID

36.1 The interconnection of load with inverter output should be done after obtaining permission from Electrical Inspectorate and Electrical Utility.

36.2 The plan scheme and drawing related to interconnection details should be submitted to Electrical Inspectorate through a licensed Electrical contractor with the guidance appropriate Engineering Authority.

36.3 Licensed contractor has to be engaged for preparation of plan scheme to be submitted to the Kerala State Electricity Licensing Board and necessary fee should be remitted for energisation of Solar Power Plant.

36.4 The panel board and distribution board required for AC interconnection should be done as per specification/ instruction given appropriate Engineering Authority.

36.5 All the electrical works required for the interconnection of load with inverter output should be done by the successful bidder as a part of the Solar Power Plant installation.

36.6 Bidder should visit the actual site and ensure the exact place for providing Solar Modules and Inverter etc. in presence of technical representative from the ANERT.

36.7 Net Metering Equipment shall be installed and maintained in accordance with the provisions of The Central Electricity Authority (Installation and Operation of Meters) Regulations, 2006 as amended from time to time. The Contractor shall maintain the Metering System as per metering code and CEA guidelines. The defective meter shall be immediately tested and calibrated.

36.8 The accuracy class of the Net Metering Equipment will be selected so that all levels of energy produced or taken by the Solar Power Plant will be measured accurately, and this equipment has applicable accuracy class.

36.9 Net Metering Equipment shall be microprocessor-based conforming to the relevant IEC standards with Advanced Metering Infrastructure (AMI) with RS232 cable facility.

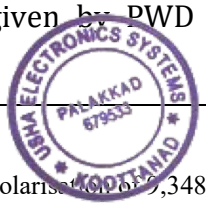
36.10 Net Metering Equipment shall measure active energy (both import and export) and reactive energy (import) by 3 ph, 4 wire principle suitable for balanced / un-balanced 3 phase load (With KVAr, KWh, KVA measuring registers). Tri-vector based energy meter shall have an accuracy class of energy measurement of at least Class 0.2 for active energy and at least 0.5 Class for reactive energy according to IEC 60687.

36.11 Display parameters: LCD test, kWh import, kWh export, MD in kW export, MD in kW import, Date & Time, AC current and voltages and power factor (Cumulative KWH will be indicated continuously by default)

37. PERMISSION FROM KSELB/ELECTRICAL INSPECTORATE BY BIDDER

37.1 The plan scheme and drawing related to interconnection details should be submitted to Kerala State Electricity Licensing Board through a licensed Electrical Contractor with the guidance of PWD Electrical wing/A.E, L.S.G.D/appropriate Engineering Authority.

37.2 The panel board and distribution board required for AC interconnection should be done as per specification/instruction given by PWD Electrical



wing/Electrical Inspectorate Authorities /A.E, L.S.G.D. /appropriate Engineering Authorities

37.3 The fee for utility feasibility, plant registration fee etc if any is to be borne by the successful bidder. Also, the application and charges for Electrical Inspectorate are also under the scope of the bidder.

37.4 If additional wiring is required for segregating the load, then that work should also be done as a part of this project implementation.

37.5 It is mandatory to obtain Energisation certificate by bidder from Electrical Inspectorate for the installations of capacity above and including 10 kW.

37.6 It is mandatory to obtain pre scheme approval from Electrical inspectorate for the installations in Group 2.

38. WARRANTY

38.1 7years' warranty should be provided by the supplier for the system and components, or part of the system must be provided as per the special conditions of the contract.

38.2 PV modules used in solar power plants/ systems must be warranted for their output peak watt capacity, which should not be less than 90 % at the end of 10 years and 80% at the end of 25 years

38.3 The Warranty Card to be supplied with the system must contain the details of all the components supplied.

39. OPERATION MANUAL

39.1 An Operation, Instruction and Maintenance Manual, in English and Malayalam should be provided with the system.

39.2 The following minimum details must be provided in the manual:

a) About solar power plant – its components and expected performance.
b) About PV module
c) About electronics
d) About charging and significance of indicators
e) DO's and DON'T's
f) Clear instructions on regular maintenance and troubleshooting of solar power plant

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g) Name and address of the contract person in case of non-functionality of the solar power plant.

40. BILL OF MATERIAL

40.1 The bidder should provide the bill of material mentioning the quantity of each of the item consisting in the system, along with the offer.

Table 40.1

Sl. No.	Item	Make (if any)	Model & Individual Capacity (If any)	Qty (Nos)	Rating / Capacity
1.	PV Module				
2.	PCU/Inverter				
3.	Remote Monitoring Unit				
4.	DC Cables				
5.	AC Cables				
6.	AJB/SCB				
7.	Module Mounting Structure (MMS)				
8.	ACDB				
9.	Lightning Arrester				
10.	Earthing System Details and No. of Earth pits				

41. DISPLAY BOARD

41.1 The logo of ANERT and details of the scheme as specified in the work order.

42. INSURANCE

42.1 The power plant must be insured at every stage of operation – from Material dispatch, storage, completion of installation and till 7 years after commissioning.

42.2 The insurance coverage on handing over of the system must include all conditions of **Standard Fire and Special Perils as well as burglary and house break Policy (Material Damage as well as theft)**. The insurance

premium for the 7years of warranty is to be paid by the bidder. On handing over of the system, the original insurance policy is to be handed over to the authorised person at the site of installation and a copy to ANERT District Office. The annual premium payment receipt must be handed to the authorised person at the site of installation.

43. ENGINEERING DRAWINGS

43.1 The bidder should submit and get the necessary approval of the following detailed Engineering Drawings as per the system described in 17.1 (a)&(b) of this document before execution of the project:

a. Schematic drawing showing the PV panels, Power conditioning Unit(s)/Inverter, Array Junction Boxes (AJBs)/String Combiner Boxes (SJB), AC and DC Distribution Box, Net meters, MSB etc.
b. Foundation ad structural diagram shall be approved by any of the IITs, NITs or other government universities.
c. Layout of solar PV Array
d. Single Line Diagram (SLD) with specification of all components.
e. Design document for Module Mounting Structure (MMS) including certificate showing wind speed withstanding capacity of the structure (STAAD/Equivalent).
f. Module Mounting Structure (MMS) drawing along with foundation details for the structure.
g. Sizes and specification of cables for PV Module interconnections, PV Array to Array Junction Boxes, Array Junction Boxes to Inverter, Inverter to ACDB/ Grid Connection point etc. shall be furnished.

44. SELECTION PROCEDURE

The Lead bidders need to get themselves graded

i. The eligibility of capacity for installation of single plant and total allocation per batch (allotment) will be based on the grading provided by the grading agency appointed by ANERT.

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ii. The grading agency selected for this purpose is "ICRA Analytics Limited" Securities and Exchange Board of India (SEBI) approved Agency for "Assessing and Grading of Manufacturers / Contractors / Joint Venture of Manufacturers & integrators for submitting bids under PM KUSUM scheme – Component C Programme implemented in the state of Kerala. The grading is to be done with the same criteria set by ANERT for the Vendor Registration process.

iii. The grading will be done by M/s ICRA Analytics Ltd at the rates finalised by ANERT as below:

#	Rate For Undertaking Grading Services	AMOUNT (incl GST)
1	Initial Grading	23,600/-
2	Renewal of Grading post one year	9,440/-

The contact details of the ICRA Analytics Limited mentioned below and personnel dedicated for ANERT functionalities are as below:

ICRA Analytics Ltd
Infinity Benchmark, 17th Floor, Plot – G-1,
Block GP, Sector V, Salt Lake, Kolkata – 700091

Name	Contact Details	Email id
		anert.grading@icraanalytics.com
Mr. Indranil Chakraborty	+91 99033 77455	

The grading certificate issued only after 1/01/2024 will be considered under the tender. The EPC / System Integrators are to be graded in the same pattern for Registration of Vendors for Solar Program by M/s ICRA. This grading shall be submitted at the time of tender submission and failure on submission will lead to rejection of the bid. The same will be called for once the tender is opened and finalised during project implementation stage. Once the bids are opened, ANERT will evaluate all the proposals to determine whether these are complete in all respects as specified in the tender document. Evaluation of the proposals shall be done in three stages as:

i. Level - I (Technical Evaluation):

ANERT shall evaluate the technical bid(s) to determine whether these qualify the essential eligibility criteria, whether the bidder has submitted the EMD whether any computational errors have been made, whether all the documents have been properly signed & stamped, whether all the documents as mentioned / or required to submitted with technical bid are submitted and whether bids are completed and generally in order.

After evaluation of technical bid(s), a list of the qualifying bidder(s) shall be made. Short-listed bidder{s) shall be informed of the date, time and place of opening of ~~financial bid(s)~~ (online).

~~ii. Level - II (Ranking of qualified Bidders & elimination):~~

~~The financial bid(s) of Technically Qualified Bids shall be ranked in the ascending order of their respective financial bids (L1, L2, ..,Ln). The bids which have quoted the same amount shall be assigned the same rank.~~

~~If there are more than one L1 bidders quoting the same cost in Rs, tie breaking is based on the time of submission of the bid as recorded in the e-tender site. The bidder who has submitted the bid first will be the lowest bidder (L1 Bidder) and the other bidders who have quoted the L1 rates will be ranked based on the time of submission of bids as L2 bidder, L3 bidder etc. After ranking bidders who have offered L1 rates, the next lowest bidders are assigned subsequent ranks based on the same criteria.~~

~~iii. Level – III (L1 Matching)~~

~~Under this process, all bidders other than L1 bidder/(s) within the price bracket (L1+25% of L1) will be asked to match the L1 rate discovered. Only those bidders within the above price bracket are considered for matching with L-1 rate, and if they match with L-1 rate, then they will be selected. If total no. of bidders within the above price bracket is less than 5, then those bidders who fall in (L1 + 30 % of L1) will also be considered for matching with the Lowest discovered rate ("L-1 Matching"). If they match, they will also be selected.~~

Rate arrived as per the Rate Contract Order No. 46/2023/ANERT dtd. 28/02/2023 is as given below.

Rate of power plants as arrived by tender		
Plant Capacity (kWp)	**Ground Mounted (in Rs.)**	**Roof Top (in Rs.)**
2	2,48,190	2,29,982
3	2,98,195	2,79,413
5	4,61,894	4,31,930
7	5,93,004	5,47,137
10	7,68,873	7,13,457
30	21,50,820	21,40,290
50	35,84,700	35,67,150
75	53,77,050	53,50,725
150	1,09,24,800	1,05,39,900

iv. Level – IV (Allocation of works)

i. ANERT will issue an order regarding the selection of bidders for each capacity and the total volume allotted to them based on the grading provided to the bidder by M/s ICRA. The rates including taxes will be included in the order and no requests for enhancement will be entertained.

ii. The L1 matched bidders are required to enter into an agreement with ANERT within 7 days from the date of issue of order.

iii. The capacity of Solar Power Plant that can be allotted to a particular vendor depends on their grading issued by M/s ICRA Analytics Limited, which is determined using the experience and financial strength of the vendor. Based on the grading, the vendors will be listed in certain categories as below:

Grading Scale		**Financial Strength**				
		Strong	**Above Average**	**Average**	**Below Average**	**Weak**
Performance capability	**Strong**	1A	1B	1C	1D	1E
	Above Average	2A	2B	2C	2D	2E
	Average	3A	3B	3C	3D	3E
	Below Average	4A	4B	4C	4D	4E
	Weak	5A	5B	5C	5D	5E

iv. Only agencies obtaining grades 3C and above are eligible for listing

v. With reference to the grading allotted, the single plant capacity and the total volume of works that can be allotted at a time is

Grade Allotted	Total Volume in kW in Batch
1A	5000
1B	3500
1C	1000
1D	500
1E	100
2A	2500
2B	2000
2C	1000
2D	200
2E	100
3A	1000
3B	500
3C	300
3D	50
3E	50
4A	100
4B	100
4C	50
4D	25
4E	25
5A	25
5B	15
5C	10

45. CHANGE IN LAW

i. If as a result of Change in Law, the Successful bidder suffers any additional costs in the execution of the Works or in relation to the performance of its other obligations

under this Agreement, the Successful bidder shall, within 15 (fifteen) days from the date it becomes reasonably aware of such addition in cost, notify ANERT with a copy to ANERT's Engineer of such additional cost due to Change in Law.

ii. If as a result of Change in Law, the Successful bidder benefits from any reduction in costs for the execution of this Agreement or in accordance with the provisions of this Agreement, either Party shall, within 15 (fifteen) days from the date it becomes

reasonably aware of such reduction in cost, notify the other Party with a copy to the Authority's Engineer of such reduction in cost due to Change in Law.

iii. ANERT's Engineer shall, within 15 (fifteen) days from the date of receipt of the notice from the Successful bidder or ANERT, determine any addition or reduction to the Contract Price, as the case may be, due to the Change in Law.

46. FORCE MAJEURE

i. Notwithstanding the provisions of clauses contained in the tender document; the work awarded agency shall not be liable to forfeit
   a. Security deposit for delay and
   b. termination of contract; if he is unable to fulfill his obligation under this contract due to force majeure conditions.

ii. For purpose of this clause, "Force Majeure" means an event beyond the control of the work awarded agency and not involving the work awarded agency's fault or negligence and not foreseeable, either in its sovereign or contractual capacity. Such events may include but are not restricted to Acts of God, wars or revolutions, fires, floods, epidemics, quarantine restrictions and fright embargoes etc. Whether a "Force majeure" situation exists or not, shall be decided by ANERT and its decision shall be final and binding on the work awarded agency and all other concerned.

iii. In the event that the work awarded agency is not able to perform his obligations under this contract on account of force majeure, he will be relieved of his obligations during the force majeure period. In the event that such force majeure extends beyond six months, ANERT has the right to terminate the contract in which case, the security deposit shall be refunded to him.

iv. If a force majeure situation arises, the work awarded agency shall notify ANERT in writing promptly, not later than 14 days from the date such situation arises. The work awarded agency shall notify ANERT not later than 3 days of cessation of force

majeure conditions. After examining the cases, ANERT shall decide and grant suitable additional time for the completion of the work, if required.

47. Limitation of Liability

Except in cases of criminal negligence or wilful misconduct,

a. The Successful bidder shall not be liable to the ANERT, whether incontract, tort, or otherwise, for any indirect or consequential loss or damage, loss of use, loss of production, or loss of profits or interest costs, provided that this exclusion shall not apply to any obligation of the Successful bidder to pay liquidated damages to the
ANERT

b. The aggregate liability of the Successful bidder to the ANERT, whetherunder the Contract, in tort or otherwise, shall not exceed the total Contract Price, provided that this limitation shall not apply to any obligation of the Successful bidder to indemnify the ANERT with respect to patent infringement

FORMAT FOR COVERING LETTER

(This letter to be submitted on the official letter head of the tenderer, signed by the authorised signatory.)

Sir,

I/We hereby e-tender to supply, under annexed terms and conditions of contract, the whole of the articles referred to and described in the attached specification and quantity decided by the Agency for New and Renewable Energy Research and Technology (ANERT), at the rates quoted against each item. The articles will be delivered and installed/commissioned within the time and at the place(s) specified in the schedule.

I am/We are remitting herewith the required amount of Rs. ..... towards the cost of e-tender and Earnest Money Deposit by electronic payment vide transaction No ..... dtd.....

Yours faithfully,

Place:

Date:

Signature

Name

Designation

(Office Seal)

ANNEXURE A – SUMMARY OF BID QUALIFICATIONREQUIREMENTS

(To be filled in by the bidder)

1.	Name of the Applicant/Bidder						
2.	Address in full						
3.	Contact Details Mobile Land Phone Email						
4.	Name and Designation of the authorised signatory						
5.	GST Registration No.						
6.	Total number and Aggregate capacity of solar power plants installed for the last 5 Years (Off-Grid/On-Grid) *(proof to be enclosed, and flagged as Annexure)*		2017	2018	2019	2020	2021
		Number of systems:					
		Total capacity					
7.	Highest Capacity of individual PV Power Plant installed so far (With the details of Beneficiary/Institution name, Phone No, Email ID, Grama Panchayat, District, State etc.						
8.	Annual turnover of the firm during last three years (Rs.)						

9.	No. of service centres/Authorised service providers in Kerala	*(Proof or undertaking to be enclosed as Annexure)*
10.	Whether Bidder was/is de-barred by ANERT/Other State Nodal Agencies /MNRE/DISCOMs (Yes/No)?	
11.	Agreement submitted (Yes/ No)?	

Documentary evidence for the bid qualification requirements are submitted along with this document and the details furnished above are true and correct.

Signatureof authorised signatory

Name

Designation

Date: (office seal)

ANNEXURE B-AGREEMENT

ARTICLES OF AGREEMENT executed on this the . . . . . day of . . . .

Two thousand and . . . .between the **Agency for New & Renewable Energy Research and Technology** (hereinafter referred to as **ANERT**) of the one part and Sri . . . . (Name and Address of the tenderer) hereinafter referred to as "the Bounden") of the other part.

WHEREAS in response to the Notification No. . . . . dated . . . . the bounden has submitted to ANERT a e-tender for the ***EoI for additional Empanelment of vendors under the Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW - 150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala*** specified therein subject to the terms and conditions contained in the said e-tender.

AND WHEREAS the bounden has furnished to ANERT a sum of Rs. . . . . .. as Earnest Money Deposit for execution of an agreement undertaking the due fulfilment of the contract in case his e-tender is accepted by ANERT. NOW THESE PRESENTS WITNESS and it is hereby mutually agreed as follows: -

In case the e-tender submitted by the bounden is accepted by ANERT and the contract for . . . . is awarded to the bounden, the bounden shall within Fifteen days of acceptance of this e-tender, execute an agreement with ANERT incorporating all the terms and conditions under which ANERT accepts this e-tender.

In case the bounden fails to execute the agreement as aforesaid incorporating the terms and conditions governing the contract, ANERT shall have power and authority to recover from the bounden any loss or damage caused to ANERT by such breach as may be

determined by ANERT by appropriating the moneys inclusive of Earnest Money deposited by the bounden and if the Earnest Money is found to be inadequate the deficit amount may be recovered from the bounden and his properties movable and immovable in the manner hereinafter contained.

All sums found due to ANERT under or by virtue of this agreement shall be recoverable from the bounden and his properties movable and immovable under the provisions of the Revenue Recovery Act for the time being in force as though such sums are arrears of land revenue and in such other manner as ANERT may deem fit.

In witness whereofSri . . . . . (Name and Designation) for and on behalf of the Agency for Non-conventional Energy and Rural Technology and Sri . . . . the bounden have hereunto set their hands the day and year shown against their respective signature.

Signed by Sri	Signed by Sri . . . . .
(Date)	(Date) . . . .
in the presence of witnesses	in the presence of witnesses
1.	1.
2.	2.

ANNEXURE C –DECLARATION BY THE BIDDER

e-Tender Notification No: ....., dtd ..... for EoI for additional Empanelment of vendors under the Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW - 150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala

To

The CEO
ANERT

We, the undersigned, declare that:

1. We have examined and have no reservations to the Bidding Document, including Addenda No.: ..... (if any)
2. We offer to supply in conformity with the Bidding Document and in accordance with the delivery schedule
3. Our Bid shall be valid for a period of 12 months from the date fixed as deadline for the submission of tenders in accordance with the Bidding Document, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;
4. If our Bid is accepted, we commit to submit a Security Deposit in the amount of 3 percent of the Contract Price for the due performance of the Contract;
5. We are not participating, as Bidders, in more than one Bid in this bidding process;
6. Our firm, its affiliates, or subsidiaries, including any subcontractors or suppliers for any part of the Contract, has not been declared ineligible by the ANERT or Government of Kerala;
7. We understand that this Bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal Contract is prepared and executed.
8. Our firm has obtained the certifications from MNRE or NABL approved Test laboratories that the goods and services are satisfying the technical criteria specified in the bid.

Signature

Date

Name

ANNEXURE D– DECLARATION ON SUBSIDY CLAIM

(to be signed and submitted by the bidder along with the bid)

Tender Notification No.: ……..

EoI for additional Empanelment of vendors under the Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW - 150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala

To

The CEO
ANERT

I hereby declare that we will not apply directly to MNRE for claiming the subsidy for this SPV project with .....HP capacity and proposed to be installed at .....

Signature of Bidder:

Name :

Date:

Office Seal

VIBHA ELECTRONICS SYSTEMS PALAKKAD 679533 AGOTTY

ANNEXURE E – DECLARATION OF RELATIONSHIP WITH ANERT EMPLOYEE

(to be signed and submitted by the bidder along with the bid)

Tender Notification No.: ……..
EoI for additional Empanelment of vendors under the Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW - 150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala

To

The CEO
ANERT

Name of the ANERT employee with Designation:

Name of the bidder related to the employee:

This is to put on record that Shri/Smt ……..

currently working as ……..… in ANERT is related to ……., who is the bidder in the bid. We are aware of the Anti-corruption policy of ANERT and will observe the highest standards during the procurement and the execution of contract and shall retain from corrupt, fraudulent, collusive or coercive practices on competing for the contract.

Signature

Name

Date

ANNEXURE F –SERVICE REPORT

(Format of Service Report to be submitted on Quarterly basis to respective District Offices)

SERVICE REPORT

Fault/ Quarterly Service
(Put ✓on the number of Periodic service & Month from the date of commissioning)

Periodic Service				Months after commissioning			
1	2	3	4	3	6	9	12
8	7	6	5	15	18	21	24
9	10	11	12	27	30	33	36
16	15	14	13	39	42	45	48
17	18	19	20	51	54	57	60
21	22	23	24	63	66	69	72
25	26	27	28	75	78	81	84

GENERAL INFORMATION			
Installation Site			
Address			
LSG			
Assembly Constituency			
District			
Service Executive Name & Contact :		Inspection Date & Time	

VISUAL INSPECTION DATA

SOLAR MODULE		
Total capacity Solar Array (kW):		
Solar Module size (Watt peak per module) Wp		
Brand of solar module :		
Model of solar module :		
Cracked glass of PV panel	☐ Yes	☐ No
White or Brown spot, bubble of air, moisture behind the glass	☐ Yes	☐ No
Junction boxes at backside loose or without cover?	☐ Yes	☐ No
Physical damage to any PV module	☐ Yes	☐ No
Check for loose cable terminations between PV modules	☐ Yes	☐ No
PV modules are properly grounded with lugs on each module	☐ Yes	☐ No
PV modules are properly cleaned /washed	☐ Yes	☐ No
STRUCTURAL AND ROOF		
Are the modules mounted securely, and level?	☐ Yes	☐ No
Results of module hand lift test?	☐ Secure	☐ Not Secure
Are Conductors loose, touching roof surface or in contact with sharp or abrasive surfaces?	☐ Yes	☐ No
Conductor plug-and-receptacle connectors are fully engaged between junction boxes ?	☐ Yes	☐ No
Are any dissimilar metals being combined?	☐ Yes	☐ No
corrosion/evidence of rust, when encountered apply the cold galvanization spray	☐ Yes	☐ No
Check for proper earthing of structures	☐ Yes	☐ No
Check for physical damage of structures	☐ Yes	☐ No
INVERTER		

USHA ELECTRONICS SYSTEMS PALAKKAD 679533

Inverter Make & Model		
Power output (kW / kVA) :		
Is the inverter located in an area which is exposed to direct sun?	☐ Yes	☐ No
Proper wire sizes ?	☐ Yes	☐ No
Check all meters and control wiring connected as per drawing	☐ Yes	☐ No
Enclosure cleaned and vacuumed out	☐ Yes	☐ No
Display and indications are working	☐ Yes	☐ No
Check for Noise levels of inverter	☐ Normal	☐ High
Check for ventilation condition (Exhaust fan is working properly or not)	☐ Yes	☐ No
Grounded ?	☐ Yes	☐ No
JUNCTION BOXES		
Check for tightness of clamps, supports, Nut- bolts used for combiner box	☐ Yes	☐ No
Check cables are secured from sharp edges	☐ Yes	☐ No
Check proper conduit fittings used and adequately tightened	☐ Yes	☐ No
Array box is Vermin and dust proof	☐ Yes	☐ No
MAIN ELECTRICAL DISTRIBUTION PANEL		
Electrical Concerns or Code Violations	☐ Yes	☐ No
Check cable terminals for burnt marks, hot spot or loose connection	☐ Yes	☐ No
Check for physical damage	☐ Yes	☐ No
REMOTE MONITORING SYSTEM		
Check whether RMS unit is functioning	☐ Yes	☐ No

SPV POWER PLANT MONITORING SHEET

Parameters under Measurement	Data	Remarks if any
GENERATION		
Current Energy Meter Reading (C)		
Previous Energy Meter Reading (P)		
Quarterly Generation (C – P) kWh		
Inverter Cumulative Generation (kWh)		
Number of days without generation (*in case of fault*)		
PV MODULES (AJB Reading using Multimeter)		
i. Watt Peak (Wp)		
ii. Voltage (V)		
iii. Current (A)		
iv. Number of Series		
v. Number of Parallel		
POWER CONDITIONING UNIT (PCU)		
i. PV Voltage (V)		
ii. PV Current (A)		
iii. PV Power (kW)		
iv. AC Voltage (R Phase)		
v. AC Voltage (Y Phase)		
vi. AC Voltage (B Phase)		
vii. Frequency (Hz)		
viii. Error log/Warning log Details		

Special Remarks (if any) Customer / Service Executive:

USHA ELECTRONICS SYSTEMS PALAKKAD 679533 KOOTTARA

The above generation data are verified and the power plant is working satisfactorily. The periodic maintenance is regular and no default in inspection is noticed.

Signature with Seal

Authorised Representative of LSG

Name:

Designation:

Signature with Seal

Service Executive

Installed Agency

To be issued in Triplicate: Original to ANERT DO, copy to beneficiary& One for the installed agency

USHA ELECTRONICS SYSTEMS PALAKKAD 679533 KOOTTANAD

ANNEXURE G –GUARANTEED TECHNICAL PARAMETERS

PV Module			
#	Particulars	Required	Offered
1	PV Module Manufacture Name & Country of origin	manufacture name to be specified)	
2	PV Module type	Mono Crystalline, Mono-PERC	
3	Product Code		
4	No. of PV cells per Module		
5	Total number of PV modules		
6	Max.Power, Pmp @STC	500 Wp or above	
7	Max. power tolerance (%)	Not more than 3%	
8	Max. Power voltage (Vmp)@STC	To be specified	
9	Max. Power current (Imp) @STC	To be specified	
10	Open circuit voltage, Voc@STC	To be specified	
11	Short circuit current, Isc@STC	To be specified	
12	Nominal voltage	To be specified	
13	Nominal Wattage	To be specified	
14	Fill Factor	Not less than 0.7	
15	Temp. coefficient of Voc (%/C)		
16	Temp. coefficient of Pmp (%/C)		
17	Temperature Co-efficient of Isc (%/°C)		
18	Normal Operating Cell		

USHA ELECTRONICS SYSTEMS PALAKKAD 679533 KOOTTANAD

PV Module			
#	**Particulars**	**Required**	**Offered**
	Temperature (NOCT) (°C)		
19	Operating Temperature (°C)		
20	Max Temperature rise of solar cells under severe working conditions over Max. Ambient Temp.	To be specified	
21	Module is suitable to operate at 500 ambient	Yes/No	
22	Cell efficiency	%	
23	Module efficiency	>=19.5% (Document to prove efficiency shall be furnished with the offer)	
24	Maximum System Voltage		
25	No. of By-pass Diodes		
26	Mounting arrangement for Solar Module	Fixed Arrangement	
27	Solar Module frame material	Anodized Aluminum	
28	Finish		
29	Types of Sections used		
30	Module dimensions cms (LxWxH)	To be specified	
31	PV panel Weight (kg)	To be specified	
32	Module Life (minimum)	25 years	

PV Module			
#	Particulars	Required	Offered
33	PV array area(sqm)		
34	Standards/Approvals from International Agencies	IEC 61215/IEC 61730/ IEC 61701	
35	Guaranteed output confirm	Yes	
36	Output Cables	Polarized, UV protected &Weather Proof DC rated multi-contact connector	
37	Output Terminal	PV Connectors	
38	Junction Box	Weather resistant HDPE (IP65)	
39	Construction Front, Back	High transmittance glass. Polyester Ethyl Vinyl Acetate (EVA) encapsulate	
40	Glass	Low iron tempered	
43	Copies of test certificates	IS 14286/IEC 61215,61730 part 1&2, IEC 61701	

INVERTER (To be provided for each capacity)			
#	Particulars	Required	Offered
1	Manufacturer		
2	Model name/No.		
3	Number of units		
5	Nominal AC power		
6	Nominal AC voltage		

USHA ELECTRONICS SYSTEMS PALAKKAD 679533 KOOTTANAD

INVERTER (To be provided for each capacity)			
#	**Particulars**	**Required**	**Offered**
7	Nominal AC Current		
8	AC grid Frequency range	50Hz ± 0.5%	
9	AC grid voltage range		
10	Power Factor (+ and -)		
11	Total Harmonic Distortion	As per IEEE-519 2014	
12	AC over / under voltage over / under frequency protection		
13	Max PV input power		
14	Maximum DC voltage	Less than 1000 V	
15	MPPT voltage range		
16	Maximum DC current		
17	No. of DC input ports		
18	Maximum Efficiency	as perIEC61683	
19	DC voltage ripple		
20	Ambient temperature range		
21	Humidity (non-condensing)	95%, non-condensing	
22	Degree of protection		
23	Dimensions approx. (HxWxD)		
24	Weight		
25	Protective functions AC over/under voltage, ACover/under frequency,		

INVERTER (To be provided for each capacity)			
#	**Particulars**	**Required**	**Offered**
	overtemperature, AC and DC overcurrent, DC over-voltage,against Islanding		
26	Communication Interface	RS485. MPI Profi Bus/Telephone Modem/WiFi	
27	User-display standard	LCD panel with membrane Keypad	
28	Enclosure environment rating		
29	Safety and EMC		
30	Anti-islanding feature	IEEE1547/UL1741/IEC62116	

Others				
#	**Particulars**	**Required**	**Offered**	
1	Remote Monitoring Unit	IIOT-Compatible	☐ Yes	☐ No
2	Cables	UV Rated	☐ Yes	☐ No
3	Junction Boxes	IP 54 or IP 65 Rated	☐ Yes	☐ No

ANNEXURE H – BID SECURITY BANK GUARANTEE

BID SECURITY BANK GUARANTEE

BG No. :

Amount :

Date :

Valid up to :

This guarantee is made on this ..... day of ..... 20..... by ..... (Complete postal address of the bank) hereinafter called 'the **Bank**', which expression shall unless repugnant to the context or meaning thereof shall include its successors and assigns.

WHEREAS the **ANERT,** having its registered office at PMG-Law College Rd, Vikas Bhavan PO, Thiruvananthapuram, Kerala, PIN – 695 033, hereinafter called as **ANERT,** which expression shall unless repugnant to the context or meaning thereof shall include its successors and assigns in having agreed to exempt .....(hereinafter called "**contractor(s)**" which expression unless repugnant to the context and meaning thereof shall include its successors and assigns) from depositing with **ANERT,** a sum of Rs. ..... towards Security Deposit in lieu of the said **contractor(s)** having agreed to furnish a bank guarantee for the said sum of Rs. ..... as required under the terms and conditions of Tender No. ..... dated ..... (hereinafter referred as the 'bid') placed by the **ANERT.**, on the said **contractor(s)** and on specific request on the part of the said **Contractor**(s), we the **Bank** hereby unconditionally and irrevocably affirm and undertake-

On production of the Bank Guarantee for Rs..... (Rupees..... only) we, ...Bank having our Head Office at ..... (herein after referred to as "the Bank") at the request of M/s. .....(name of contractor) do hereby undertake to pay to the ANERT an amount not exceeding Rs..... (Rupees ..... only), against any loss or damage

caused to or suffered or would be caused to or suffered by the ANERT by reason of any breach by the said contractor of any of the terms and conditions contained in the said agreement

We, ...Bank, do hereby undertake to pay the amount due and payable under this Guarantee without any demur, merely on a demand from the ANERT stating that the amount claimed is due by way of loss or damage caused to or would be caused to or suffered by the ANERT by reasons of breach by the said contractor of any of the terms or conditions contained in the said agreement. Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. ..... (Rupees ..... only).

This guarantee will not be discharged due to change in the constitution of the bank or the contractor/supplier.

Notwithstanding anything contained hereinbefore:

1) Our liability under this Bank Guarantee shall not exceed Rs.....(Rupees .... only)
2) This Bank Guarantee shall be valid upto .....
3) We are liable to pay the guaranteed amount or any part thereof under this Bank Guarantee amount only and only if you serve us a written claim or demand on or before.....

Dated at ..... this .... day of 2021

SIGNATURE OF THE BANK _____

SEAL OF THE BANK _____

SIGNATURE OF THE WITNESS _____

Name and Address of the Witness _____

The bank guarantee shall be issued by a bank (Nationalized/Scheduled) located in India

ANNEXURE I – RATE CONTRACT ORDER

FORMAT A –UNDERTAKING FOR NO BLACKLISTING & NO BANNING

(To be provided on Rs.200 Non-Judicial Stamp paper. In Case of JV the following format is to be provided by Each Member of the Joint Venturerespectevly)

Undertaking for No Blacklisting & No Banning

To

The CEO
ANERT

Sub: EoI for additional Empanelment of vendors under the Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW - 150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala

I / We hereby declare that presently our Company/Limited Liability Partnership/ Partnership Firm/ Sole Proprietorship is having unblemished record and is not declared ineligible for corrupt/fraudulent practices by any State/Central Government/PSU on the date of Bid Submission.

I / We further declare that presently our Company/Limited Liability Partnership/ Partnership Firm/ Sole Proprietorship is not blacklisted and not declared ineligible for reasons other than corrupt/fraudulent practices by any State/Central Government/PSU on the date of Bid Submission.

If this declaration is found to be incorrect then without prejudice to any other action that may be taken, our security may be forfeited in full and the tender if any to the extent accepted may be cancelled.

(Signature & Seal of Authorized Signatory for which POA attached)

Name of Authorized Signatory:

Designation:

Date:

Place:

USHA ELECTRONICS SYSTEMS PALAKKAD 6/9633 KOOTTANAD

FORMAT B –POWER OF ATTORNEY IN FAVOUR OF AUTHORIZED SIGNATORY (IN CASE BIDDER IS JOINT VENTURE)

(On Non-Judicial Stamp Paper of Rs. 200/- attested by Notary Public / First Class Magistrate)

Power of Attorney in favour of Authorized Signatory

KNOW ALL MEN BY THESE PRESENTS THAT WE, the Partners whose details are given hereunder ..... have formed a Joint Venture under the laws of ..... and having our Registered Office(s)/Head Office(s) at ..... (hereinafter called the 'Joint Venture' which expression shall unless repugnant to the context or meaning thereof, include its successors, administrators and assigns) acting through M/s ..... being the Partner in-charge do hereby constitute, nominate and appoint M/s..... a Company incorporated under the laws of ..... and having its Registered/Head Office at ..... as our duly constituted lawful Attorney (hereinafter called "Attorney" or "Authorised Representative" or "Partner In-charge") to exercise all or any of the powers for and on behalf of the Joint Venture in regard to “Bid Specification” for the Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9348 nos. under the PM-KUSUM scheme (Component-C) in the State of Kerala”, under NIT No: ANERT-TECH/45/2020-PE1(RTS) for which bids have been invited by ANERT undertake the following acts:

i. To submit proposal and participate in the aforesaid Bid Specification of ANERT on behalf of the "Joint Venture".

ii. To negotiate with ANERT the terms and conditions for award of the Contract pursuant to the aforesaid Bid and to sign the Contract with the ANERT for and on behalf of the "Joint Venture".

iii. To do any other act or submit any document related to the above.

iv. To receive, accept and execute the Contract for and on behalf of the "Joint Venture".

It is clearly understood that the Partner In-charge (Lead Partner) shall ensure performance of the Contract(s) and if one or more Partner fail to perform their

respective portions of the Contract(s), the same shall be deemed to be a default by all the Partners.

It is expressly understood that this Power of Attorney shall remain valid binding and irrevocable till completion of the period to complete all the Scope of Work awarded under the terms of Bid Specification/ Contract.

The Joint Venture hereby agrees and undertakes to ratify and confirm all the whatsoever the said Attorney/Authorised Representatives/Partner in-charge quotes in the bid and negotiates with ANERT and signs the Contract with ANERT and/or proposes to act on behalf of the Joint Venture by virtue of this Power of Attorney and the same shall bind the Joint Venture as if done by itself.

IN WITNESS THEREOF the Partners Constituting the Joint Venture as aforesaid have executed these presents on this ..... day of ……..... under the Common Seal(s) of their Companies.

For and on behalf of the partners of Joint Venture

.....

.....

The Common Seal of the above Partners of the Joint Venture:

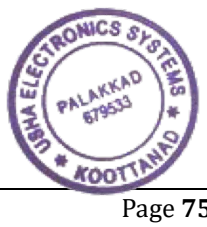
The Common Seal has been affixed there unto in the presence of:

WITNESS

1. Signature.....
   Name .....
   Designation .....
   Occupation .....
2. Signature.....
   Name .....
   Designation .....
   Occupation .....

Note:

1. For the purpose of executing the Agreement, the non-judicial stamp papers of appropriate value shall be purchased in the name of Joint Venture.
2. The Agreement shall be signed on all the pages by the authorised representatives of each of the partners and shall invariably be witnessed.


USHA ELECTRONICS SYSTEMS
PALAKKAD
679533
KOOTTANAD

FORMAT D –CHECKLIST TO BE SUBMITTED ALONG WITH COVERING LETTER

Checklist to be submitted along with Covering letter					
Tender ID:			**Date:**		
Tender name: -Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 Nos ranging from 2kW- 150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala					
Name of Sole/ Lead Bidder					
Name of JV Partner					
Sl No	**Particular**	**Sole/Lead bidder**		**Partner in JV**	
		Pg No	**File Name**	**Pg No**	**File Name**
1	Proof for Tender fee Exemption, if any				
2	Proof for EMD fee Exemption, if any				
3	In case of JV, provide JV agreement defining lead member				
4	Copy of Registration/Incorporation Certificate				
5	Copy of GST Registration certificate				
6	Copy of Pan Card				
7	Power of Attorney in favour of authorized signatory in Rs 200 Stamp paper				
8	If Power of Attorney in favour of authorized signatory not applicable - need to submit self-declaration on authorized signatory				
9	Declaration by JV partner /Sole bidder on Manufacturing of Solar Panels				
10	Work orders as proof of Experience				
11	Completion certificate for the work orders				
12	Undertaking for Non-Black Listing in 200 Rs Stamp Paper				
13	Scanned copy of Tender Document Signed and Sealed				
14	Agreement in the Prescribed format Annexure B in 200Rs stamp paper				
15	Declaration by manufacturer to provide PV module from ALMM List & with DCR content				

16	Declaration from lead bidder to provide Inverter with IS1621, IS16169 certification				
17	Summary of Bid Qualification Requirement				
18	Bill of Material				
19	Guaranteed Technical Parameters				
20	Test Certificates as per GTP				
21	Datasheet as per GTP				
22	Declaration by the bidder				
23	Declaration on subsidy claim				
24	Declaration of relationship with ANERT Employee				
25	List of Service centres /Declaration to provide service centre in 200Rs Stamp Paper				
26	ICRA Grading Certificate				

ANNEX_PMKUSUM_3

Kondaas Automation Pvt. Ltd.,
(An ISO 9001 : 2015 Certified Company)
5 B, Sri Alamelu Nagar, Kamarajar Road, Coimbatore 641 015
Phone : 0422- 2574000,5000,6000
email : info@kondaas.com URL : www.kondaas.com

Tender Inviting Authority : Director, ANERT

Name of Work : Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos ranging from 2kW 150kW under the PM KUSUM scheme (Component C) in the State of Kerala

Name of Bidder : M/s. Kondaas Automation Private Limited.

ROOF TOP MOUNTED SOLAR POWER PLANT

Group 1:

Item Description (in Rs)	Basic Rate (in Rs)	GST (in Rs)	Total Amount Without Tax (in Rs)	Total Amount With Tax (in Rs)
Total cost for the SIC 2KW SPV Power plant meeting all the specifications as per the Tender	206740.00	28530.12	206740.00	235270.12
Total cost for the SIC 3KW SPV Power plant meeting all the specifications as per the Tender	250840.00	34615.92	250840.00	285455.92
Total cost for the SIC 5KW SPV Power plant meeting all the specifications as per the Tender	390340.00	53866.92	390340.00	444206.92
Total cost for the SIC 7KW SPV Power plant meeting all the specifications as per the Tender	495860.00	68428.68	495860.00	564288.68
Total cost for the SIC 10KW SPV Power plant meeting all the specifications as per the Tender	645060.00	89018.28	645060.00	734078.28

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kondaas
Kondaas Automation Pvt. Ltd.,
(An ISO 9001 : 2015 Certified Company)
5 B, Sri Alamelu Nagar,Kamarajar Road,Coimbatore 641 015
Phone : 0422- 2574000,5000,6000
email : info@kondaas.com URL: www.kondaas.com

Tender Inviting Authority : Director, ANERT

Name of Work : Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos ranging from 2kW 150kW under the PM KUSUM scheme (Component C) in the State of Kerala

Name of Bidder : M/s. Kondaas Automation Private Limited.

ROOF TOP MOUNTED SOLAR POWER PLANT

Group 2:

Item Description (in Rs)	Basic Rate (in Rs)	GST (in Rs)	Total Amount Without Tax (in Rs)	Total Amount With Tax (in Rs)
Cost per KW for the SPV Power plant meeting in the range of 30KW to 99 KW or part there of	62692.00	8651.49	62692.00	71343.49
Cost per KW for the SPV Power plant meeting in the range of 100KW to 150 KW or part there of	61745.00	8520.81	61745.00	70265.81

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Tender Inviting Authority : Director, ANERT

Name of Work: Rate Contract for the Solarisation of Grid connected Agricultural pumps of cumulative capacity of 9348 nosranging from 2kW- 150kW under PM-KUSUM scheme (Component C) in the state of Kerala

Contract No: ANERT-TECH/144/2022-T4

Name of the Bidder/ Bidding Firm/Company: TATA Power Solar Systems Limited

Price Schedule- Rooftop Systems

NUMBER #	TEXT #	NUMBER #	NUMBER #	NUMBER #	NUMBER #	TEXT #
SL No.	Item Description	Estimated Rate in figures to be entered by Bidder in Rs.P	GST Rate in figures to be entered by Bidder in Rs.P (70% of estimated rate under 12% GST & 30% of estimated rate under 18% GST. On service part)	TOTAL AMOUNT Without Taxes in Rs. P	TOTAL AMOUNT With Taxes Rs.P	TOTAL QUOTED RATE in Words
1	2	13	13	53	54	55
1	Rate Contract for the Solarisation of Grid connected Agricultural pumps of cumulative capacity of 9348 nos ranging from 2kW- 150kW under PM-KUSUM scheme (Component C) in the state of Kerala					

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TATA POWER SOLAR

Tata Power Solar Systems Limited
Communication address: 78 Electronics City Phase I Hosur Road Bengaluru 560 100 India
Registered office: Tata Power Corporate Centre 34 Sant Tuka Ram Road Carnac Bunder Mumbai 400009
CIN U40108KA1989PLC034989 Tel: +91 80 6777 2200 Email: info.solar@tatapower.com Website: www.tatapowersolar.com

TATA POWER SOLAR SYSTEMS LTD.

SUN TASTIC

SUNTASTIC ENGINEERING PRIVATE LIMITED
(Formerly Suntastic Solar Systems Private Limited)
Class I Contractor - PWD, TN Highways and Corporation
Business in Solar, Construction, Engineering, Trading

Tender Inviting Authority : Director, ANERT

Name of Work : Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos ranging from 2kW 150kW under the PM KUSUM scheme (Component C) in the State of Kerala

Name of Bidder : M/s. Suntastic Engineering Private Limited.

ROOF TOP MOUNTED SOLAR POWER PLANT

Group 1:

Item Description (in Rs)	Basic Rate (in Rs)	GST (in Rs)	Total Amount Without Tax (in Rs)	Total Amount With Tax (in Rs)
Total cost for the SIC 2KW SPV Power plant meeting all the specifications as per the Tender	203600.00	28096.80	203600.00	231696.80
Total cost for the SIC 3KW SPV Power plant meeting all the specifications as per the Tender	246600.00	34030.80	246600.00	280630.80
Total cost for the SIC 5KW SPV Power plant meeting all the specifications as per the Tender	385500.00	53199.00	385500.00	438699.00
Total cost for the SIC 7KW SPV Power plant meeting all the specifications as per the Tender	490700.00	67716.60	490700.00	558416.60
Total cost for the SIC 10KW SPV Power plant meeting all the specifications as per the Tender	634000.00	87492.00	634000.00	721492.00

For SUNTASTIC ENGINEERING PVT. LTD

Chief Executive Officer

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No.69/27A, First Pilliayar Koil St, Lakshmipuram, Chrompet, Chennai - 600044
Conatct : +91 8939838052/58 Mail : suntasticengineering@gmail.com
Web : www.suntasticsolarsystems.com GST : 33AAXCS4958B1ZZ

SUN TASTIC

SUNTASTIC ENGINEERING PRIVATE LIMITED
(Formerly Suntastic Solar Systems Private Limited)
Class I Contractor - PWD, TN Highways and Corporation
Business in Solar, Construction, Engineering, Trading

Tender Inviting Authority : Director, ANERT

Name of Work : Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 nos ranging from 2kW 150kW under the PM KUSUM scheme (Component C) in the State of Kerala

Name of Bidder : M/s. Suntastic Engineering Private Limited.

ROOF TOP MOUNTED SOLAR POWER PLANT

Group 2:

Item Description (in Rs)	Basic Rate (in Rs)	GST (in Rs)	Total Amount Without Tax (in Rs)	Total Amount With Tax (in Rs)
Cost per KW for the SPV Power plant meeting in the range of 30KW to 99 KW or part there of	61000.00	8418.00	61000.00	69418.00
Cost per KW for the SPV Power plant meeting in the range of 100KW to 150 KW or part there of	60000.00	8280.00	60000.00	68280.00

For SUNTASTIC ENGINEERING PVT. LTD

Chief Executive Officer

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No.69/27A, First Pilliayar Koil St, Lakshmipuram, Chrompet, Chennai - 600044
Conatct : +91 8939838052/58 Mail : suntasticengineering@gmail.com
Web : www.suntasticsolarsystems.com GST : 33AAXCS4958B1ZZ

sunsenz GREEN LIFE
Corporate.off: Bldg.No. 2/159, Smart Tower, Muttom
Choornikara, Aluva 683106, Ernakulam, Kerala, India
Tel: +91484 262583, Mob : 09946788881 -86
www.sunsenz.com Email : contact@sunsenz.in
Moopens Energy Solutions Pvt. Ltd.

B) Price Schedule using Roof top Structure

Sl. No.	Item Description	Estimated Rate in Figures To be Entered by the Bidder	GST Rate in Figures To be entered by the Bidder	Total Amount Without Taxes	Total Amount with Taxes
	Group -1				
1	Total Cost for the SIC of 2 kW SPV Power Plant meeting all the specifications as per tender	₹ 2,07,160.00	₹ 28,588.08	₹ 2,07,160.00	₹ **2,35,748.08**
2	Total Cost for the SIC of 3 kW SPV Power Plant meeting all the specifications as per tender	₹ 2,50,455.00	₹ 34,562.79	₹ 2,50,455.00	₹ **2,85,017.79**
3	Total Cost for the SIC of 5 kW SPV Power Plant meeting all the specifications as per tender	₹ 3,89,450.00	₹ 53,744.10	₹ 3,89,450.00	₹ **4,43,194.10**
4	Total Cost for the SIC of 7 kW SPV Power Plant meeting all the specifications as per tender	₹ 4,96,230.00	₹ 68,479.74	₹ 4,96,230.00	₹ **5,64,709.74**
5	Total Cost for the SIC of 10 kW SPV Power Plant meeting all the specifications as per tender	₹ 6,42,500.00	₹ 88,665.00	₹ 6,42,500.00	₹ **7,31,165.00**

Group 2

1	Cost per kW for the SIC of SPV Power Plants in the range of 30 kW - 99 kW or part thereof	₹ 73,380.00	₹ 10,126.44	₹ 73,380.00	₹ **83,506.44**
2	Cost per kW for the SIC of SPV Power Plants in the range of 100 kW - 150 kW or part thereof	₹ 73,100.00	₹ 10,087.80	₹ 73,100.00	₹ **83,187.80**

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ANNEX_PM KUSUM_1

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Item Rate BoQ

Tender Inviting Authority: Director,ANERT

Name of Work : Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2 kW-150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala

Contract No: ANERT-TECH/144/2022-T4

Name of the Bidder/ Bidding Firm / Company :	Tata power Solar Systems Limited

PRICE SCHEDULE

(This BOQ template must not be modified/replaced by the bidder and the same should be uploaded after filling the relevent columns, else the bidder is liable to be rejected for this tender. Bidders are allowed to enter the Bidder Name and Values only)

NUMBER #	TEXT #	NUMBER #	NUMBER #	NUMBER #	NUMBER #	TEXT #
Sl. No.	Item Description	ESTIMATED RATE In Figures To be entered by the Bidder in Rs. P	GST RATE In Figures To be entered by the Bidder in Rs. P (70% of Estimated Rate under 12% GST & 30% of the Estimated Rate under 18% GST. on service part)	TOTAL AMOUNT Without Taxes in Rs. P	TOTAL AMOUNT With Taxes Rs. P	TOTAL QUOTED RATE In Words
1	2	13	13	53	54	55
1	Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2 kW-150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala Group - 2					
1.01	Cost per kW for the SIC of SPV Power plants in the range of 30 kW - 99 kW or part therof	69180.00	9546.84	69180.00	78726.84	INR Seventy Eight Thousand Seven Hundred & Twenty Six and Paise Eighty Four Only
1.02	Cost per kW for the SIC of SPV Power plants in the range of 100 kW - 150 kW or part therof	68780.00	9491.64	68780.00	78271.64	INR Seventy Eight Thousand Two Hundred & Seventy One and Paise Sixty Four Only
Total in Figures				137960.00	156998.48	INR One Lakh Fifty Six Thousand Nine Hundred & Ninety Eight and Paise Forty Eight Only
Quoted Rate in Words		INR One Lakh Fifty Six Thousand Nine Hundred & Ninety Eight and Paise Forty Eight Only				

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Item Rate BoQ

Tender Inviting Authority: Director,ANERT

Name of Work : Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2 kW-150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala

Contract No: ANERT-TECH/144/2022-T4

Name of the Bidder/ Bidding Firm / Company :	Tata Power Solar Systems Ltd

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PRICE SCHEDULE

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NUMBER #	TEXT #	NUMBER #	NUMBER #	NUMBER #	NUMBER #	TEXT #
Sl. No.	Item Description	ESTIMATED RATE In Figures To be entered by the Bidder in Rs. P	GST RATE In Figures To be entered by the Bidder in Rs. P (70% of Estimated Rate under 12% GST & 30% of the Estimated Rate under 18% GST. on service part)	TOTAL AMOUNT Without Taxes in Rs. P	TOTAL AMOUNT With Taxes Rs. P	TOTAL QUOTED RATE In Words
1	2	13	13	53	54	55
1	Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2 kW-150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala Group - 1					
1.01	Total cost for the SIC of 2 kW SPV Power plant meeting all the specifications as per tender	218093.00	30096.83	218093.00	248189.83	INR Two Lakh Forty Eight Thousand One Hundred & Eighty Nine and Paise Eighty Three Only
1.02	Total cost for the SIC of 3 kW SPV Power plant meeting all the specifications as per tender	262034.00	36160.69	262034.00	298194.69	INR Two Lakh Ninety Eight Thousand One Hundred & Ninety Four and Paise Sixty Nine Only
1.03	Total cost for the SIC of 5 kW SPV Power plant meeting all the specifications as per tender	405882.00	56011.72	405882.00	461893.72	INR Four Lakh Sixty One Thousand Eight Hundred & Ninety Three and Paise Seventy Two Only
1.04	Total cost for the SIC of 7 kW SPV Power plant meeting all the specifications as per tender	521093.00	71910.83	521093.00	593003.83	INR Five Lakh Ninety Three Thousand &Three and Paise Eighty Three Only
1.05	Total cost for the SIC of 10 kW SPV Power plant meeting all the specifications as per tender	675635.00	93237.63	675635.00	768872.63	INR Seven Lakh Sixty Eight Thousand Eight Hundred & Seventy Two and Paise Sixty Three Only
Total in Figures				2082737.00	2370154.70	INR Twenty Three Lakh Seventy Thousand One Hundred & Fifty Four and Paise Seventy Only
Quoted Rate in Words		INR Twenty Three Lakh Seventy Thousand One Hundred & Fifty Four and Paise Seventy Only				

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Item Rate BoQ

Tender Inviting Authority: Director,ANERT

Name of Work : Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2 kW-150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala

Contract No: ANERT-TECH/144/2022-T4

Name of the Bidder/ Bidding Firm / Company :	SURYAM INTERNATIONAL PRIVATE LIMITED

PRICE SCHEDULE

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NUMBER #	TEXT #	NUMBER #	NUMBER #	NUMBER #	NUMBER #	TEXT #
Sl. No.	Item Description	ESTIMATED RATE In Figures To be entered by the Bidder in Rs. P	GST RATE In Figures To be entered by the Bidder in Rs. P (70% of Estimated Rate under 12% GST & 30% of the Estimated Rate under 18% GST. on service part)	TOTAL AMOUNT Without Taxes in Rs. P	TOTAL AMOUNT With Taxes Rs. P	TOTAL QUOTED RATE In Words
1	2	13	13	53	54	55
1	Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2 kW-150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala Group - 2					
1.01	Cost per kW for the SIC of SPV Power plants in the range of 30 kW - 99 kW or part therof	63000.00	71694.00	63000.00	134694.00	INR One Lakh Thirty Four Thousand Six Hundred & Ninety Four Only
1.02	Cost per kW for the SIC of SPV Power plants in the range of 100 kW - 150 kW or part therof	64000.00	72832.00	64000.00	136832.00	INR One Lakh Thirty Six Thousand Eight Hundred & Thirty Two Only
Total in Figures				127000.00	271526.00	INR Two Lakh Seventy One Thousand Five Hundred & Twenty Six Only
Quoted Rate in Words		INR Two Lakh Seventy One Thousand Five Hundred & Twenty Six Only				

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Item Rate BoQ

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Tender Inviting Authority: Director,ANERT

Name of Work : Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2 kW-150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala

Contract No: ANERT-TECH/144/2022-T4

Name of the Bidder/ Bidding Firm / Company :	SURYAM INTERNATIONAL PRIVATE LIMITED

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PRICE SCHEDULE

(This BOQ template must not be modified/replaced by the bidder and the same should be uploaded after filling the relevent columns, else the bidder is liable to be rejected for this tender. Bidders are allowed to enter the Bidder Name and Values only)

NUMBER #	TEXT #	NUMBER #	NUMBER #	NUMBER #	NUMBER #	TEXT #
Sl. No.	Item Description	ESTIMATED RATE In Figures To be entered by the Bidder in Rs. P	GST RATE In Figures To be entered by the Bidder in Rs. P (70% of Estimated Rate under 12% GST & 30% of the Estimated Rate under 18% GST. on service part)	TOTAL AMOUNT Without Taxes in Rs. P	TOTAL AMOUNT With Taxes Rs. P	TOTAL QUOTED RATE In Words
1	2	13	13	53	54	55
1	Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2 kW-150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala Group - 1					
1.01	Total cost for the SIC of 2 kW SPV Power plant meeting all the specifications as per tender	226000.00	257188.00	226000.00	483188.00	INR Four Lakh Eighty Three Thousand One Hundred & Eighty Eight Only
1.02	Total cost for the SIC of 3 kW SPV Power plant meeting all the specifications as per tender	279000.00	317502.00	279000.00	596502.00	INR Five Lakh Ninety Six Thousand Five Hundred & Two Only
1.03	Total cost for the SIC of 5 kW SPV Power plant meeting all the specifications as per tender	425000.00	483650.00	425000.00	908650.00	INR Nine Lakh Eight Thousand Six Hundred & Fifty Only
1.04	Total cost for the SIC of 7 kW SPV Power plant meeting all the specifications as per tender	546000.00	621348.00	546000.00	1167348.00	INR Eleven Lakh Sixty Seven Thousand Three Hundred & Forty Eight Only
1.05	Total cost for the SIC of 10 kW SPV Power plant meeting all the specifications as per tender	730000.00	830740.00	730000.00	1560740.00	INR Fifteen Lakh Sixty Thousand Seven Hundred & Forty Only
Total in Figures				2206000.00	4716428.00	INR Forty Seven Lakh Sixteen Thousand Four Hundred & Twenty Eight Only
Quoted Rate in Words		INR Forty Seven Lakh Sixteen Thousand Four Hundred & Twenty Eight Only				

Validate Print Help

Item Rate BoQ

Tender Inviting Authority: Director,ANERT

Name of Work : Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2 kW-150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala

Contract No: ANERT-TECH/144/2022-T4

Name of the Bidder/ Bidding Firm / Company :	SUNTASTIC ENGINEERING PRIVATE LIMITED

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PRICE SCHEDULE

(This BOQ template must not be modified/replaced by the bidder and the same should be uploaded after filling the relevent columns, else the bidder is liable to be rejected for this tender. Bidders are allowed to enter the Bidder Name and Values only)

NUMBER #	TEXT #	NUMBER #	NUMBER #	NUMBER #	NUMBER #	TEXT #
Sl. No.	Item Description	ESTIMATED RATE In Figures To be entered by the Bidder in Rs. P	GST RATE In Figures To be entered by the Bidder in Rs. P (70% of Estimated Rate under 12% GST & 30% of the Estimated Rate under 18% GST. on service part)	TOTAL AMOUNT Without Taxes in Rs. P	TOTAL AMOUNT With Taxes Rs. P	TOTAL QUOTED RATE In Words
1	2	13	13	53	54	55
1	Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2 kW-150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala Group - 1					
1.01	Total cost for the SIC of 2 kW SPV Power plant meeting all the specifications as per tender	218000.00	30084.00	218000.00	248084.00	INR Two Lakh Forty Eight Thousand &Eighty Four Only
1.02	Total cost for the SIC of 3 kW SPV Power plant meeting all the specifications as per tender	264300.00	36473.40	264300.00	300773.40	INR Three Lakh Seven Hundred & Seventy Three and Paise Forty Only
1.03	Total cost for the SIC of 5 kW SPV Power plant meeting all the specifications as per tender	405500.00	55959.00	405500.00	461459.00	INR Four Lakh Sixty One Thousand Four Hundred & Fifty Nine Only
1.04	Total cost for the SIC of 7 kW SPV Power plant meeting all the specifications as per tender	468300.00	64625.40	468300.00	532925.40	INR Five Lakh Thirty Two Thousand Nine Hundred & Twenty Five and Paise Forty Only
1.05	Total cost for the SIC of 10 kW SPV Power plant meeting all the specifications as per tender	674300.00	93053.40	674300.00	767353.40	INR Seven Lakh Sixty Seven Thousand Three Hundred & Fifty Three and Paise Forty Only
Total in Figures				2030400.00	2310595.20	INR Twenty Three Lakh Ten Thousand Five Hundred & Ninety Five and Paise Twenty Only

Quoted Rate in Words	INR Twenty Three Lakh Ten Thousand Five Hundred & Ninety Five and Paise Twenty Only

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Item Rate BoQ

viting Authority: Director,ANERT

Work : Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2 kW-150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala

No: ANERT-TECH/144/2022-T4

he irm / :	SUNTASTIC ENGINEERING PRIVATE LIMITED

PRICE SCHEDULE

(This BOQ template must not be modified/replaced by the bidder and the same should be uploaded after filling the relevent columns, else the bidder is liable to be rejected for this tender. Bidders are allowed to enter the Bid

R #	TEXT #	NUMBER #	NUMBER #	NUMBER #	NUMBER #	
	Item Description	ESTIMATED RATE In Figures To be entered by the Bidder in Rs. P	GST RATE In Figures To be entered by the Bidder in Rs. P (70% of Estimated Rate under 12% GST & 30% of the Estimated Rate under 18% GST. on service part)	TOTAL AMOUNT Without Taxes in Rs. P	TOTAL AMOUNT With Taxes Rs. P	TOTAL
	2	13	13	53	54	
	Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2 kW-150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala Group - 2					
	Cost per kW for the SIC of SPV Power plants in the range of 30 kW - 99 kW or part therof	64000.00	8832.00	64000.00	72832.00	INR Seventy Two Thousand E
	Cost per kW for the SIC of SPV Power plants in the range of 100 kW - 150 kW or part therof	63000.00	8694.00	63000.00	71694.00	INR Seventy One Thousand S
igures				127000.00	144526.00	INR One Lakh Forty Four Tho
ate in Words		INR One Lakh Forty Four Thousand Five Hundred & Twenty Six Only				

Print Help

Item Rate BoQ

viting Authority: Director,ANERT

Work : Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2 kW-150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala

No: ANERT-TECH/144/2022-T4

ne irm /	INKEL LIMITED,KAKKANAD

PRICE SCHEDULE

(This BOQ template must not be modified/replaced by the bidder and the same should be uploaded after filling the relevent columns, else the bidder is liable to be rejected for this tender. Bidders are allowed to enter the Bid

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	2	13	13	53	54	
	Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2 kW-150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala Group - 2					
	Cost per kW for the SIC of SPV Power plants in the range of 30 kW - 99 kW or part therof	69490.00	9589.62	69490.00	79079.62	INR Seventy Nine Thousand &
	Cost per kW for the SIC of SPV Power plants in the range of 100 kW - 150 kW or part therof	69262.00	9558.16	69262.00	78820.16	INR Seventy Eight Thousand E Sixteen Only
gures				138752.00	157899.78	INR One Lakh Fifty Seven Tho Paise Seventy Eight Only
ate in Words		INR One Lakh Fifty Seven Thousand Eight Hundred & Ninety Nine and Paise Seventy				

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Item Rate BoQ

viting Authority: Director,ANERT

Work : Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2 kW-150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala

No: ANERT-TECH/144/2022-T4

he irm / :	INKEL LIMITED KAKKANAD

PRICE SCHEDULE

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	2	13	13	53	54	
	Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2 kW-150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala Group - 1					
	Total cost for the SIC of 2 kW SPV Power plant meeting all the specifications as per tender	230000.00	31740.00	230000.00	261740.00	INR Two Lakh Sixty One Thou
	Total cost for the SIC of 3 kW SPV Power plant meeting all the specifications as per tender	305000.00	42090.00	305000.00	347090.00	INR Three Lakh Forty Seven
	Total cost for the SIC of 5 kW SPV Power plant meeting all the specifications as per tender	466596.00	64390.25	466596.00	530986.25	INR Five Lakh Thirty Thousan Twenty Five Only
	Total cost for the SIC of 7 kW SPV Power plant meeting all the specifications as per tender	585132.00	80748.22	585132.00	665880.22	INR Six Lakh Sixty Five Thous Twenty Two Only
	Total cost for the SIC of 10 kW SPV Power plant meeting all the specifications as per tender	790572.00	109098.94	790572.00	899670.94	INR Eight Lakh Ninety Nine Th Paise Ninety Four Only
igures				2377300.00	2705367.41	INR Twenty Seven Lakh Five and Paise Forty One Only
ate in Words		INR Twenty Seven Lakh Five Thousand Three Hundred & Sixty Seven and Paise Fort				

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Item Rate BoQ

viting Authority: Director,ANERT

Work : Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2 kW-150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala

No: ANERT-TECH/144/2022-T4

ne	MOOPENS ENERGY SOLUTIONS PVT. LTD.
irm /	

PRICE SCHEDULE

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	2	13	13	53	54	
	Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2 kW-150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala Group - 1					
	Total cost for the SIC of 2 kW SPV Power plant meeting all the specifications as per tender	222600.00	30718.80	222600.00	253318.80	INR Two Lakh Fifty Three Tho Paise Eighty Only
	Total cost for the SIC of 3 kW SPV Power plant meeting all the specifications as per tender	269040.00	37127.52	269040.00	306167.52	INR Three Lakh Six Thousand Fifty Two Only
	Total cost for the SIC of 5 kW SPV Power plant meeting all the specifications as per tender	414900.00	57256.20	414900.00	472156.20	INR Four Lakh Seventy Two T Paise Twenty Only
	Total cost for the SIC of 7 kW SPV Power plant meeting all the specifications as per tender	536550.00	74043.90	536550.00	610593.90	INR Six Lakh Ten Thousand Fi Ninety Only
	Total cost for the SIC of 10 kW SPV Power plant meeting all the specifications as per tender	695800.00	96020.40	695800.00	791820.40	INR Seven Lakh Ninety One T Paise Forty Only
gures				2138890.00	2434056.82	INR Twenty Four Lakh Thirty F Eighty Two Only

te in Words	INR Twenty Four Lakh Thirty Four Thousand &Fifty Six and Paise Eighty Two

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Item Rate BoQ

viting Authority: Director,ANERT

Work : Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2 kW-150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala

No: ANERT-TECH/144/2022-T4

he irm /	MOOPENS ENERGY SOLUTIONS PVT. LTD.

PRICE SCHEDULE

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	2	13	13	53	54	
	Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2 kW-150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala Group - 2					
	Cost per kW for the SIC of SPV Power plants in the range of 30 kW - 99 kW or part therof	73780.00	10181.64	73780.00	83961.64	INR Eighty Three Thousand N Four Only
	Cost per kW for the SIC of SPV Power plants in the range of 100 kW - 150 kW or part therof	73250.00	10108.50	73250.00	83358.50	INR Eighty Three Thousand T Fifty Only
igures				147030.00	167320.14	INR One Lakh Sixty Seven Th Paise Fourteen Only
ate in Words		INR One Lakh Sixty Seven Thousand Three Hundred & Twenty and Paise Fourtee				

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Item Rate BoQ

viting Authority: Director,ANERT

Work : Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2 kW-150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala

No: ANERT-TECH/144/2022-T4

he firm / :	Kondaas Automation Pvt Ltd

PRICE SCHEDULE

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	2	13	13	53	54	
	Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2 kW-150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala Group - 1					
	Total cost for the SIC of 2 kW SPV Power plant meeting all the specifications as per tender	206740.00	28530.12	206740.00	235270.12	INR Two Lakh Thirty Five Tho Paise Twelve Only
	Total cost for the SIC of 3 kW SPV Power plant meeting all the specifications as per tender	250840.00	34615.92	250840.00	285455.92	INR Two Lakh Eighty Five Tho Paise Ninety Two Only
	Total cost for the SIC of 5 kW SPV Power plant meeting all the specifications as per tender	390340.00	53866.92	390340.00	444206.92	INR Four Lakh Forty Four Tho Ninety Two Only
	Total cost for the SIC of 7 kW SPV Power plant meeting all the specifications as per tender	495860.00	68428.68	495860.00	564288.68	INR Five Lakh Sixty Four Tho Paise Sixty Eight Only
	Total cost for the SIC of 10 kW SPV Power plant meeting all the specifications as per tender	645060.00	89018.28	645060.00	734078.28	INR Seven Lakh Thirty Four T Twenty Eight Only
igures				1988840.00	2263299.92	INR Twenty Two Lakh Sixty T Nine and Paise Ninety Two O
ate in Words		INR Twenty Two Lakh Sixty Three Thousand Two Hundred & Ninety Nine and Paise Nir				

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Item Rate BoQ

viting Authority: Director,ANERT

Work : Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2 kW-150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala

No: ANERT-TECH/144/2022-T4

ne irm /	Kondaas Automation Pvt Ltd

PRICE SCHEDULE

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	2	13	13	53	54	
	Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2 kW-150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala Group - 2					
	Cost per kW for the SIC of SPV Power plants in the range of 30 kW - 99 kW or part therof	62692.00	8651.49	62692.00	71343.49	INR Seventy One Thousand T Forty Nine Only
	Cost per kW for the SIC of SPV Power plants in the range of 100 kW - 150 kW or part therof	61745.00	8520.81	61745.00	70265.81	INR Seventy Thousand Two H One Only
gures				124437.00	141609.30	INR One Lakh Forty One Thou Thirty Only

ate in Words	INR One Lakh Forty One Thousand Six Hundred & Nine and Paise Thirty On

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Item Rate BoQ

viting Authority: Director,ANERT

Work : Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2 kW-150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala

No: ANERT-TECH/144/2022-T4

he firm / :	M/s. KC KOPAR Energy Solutions Pvt Ltd, Angamaly

PRICE SCHEDULE

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	2	13	13	53	54	
	Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2 kW-150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala Group - 1					
	Total cost for the SIC of 2 kW SPV Power plant meeting all the specifications as per tender	242050.00	33403.00	242050.00	275453.00	INR Two Lakh Seventy Five T Only
	Total cost for the SIC of 3 kW SPV Power plant meeting all the specifications as per tender	298321.00	41168.00	298321.00	339489.00	INR Three Lakh Thirty Nine T Only
	Total cost for the SIC of 5 kW SPV Power plant meeting all the specifications as per tender	449477.00	62028.00	449477.00	511505.00	INR Five Lakh Eleven Thousa
	Total cost for the SIC of 7 kW SPV Power plant meeting all the specifications as per tender	535202.00	73858.00	535202.00	609060.00	INR Six Lakh Nine Thousand
	Total cost for the SIC of 10 kW SPV Power plant meeting all the specifications as per tender	768483.00	106051.00	768483.00	874534.00	INR Eight Lakh Seventy Four Only
igures				2293533.00	2610041.00	INR Twenty Six Lakh Ten Tho

ate in Words	INR Twenty Six Lakh Ten Thousand &Forty One Only

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Item Rate BoQ

viting Authority: Director,ANERT

Work : Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2 kW-150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala

No: ANERT-TECH/144/2022-T4

he irm / :	M/s. KC KOPAR Energy Solutions Pvt Ltd, Angamaly

PRICE SCHEDULE

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R #	TEXT #	NUMBER #	NUMBER #	NUMBER #	NUMBER #	
	Item Description	ESTIMATED RATE In Figures To be entered by the Bidder in Rs. P	GST RATE In Figures To be entered by the Bidder in Rs. P (70% of Estimated Rate under 12% GST & 30% of the Estimated Rate under 18% GST. on service part)	TOTAL AMOUNT Without Taxes in Rs. P	TOTAL AMOUNT With Taxes Rs. P	TOTAL
	2	13	13	53	54	
	Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2 kW-150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala Group - 2					
	Cost per kW for the SIC of SPV Power plants in the range of 30 kW - 99 kW or part therof	67208.00	9275.00	67208.00	76483.00	INR Seventy Six Thousand Fo
	Cost per kW for the SIC of SPV Power plants in the range of 100 kW - 150 kW or part therof	62727.00	8656.00	62727.00	71383.00	INR Seventy One Thousand T
igures				129935.00	147866.00	INR One Lakh Forty Seven Th

ate in Words	INR One Lakh Forty Seven Thousand Eight Hundred & Sixty Six Only

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Note # 1

Pls verify and take necessary steps to publish the tender.

08/08/2022 03:53 PM **JAYAKUMAR R**
TH(T4) ANERT

Note # 2

Verified the document.

08/08/2022 05:42 PM **VINAY P**
PE1(RTS) ANERT

Note # 3

Draft tender document put up for approval;

08/08/2022 05:46 PM **JAYAKUMAR R**
TH(T4) ANERT

Note # 4

May be approved

10/08/2022 05:54 PM **ANEESH S PRASAD**
CTM ANERT

Note # 5

11/08/2022 11:24 AM **NARENDRA NATH VELURI I F S**
CEO ANERT

Note # 6

11/08/2022 11:27 AM **CENTRAL REGISTRY UNIT**
CRU ANERT

Note # 7

i. Based on the clarification sought by prospective bidders and subsequent bidders meeting held on 17/09/2022, a draft addendum/corrigendum is prepared.
ii. As decided, ICRA grading is made mandatory for all bidders participating in the tender. If required, we can have a meeting with M/s ICRA to fine tune the evaluation criteria, as the current one is for

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individual agencies rather than Joint Ventures. In case of JV, the OEM will be obviously having a higher financial capacity, whereas their financial commitment will be low compared to the EPC.

iii. Draft addendum / corrigendum is attached herewith.

20/09/2022 04:32 PM **VINAY P**
PE1(RTS) ANERT

Note # 8

The tender queries received from bidders through mail is attached herewith.

The bid opening date had been extended to 11-OCT-22. The document regarding the same is attached .

Forwarding for draft approval with perusal.

22/09/2022 05:51 PM **ARUN RAJAN R V**
PI2 ANERT

Note # 9

The draft corrigendum may be approved.

23/09/2022 06:11 PM **JAYAKUMAR R**
TH(T4) ANERT

Note # 10

May be approved

23/09/2022 10:44 PM **ANEESH S PRASAD**
CTM ANERT

Note # 11

Approved

27/09/2022 10:43 AM **NARENDRA NATH VELURI I F S**
CEO ANERT

Note # 12

27/09/2022 11:01 AM **CENTRAL REGISTRY UNIT**
CRU ANERT

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Note # 13

27/09/2022 01:30 PM **VINAY P**
PE1(RTS) ANERT

Note # 14

10/10/2022 04:46 PM **ARUN RAJAN R V**
PI2 ANERT

Note # 15

i. An online discussion with M/s ICRA on the grading pattern was conducted on 30/09/2022. They had pointed out that the grading pattern already finalised was for the Vendor Registration process of Solar EPC / System Integrator etc. Accordingly, it will take time if they are to prepare a grading pattern and evaluate the joint venture for the KUSUM tender.
ii. The primary objective of enforcing grading was to identify the techno-financial capability of the work awarded agency. In the JV, the financial commitment of the Manufacturer in terms of project execution will be limited. Since, we need to finalize the KUSUM tender at the earliest, it is suggested that instead of going for grading the Joint venture, the grading for EPC / SI with the grading pattern accepted for Vendor Registration may be done. This will enable us to ascertain the financial strength of the EPC during work awarding stage.

For orders;

11/10/2022 01:08 PM **VINAY P**
PE1(RTS) ANERT

Note # 16
The matter was already discussed. Grading for EPC/System Integrators may be done.

11/10/2022 06:27 PM **JAYAKUMAR R**
TH(T4) ANERT

Note # 17
it will make sense and may be approved

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12/10/2022 07:20 AM **ANEESH S PRASAD**
CTM ANERT

Note # 18
Approved

12/10/2022 03:36 PM **NARENDRA NATH VELURI I F S**
CEO ANERT

Note # 19

12/10/2022 03:38 PM **CENTRAL REGISTRY UNIT**
CRU ANERT

Note # 20

i. A few Corrigendum / Addendum were published in the tender based on the queries received and subsequent discussions with CTM / ACTM; The same are attached. The last date for submission of bids is 14/11/2022 and we are expecting a fair number of participation in the tender.
ii. Accordingly, it is suggested to formulate a committee to evaluate the bids once the tender is opened.

For orders;

07/11/2022 02:45 PM **VINAY P**
PE1(RTS) ANERT

Note # 21

An evaluation committee may be constituted with the following members.

1. Sri.Aneesh S Prasad CTM
2. Sri.Premkumar K SF
3. Sri.Rajesh R Addl.CTM
4. Jayakumar R Joint CTM

07/11/2022 03:39 PM **JAYAKUMAR R**
TH(T4) ANERT

Note # 22

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I may be substituted with some other senior officer

07/11/2022 04:10 PM **ANEESH S PRASAD**
CTM ANERT

Note # 23
Instead of CTM, Smt. Kala KG Addl.CTM may be included in the evaluation committee.

1. Sri.Premkumar K SF
2. Sri.Rajesh R Addl.CTM
3. Smt. Kala KG Addl.CTM
4. Jayakumar R Joint CTM

07/11/2022 05:07 PM **JAYAKUMAR R**
TH(T4) ANERT

Note # 24
May be approved

08/11/2022 10:11 AM **ANEESH S PRASAD**
CTM ANERT

Note # 25
Approved

08/11/2022 05:43 PM **NARENDRA NATH VELURI I F S**
CEO ANERT

Note # 26

08/11/2022 06:06 PM **CENTRAL REGISTRY UNIT**
CRU ANERT

Note # 27
Pls see #23 & 25.

08/11/2022 10:24 PM **JAYAKUMAR R**
TH(T4) ANERT

Note # 28
Noted and file returned to Projects, as informed by Sri Jayakumar.

15/11/2022 01:56 PM **PREMKUMAR K**
TH(T7) ANERT

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Note # 29

15/11/2022 04:40 PM **VINAY P**
PE1(RTS) ANERT

Note # 30

forwarding for further process.

29/11/2022 02:47 PM **ARUN RAJAN R V**
PI2 ANERT

Note # 31

29/11/2022 04:17 PM **VINAY P**
PE1(RTS) ANERT

Note # 32

The tender was opened 15/11/2022. Bidders quoted were 13 nos.
The bid list details is attached here for reference. (pg no 165)

The committee evaluated the bid documents as the part of technical evaluation and sought clarifications to all the 13 bidders.The clarification queries attached herewith. (pg no.149 -161)

After submitting the clarifications, the committed evaluated them and finalized the decisions and report was submitted to the CEO, ANERT. (pg no. 167)

CEO approved the report (pg no162) and the financial bid was opened.

The price bid is attached here for reference(pg no.171)

It is suggested to convene a meeting with technically qualified bidders regarding the discussion on the implementation strategy.

The meeting may be conducted on 05-12-2022,Monday- 11.00AM at Chamber of CEO,ANERT.

In this regard draft letter (No.19068) as intimation to bidders is attached and put up for approval.

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29/11/2022 06:28 PM **ARUN RAJAN R V**
PI2 ANERT

Note # 33
The draft letter may be approved

30/11/2022 10:02 AM **JAYAKUMAR R**
TH(T4) ANERT

Note # 34
discuss

30/11/2022 11:09 AM **ANEESH S PRASAD**
CTM ANERT

Note # 35

30/11/2022 03:34 PM **JAYAKUMAR R**
TH(T4) ANERT

Note # 36

As directed by CEO, in person meeting is changed to online mode on 06-12-2022, Tuesday with participants as follows

i. Aditi Solar Pvt Ltd.
ii. Rajasthan Electrocnics Instruments Ltd.
iii. Sirius Solar energy solutions pvt ltd.
iv. Suntastic Engineering pvt Ltd.
v. Surya International pvt Ltd.
vi. Tata Power solar systems Ltd.

Forwarding for approval on the same.

03/12/2022 05:15 PM **ARUN RAJAN R V**
PI2 ANERT

Note # 37
May be approved

03/12/2022 05:28 PM **ANEESH S PRASAD**
CTM ANERT

Note # 38
As Aditi solar has sent a mail not to consider them others can be

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sent communication

03/12/2022 05:34 PM **NARENDRA NATH VELURI I F S**
CEO ANERT

Note # 39

03/12/2022 05:35 PM **CENTRAL REGISTRY UNIT**
CRU ANERT

Note # 40
For N/A

05/12/2022 09:50 AM **ANEESH S PRASAD**
CTM ANERT

Note # 41

07/12/2022 10:48 AM **JAYAKUMAR R**
TH(T4) ANERT

Note # 42
An online meeting was held on 06/12/2022,10.00AM with the technically qualified bidders with CEO ANERT.
Minutes of the meeting is attached herewith.
As per the meeting, CEO decided to have a re-tender for the project- PM KUSUM Component C solarisation for 9,348 pumps.

Since Mr. Jayakumar- JCTM ANERT is on leave and as per his instruction, the file is forwarding to CTM for approval.

07/12/2022 11:02 AM **ARUN RAJAN R V**
PI2 ANERT

Note # 43
it is already approved as per minutes of the meeting . May be approved

07/12/2022 11:46 AM **ANEESH S PRASAD**
CTM ANERT

Note # 44

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Approved

07/12/2022 11:53 AM **NARENDRA NATH VELURI I F S**
CEO ANERT

Note # 45

08/12/2022 01:16 PM **CENTRAL REGISTRY UNIT**
CRU ANERT

Note # 46

16/12/2022 11:12 AM **VINAY P**
PE1(RTS) ANERT

Note # 47
As per the decision from CEO, re-tender has been floated for the solarisation of 9,348 pumps under PM KUSUM Component C.

The tender document is attached for reference.

Some points needed to be clarified on the tender mentioned above. Hence it may be released asCorrigendum and is attached as Draft (No.19296).

Forwarding for approval with perusal.

16/12/2022 01:31 PM **ARUN RAJAN R V**
PI2 ANERT

Note # 48
The draft corrigendum may be approved.

16/12/2022 02:01 PM **JAYAKUMAR R**
TH(T4) ANERT

Note # 49

16/12/2022 03:23 PM **ANEESH S PRASAD**
CTM ANERT

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Note # 50

16/12/2022 03:33 PM **ARUN RAJAN R V**
PI2 ANERT

Note # 51
Modified corrigendum put up for approval.

16/12/2022 03:39 PM **JAYAKUMAR R**
TH(T4) ANERT

Note # 52
May be approved

16/12/2022 03:50 PM **ANEESH S PRASAD**
CTM ANERT

Note # 53
Approved

16/12/2022 03:53 PM **NARENDRA NATH VELURI I F S**
CEO ANERT

Note # 54

16/12/2022 04:19 PM **CENTRAL REGISTRY UNIT**
CRU ANERT

Note # 55

16/12/2022 04:27 PM **VINAY P**
PE1(RTS) ANERT

Note # 56

Tender was opened on 21/12/2022. 8 firms submitted the bids.

1. TATA Power Solar Systems Pvt Ltd.
2. Inkel Ltd.
3. Kondaas Automation Pvt Ltd.
4. Suryam International Pvt Ltd.

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5. Suntastic Engineering Pvt Ltd.
6. Moopens Energy Solutions Pvt Ltd.
7. KC Kopar Energy Solutions Pvt. Ltd.
8. Mechatronik Technologies Pvt Ltd.

By evaluating the bid some clarifications were sought via e-mail regarding the documents submitted .

The bidders have responded to the same.

By evaluating the mails and submitted documents final findings were concluded.

As per that following firms satisfactorily met the tender conditions.

Sl no	Bidder	ICRA Rating
1	TATA Power Solar Systems Pvt Ltd.	1B
2	Inkel Ltd	1C
3	Kondaas Automation Pvt Ltd.	2B
4	Suryam International Pvt Ltd.	2B
5	Suntastic Engineering Pvt Ltd.	2C

Clarification sought were provided by others are not satisfactorily.

The signed evaluation report is attached for reference

So the above mentioned 5 firms qualified in technical evaluation. As per tender Firms with ICRA rating- 1A/1B/1C/2A/2B shall be considered for L1 price finalization. Hence among the five firms expect M/s. Suntastic Engineering Pvt Ltd are eligible for price bid opening. Since they may be recommended for opening the financial bid.

Forwarding for approval.

28/12/2022 07:18 PM **ARUN RAJAN R V**
PI2 ANERT

Note # 57

The above recommendations may be approved.

28/12/2022 11:26 PM **JAYAKUMAR R**
TH(T4) ANERT

Note # 58

1. No.6 m/s Moopens Engineering is not considered since the power attorney

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in Stamp paper Rs.200/- is not submitted on Behalf of JV. JV of Moopens Energy is Pennar Industries, A public limited company.

2. In the case of No.7. KC Kopar Energy Solutions Ltd is the lead member and Swelect Energy Systems is JV partner and it is listed company. I this case it is not considered since a declaration on stamp paper worth Rs.200/- is not provided for non black listing.

To meet the requirement by MNRE - Manufacturer of components or consortium with them - is required to become a implementer of the project. To meet this requirement only all other than manufacturer is signing agreement with some of the manufactures.

In these cases both JV's are listed companies and their status is available in ROC portal. following suggestions may be considered

a. In the case of Moopens Engineering we may collect an additional declaration that they are the lead partner and all transactions will done by them and they are only responsible for any lapse happens during implementation of the programme. And if required we can ask them to provide the Power Attorney before release work order.

b. In the case of KC Kopar Energy Solutions Ltd, Lead partner had already given declaration . Status of Swelect Energy Systems Ltd can be obtained from ROC portal. As far as Kerala Concerned there is no blacklisting exists against this firm.

It may be decided whether we may to consider these two companies for the programme . Approval for Price opening may be given.

29/12/2022 12:54 PM **ANEESH S PRASAD**
CTM ANERT

Note # 59

Agreed with Note 58 and the two companies shall be included and price bid be opened

29/12/2022 02:23 PM **NARENDRA NATH VELURI I F S**
CEO ANERT

Note # 60

29/12/2022 03:56 PM **CENTRAL REGISTRY UNIT**
CRU ANERT

Note # 61

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Note # 62

i. The financial bid of the vendors as directed above were opened and the rates obtained incl GST are as below:

ii.

KUSUM Tender Summary

Ground Mounted

Capacity	INKEL LIMITED	KC COPAR ENERGY SOLUTIONS (P) LTD	SUNTASTIC ENGINEERING PRIVATE LIMITED	Suryam International private Limited	Kondaas Automation Private Limited	Tata Power Solar	Moopens Energy Solutions Pvt Lt
2 kW SPV Power plant	2,61,740	2,75,453	2,48,084	2,57,188	**2,35,270**	2,48,190	2,53,319
3 kW SPV Power plant	3,47,090	3,39,489	3,00,773	3,17,502	**2,85,456**	2,98,195	3,06,168
5 kW SPV Power plant	5,30,986	5,11,505	4,61,459	4,83,650	**4,44,207**	4,61,894	4,72,156
7 kW SPV Power plant	6,65,880	6,09,060	***5,32,925***	6,21,348	**5,64,289**	5,93,004	6,10,594
10 kW SPV Power plant	8,99,671	8,74,534	7,67,353	8,30,740	**7,34,078**	7,68,873	7,91,820
Cost per kW in the range of 30 kW - 99 kW or part therof	*79,080*	*76,483*	*72,832*	*71,694*	***71,343***	*78,727*	*83,962*
Cost per kW in the range of 100 kW - 150 kW or part therof	*78,820*	*71,383*	*71,694*	*72,832*	***70,266***	*78,272*	*83,359*

Rooftop

Capacity	INKEL LIMITED	KC COPAR ENERGY SOLU	SUNTASTIC ENGINEERING PRIVA	Suryam International private	Kondaas Automation Private	Tata Power Solar	Moopens Energy Solution

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		TIONS (P) LTD	TE LIMITED	Limited	Limited		s Pvt Lt
2 kW SPV Power plant			2,31,697		2,57,074	**2,29,982**	2,35,748
3 kW SPV Power plant			2,80,631		3,07,533	**2,79,413**	2,85,018
5 kW SPV Power plant			4,38,699		4,70,700	**4,31,930**	4,43,194
7 kW SPV Power plant			5,58,417		6,09,501	**5,47,137**	5,64,710
10 kW SPV Power plant	No Separate Quote	No Separate Quote	7,21,492	No Separate Quote	7,91,638	**7,13,457**	7,31,165
Cost per kW in the range of 30 kW - 99 kW or part therof			69,418		**74,933**	No separate Quote	83,506
Cost per kW in the range of 100 kW - 150 kW or part therof			68,280		**73,608**		83,188

iii. As per tender condition, only financial bids of agencies having Solar grading above 2B will be considered for L1 finalization. Accordingly, the bids of M/s KC Kopar and M/s Suntastic Engineering cannot be considered for L1 finalisation. M/s Suntastic has become the L1 bidder for 7 kW (Ground Mounted) and 30 - 150 kW in Rooftop category. Hence, the rate of L2 bidder in these category, bid of M/s Kondaas Automation need to be considered as the L1 rate.

For information and further orders

04/01/2023 11:25 AM

VINAY P
PE1(RTS) ANERT

Note # 63

05/01/2023 12:21 PM

JAYAKUMAR R
TH(T4) ANERT

Note # 64

File No. ANERT-TECH/144/2022-T4 (Computer No. 5619)

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Note # 65

i. In the meeting held with the selected bidders, M/s Kondaas Automation has pointed that their quote for Rooftop and Ground mounted system was wrongly considered. Accordingly, the rates were interchanged and the L1 bidder for ground mounted as well as Rooftop up to 10 kW are M/s Tata Power Solar. The rates are as below:

ii.

KUSUM Tender Summary

Ground Mounted

Sl. No	Capacity	INKEL LIMITED	KC COPAR ENERGY SOLUTIONS (P) LTD	SUNTASTIC ENGINEERING PRIVATE LIMITED	Suryam International private Limited	Kondaas Automation Private Limited	Tata Power Solar	Moopens Energy Solutions Pvt Lt
1	2 kW SPV Power plant	2,61,740	2,75,453	**2,48,084**	2,57,188	2,57,074	**2,48,190**	2,53,319
2	3 kW SPV Power plant	3,47,090	3,39,489	3,00,773	3,17,502	3,07,533	**2,98,195**	3,06,168
3	5 kW SPV Power plant	5,30,986	5,11,505	**4,61,459**	4,83,650	4,70,700	**4,61,894**	4,72,156
4	7 kW SPV Power plant	6,65,880	6,09,060	***5,32,925***	6,21,348	6,09,501	**5,93,004**	6,10,594
5	10 kW SPV Power plant	8,99,671	8,74,534	**7,67,353**	8,30,740	7,91,638	**7,68,873**	7,91,820
6	Cost per kW for 30 kW - 99 kW or part therof	*79,080*	*76,483*	*72,832*	***71,694***	74,933	*78,727*	*83,962*
7	Cost per kW for 100 kW - 150 kW or part therof	*78,820*	*71,383*	***71,694***	***72,832***	73,608	*78,272*	*83,359*

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Rooftop

Sl. No	Capacity	INKEL LIMITED	KC COPAR ENERGY SOLUTIONS (P) LTD	SUNTASTIC ENGINEERING PRIVATE LIMITED	Suryam International private Limited	Kondaas Automation Private Limited	Tata Power Solar	Moopens Energy Solutions Pvt Lt
1	2 kW SPV Power plant	No Separate Quote	No Separate Quote	2,31,697	No Separate Quote	2,35,270	**2,29,982**	2,35,748
2	3 kW SPV Power plant			2,80,631		2,85,456	**2,79,413**	2,85,018
3	5 kW SPV Power plant			4,38,699		4,44,207	**4,31,930**	4,43,194
4	7 kW SPV Power plant			5,58,417		5,64,289	**5,47,137**	5,64,710
5	10 kW SPV Power plant			7,21,492		7,34,078	**7,13,457**	7,31,165
6	Cost per kW for 30 kW - 99 kW or part therof			**69,418**		***71,343***	No separate Quote	83,506
7	Cost per kW for 100 kW - 150 kW or part therof			**68,280**		***70,266***		83,188

05/01/2023 04:21 PM **VINAY P**
PE1(RTS) ANERT

Note # 66
May be approved.

05/01/2023 04:31 PM **JAYAKUMAR R**

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TH(T4) ANERT

Note # 67
May be approved

05/01/2023 04:44 PM **ANEESH S PRASAD**
CTM ANERT

Note # 68
Approved

05/01/2023 05:07 PM **NARENDRA NATH VELURI I F S**
CEO ANERT

Note # 69

05/01/2023 05:11 PM **CENTRAL REGISTRY UNIT**
CRU ANERT

Note # 70

05/01/2023 06:17 PM **VINAY P**
PE1(RTS) ANERT

Note # 71

12/01/2023 11:26 AM **JAYAKUMAR R**
TH(T4) ANERT

Note # 72

14/02/2023 11:10 AM **ARUN RAJAN R V**
PI2 ANERT

Note # 73

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16/02/2023 01:44 PM **JAYAKUMAR R**
TH(T4) ANERT

Note # 74

The rates and agencies for the solarization of grid connected agricultural pumps have been finalized

The rates are as under :-

Rate for lower capacity power plants		
	Ground Mounted (Inclusive of GST in Rs)	Rooftop (Inclusive of GST in Rs)
Cost for the SIC of 2 kW SPV power plant	2,48,190	2,29,982
Cost for the SIC of 3 kW SPV power plant	2,98,195	2,79,413
Cost for the SIC of 5 kW SPV power plant	4,61,894	4,31,930
Cost for the SIC of 7 kW SPV power plant	5,93,004	5,47,137
Cost for the SIC of 10 kW SPV power plant	7,68,873	7,13,457
Per kW Rate for higher capacity power plants		
Cost per kW for the SIC of SPV power plants in the range of 30 kW - 99 kW	71,694	71,343
Cost per kW for the SIC of SPV power plants in the range of 100 kW - 150 kW	72,832	70,266

The companies are as under

Sl No	**Company Name**
1	M/s. Tata Power Solar Systems LIMITED
2	M/s.Moopens Energy Solutions Pvt Ltd
3	M/s. INKEL Limited
4	M/s. Kondaas Automation Private Limited
5	M/s. Suryam International Private Ltd
6	M/s Suntastic Engineering Pvt.Limited
7	M/s. KC KOPAR ENERGY SOLUTIONS PRIVATE LIMITED

Hence a draft order (DFA/20249) in this regard is prepared and forwarding for perusal and approval.

17/02/2023 11:23 AM **MANJU SAROJINI**
DPE(SP) ANERT

Note # 75

Kind attn: Sri. Vinay P

1. As per Note #65, the quoted rates for roof-top and ground-mounted systems were interchanged. Pls attach relevant documents.

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2. Pls verify the draft rate contract order.

17/02/2023 02:37 PM **JAYAKUMAR R**
TH(T4) ANERT

Note # 76

1. The relevant documents are already attached as part of the financial bid, (Bids in Letter head submitted by bidders). The confusion was due to the fact that M/s Kondaas Automation had quoted the rates for Rooftop in the BoQ excel file, whereas it was mentioned to include the rates for ground mounted in the excel file. The same was later rectified based on the rates provided by them in the letter head.
2. The RC order is verified. The order doesn't specify the additional rate for site specific requirements such as cabling, the rates for which were collected along with the tender. It will be better to finalize this rate and include in the RC order, which will be helpful for issue of work order afterwards;

17/02/2023 07:11 PM **VINAY P**
PE1(RTS) ANERT

Note # 77

Pls include the additional rates

20/02/2023 10:53 AM **JAYAKUMAR R**
TH(T4) ANERT

Note # 78

As per the direction the additional rates for cable and structure is also added in RC order.

The rates for cable group 2 category is arrived from DSR 2018 with Cost index 41.53%(which is the maximum cost index).

There is a wide range of difference in the the rate quoted by companies for additional structure work. Hence for additional structure cost considered the average of the best rated companies.

File put up for further action

21/02/2023 02:27 PM **MANJU SAROJINI**
DPE(SP) ANERT

Note # 79

21/02/2023 04:34 PM **JAYAKUMAR R**
TH(T4) ANERT

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Note # 80

Cable rate taken from price software market rate (Page No 319 -code no MR 813 and MR 816), cable laying rate taken from DSR 2018 with Cost index 41.53%(which is the maximum cost index) (Page No 330 Item No. 7.1.2 and 7.1.3). The rate for additional structure arrived from the average of the best rated companies (suryam Intenational and Moopans).

21/02/2023 05:10 PM

MANJU SAROJINI
DPE(SP) ANERT

Note # 81

The draft rate contract order may be approved

21/02/2023 05:38 PM

JAYAKUMAR R
TH(T4) ANERT

Note # 82

Pls verify the proceeding prepared with respect to the tender conditions and offer your remarks .

22/02/2023 10:16 AM

ANEESH S PRASAD
CTM ANERT

Note # 83

Draft proceedings may be approved.

22/02/2023 11:17 AM

KALA K.G.
TH(T2) ANERT

Note # 84

May be approved

22/02/2023 04:16 PM

ANEESH S PRASAD
CTM ANERT

Note # 85

Approved

23/02/2023 10:40 AM

NARENDRA NATH VELURI I F S
CEO ANERT

Note # 86

23/02/2023 12:38 PM

CENTRAL REGISTRY UNIT
CRU ANERT

Note # 87

23/02/2023 01:05 PM **JAYAKUMAR R**
TH(T4) ANERT

Note # 88

As per discussion with CEO, CTM and JCTM the rate contract is revised and the draft is put up

Kiran Krishnan G

23/02/2023 05:31 PM **KIRAN KRISHNAN G**
PE1(T4) ANERT

Note # 89

The modified draft proceedings put up for approval.

27/02/2023 11:04 AM **JAYAKUMAR R**
TH(T4) ANERT

Note # 90

M/s Inkel Ltd has matched with the L1 Rate for the tender . The rate contract is revised and draft is put up

27/02/2023 04:57 PM **KIRAN KRISHNAN G**
PE1(T4) ANERT

Note # 91

Draft rate contract order(DFA/20388) is put up for approval

27/02/2023 05:31 PM **JAYAKUMAR R**
TH(T4) ANERT

Note # 92

May be approved

28/02/2023 10:42 AM **ANEESH S PRASAD**
CTM ANERT

Note # 93

Approved

28/02/2023 06:44 PM **NARENDRA NATH VELURI I F S**
CEO ANERT

Note # 94

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01/03/2023 11:30 AM **CENTRAL REGISTRY UNIT**
CRU ANERT

Note # 95

01/03/2023 11:37 AM **MANJU SAROJINI**
DPE(SP) ANERT

Note # 96

04/03/2023 01:09 PM **KIRAN KRISHNAN G**
PE1(T4) ANERT

Note # 97

06/03/2023 11:28 AM **CENTRAL REGISTRY UNIT**
CRU ANERT

Note # 98

25/05/2023 11:22 AM **KIRAN KRISHNAN G**
PE1(T4) ANERT

Note # 99

06/06/2023 04:39 PM **MANJU SAROJINI**
DPE(SP) ANERT

Note # 100

06/06/2023 04:59 PM **KIRAN KRISHNAN G**
PE1(T4) ANERT

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Note # 101

The Suryam International Private Limited and TATA Power solar have furnished an amount of Rs.5,00,000/- & Rs.5,00,000/- as EMD vide Bank Transfer to ANERT account No. 57009348504. Now the agency has requested to release the EMD. So it is needed an amount of **Rs.10,00,000/- (Rupees Ten Lakh Only)** to Suryam International Private Limited(Rs.5,00,000/-) and TATA Power Solar(Rs.5,00,000/-)
Pls verify and forward for further action

23/06/2023 04:07 PM **LIJITHA V P**
AACCO-1 ANERT

Note # 102

M/s TATA Power Solar and M/s Suryam International have requested for release of EMD submitted by them along with the tender. If the agency have submitted PBG against the RC order, the EMD can be released. Draft proceedings in this regard is attached.

23/06/2023 04:52 PM **VINAY P**
PE1(RTS) ANERT

Note # 103

23/06/2023 05:11 PM **JAYAKUMAR R**
TH(T4) ANERT

Note # 104

23/06/2023 05:20 PM **MANJU SAROJINI**
DPE(SP) ANERT

Note # 105

Correction to Note 101, EMD credited to Bank account number 67250668543. So it is needed to debit amount from 67250668543.

24/06/2023 11:39 AM **LIJITHA V P**
AACCO-1 ANERT

Note # 106

PBG from M/s. Suryam International and M/s. TATA is submitted. The original is with Thapal. The EMD may be released.

24/06/2023 01:02 PM **MANJU SAROJINI**
DPE(SP) ANERT

Note # 107

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1. Draft proceedings may be approved
2. The financial instruments (PBGs of TATA and Suryam) may be kept with the Finance Section.

24/06/2023 02:02 PM **JAYAKUMAR R**
TH(T4) ANERT

Note # 108

24/06/2023 02:07 PM **MUHAMMED HARIS M**
CFO ANERT

Note # 109
Verified, may be approved.

27/06/2023 04:45 PM **BANDEESH P**
AO ANERT

Note # 110

30/06/2023 12:13 PM **MUHAMMED HARIS M**
CFO ANERT

Note # 111
Approved

30/06/2023 03:07 PM **NARENDRA NATH VELURI I F S**
CEO ANERT

Note # 112

14/07/2023 03:38 PM **CENTRAL REGISTRY UNIT**
CRU ANERT

Note # 113

07/08/2023 02:29 PM **MANJU SAROJINI**
DPE(SP) ANERT

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Note # 114

As per the point 7 of minutes of meeting with EPC on 5-8-2023 it was decided to include other EPC companies having eligibility to be part of the existing rate contract for the project ,so as to increase the number of companies for implementing the project .

07/08/2023 02:40 PM **KIRAN KRISHNAN G**
PE1(T4) ANERT

Note # 115

In line with the decision made during the meeting on the 5th of this month, we need to take appropriate actions to onboard a greater number of vendors. Please find attached the minutes of the meeting for reference.

07/08/2023 03:51 PM **JAYAKUMAR R**
TH(T4) ANERT

Note # 116

An EoI can be called for inclusion of bidders who are ready to match the rates and undertake the works as per the terms and conditions in the earlier Rate Contract. Further, we may reconsider the Pre-Qualification criteria setforth for the earlier tender like a minimum of 3 MW capacity must have completed, Allowing Joint Ventures to participate taking into account their technical and financial aspects etc. Only then, we will be able to list maximum number of bidders, that could help in completing the scheme in a timely manner.

For orders;

08/08/2023 07:29 PM **VINAY P**
PE1(RTS) ANERT

Note # 117

May be allowed

09/08/2023 09:57 AM **ANEESH S PRASAD**
CTM ANERT

Note # 118

Allowed.

10/08/2023 02:25 PM **NARENDRA NATH VELURI I F S**
CEO ANERT

Note # 119

11/08/2023 10:24 AM **CENTRAL REGISTRY UNIT**

CRU ANERT

Note # 120

11/08/2023 12:31 PM **VINAY P**
PE1(RTS) ANERT

Note # 121

11/08/2023 02:50 PM **JAYAKUMAR R**
TH(T4) ANERT

Note # 122

As per the direction from CEO ANERT to incorporate more EPC'S to the work implementation of PM KUSUM Component C the following changes can be made in the tender document. The companies having the prescribed eligibilities and willing to adhere to the terms and conditions in the tender document and the existing rates in the Rate Contract Order No. 46/2023/ANERT dtd. 28/02/2023 may be considered to prepare a new list of EPC companies for the PM KUSUM Component C.

Sl no	Existing clause	To be changed
1	Clause No 10.2 Table 10.2 Sl No. 1.5, The bidder must have completed solar installations of at least 3 MW in India. In case of JV, all the members jointly must fulfill this requirement and submit the documents as per the Tender document.	Clause No 10.2 Table 10.2 The bidder must have completed solar installations of at least 3 MW in India to be eligible for projects above 10 KW. In case of JV, all the members jointly must fulfil this requirement and submit the documents as per the Tender document. The bidder must have completed solar installations of at least 1 MW in India to be eligible for projects up to 10 KW In case of JV, all the members jointly must fulfil this requirement and submit the documents as per the Tender document.
	Clause No	Clause No

By

File No. ANERT-TECH/144/2022-T4 (Computer No. 5619)

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2	10.1.3 As per the guidelines of PM-KUSUM, only manufactures of PV MODULES or a joint venture of an EPC with a manufacturer of solar module are eligible to undertake works under the scheme. But in case of JV the manufactures shall not participate in multiple bids.	10.1.3 As per the guidelines of PM-KUSUM, only manufactures of PV MODULES or a joint venture of an EPC with a manufacturer of solar module are eligible to undertake works under the scheme.
3	Clause No 44 LEVEL IV(ALLOCATION OF WORK)	Grading scale of 1A,1B,1C,2A,2B,2C,3A,3B,3C to be considered

incorporating these changes in the present tender, we may tender again.

Drat tender document (DFA/22767) put up for approval

14/08/2023 06:11 PM **MANJU SAROJINI**
DPE(SP) ANERT

Note # 123

Attached is the revised draught of the tender document. Please execute the necessary actions in order to publish the tender notice.

16/08/2023 11:09 AM **JAYAKUMAR R**
TH(T4) ANERT

Note # 124

The Name of the tender may be revised to "EoI for Additional Empanelment of vendors under the Rate Contract for .. under PM KUSUM Scheme (Component C) in the State of Kerala". Also, the existing rates are to be mentioned in the document citing the Rate Contract order (incl AO number and date) and no financial bids are collected as part of the tender process.

16/08/2023 01:44 PM **VINAY P**
PE1(RTS) ANERT

Note # 125

Tender document changed as directed and Draft (DFA/22783) is put up. Rate contract order

16/08/2023 05:42 PM **MANJU SAROJINI**
DPE(SP) ANERT

Note # 126

Draft tender document for additional empanelment of vendors for implementation of PM KUSUM scheme may be approved.

17/08/2023 03:47 PM **VINAY P**

Generated from eOffice by KIRAN KRISHNAN G, PE1(T4) ANERT, PE1(T4) ANERT, AGENCY FOR NEW AND RENEWABLE ENERGY RESEARCH & TECHNOLOGY on 01/10/2024 03:31 PM

PE1(RTS) ANERT

Note # 127

May be approved

18/08/2023 11:26 AM **ANEESH S PRASAD**
CTM ANERT

Note # 128

Put up Post Onam. This shall be first communicated separately with existing developers to avoid legal issues and give a weeks time then publish

18/08/2023 05:08 PM **NARENDRA NATH VELURI I F S**
CEO ANERT

Note # 129

19/08/2023 01:03 PM **CENTRAL REGISTRY UNIT**
CRU ANERT

Note # 130

Jayakumar pls see

19/08/2023 03:52 PM **ANEESH S PRASAD**
CTM ANERT

Note # 131

23/08/2023 03:38 PM **JAYAKUMAR R**
TH(T4) ANERT

Note # 132

Noted.

As directed vide Note #128, the existing developers may be communicated about the process prior to the publish of the tender for additional empanelment

25/08/2023 12:02 PM **VINAY P**
PE1(RTS) ANERT

Note # 133

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05/09/2023 11:24 AM **MANJU SAROJINI**
DPE(SP) ANERT

Note # 134

05/09/2023 03:14 PM **JAYAKUMAR R**
TH(T4) ANERT

Note # 135

The letter to be sent to empanelled vendors regarding the additional empanelment process is attached.

For orders

14/09/2023 12:00 PM **VINAY P**
PE1(RTS) ANERT

Note # 136

May be approved

14/09/2023 12:15 PM **JAYAKUMAR R**
TH(T4) ANERT

Note # 137

May be approved

14/09/2023 12:25 PM **ANEESH S PRASAD**
CTM ANERT

Note # 138

Approved

14/09/2023 03:59 PM **NARENDRA NATH VELURI I F S**
CEO ANERT

Note # 139

14/09/2023 04:01 PM **ANEESH S PRASAD**
CTM ANERT

Note # 140

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14/09/2023 04:33 PM **JAYAKUMAR R**
TH(T4) ANERT

Note # 141

The communication regarding additional empanelment is sent to all the existing developers under the scheme. The tender document for the additional empanelment may be approved.

24/09/2023 02:23 PM **VINAY P**
PE1(RTS) ANERT

Note # 142

Pls examine closely.

25/09/2023 10:14 AM **JAYAKUMAR R**
TH(T4) ANERT

Note # 143

26/09/2023 08:53 PM **KIRAN KRISHNAN G**
PE1(T4) ANERT

Note # 144

29/09/2023 03:41 PM **JAYAKUMAR R**
TH(T4) ANERT

Note # 145

The following changes are made in the draft document

1. Clause no 12. (1), regarding the no of pumps the point added is " The individual no of pumps may vary according to the NABARD allocation and field survey"(Page 29) .
2. Clause no. 14.2 (b) in payment terms **commissioning** instead of completion of the installation is added (Page 33) .
3. Clause no 16(i), the point is added " Individual Krishibhavan/part will be provided to vendors for conducting site study and feasible site will be allotted as project for issuing work order through BuyMySun.com"(Page 36) .

Tender document changed as above and Draft (DFA/23253) is put up

03/10/2023 05:17 PM **MANJU SAROJINI**
DPE(SP) ANERT

Note # 146

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The draft tender document (DFA/23253) may be approved.

03/10/2023 06:41 PM **JAYAKUMAR R**
TH(T4) ANERT

Note # 147

May be approved

04/10/2023 09:57 AM **ANEESH S PRASAD**
CTM ANERT

Note # 148

Resubmit with corrections as discussed

16/10/2023 02:21 PM **NARENDRA NATH VELURI I F S**
CEO ANERT

Note # 149

Updated the document as suggested. The additional empanelment document may be approved.

19/10/2023 03:03 PM **VINAY P**
PE1(RTS) ANERT

Note # 150

10.1.4 shall be modified and resubmit. there is little ambiguity

19/10/2023 05:28 PM **NARENDRA NATH VELURI I F S**
CEO ANERT

Note # 151

The clause is re-drafted and updated in the EoI document

19/10/2023 05:50 PM **VINAY P**
PE1(RTS) ANERT

Note # 152

Approved

20/10/2023 10:10 AM **NARENDRA NATH VELURI I F S**
CEO ANERT

Note # 153

26/12/2023 01:20 PM **VINAY P**
PE1(RTS) ANERT

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Note # 154

Tender FOR ADDITIONAL empanelment of vendors was opened on 18/11/2023. 10 firms submitted the bids.

1. M/s. Adithya Innovations.
2. M/s. A J Infra solutions.
3. M/s. B S Energy Industries
4. M/s. BSS Community Industries.
5. M/s. Coopa Energy.
6. M/s. Inforce Engineering solutions.
7. M/s. K CP Solar Industry.
8. M/s. Soft rays Power solutions.
9. M/s. Usha Electronics Systems.
10. M/s. Wattsun Energy India Pvt ltd

By evaluating the bids some clarifications were sought via e-mail regarding the documents submitted.

All the bidders have responded to the same(response attached in the reference).

By evaluating the mails and submitted documents final findings were concluded.

As per that following firms satisfactorily met the tender conditions.

Sl no	Bidder	ICRA Rating	Remarks
1	M/s. A J Infra solutions	Awaiting for ICRA certificate	M/s. K CP Solar Industry.
2	M/s. B S Energy Industries	Awaiting for ICRA certificate	M/s. K CP Solar Industry.
3	M/s. Inforce Engineering solutions.	3C	
4	M/s. K CP Solar Industry	1C	Conditionally qualified

M/s. A J Infra solutions & M/s. B S Energy Industries are conditionally qualified and need to produce the ICRA certificate within 30 days and M/s. K CP Solar Industry needs to produce the consolidated completion certificate within 30 days.

Clarification sought were provided by others are not satisfactorily.

The evaluation report is prepared as draft.

So the above mentioned 4 firms qualified in technical evaluation. As per tender Firms with ICRA rating- 1A/1B/1C/2A/2B /2C /3A/3B/3C 3shall be considered as qualified.

A draft Tender evaluation report (DFA/24213) is prepared

Forwarding for approval.

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30/12/2023 11:56 AM **MANJU SAROJINI**
DPE(SP) ANERT

Note # 155

Pls check the e-mail and resubmit with updated documents.

01/01/2024 05:02 PM **JAYAKUMAR R**
TH(T4) ANERT

Note # 156

Tender FOR ADDITIONAL empanelment of vendors was opened on 18/11/2023. 10 firms submitted the bids.

1. M/s. Adithya Innovations.
2. M/s. A J Infra solutions.
3. M/s. B S Energy Industries
4. M/s. BSS Community Industries.
5. M/s. Coopa Energy.
6. M/s. Inforce Engineering solutions.
7. M/s. K CP Solar Industry.
8. M/s. Soft rays Power solutions.
9. M/s. Usha Electronics Systems.
10. M/s. Wattsun Energy India Pvt ltd

By evaluating the bids some clarifications were sought via e-mail regarding the documents submitted.

All the bidders have responded to the same(response attached in the reference).

By evaluating the mails and submitted documents final findings were concluded.

As per that following firms satisfactorily met the tender conditions.

Sl no	Bidder	ICRA Rating	Remarks
1	M/s. A J Infra solutions	Awaiting for ICRA certificate	Conditionally qualified.
2	M/s. B S Energy Industries	Awaiting for ICRA certificate	Conditionally qualified.
3	M/s. Inforce Engineering solutions.	3C	Qualified
4	M/s. K CP Solar Industry	1C	Conditionally qualified

M/s. A J Infra solutions & M/s. B S Energy Industries are conditionally qualified and need to produce the ICRA certificate within 30 days and M/s. K CP Solar Industry needs to produce the consolidated completion certificate from TEDA within 30 days.They have provided a declaration via e mail stating that they will provide a consolidated completion certificate from TEDA/TANGEDCO.

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Alternatively a mail has been sent to TEDA from ANERT, to provide such a certificate.

Clarification provided by others are not satisfactory.Tender evaluation summary is attached

The evaluation report is prepared as draft.

So the above mentioned 4 firms qualified in technical evaluation. As per tender Firms with ICRA rating- 1A/1B/1C/2A/2B /2C /3A/3B/3C will only be considered.

A draft Tender evaluation report (DFA/24213) is prepared

Forwarding for approval.

03/01/2024 05:23 PM **MANJU SAROJINI**
DPE(SP) ANERT

Note # 157

The draft tender evaluation report (DFA/24213) may be approved.

04/01/2024 11:08 AM **JAYAKUMAR R**
TH(T4) ANERT

Note # 158

KUSUM team has evaluated the bids and submitted the report for approval. This may be approved

04/01/2024 03:04 PM **ANEESH S PRASAD**
CTM ANERT

Note # 159

Approved

04/01/2024 05:18 PM **NARENDRA NATH VELURI I F S**
CEO ANERT

Note # 160

04/01/2024 05:38 PM **ANEESH S PRASAD**
CTM ANERT

Note # 161

05/01/2024 10:48 AM **JAYAKUMAR R**
TH(T4) ANERT

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Note # 162

17/01/2024 11:45 AM **KIRAN KRISHNAN G**
PE1(T4) ANERT

Note # 163

After evaluating the tender the the evaluation report was submitted and it is approved by the competent authority. The qualified EPCs are

Sl No	Company Name	ICRA rating	Total capacity in kW by batch
1	M/s. Inforce Engineering solutions	3C	300
2	M/s. K C P Solar Industry	1C	1000
3	M/s. B S Energy Innovations	3C	300
4	M/s. A J Infra solutions	2C	1000

Hence a draft rate contract order (DFA/24447) is prepared and forwarding for perusal and approval.

17/01/2024 05:10 PM **MANJU SAROJINI**
DPE(SP) ANERT

Note # 164

Draft Rate Contract order (DFA/24447) may be approved.

18/01/2024 11:15 AM **JAYAKUMAR R**
TH(T4) ANERT

Note # 165

May be approved

18/01/2024 12:59 PM **ANEESH S PRASAD**
CTM ANERT

Note # 166

Approved

18/01/2024 03:46 PM **NARENDRA NATH VELURI I F S**
CEO ANERT

Note # 167

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18/01/2024 03:49 PM **ANEESH S PRASAD**
CTM ANERT

Note # 168

18/01/2024 04:26 PM **JAYAKUMAR R**
TH(T4) ANERT

Note # 169

15/03/2024 10:18 AM **MANJU SAROJINI**
DPE(SP) ANERT

Note # 170

27/03/2024 05:25 PM **KIRAN KRISHNAN G**
PE1(T4) ANERT

Note # 171

10/05/2024 02:22 PM **MANJU SAROJINI**
DPE(SP) ANERT

Note # 172

As per the direction from CEO ANERT to incorporate more EPC'S to the work implementation of PM KUSUM Component C on 7/5/2024 , the following changes can be made in the tender document. The companies having the prescribed eligibilities and willing to adhere to the terms and conditions in the tender document and the existing rates in the Rate Contract Order No. 46/2023/ANERT dtd. 28/02/2023 may be considered to prepare a new list of EPC companies for the PM KUSUM Component C.

Draft : DFA/26447 tender document prepared and putup for approval

Point no	Existing clause	To be changed

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10.2	Clause No 10.2 Table 1.5 The bidder must have completed solar installations of at least 3 MW in India to be eligible for projects above 10 KW. In case of JV, all the members jointly must fulfil this requirement and submit the documents as per the Tender document. The bidder must have completed solar installations of at least 1 MW in India to be eligible for projects up to 10 KW In case of JV, all the members jointly must fulfil this requirement and submit the documents as per the Tender document.	The bidder must have completed solar installations of at least 500kW in India to be eligible for projects up to 10 kW and for capacity above 10kW they must have completed solar installations of at least 3 MW In case of JV, all the members jointly must fulfil this requirement and submit the documents as per the Tender document.
10.2-1.3	The Bidder must have the required GST Registration. In case of JV, all the members must fulfil this requirement	The Bidder must have the required GST Registration in **Kerala** In case of JV, all the members must fulfil this requirement
19	Point 19 Table 10	In case of Rooftop sites The Kerala State Electricity Regulatory Commission order dated 11-4-2024 (In the matter of relaxation in KSERC (Renewable Energy & Net metering) Regulations, 2020 for implementation of PM-KUSUM Component-C project in Kerala) shall be followed Only crystalline silicon cell PV modules of 500W_p or higher capacity should be used in the power plant. It is necessary to use SPV modules with indigenously manufactured solar cells (DCR Content) and shall be from the Approved List

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20	Point 20.1	of Module Manufacturers (ALMM) issued by MNRE from time to time. MNRE has issued an OM vide - F no. 283/54/2018-GRID SOLAR - Part (1) 22/03/2024 making it mandatory for solar Panels used in Pump projects to have minimum efficiency of 19.5%. A revised ALMM list was also provided along this order. Along with DCR content this efficiency requirement also needs to be followed in the installation

10/06/2024 05:54 PM

KIRAN KRISHNAN G
PE1(T4) ANERT

Note # 173

Please verify and get approval from the CEO before publishing the tender

12/06/2024 11:36 AM

JAYAKUMAR R
TH(T4) ANERT

Note # 174

The tender document is verified. May be approved for publish

12/06/2024 01:21 PM

VINAY P
PE1(RTS) ANERT

Note # 175

May be approved

13/06/2024 10:15 AM

ANEESH S PRASAD
CTM ANERT

Note # 176

Approved to Proceed

13/06/2024 12:15 PM

NARENDRA NATH VELURI I F S
CEO ANERT

Note # 177

13/06/2024 12:44 PM

ANEESH S PRASAD
CTM ANERT

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Note # 178

The tender for the additional empanelment under PM KUSUM Component C was published in the Kerala tenders portal and there are 8 bidders - M/s Aadithya Innovations, M/s BSS Community Industries, m/s Coopa Energy, m/s Maxgreen Infrastructure and Renewables Pvt Ltd, M/s POM Systems and Services, M/s Softrays Power Solutions, M/s Solgen Energy and M/s Usha Electronics. The bids are emailed for evaluation and may be included in the reference section of the efile upon completion.

26/07/2024 01:44 PM **VINAY P**
PE1(RTS) ANERT

Note # 179

26/07/2024 01:53 PM **JAYAKUMAR R**
TH(T4) ANERT

Note # 180

Tender ID: 2023_ANERT_614977_2
Tender REF No: ANERT-TECH/144/2022-T4
TENDER NAME: - EoI for additional Empanelment of vendors under the Rate Contract for the Solarization of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW 150 kW under the PM KUSUM scheme (Component C) in the State of Kerala.
Tender FOR ADDITIONAL empanelment of vendors was opened on 25/07/2024. 08 firms submitted the bids.

1. M/s. Adithya Innovations.
2. M/s. BSS Community Industries.
3. M/s. Coopa Energy.
4. M/s. Maxgreen Infrastructure and renewables Pvt. Ltd
5. M/s. POM SYSTEMS AND SERVICES PVT. LTD.
6. M/s. soft rays Power solutions
7. M/s. SOLGEN ENERGY PVT. LTD
8. M/s. Usha Electronics Systems.

By evaluating the bids some clarifications were sought via e-mail regarding the documents submitted.
All the bidders have responded to the same (response attached in the reference). Bid documents and clarifications uploaded by 8 companies are attached in Reference Sl no 12 to 40
By evaluating the mails and submitted documents final findings were concluded.
As per that following firms satisfactorily met the tender conditions.

Sl no	Bidder	ICRA Rating	Remarks

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1	M/s. Adithya Innovations	3B	**qualified**
2	M/s. BSS Community industries	2B	**qualified**
3	M/s. Coopa Energy		**conditionally qualified**
4	M/s. Maxgreen infrastructure and renewables Pvt. Ltd	2C	**qualified**
5	M/s. POM systems and services Pvt. Ltd	2C	**qualified**
6	M/s. Softrays Power Solutions	2C	**qualified**
7	M/s. Solgen Energy Pvt. Ltd	2C	**qualified**
8	M/s. USHA ELECTRONICS SYSTEMS	2C	**qualified**

M/s. Coopa Energy is conditionally qualified and need to produce the ICRA certificate within 30 days.

Tender evaluation summary is attached

The evaluation report is prepared as draft

Also a draft rate contract order is also prepared as draft

A. Draft (DFA/27666) tender abstract and
B. Draft (DFA/27664) rate contract order is prepared and forwarding for perusal and approval.

24/09/2024 04:15 PM

MANJU SAROJINI
DPE(SP) ANERT

Note # 181

Scrutinized the evaluation sheet and other documents

Draft - DFA/27666 tender abstract and DFA /27664 rate contract order - verified

File No. ANERT-TECH/144/2022-T4 (Computer No. 5619)

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24/09/2024 04:51 PM **KIRAN KRISHNAN G**
PE1(T4) ANERT

Note # 182

25/09/2024 10:30 AM **JAYAKUMAR R**
TH(T4) ANERT

Note # 183

25/09/2024 10:31 AM **MANJU SAROJINI**
DPE(SP) ANERT

Note # 184

25/09/2024 02:14 PM **JAYAKUMAR R**
TH(T4) ANERT

Note # 185

reviewed

26/09/2024 10:18 AM **MANJU SAROJINI**
DPE(SP) ANERT

Note # 186

26/09/2024 11:33 AM **KIRAN KRISHNAN G**
PE1(T4) ANERT

Note # 187

The following draft proceedings may be approved.

1. Draft - DFA/27666 tender abstract
2. DFA /27664 rate contract order

26/09/2024 11:55 AM **JAYAKUMAR R**
TH(T4) ANERT

Generated from eOffice by KIRAN KRISHNAN G, PE1(T4) ANERT, PE1(T4) ANERT, AGENCY FOR NEW AND RENEWABLE ENERGY RESEARCH & TECHNOLOGY on 01/10/2024 03:31 PM

Note # 188

Approved

26/09/2024 03:37 PM **NARENDRA NATH VELURI**
CEO ANERT

Note # 189

26/09/2024 04:42 PM **JAYAKUMAR R**
TH(T4) ANERT

Note # 190

26/09/2024 05:08 PM **VINAY P**
PE1(RTS) ANERT

Generated from eOffice by KIRAN KRISHNAN G, PE1(T4) ANERT, PE1(T4) ANERT, AGENCY FOR NEW AND RENEWABLE ENERGY RESEARCH & TECHNOLOGY on 01/10/2024 03:31 PM