THE ADMINISTRATION OF UNION TERRITORY OF LADAKH

Ladakh Autonomous Hill Development Council, Kargil

Kargil Renewable Energy Development Agency

(Renewable Energy Agency of the LAHDC Kargil)

E-TENDER DOCUMENT

FOR

SUPPLY, INSTALLATION & COMMISSIONING & 5 YEARS COMPREHENSIVE MAINTENANCE

OF

OFF-GRID SOLAR PV POWER PLANTS

IN

VARIOUS BLOCKS OF LADAKH

Tender Notice No.: e-tender 06-KREDA of 2020
Dated: 24th of September, 2020

Project Director/CEO
KREDA, Baroo Tsog, Baroo, Kargil – 194105
UT Ladakh
01985-232316, 9419176016
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PART-One
General Details

THE ADMINISTRATION OF UNION TERRITORY OF LADAKH
LADAKH AUTONOMOUS HILL DEVELOPMENT COUNCIL, KARGIL
OFFICE OF THE PROJECT DIRECTOR/ CHIEF EXECUTIVE OFFICER
KARGIL RENEWABLE ENERGY DEVELOPMENT AGENCY,

E-Tender Notice: NIT No: e-tender 06-KREDA of 2020
Dated: 24.09.2020

For and on behalf of the Lt. Governor of Union Territory of Ladakh, e-tenders are invited from perspective bidders for supply, installation and commissioning and 5 years comprehensive warranty & maintenance of following items at various sites in Kargil district of Ladakh as per the details given in e-tender document.

Item	E-Tender Ref. No.	Quantity Required	Fee of Tender Document	Ernest Money Deposit
Photovoltaic Power Plant of Various Capacities i.e.: 3KW, 5KW, 10KW, 25KW, 100KW	KREDA/SPV/ OG/2020/839-844	235 KW, which may vary widely, depending upon the demands to be received from various departments/ institutions. *(required qty may increase or decrease)*	Rs. 40000	Rs. 4.5 Lac. Rs. 5000 for MSME

The OEM Company should have ISO 9001 & ISO 14001 manufacturing facilities. The tenders should be addressed to the Project Director/CEO, Kargil Renewable Energy Development Agency (KREDA)-LAHDC, Kargil, UT of Ladakh and should reach the office as per the critical date mentioned through registered/speed post/courier service or shall be delivered personally. The tender received after the stipulated date, time shall not be accepted, and the department shall not be held responsible for any postal delay in receipt of tender.

Instructions for bidders:

a. To participate in the bidding process bidder has to get "Digital Signature Certificate" (DSC) as per Information Technology Act 2000.
b. The bidders have to submit their bids online in electronic formats with digital signature. No financial bid will be accepted in physical form.
c. The bidder must quote rates for items only in the prescribed BOQ available on the website.
d. Bidders are advised not to make any change in BOQ (Bill of Quantities) contents. In no case they should attempt to create similar BOQ manually. The BOQ downloaded should be used for filing of the item rate.
e. Tenderers are advised to use "My Documents" area in their use on http://jktender.gov.in e-tendering portal to store import documents at 100DPI resolutions with Black & White PDF scan properly.

The detailed NIT/bidding documents, bill of quantities (BOQ), set of items and conditions of the contract and other details can be downloaded from the website **www.jktender.gov.in** only.

Critical Dates:

1	Date of issue of tender notice	**12.09.2020**

2	Date of Publishing of e-tender	**24.09.2020, 5:00 pm**
3	Period of downloading of bidding documents	**24.09.2020, time 06:00 pm to 08.10.2020, 02:00 pm**
4	Online bid submission start date	**24.09.2020, 06:00 pm**
5	Online bid submission end date	**15.10.2020, 02:00 PM**
6	Last date for receiving the hard copies of technical bid uploaded on the site and samples	**15.10.2020, 02:00 PM**
7	Date & timing of opening of online technical bid	**16.10.2020, 12:00 PM**
8	Date and timing of online opening of financial bids for qualifying bidder	**17.10.2020, 12:00 PM** ***(date & time given is tentative)***

The tender complete in all respect shall be received up to 2.00 PM on 15/10/2020 and shall be opened on the dates given above in the presence of tenderers or their authorized representatives who wish to be present at the time of opening of tenders. The tender should be submitted in sealed envelopes, i.e. part-1 TECHNICAL & COMMERCIAL with EMD in the form of Demand Draft pledged to Project Director/CEO, KREDA, Kargil and Part-2 PRICE BID proposed in the prescribed BOQ online.

Project Director/CEO
KREDA Kargil

No.: KREDA/SPV/OG/2020/839-844

Dated: 24.09.2020

Copy to:

1. Secretary- Non Conventional Energy, UT Ladakh, for kind information.
2. Deputy Commissioner/CEO/Chairman DPC for kind Information.
3. Chief Planning Officer Kargil.
4. Pvt. Secretary to Hon'ble Chairman/CEC, for kind information of the Hon'ble CEC.

GENERAL PARTICULARS OF TENDERER

Sl	Particulars	Details
1	Name of Tenderer/Firm	
2	Postal Address	
3	E-mail address for communication	
4	Telephone, Fax No.	
5	Name, designation & contact number of the representative of the tenderer to whom all references shall be made.	
6	Nature of the firm (Individual/ Partnership/ Consortium/ Pvt. Ltd /Public Ltd. Co. /Public Sector etc.) Attach attested copy of Registration & Partnership deed/ Memorandum of Association	
7	Amount and particulars of the earnest money deposited.	
8	Annual Turnover for last three years (Attach balance sheets from CA in this regard)	
9	GSTN Registration no.(Copies of Registration Certificates to be enclosed)	
10	Has the tenderer/firm ever been debarred by any institution for undertaking any work?	
11	Any other information attached by the tenderer (Details and Annexure / page no. where its enclosed)	
12	Does tenderer have any relative working in KREDA? If yes state the name and designation.	

Tenderers are requested to give their full particulars and legal and financial status.

(Signature of tenderer with Seal)

Check list of Annexure

(The following information/documents are to be annexed and flagged by the Bidders along with the BID)

S.N.	Annexure No	Particulars	Yes/No, Flag No.
1	Annexure-I (a)	Details of Tender document fees (Demand Draft no,date, amount and bank name)	
	Annexure-I (b)	Details of Earnest money (bank guarantee no. and date, (valid for four months)	
2	Annexure-II	The bidder is a Manufacturing Company/Firm/ Corporation Registered in India of SPV Cells /Modules /PV System Electronics /Invertors /Battery (conforming to relevant National /international Standards) **OR** A PV System Integrator-- At least Solar Photovoltaic Power Systems (s) aggregating to a total of as per table A capacity should have been installed / commissioned. (A copy of the order and completion certificate indicating its successful execution to be enclosed)	
3	Annexure-III	Following Test Certificates & Reports for components specified in technical bid	
	***SPV* Modules**		
	III(a)	IEC 61215 edition II/ IS 14286 for Crystalline Modules	
	III(b)	IEC 61730 Part 1 & 2	
	III(c)	STC Performance Report –I V curve. (Issued on or after 1st April,2016)	
	Batteries-		
	III (d)	(MNRE/NABAL/BIS authorized test centers) Test Certificate	
	PCU cum Inverters:		
	III (e)	61683-1999 or latest editions As per IEC/BIS Test report from MNRE/NABAL/BIS authorized test centers; (Issued on or after 1st April, 2014)	
4	Annexure-IV	A copy of GST registration certificate	
5	Annexure-V	Overall Average Annual Turnover of the Company/Firm/Corporation in the last three financial years (A summarized sheet of turnover of last three Financial Years certified by registered CA)	
6	Annexure-VI	A summarized sheet of **cumulative experience** in **PV systems/power plants** certified by registered CA.	
7	Annexure-VII	Cumulative Experience of the Bidder in executing contracts of Solar Photovoltaic Systems/Power plants (Installed & Commissioned).	

8	Annexure-VIII	Authorization letter of the Bidder, for the person representing his firm, that he is authorized to discuss and with specific mention of this e-tender.	
9	Annexure-IX	Certificate by the Commissioner and Director of Industries or by Deputy commissioner, District Industries Centre of Micro and small Enterprises within State	
10	**Others**		
	Annexure-X	(i). An undertaking that the service center will be opened in Kargil district and address of the centre will be submitted before supply & installation for verification.	
		(ii). ----------	
		(iii). ----------	
Please flag the annexure and write flag number in the box.			
Note:- Bids received without supporting documents for the various requirements mentioned in the tender document may be rejected.			

PART-Two

General Details of Contract & Technical Specification

Terms and Conditions:

CAPACITY RANGE	Approximate Quantity (immediate requirement)	*For General Category (lac)*				*For Micro and Small Category (lac)*			
		Turn over (in Lac)	Financial work experience (In lac)	Physical work experience (in Kw)	EMD (in Lac)	Turn over	Financial work experience	Physical work Experience (in Kw)	EMD (in Lac
3 KW – 100 KW	235 KW	150.00	300.00	500	4.50	50.00	150.00	100	00.05

(Table A)

Capacity given above is tentative and may increase or decrease, depending upon the requirements being received from Govt. institutions/departments/pvt. institutions.

1. **Minimum Criterion for Bidding:**

   The bidder must have following minimum criterion for bidding:

   a) The Bidder should be
   A Registered Manufacturing Company/Firm/ Corporation in India of **SPV Cells / Modules or PV System Electronics or Invertors** or **Battery** (Conforming to relevant National / International Standards) **OR A PV System integrator working in the field of SPV Power plants who has installed/commissioned a**t least Solar Photovoltaic Power systems/Plant (s) aggregating to a total capacity as mentioned in above table A.
   (A copy of the work order and certificate indicating its successful execution to be enclosed) **Cumulative Experience in three years** 2016-17, 2017-18 and 2018-19 of the Bidder in executing contracts of **Solar Photovoltaic Systems/Power plants (**Installed & Commissioned) **should be at least as mentioned in the above table A.**

   b) The Solar system manufacturing bidder must have ISO 9001 & ISO 14001 for *Design, Development, Manufacture and Sales of* **SPV Cells / Modules or PV System Electronics or Invertors** or **Battery***.*

   c) The bidder must have minimum Average annual turnover as mentioned in the above table (Table A) in last three financial years (this must be the individual company's turnover) certified by CA.

   d) The company should be registered with ESI & EPF.

   e) The bidder must be a profit making company in last three financial years.

   f) The bidder must have experience of supplying, installing and commissioning Solar Photo-Voltaic Power Plants of capacity (not less than) given in the table above.

   g) The bidder must have experience of supplying, installing & commissioning and maintenance of SPV Off-Grid Power Generating system of minimum capacity of cumulative 500KWp in tuff terrains such as that of Ladakh region.

   h) Successful bidder has to establish a well equipped service centre in Kargil.

2. **Scope of Work & General Technical Specification:**

The scope of work includes design, supply, and installation, commissioning of Solar Photovoltaic Power Generators/Plants including 05 years comprehensive warranty and maintenance in various tehsils/block/offices /Institutions, individual beneficiary and at locations anywhere in the UT of Ladakh directed by KREDA at sites identified by KREDA as per the below given specifications.

A standalone solar photovoltaic power generator/plant proposed comprises of solar PV modules of given capacity, with battery bank, PCU with necessary control electronics, interconnecting wires / cables, module mounting structures, necessary grounding /earthing etc.

3. GENERAL TECHNICAL SPECIFICATION:

A. SPV MODULES:

i. Only indigenous modules (Both cell and Module) of reputed brand (IEC/BIS Tested) shall be used in the project. The wattage of each module should be at least 300 Wp. The module efficiency should not be less than 15%.
ii. Crystalline high power/efficiency cells > 16% shall be used in the Solar Photovoltaic module.
iii. The PV modules will be warranted for a minimum period of 25 years from the date of supply. (Output wattage should not be less than 90% at the end of 10 Years and 80% at the end of 25 years.
iv. The terminal box on the module shall be designed for long life out door operation in harsh environment should have a provision for opening for replacing the cable, if required.
v. The offered module shall be in accordance with the requirements of MNRE.
vi. The module should be tested according to latest edition of IEC 61215 edition II / IS 14286 for Crystalline cell. The bidder shall submit appropriate valid test certificates. The minimum validity of test report should be till March 2020.
vii. PV modules must qualify to IEC 61730 Part 1- requirements for construction &Part 2 – requirements for testing, for safety qualification. The bidder shall submit appropriate valid test certificates.
viii. The offered Solar module performance test report issued from authorized MNRE/NABAL test lab should be submitted. The test report should be issued on or after 1 April.2016.
ix. Protective devices against surges at the PV module shall be provided. Low voltage drop bypass diodes shall be provided and if required, blocking diode(s) may also be provided.
x. The peak power point voltage and the peak power point current of any supplied module and/or any module string (series connected modules) shall not vary by more than 2 (two) per cent from the respective arithmetic means for all modules and/or for all module strings, as the case may be.

IDENTIFICATION AND TRACEABILITY

Each PV module must have sticker inside the module with the following information:

i. Name of the manufacturer of PV Module
ii. Month and year of the manufacture of module.
iii. Made in India
iv. Unique Serial No and Model No of the module

Following data maybe provided out site in such a way that it should not pull out during harsh environmental condition).

i. Peak Wattage, Im, Vm and FF for the module
ii. KREDA logo

Test reports/ certificate from IEC/NABL accredited laboratory to be mandatorily enclosed for relevant IEC/equivalent BIS Standards.

The solar module must be from ALMM list approved by MNRE from effective date of implementation as per MNRE order no 283/54/2018-Grid solar dated 3rd Jan 2019 or its latest amendments.

B. BATTERY:

The battery shall be Hi- Performance Valve-Regulated Lead Acid (VRLA) Tubular (Gel Type) or SMF AGM Battery having container made of Polypropylene Co-polymer

The tensile strength of the material of the container shall be such that it can handle the internal pressure of the cell in extreme working conditions. The cell shall not show any deformity, cracking or bulge on the side under all working conditions.

The battery shall be provided with a pressure regulation valve, which shall be self- re-sealable and explosion-proof. The valve unit shall be such that it cannot be opened without a proper tool.

The cell covers shall be made of suitable plastic material compatible with the container material and permanently sealed with the container. It shall be capable to withstand internal pressure without bulging or cracking. It shall also be fire retardant.

The batteries shall use 2V, cells with related battery capacity is to be designed at C10 rate with End Cell Voltage of 1.75V / cell.

Charging instructions shall be provided along with the batteries.

Suitable carrying handle shall be provided:

Sr. No.	Description	Specification
1	Battery Configuration minimum cell Capacity	2V, cells with related battery capacity is to be designed at C10 rate with End Cell Voltage of 1.75V / cell.
2	Working Temperature Range (both for charging & discharging)	-20 - +55 Deg C
3	Cycle Life (Full charge to full discharge @ 25 deg C before capacity of battery falls below 75%) At 20% D.O.D At 50% D.O.D At 80% D.O.D	 4000 - 5000 Cycles 2000 - 2500 Cycles 1200 - 1500 Cycles
4	Battery Warranty	5 years
5	Bank voltage required:	
	For 3kWp	48V 500 Ah SMF AGM VRLA or GEL type (2V each) 24 nos. with all accessories like battery rack, connectors and other necessary

		items
	For 5kWp	96V 500 Ah SMF AGM VRLA or GEL type (2V each) 48 nos. with all accessories like battery rack, connectors and other necessary items.
	For 10kWp	120V 600 Ah SMF AGM VRLA or GEL type (2V each) 60 nos. with all accessories like battery rack, connectors and other necessary items.
	For 25kWp	Battery bank 240V 600 Ah SMF AGM VRLA or GEL type@c10 (2V each) 120 nos. with all accessories like battery rack, connectors and other necessary items.
	For 100kWp	Battery bank 240V 600 Ah SMF AGM VRLA or GEL type@c10 (2V each) 120 nos. with all accessories like battery rack, connectors and other necessary items.

Depth of Discharge : up to 85%
Maximum Discharging rate : up to C rate of battery Capacity
Maximum Charging Rate : upto 0.5 C rate of battery capacity

A very good battery management system to be incorporated and got it tested with battery from **MNRE/NABAL** accredited lab **as per IEC/BIS standard**. Capacity of the battery bank shall not be less than as specified above at C10 rate.

i. Battery shall have a design life expectancy of >5 years at 50% DOD at 27°C.
ii. Battery terminal shall be provided with covers.
iii. Suitable carrying handle shall be provided.
iv. Batteries shall be provided with micro porous vent plugs & acid level indicator. The **test report as BIS of MNRE/NABAL** accredited lab issued on or after 1 April 2014 should be submitted along with tender.

C. Power Conditioning Unit (PCU) cum Inverter:

Sr. No.	Description	Specification
1	Power Conditioning Unit Required:	
	For 3kWp	Power Conditioning Unit of 48V VDC, 50Hz, 220V AC, 3kWp MPPT with 3KVA Inverter.
	For 5kWp	Power Conditioning Unit of 96V VDC, 50Hz, 220V AC, 5kWp MPPT with 5KVA Inverter.
	For 10kWp	Power Conditioning Unit of 120 VDC, 50Hz, 220V AC, 10kWp MPPT with 10KVA Inverter.
	For 25kWp	A Power Conditioning Unit of 240 VDC, 50Hz, 220V AC, 25KVA Inverter with 25kWp MPPT
	For 100kWp	Power Conditioning Unit of 240VDC, 50Hz, 220V AC, 100 KVA inverter with 100Kw MPPT.

The Power conditioning unit (PCU) should have inbuilt charge controller and Inverter of capacity & ratings as specified in the Table for various capacity of Solar Power Plants. The PCU will have following features:

- The PCU should be dual input type, Bi-directional converter, synchronized with Grid Hybrid type such that the Input PF is close to 0.95 with Low THD. where under normal condition the input is fed from a SPV panel and in the absence of SPV power or low SPV power conditions an external AC source can be used for battery charging at C-10 rates so as to reduce the charging time. However the charger circuit must communicate with BMS and control charging profile keeping in mind the SOC of each cell, The charging rate will thus start tapering till charge completion and the State-of-charge (SOC) shall also be available locally on display as well as remotely (if required).
- In case the PV power generated at any instant of time is more than the battery charging power required, this excess PV power shall be used to share the AC load the output of the Inverter output. All these operation should be automatic. When battery bank is fully charged, the PCU should have the feature to feed the power generated from solar to load and draw the additional power from main supply to meet the load requirements in the case load is more than solar energy produced. Thus the electricity consumption from grid shall be reduced.
- Solar-Hybrid MPPT charger PCU. The synchronization of BMS and PCU is important aspects and it must be ensured. Considering the importance of this aspects the firm can choose the battery voltage keeping the total watt-hour capacity same.

Indicator:

- ¬ Array charger on
- ¬ Battery charging
- ¬ Inverter ON
- ¬ Load on solar/ battery
- ¬ Grid charger on
- ¬ Load on Grid
- ¬ Grid on
- ¬ Fault

Display parameters:

- ¬ Charging current
- ¬ Charging voltage
- ¬ Voltage of PV panels
- ¬ Output voltage
- ¬ Grid voltage
- ¬ Power output in KW
- ¬ Energy delivered in Kwh

MIMIC Diagram:

- ¬ To indicate power flow and operation of the charge controller/ battery charger; shall have provision for visual indications of existing power input/output through
- ¬ MIMIC diagram.
- ¬ Full Protection against polarity reversal of PV array and battery, Over Current, Short Circuit, Deep Discharge, Input Surge Voltage, open circuit, accidental short circuit and night time leakage of current from battery to module.
- ¬ Adequate protection shall also be incorporated under no-load conditions (i.e. when the system is ON & the load is removed.
- ¬ The PCU charge controller must be synchronize with Battery Management System (BMS). The PCU/ inverters should be tested from the MNRE / NABL /BIS /IEC accredited testing calibration laboratories.

Surge Protection

Internal surge protection shall consist of three MOV type surge arrestors connected from +ve and –ve terminals to earth (via Y arrangement) or other suitable devices should be provided.

Earthing Protection

- Each array structure of the PV yard and metal casing should be grounded/ earthed properly as per IS: 3043 latest edition.
- Necessary earthing/ grounding are to be provided on the body of the inverter.
- The quality and standards of the system will be strictly adhering to the national/international standards specified as per MNRE Govt. of India norm.

D. Balance Of System (BOS) Items/ Components:

The BOS items / components of the SPV power plants/ systems deployed must conform to the latest edition of IEC/ Equivalent BIS Standards/ MNRE specifications / as specified below:

BOS Item / System	***Applicable BIS /Equivalent IEC Standard Or MNRE Specifications*** Standard Description	***Standard Number***
Charge Controller/MPPT units	Environmental Testing	IEC 60068-2 (1,2,14,30) / Equivalent BIS Std.
Power Conditioners/ Invertersincluding MPPT and Protections.**	Efficiency Measurements, Environmental Testing	IEC 61683 / IS 61683, IEC 60068-2 (1, 2, 14, 30) /Equivalent BIS Std.
Storage Batteries	SMF AGM VRLA or Gel type	IS 16270 /, IS 16046 (Part 2): 2018/, IEC 62133-2017/BIS standard, IEC 62133-2017/BIS standard
Cables	General Test and Measuring Method PVC insulated cables for working voltage up to and including 1100 V and UV resistant for outdoor installation	IEC 60227 / IS 694, IEC 60502 / IS 1554 (Pt. I & II)
Switches/Circuit Breakers/Connectors	General Requirements, Connectors –safety, A.C. /D.C.	IEC 60947 part I,II, III /, IS 60947 Part I,II,III, EN 50521
Junction Boxes /Enclosures for inverters/Charge Controllers/Luminaries	General Requirements	IP 54(for outdoor)/ IP 21(for indoor) as per IEC 529

***In case if the Charge controller is in-built in the inverter, no separate IEC 62093 test is required and must additionally conform to the relevant national/international Electrical Safety Standards wherever applicable.*

E. Mounting Structure:

1. The module & frame structure shall be mild steel, hot dipped galvanized (120 micron) with corrosion resistant painting for holding the PV modules.
2. Each panel frame structure shall be so fabricated as to be grouted on ground on its legs. The size of angle iron/C channel should not be less than 40X40X5 mm. Anti-Theft Nut Bolts of SS (with washers) should be used for mounting modules for better theft proofing. Regarding civil structures the bidder need to take care of the load baring capacity of the roof and need arrange suitable structures based on the quality of roof.
3. The total load of the structure (when installed with PV modules) on the terrace should be less than 60 kg/m2.
4. The minimum front clearance of the structure from the roof level should be 300 mm.
5. The legs of the structures made with hot dip GI angles will be fixed and grouted in the RCC foundation columns made with 1:2:4 cement concrete. The foundation should be as per design of structure to withstand maximum wind loading.
6. There shall be a minimum air gap of 3+/- 0.3-cm between the facing edges of two adjacent modules on all sides.
7. Each panel frame structure shall have inclination between 20- 40 degrees depending on the site location seasonal load requirement. A weather proof junction box as per the relevant ISI specifications, to be provided where the module terminals shall be interconnected and output taken.
8. All nuts bolts and fasteners should be made of stainless steel.
9. The structure should be designed to allow easy replacement of any module and shall be aligned with site requirement.
10. The structure should be designed for simple mechanical and electrical installations. It will be designed to withstand severe cyclone/ storm with the speed max.150 Km/hr. as per IS875 part 3.
11. The systems should be installed at ground level / roof top at least the height of 45Centimeter with a CC block of 30X30X30 Cm with each support.

F. Battery Trolley/Rack:

A metallic cabinet of minimum 22 SWG thick made of pre-coated galvanized (60-micron thickness) MS sheet for housing the storage battery indoors should be provided with proper lock and key. The cabinet should be inscribed with KREDA written on front faces. The size of cabinet should be as per battery size. Danger logo as approved by KREDA shall be screen printed on it. The necessary switch gear, MCB etc to ensure the safety may be installed in cabinet. The cabinet has a modular design featuring uninterruptible maintenance and easy installation. The cabinet should be as per standard for safe storage of lifepo4 battery.

G. Electrical connections:

High quality ISI mark copper wires/cables of reputed makes are to be provided for connecting Solar Modules, from junction box to PCU, and Battery.

A suitable connection point shall be provided to the consumer from PCU, at a distance not more than 05 meters, from where consumer shall have its own wiring to the use points.

H. Junction Boxes:

The junction boxes for 5KW and above are to be provided in the PV array for termination of connecting cables. The J. Boxes (JBs) shall be made of polycarbonate/GRP/FRP/ Powder Coated Aluminum /cast aluminum alloy with full dust, water & vermin proof arrangement. All wires/cables must be terminated through cable lugs. The JBs shall

be such that input & output termination can be made through suitable cable glands. Copper bus bars/terminal blocks housed in the junction box with suitable termination threads Conforming to IP65 standard and IEC 62208 Hinged door with EPDM rubber gasket to prevent water entry. Each Junction Box shall have High quality Suitable SPDs fuses on +ve side Suitable Reverse Blocking Diodes. The Junction Boxes shall have suitable arrangement for disconnection for each of the groups. Suitable markings shall be provided on the bus bar for easy identification and the cable ferrules must be fitted at the cable termination points for identification. DC DPBs shall have sheet from enclosure of dust & vermin proof conform to IP 65for outdoor and IP54 for indoor protection. The bus bars are made of copper of desired size. Suitable capacity MCBs/MCCB shall be provided for controlling the DC power output to the PCU along with necessary surge arrestors AC Distribution Panel Board (DPB) shall control the AC power from PCU/ inverter, and should have necessary surge arrestors. All indoor panels will have protection of IP54 or better. All outdoor panels will have protection of IP65 or better should conform to Indian Electricity Act and rules (till last amendment).

Connecting cables PVC insulated copper cables (ISI marked) for: The cable should be used as per site considering the maximum permissible loss up to 2%, however for 5 KW plant the minimum cable should be as follow.

Module interconnections (4.0 mm copper single core multi strand),
Module parallel interconnection (10 mm copper single core multi strand)
Array or AJB to PCU (16 mm copper two cores)
Battery to PCU (16 mm copper single core multi strand) might be double cables if required PCU to load / change over switch (Single core copper cable 6.0 mm multi strand) as per requirement of site. ACDB: ACDB must have load mains change over switch for manual bypass

I. Data Acquisition System / Plant Monitoring

i. Data Acquisition System shall be provided for each of the solar PV plant having capacity 10 KW or above.
ii. Data Logging Provision for plant control and monitoring, time and date stamped system data logs for analysis. Metering and Instrumentation for display of systems parameters and status indication to be provided.
iii. Solar Irradiance: An integrating Pyrometer / Solar cell based irradiation sensor (along with calibration certificate) provided, with the sensor mounted in the plane of the array. Readout integrated with data logging system.
iv. Temperature: Temperature probes for recording the Solar panel temperature and/or ambient t e m p e r a t u r e to be provided complete with readouts integrated with the data logging system.
v. The following parameters are accessible via the operating interface display in real time separately for solar power plant:
    a. AC Voltage.
    b. AC Output current.
    c. Output Power
    d. Power factor.
    e. DC Input Voltage.
    f. DC Input Current.
    g. Time Active.
    h. Time disabled.
    i. Time Idle.
    j. Power produced.

The PCU should have data logging facilities for BMS also in order to monitor the performance of battery

Data Acquisition System shall be provided for each of the solar PV plant having capacity 10 KW or above, plant monitoring will be remote through web based GPRS Monitoring. Also the data shall be recorded in a common work sheet chronologically data wise. The data file shall be MS Excel compatible. Remote Server and Software for centralized internet monitoring system shall be also provided for download and analysis of cumulative data of all the plants and the data of the solar radiation and temperature monitoring system.

J. Installation Of System:

The system should be properly installed at site. The SPV module mounting structure should be properly grouted depending upon the location and requirement of the site. The grouting should be such that it should withstand the maximum wind speed /storm. Adequate space should be provided behind the PV module/array for allowing un-obstructed air flow for passive cooling. Cables of appropriate size should be used to keep electrical losses to a bare minimum. Care should be taken to ensure that the battery is placed with appropriate leveling on a structurally sound surface. All wiring should be in a proper conduit or capping case. Wire should not be hanging loose. Any minor items which are not specifically included in the scope of supply but required for proper installation and efficient operation of the Solar Power Generator/Plant system are to be provided by the manufacturer as per standards.

K. ELECTRIC CABLE:

All the cables shall be supplied conforming to IEC 60227– IS 694 / IS 1554 – IS / IEC 60502 shall be of 650 V/ 1.1 kV grade as per requirement. Only PVC copper cables shall be used.

L. Warranty:

The mechanical structures, electrical works including power conditioners /inverters/charge controllers/ maximum power point tracker units/distribution boards/digital meters/ switchgear/ storage batteries, etc. and overall workmanship of the SPV power generator/Plant system must be warranted against any manufacturing/ design/ installation defects for a minimum period of 5 years.

M. Others:

a. The tender should be addressed to **The Project Director/Chief Executive Officer, Kargil Renewable Energy Development Agency (KREDA)-LAHDC, Kargil.**

b. Both inner and outer covers duly sealed and superscripted and hard copy sent either under registered cover or cast to the office of the **Project Director/Chief Executive Officer, KREDA-LAHDC, Kargil.**

c. The tenderer shall ensure timely receipt of the hard copy of tender in the office of the **Project Director/Chief Executive Officer, KREDA, Kargil-LAHDC,** the tenders received by hand or by post after due date of receipt of tenders shall not be entertained even if the tender has been posted/ dispatched much before the due date of receipt.

d. Tenders must be complete in all respects; all the terms and conditions of tender including the technical specifications should be carefully studied for the sake of submitting complete and comprehensive tender documents. Failure to comply with any of terms and conditions or

instructions of the offer with insufficient particulars which are likely to render fair comparison of tender as a whole impossible may lead to rejection even if otherwise it is a competitive offer/tender.

e. Telegraphic tenders or the tenders of such tenderers who have not purchased tender document shall not be entertained. Any request by post or by hand or telegraphically for any modification addition or deletion etc. in the tenders shall not be considered.

f. The tenderer shall furnish an affidavit duly attested by notary that design of their equipment is free from legal encumbrances and that no legal case of any kind of litigation regarding the patent design is pending in any court of law.

g. The tenderer shall furnish the Tender Acceptance Letter (attached as Annexure) as well duly signed & sealed.

h. No tenderer unless otherwise specified in these specifications, terms and conditions shall be exempted from depositing earnest money.

i. No claim shall be laid against the department either in respect of interest or depreciation in value for the amount of security deposit and or earnest money. In the case of bank deposits the department shall not be responsible for any loss on account of failure of the bank.

N. Negotiations:

I. The Distt. Level Purchase Committee (DLPC) reserves the right to conduct negotiations with any tenderer if necessary before finalization of the tender.
II. No tenderer shall have the right to insist for negotiation by the DLPC at any time.
III. During the negotiations, the tenderer should attend either personally or through their authorized representative. The authorized person should produce authorization letter from the authorized person.
IV. The DLPC reserves the right to award the tender in full or in part to one or several parties. The decision of the DLPC is final and binding on tenderers.
V. The DLPC reserves the right to reject any or all the tenders without assigning any reason whatsoever. The decision of the DLPC in this regard shall be final and binding on tenderer and cannot be called into question or challenge in any court of law.
VI. Depending on the lowest rates received, negotiations may be conducted with all tenderers if required.

O. Special Instructions:

a. Tenders not submitted on the lines indicated in the tender are liable to be rejected without any correspondence.
b. Request for extension in last date of receipts of tenders shall be ignored.
c. The purchaser reserves the right to order additional quantity or reduce the quantity of the material advertised at the time of placement of order for which the quoted rate shall be valid.
d. All legal proceedings in connection with the order, tender will be subject to the jurisdiction of local court of UT of Ladakh alone.
e. The purchaser reserves the right to divide the order between two or more tenders for 100% achievement.
f. In case of any doubt, dispute or differences arising out of the contract, the same shall be referred to the Hon'ble District Court, Kargil, UT Ladakh.

g. The purchaser shall not be bound to accept the lowest or any tender and reserves to itself the right of accepting the whole or a portion of any of the tender, as it may deem fit, without assigning any reason thereof.

h. Any form of canvassing by the tenderers to influence the consideration of their tender shall liable to summery rejection.

i. The condition hereafter deal with systems details and supplementary conditions of the contract in addition to those stipulated in foregoing clauses which along with schedules and annexure, shall be deemed to form part of detail specification for equipment. The tenderer are advised to study and familiarize themselves with the terms & conditions of the tender.

j. All material shall be best quality in the market and be capable of satisfactory operation when exposed to the local atmospheric conditions at site.

k. Force majeure clause shall apply.

l. No other conditions except those mentioned in this tender will be acceptable.

m. Offers not complying with the delivery schedule shall be considered non responsive and shall not be evaluated.

n. Offers not providing clause by clause compliance shall be considered non responsive and shall not be evaluated.

o. Offers not submitted as per the BOQ (online) format shall be considered non-responsive and shall not be evaluated.

p. The e-tender prepared by the Bidder and all correspondence and documents relating to the bid exchanged by the Bidder and KREDA shall be written in the English only.

P. Earnest Money:

1. Tenders shall be accompanied with the earnest money Rs. 2,00,000.00 *(Rupees Two Lac only)* in the form of CDR/FDR/DD/BG pledged to the Project Director, KREDA-LAHDC, Kargil.

2. Tenders not accompanied with the required amount of earnest money will be rejected and their price bid shall not be opened.

3. The earnest money of the tenderers shall be forfeited if they withdraw their tender or raise the prices of their offer within the validity period. The earnest money shall also be forfeited in case of the tenderers who do not comply with the purchase order placed on them within the validity period of the offer or violate any terms and conditions contained herein for this, purchase order shall be deemed to have been placed from the due date of letter of intent.

4. Earnest money deposit shall be released in favour of the unsuccessful tender(s) within one month after the final acceptance of the tender.

Q. Security Deposit:

The successful tenderer(s) shall be required to furnish security deposit equivalent to 10% of the value of the contract in the CDR/FDR/bank guarantee from nationalized/scheduled bank pledged to the Project Director, KREDA-LAHDC, Kargil. This shall be released after installation & commissioning of the battery banks.

Security deposit shall be furnished within one month from the date of detailed purchase order. Failure to do so will make the contract liable for cancellation together with forfeiture of EMD at the discretion of chairman. The EMD of the successful tenderer (s) equivalent to Rs. 4.5 lac shall be released after the Submission of the security deposit.

R. Taxes Etc:

The rates offered by the tenderer will be for supply, installation & commissioning of the said Solar Plants F.O.R respective sites, including transportation, unloading at respective sites, including all applicable taxes (including GST).

In case of failure to deliver in full the required supplies on order, the purchaser shall have the right to make a risk purchase at the cost of supplier and/or cancel the contract and claim reasonable compensation/damages. The contract of supply shall be repudiated if the supplies are not made within the prescribed period and to the satisfaction of the purchasing officer.

The price bid (BOQ) should include GST, income tax, surcharge on income tax, service tax, local taxes etc. Income tax, service tax and other deductible taxes shall be deducted at the source.

S. Validity:

The tender should be unconditionally valid for a period of sixteen months from the date of opening of the tenders. The quoted price per system as such shall be firm and not variable with the market price. The rates approved as per the NIT year would be valid for further purchase of the systems during the validity period. Any tenderer revising the offer within the validity period, without prejudice to other remedies available with the department is likely to be blacklisted.

T. Payment Schedule & Penalty:

25% shall be made as advanced payment to the successful bidder, subject to the submission of a bank guarantee for an equal amount valid for a period of one year at least. Another 25% shall be released on receipt of the material at the site, 45% after the installation and commissioning. 5% shall be released against BG for 5 yrs or in five equal installments at the end of each year on submission of documentary evidence confirming successful maintenance during that year.

In case of failure on the part of the tenderer to make supplies and execute the work in full, part thereof within the delivery schedule stipulated in the purchase order, penalty @ 0.5% per week of undelivered portion subject to a maximum of 15% of the cost of undelivered portion shall be levied.

U. Changes & Packaging:

No variation or modification or waiver of any of the terms and provisions of these specifications shall be deemed valid unless mutually agreed upon in writing by both the purchaser and the supplier.

The bidder shall be responsible for assuring that all commodities shipped are properly packed and protected to prevent damage or deterioration during shipment. Packaging and shipping costs shall be borne by the supplier. Customs clearance and all costs and actions associated with import duties, taxes and processing of documents are to be borne by the bidder. The supplier shall be responsible for all the damages/losses if any. All crates shall be marked with proper signs indicating UP and DOWN sides of the packing and also unpacking instructions considered necessary by the supplier.

V. Insurance:

The bidder shall provide insurance coverage ex-factory until commissioning, and acceptance for replacement or repair of any part of the consignment due to damage or loss.

W. Health, Safety And Environment:

The bidder shall submit the following before starting the installation of the Battery Bank.

- Safety and Environment policy of the Company
- HSE Manuals for Installation
- Emergency Management Plan

X. Material Inspection:

The material inspection shall be done at the factory location before shipment of the material from factory location. The material inspection charges (boarding /lodging) for four representatives from KREDA have to be borne by the successful tenderer.

Y. Agreement:

The successful tenderer(s) shall be required to execute an agreement on a valid stamped paper for strict compliance of the terms and conditions of the contract, vis-à-vis the NIT and the supply order within seven days of placement of the order.

Project Director/CEO,
KREDA-Kargil

No.: KREDA/SPV/OG/2020/839-844

Dated: 24.09.2020

"ANNEXURE-A"

TENDER ACCEPTANCE LETTER
(To be given on Company Letter Head)

Date:

To,
_____
_____
_____

Sub: Acceptance of Terms & Conditions of TENDER.

TENDER Reference No:_____ dated ___/___/2020

Name of TENDER / Work: -
_____
_____
_____

Dear Sir,

1. I/ We have downloaded / obtained the tender document(s) for the above mentioned 'Tender/Work' from the web site(s) namely:
_____
_____

as per your tender/advertisement, uploaded on/given in the above mentioned website(s).

2. I / We hereby certify that I / we have read the entire terms and conditions of the tender documents from Page No. __ to ___ (including all documents like annexure(s) etc.), which form part of the contract agreement and I / we shall abide hereby by the terms / conditions / clauses contained therein. I/We hereby also affirm that the list of site details given as ANNEXURE, where in the names of the proposed sites/distance from HQ/location etc. has been given is properly read through and the BOQ has been filled accordingly.

3. The corrigendum(s) issued from time to time by your department/ organization too has also been taken into consideration, while submitting this acceptance letter.

4. I / We hereby unconditionally accept all the tender conditions of above mentioned tender document(s) /corrigendum(s) in its totality / entirety.

5. In case any provisions of this tender are found violated, then your department/ organization shall without prejudice to any other right or remedy be at liberty to reject this tender/bid including the forfeiture of the full said Earnest Money Deposit absolutely or any other punitive action whatsoever as deemed proper to protect the interests of KREDA.

Yours Faithfully,

(Signature of the Bidder, with Official Seal)

Signature Not Verified
Digitally signed by ALI NAQI
Date: 2020.09.24 16:49:25 IST
Location: Jammu and Kashmir-JK