BIDDING DOCUMENTS

FOR

DESIGN, MANUFACTURE, SUPPLY, ERECTION, TESTING AND COMMISSIONING ALONG WITH OPERATION AND COMPREHENSIVE MAINTENANCE CONTRACT OF 5 YEARS FOR 5 kWp OFF GRID SOLAR POWERPLANT FOR LAB EQUIPMENTS And LIGHTING LOAD.

AT

MCM DAV COLLEGE FOR WOMEN, SECTOR- 36A, CHANDIGARH

MCM DAV COLLEGE FOR WOMEN

SECTOR-36A, Chandigarh.

Telephone nos 01722603355

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NOTICE INVITING TENDER

MCM DAV COLLEGE FOR WOMEN,SECTOR -36 A CHANDIGARH

NIT No: - MCM/SPV/2020

Tenders are hereby invited by PRINCIPAL MCM DAV COLLEGE FOR WOMEN from manufacturers of SPV module/ System Integrators having specific experience of supply, installation, testing & commissioning of SPV Power Plants in Chandigarh under CREST.

Scope of Work	Design, manufacture, supply, erection, testing and commissioning along with operation and maintenance of 5 years for 5kwp Off Grid Solar Power Plant to run Lab equipments and lighting load during power failure.
Estimated Cost	Rs 5 Lac
Tender Fees	Rs. 5,000/- (Favoring of Principal MCM DAV COLLEGE FOR WOMEN, DD payable at Chandigarh)
Time Limit	20 days from the date of publication of Advertisement
Tender Available Date	06th March,2020
Date and time of opening of tender	27th March at 12:30 pm
Place of opening of tender	Principal, MCM DAV College for Women, Sector 36 A, Chandigarh-160036
Tender last date for submission of documents	26th March,2020
POSTAL ADDRESS (The address at which the tender is to be submitted)	Principal, MCM DAV College for Women, Sector 36 A, Chandigarh-160036

Minimum Eligibility Criteria

- Vendors should be registered with CREST Chandigarh.
- Minimum aggregate capacity of Solar Power Plant Installation in Chandigarh should not

be less than 100kWp.

- Company Service centre should be within 30 km range.
- Vendor should not be blacklisted in any Government or private sector.
- Vendor should provide list of Installation base in Chandigarh. Any false information will disqualify the vendor.

SPECIAL CONDITIONS

- The following instructions must be carefully observed by all the Vendors. Tenders not strictly in accordance with these instructions shall be liable to be rejected.
- The rates shall be quoted in figure as well as in words.
- Telegraphic tenders shall not be accepted.
- The College reserves the right to modify the schedule of requirements, technical particulars and the specifications at any time and to place the order as a whole or in parts, and to reject any or all the tenders without assigning any reasons. The College will not be responsible for and will not pay for expenses for losses that may be incurred by vendors in the preparation of the tenders.
- The successful vendor shall be called upon to enter in an agreement on prescribed form.
- Vendor is also responsible for Liaising with Government department and get all clearance required for SPV system on behalf of college.
- The Principal of MCM DAV COLLEGE FOR WOMEN reserves the right to any omission/modificationin the load of SPV power plant to be installed

Payment terms

The price quoted shall be on turnkey basis and should be inclusive of all duties and taxes including GST, freight or any other tax on material in respect of this contract shall be payable by the Contractor and MCM COLLEGE will not entertain any claim whatsoever in respect of the same.

The tenderer shall acquaint with the work and working conditions at site and locality. No claim shall be entertained on this issue after the offer has been submitted. Once the firm has submitted the bid, it shall be presumed that they have inspected the site and work conditions.

The terms of payment shall be as under:-

50% along with Work order. 40 % After Installation & Commissioning, Balance 10% after commissioning of the work at site and satisfaction of the Site incharge.

COMPLETION PERIOD:-

The time allowed for completion of work shall be one month from the written order to commence the work. However the firm will quote the minimum time/period of completion.

COMMISSIONING:-

The complete SPV Power Plant will be deemed to have been completed and commissioned when connected with the lab equipments and lighting load and tested after concluding the satisfactory performance of the same.

Material

The material to be used in the manufacture of the equipment to be supplied against contract

shall be of the good quality conforming to BIS/foreign standard and carry certification/making

Wherever applicable. The firm/agency shall be solely responsible for the procurement of

Material required for the purpose.

GUARANTEE:

The SPV module shall be guaranteed life of 25 years and all other equipments shall be guaranteed for a period of 10 years from the date of taking over the installation by the College against unsatisfactory performance and/or break down due to defective design, workmanship of material. The equipments or components, or any part thereof, so found defective during guarantee period shall be forthwith replaced free of cost to the satisfaction of the College Principal.

Technical specifications

Due On:- **Approx. Amt: - Rs. 5 Lac**

Earnest Money:-Rs. 20,000/- **Time Limit: - 1 months.**

Name of the Work:

Design, manufacture, supply, erection, testing and commissioning along with operation and maintenance of 5 years for 5kwp off grid rooftop Solar Photovoltaic Power Plants and the output should be connected with the Lab lighting load and equipments at MCM COLLEGE BUILDING.

1.	Power Project:-	5 kWp Roof top off grid battery backup Solar Power Plant
i)	Scope of Work	Design, manufacture, supply, erection, testing and commissioning along with operation and maintenance of 5 years for 5kwp off grid Solar Photovoltaic Power Plant.
ii)	Roof Top	As per site available
iii)	Ambient Temp	45° c (Max)
iv)	Latitude	30° 40’ N
v)	Longitude	76° 47’E
vi)	Elevation	238 Mtr. Above mean sea level
vii)	Tilt Angle	As per roof / space available
viii)	Feeding point	LT panel adjoining Electrical room
	NOTE:-BIDDER MUST VISIT THE SITE BEFORE QUOTING THE RATES , OTHERWISE IT WILL BE ASSUMED THAT THE PARTY HAS ALREADY VISITED THE SITE BEFORE QUOTING THE TENDER, AN UNDERTAKING TO BE FURNISHED ACCORDINGLY	

Solar Photovoltaic Modules

The capacity of each solar module should not be less than 330 Wp and total capacity on DC side should also not less than 5000 Watts .The Photovoltaic modules must be tested **& approved by one of the IEC authorized test centers,Test Certificates can be from any of the NABL / BIS accredited testing / calibration laborites.**

The module type must be qualified as per IEC 61215(Second Edition). In addition PV modules must qualify to IEC 61730 Part I to II for safety qualification testing. SPV module conversion efficiency should not be less than 17% under STC. The SPV Modules to be supplied should be tested from MNRE.

The module shall have warranty of 25years with degradation of power generated not exceeding 20% of the minimum rated power over the 25 years period and not more than 10% after 10 years period.

DENTIFICATION AND TRACEBILITY

Each PV module used in any solar power project must use a **RF Identification Tag(RFID)**, which must contain the following Information.

i. Name of the manufacturer of PV Module
ii. Name of the manufacturer of solar cells
iii. Month and year of the manufacturer (separately for solar cells and modules.
iv. Country of Origin (separately for solar cells and modules
v. I-V Curve for the module
vi. Peak wattage , Im , Vm 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

SPV PANEL ARRAY STRUCTURES

The supplier shall specify installation details of the PV modules and the support structures with appropriate diagrams and drawings. Such details shall include, but not limited to the following:

- Determination of true south at the site;
- Array tilt angle to the horizontal, with permitted tolerance;
- Details with drawings for fixing the modules;
- Details with drawings of fixing the junction/terminal boxes;
- Interconnection details inside the junction/terminal boxes;
- Structure installation details and drawings;
- Electrical grounding (earthling);
- Inter-panel/Inter-row distances with allowed tolerances; and
- Safety precautions to be taken.

- The array structure shall support SPV modules at a given orientation to absorb and transfer the mechanical loads to the roof properly. The portion of array structure if any lying within the column shall be of GI of superior quality. All nuts and bolts shall be of very good quality stainless steel. Strict care should be taken during execution to avoid any damage to the roof surface of the buildings and to ensure no leakage should occur.

- Wherever required, Suitable number of PV panel structures shall be provided. Structures shall be of flat-plate design and can be easily fixed on the rooftop.
- Structural material shall be corrosion resistant and electrolytically compatible with the materials used in the module frame, its fasteners, Stainless steel nuts and bolts. Galvanizing

should meet ASTM A-123 hot dipped galvanizing. The thickness of each column and rafter should not less than 3 mm and purlin thickness should be 3 mm or Aluminum material with thickness of 5mm for front and back legs and rafter. Thickness of Purlin should not less than 3mm..

- GI structures with adequate strength and in accordance with relevant BIS standards shall be used with proof that the design of the structure can withstand a wind speed upto 170KM per hour.

- Structures shall be supplied complete with all members to be compatible for allowing easy installation at the rooftop site.

- Each structure should have angle of inclination as per the site conditions to take maximum insolation.

- Each panel frame structure be so fabricated as to be easily fixed on the rooftop without any damage to building roof.
- The structures shall be designed for simple mechanical and electrical installation. There shall be no requirement of welding or complex machinery at the installation site. If prior civil work or support platform is absolutely essential to install the structures, the supplier shall clearly and unambiguously communicate such requirements along with their specifications in the bid. Detailed engineering d drawings and instructions for such prior civil work shall be carried out prior to the supply of Goods. All nuts and bolts shall be of very good quality stainless steel except foundation bolts which will be of MS (GI Coated).
- The entire s*tructure should be able to sustain the wind speed upto 170KM/Hr.*
- If, possible, 4 Ft. offset from boundary of rooftop from all sides should be kept while installing structure for modules.
- The vertical section and base plate of module mounting structure should be of minimum 5mm thickness in case of GI structure.
- No damage in any way should be caused to the building rooftops while installation of SPV Power Plant. If any damage done it will wholly be the responsibility of the bidder and cost shall be recovered from the vendor.

Inverter Specifications

Specifications:

Type	Solar Hybrid Inverter
Capacity	5 KVA /6 KVA 96V DC design
Output	Sine wave
Solar Charger	Inbuilt , MPPT
User friendly LED/ LCD Display	Parameters DC Voltage, O/P Voltage, PV Voltage, PV current, Grid voltage and battery charging current etc.
Isolation transformer	Inbuilt
DC Input range	130 V-190 V
Output voltage	230 V
Frequency	50 Hz ±1 Hz
Output maximum current	26 Amp
Selectable Source priority	Choose source priority from Solar, battery and grid.
Operating temperature Range	0 to 55 deg C
Certificates	IEC61683,60068,60529

Battery Specifications

Battery 12 V/150 AH	Lead Acid Or VRLA Gel batteries
Battery Interlink Cables and thimbles	Only copper cables and thimbles
Warranty	5 years
Battery Rack	Should be provided

The bidder shall use the original parts in case of any fault in the PCU/Inverter during the O&M period of 5 years. Free replacement should be provided in case PCU is not repairable.

Electrical safety, Earthing and Protection:

Internal Faults: In built protection for internal faults including excess temperature, commutation failure, overload and cooling fan failure (if fitted) is obligatory.

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.

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.

Cabling practice: 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.

Fast acting semiconductor type current limiting fuses at the main bus-bar to protect from the grid short circuit contribution.

Factory Testing:

Preparation of all controls, protective and instrumentation circuits shall be demonstrated by direct test if feasible or by simulation operation conditions for all parameters that cannot be directly tested.

Operation of start up, disconnect and shutdown controls shall also be tested and demonstrated. Stable operation of the PCU and response to control signals shall also be tested and demonstrated.

Factory testing shall include measurement of phase currents, efficiencies, harmonic content and power factor.

A factory Test Report (FTR) shall be supplied along with the unit. The FTR shall include detailed description of all parameters tested qualified and warranted.

Surge Protection Device (SPD)

There should be a separate Array Junction Box with Metal Oxide Varistors (MOV) based Surge Protection Device with fuses to be provided for each string inverter on D.C. Side.(IEC61643-1:International Standards for low voltage).

CABLES

- ISI marked **as per given brands** PVC insulated Copper Cond. Cable of various sizes asper load requirement for connecting all the modules / arrays to Jn. Boxes and from Junction box to inverter and inverter to ACDB.

- Wires: Only solar copper wires of appropriate size **based on load requirements** of reputed make as specified in DNIT shall have to be used.

- Cables Ends: All connections are to be made through suitable cable/lug/terminals; Crimped properly & with use of Cable Glands.

- Cable Marking: All cable/wires are to be marked with proper manner by good quality ferule or by other means so that the cable can be easily identified.

LIGHTNING PROTECTION

There shall be the required number of suitable lightning arrestors installed in the array area. Lightning protection shall be provided by the use of metal oxide arrestors and suitable earthing such that induced transients find an alternate route to earth. Protection shall meet the safety rules as per Indian Electricity Act**.**

EARTHING PROTECTION

Each array structure of the PV yard should be grounded/ Earthing properly as per IS:3043-1987. In addition the lighting arrester/masts should also be provided inside the array field. Provision should be kept for shorting and grounding of the PV array at the time of maintenance work. All metal casing/shielding of the plant should be thoroughly grounded in accordance with Indian electricity Act./IE Rules. Earth Resistance should be tested in presence of the representative of Department after earthing by calibrated earth tester. PCU, ACDB and Module Structure should also be earthed properly.

COMPREHENSIVE MAINTENANCE

All the equipments (but in case of SPV Modules the guarantee period is 25years) shall be provided with comprehensive Maintenance for 5 years against unsatisfactory performance and/or break down due to defective design, workmanship of material. The equipments or components, or any part thereof, so found defective during Comprehensive Maintenance period shall be forthwith repaired or replaced free of cost to the satisfaction of the Engineer-in-charge.

JET PUMP 1/2 HP (CROMPTON/ KIRLOSKOR)

As per site requirement, 1/2HP BIS approved surface pumps shall be installed for each SPV Power Plant. Suitable numbers of water outlets shall be provided through B-class ISI Marked GI Pipes for cleaning of the modules.

FIRE EXTINGUISHER

As per requirement, Fire Extinguisher

TECHNICAL BID and FINANCIAL BID IN SEPARATE SEALED ENVELOPES

TECHNICAL BID FORMAT

All pages of the Technical Bid shall be organized section-wise, annexed with proof documents,seriallynumberedandstitched/orspiralboundintactandsubmitted)Loose pagesshallnotbeaccepted.

1. GENERALPARTICULARSOFTENDERER

SL NO	PARTICULARS	TO BE FURNISHED BY THE TENDERER
1)	Name of Firm	
2)	Postal Address	
3)	E-mail address for communication	
4)	Telephone/ Fax No.	
5)	Name,designation,address,contactnumber and Email 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 V	
7)	Amount and particulars of the Earnest Money Deposited.	
8)	PAN NO (Copy of certificate to be enclosed)	
09)	Service Tax Registration No., VAT/TIN/ GRN No. CST No. (copies of certificates to be attached)	
10)	Has the Tenderer/firm ever been debarred	

13)	Any other information attached by the Tenderer (Details of Annexure / page no. where its enclosed)	

DETAILSABOUTTHECOMPONENTSTOBEUSED

S. No	Description	Name of Manufacturer(s)	Manufacturing Plant address
1	Solar PV Modules		
2	Solar Inverter/PCU		

Enclose the Data Sheets of Solar PV Modules and Solar Hybrid Inverter proposed to be used.

DETAILSOFEXPERIENCE

Please fill in information about off grid Solar PV Systems installed in the last three years.

Sl. N	Description	FY 2015-16	FY 2016-17	FY 2018-19	FY-2020
1	Solar PV Plants in kWp				
2	Total Aggregate Project Cost in Rs.				

DETAILSABOUTTHEBLACKLISTING,IFANY

Information on litigation history in which Bidder is involved.

1) *Whetherblacklisted/Debarred/Suspendedfromexecutionofwork.*
2) *Otherlitigations.IfanyincludingCourtlitigationsArbitrationsetc.*

Department and concerned officer	Other party (ies)	Case of dispute.	Amount involved.	Remarks showing presentstatus.
1	2	3	4	5

Signature:

Name of the authorised person:

Designation:

Name and Address of

Bidder Stamp of bidder:

Undertaking by the Tenderer

I/We, ……have gone through carefully all the tender conditions and solemnly declare that I/We will abide by any panel actions such as disqualifications or blacklisting or termination of contract or any other action deemed fit, taken by, the College against us, if it is found that statements, documents, certificates produced by us are false/fabricated.

Signature of tenderer