NOTICE INVITING TENDER

Sealed Tender Bids are hereby invited from OEM and/or their authorized System Integrators with suitable eligibility criteria as detailed in the tender document hereunder for the purpose of the Supply, Installation and Commissioning for 30kWp On-Grid Solar Power Plant at FACC/CHRD/LAKE HALL, BIDHAN CHANDRA KRISHI VISWAVIDYALAYA (BCKV), KALYAN, DIST-NADIA, WEST BENGAL, INDIA, PIN- 741235

<table>
<thead>
<tr>
<th>Tender No. &amp; Date</th>
<th>DR/FACC/______ dated</th>
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<tbody>
<tr>
<td>Name of the work</td>
<td>Supply, Installation and Commissioning for 30kWp On-Grid Solar Power Plant at FACC, BCKV.</td>
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<tr>
<td>Date &amp; Time of Submission of the Tender Bids.</td>
<td>27.03.2015 at 2.00 P.M</td>
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<tr>
<td>Date &amp; Time of the opening of the Technical Bids.</td>
<td>27.03.2015 at 3.00 P.M</td>
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<tr>
<td>Venue for the above</td>
<td>DIRECTORATE OF RESEARCH, BIDHAN CHANDRA KRISHI VISWAVIDYALAYA, PO. KALYANI, DIST-NADIA, WEST BENGAL, INDIA Pin – 741235</td>
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Note: The respective price bids shall be opened for only those bidders whose techno commercial bids are found to be compliant in all respect. The time & date of opening of the price bid shall be intimated by BCKV to the bidders whose techno-commercial bids are thus found to be qualified.
1. Bidder Eligibility

<table>
<thead>
<tr>
<th>Sl</th>
<th>Eligibility Criterion</th>
<th>Supporting Document Required</th>
<th>Complied (Yes / No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The Bidder must be a channel partner of MNRE as on 31.03.2015 and should have a rating of SP 2B or above</td>
<td>MNRE list of Channel Partners highlighting the Channel Partner Name, Rating and Validity</td>
<td></td>
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<td>2</td>
<td>The Bidder must have an office in West Bengal</td>
<td>Trade License Copy along with:&lt;br&gt;- Complete Name and Address&lt;br&gt;- Contact Numbers</td>
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<td>3</td>
<td>The Bidder must have executed at least one order for minimum 30 kWp in any educational institute in West Bengal under the net metering scheme</td>
<td>Work Completion Certificate from the End Customer&lt;br&gt;Copy of the Electricity Bill of the End Customer showing net metering benefits</td>
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2. Technical Specifications

**System Design**

The System Design will be as per Single Line Diagram enclosed as Annexure A.

The system will consist of the following components:

1. Crystalline Silicone PV Modules minimum 30 kWp Capacity
2. PV Module Mounting Structure suitable for above PV Modules
3. DC Array Junction Box – 2 Nos
4. Transformerless Three Phase String Inverters – 2 Nos of 15 kW Capacity each
5. Inverter Interfacing ACDB – Suitable for up to 30 kW Power Evacuation
6. SFU for Grid Connectivity – 1 Nos
7. Earthing System
8. Lightning Rod – 1 Nos
9. All Electrical AC and DC cables including Conduits
10. Remote monitoring System – 1 Set
Detailed Technical Specifications

1. Crystalline Silicone PV Modules
   a. Modules must be indigenously manufactured in India
   b. Only Mono / Poly Crystalline Modules are acceptable
   c. Modules must have IEC 61215 and IEC 61730 as per MNRE requirements from any NABL / IECQ accredited laboratory
   d. PV Modules of 60 Cells – 250 Wp and above or 72 cells – 290 Wp and above are acceptable. No other configuration is acceptable
   e. Total PV Yard Capacity should be 30000 Wp minimum
   f. Warranty - The warranty should have 5 Years Comprehensive Warranty, 10 years 90% power output guarantee and 25 Years 80% Power Output Guarantee.
   g. Please clearly mention the following
      i. Make of the PV Module
      ii. Model Number of the PV Module
      iii. Voc (Open Circuit Voltage of the PV Module)
      iv. Isc (Short Circuit Current of the PV Module)
      v. Vmpp (MPP Voltage of the PV Module)
      vi. Impp (MPP Current of the PV Module)
      vii. Dimensions in mm
      viii. Temperature Coefficients of Voltage, Power and Current
      ix. Wp Rating of the PV Modules
      x. Total number of PV Modules Offered

MANDATORY ENCLOSURES

1. Brochure of the Offered PV Module
2. IEC 61215 certificate of the PV Modules
3. IEC 61730 certificate of the PV Modules

2. Power Conditioning Unit (PCU)
   a. The Power Conditioning Unit will be a grid connected string inverter. This will convert the DC Power generated from the PV Array Yard to Pure Sine wave AC Output and feed into the grid.
   b. Rating – The System should be capable of handling upto 17 kWp of PV modules. The Output AC shall not be less than 15000 W.
   c. The Output Voltage of the Inverter should be 400 VAC and should be capable of syncing to the grid within a range of +/- 20%. The Output will be 3 Phase 4 Wire
   d. The Output frequency should be minimum 46-54 Hz in sync with the grid frequency
e. The PCU should be transformerless and in minimum IP 65 enclosure for outdoor use if required
f. The Inverter Selected should have atleast 2 Channels of MPPT. Each Channel of MPPT Should be able to support atleast 14.5 kW of DC Power. The MPPTs should be capable of symmetric as well as asymmetric loading and should also be capable of paralleling.
g. The MPPT Tracking range should be 200V – 800 V.
h. Please mention the following parameters about the Inverter
   i. Make of the Inverter
   ii. Model Number of the Inverter
   iii. Please mention maximum Input voltage from PV modules allowed on the inverter
   iv. Please mention Input MPP Range of the Inverter
   v. Please mention night Consumption of the Inverter
i. The Inverter should have a peak efficiency not less than 97.5%
j. The Inverter should have IEC 61683 and IEC 60068-2 (1,2,14,30)
k. The Inverter should have RS 485 over Modbus for remote monitoring, it should have USB port for Upgrading firmware and for downloading the inverter service log data and generation data. It should have inbuilt web server with RJ 45 interface for monitoring on the local LAN.

MANDATORY ENCLOSURES

1. Brochure of the Offered Inverter
2. IEC 61683 of the offered Inverter
3. IEC 60068-2 (1,2,14,30) of the offered inverter

3. Remote and Weather Monitoring System

The Remote monitoring system will consist of a Data Logger and environmental sensors. The data logger will connect to the Inverters over MODBUS through RS 485 and collect the generation details of the Inverter and store locally. The data logger will also connect to the following two sensors – irradiation sensor (for measuring solar insolation), module temperature sensor collect the data from them and store locally. The data after being stored locally will be transferred to the remote portal in the internet cloud which will keep a backup of the data. Anyone can logon to the remote portal and access the generation data using a predefined username and password.

The data logger and the inverter make should be same to ensure that 100% compatibility.

4. Module Mounting Structure

The Solar PV mounting structure should be Mild Steel Galvanized to minimum 80 microns. The structure should be suitably built at an angle of 23-25 deg and will be placed at Roof top of a Building in shadow free area for maximum output from PV array. The structure should be built to accommodate the PV Modules in Section 1 above for KOLKATA region. The structure should be so designed as to withstand wind speeds upto 150 km / hr. The successful bidder will
have to have the module mounting structure design vetted and approved by a Civil Engineer.

5. **DC Array Junction Box (AJB)**

The Array Junction Box must confirm to the following specifications

1. It should be made of Fire Proof, UV protected Poly Carbonate and should be IP 65 enclosure protection
2. The AJB should have suitable rated 25 kA SPD Type II inbuilt in the system. 1 SPD should be provided for each MPPT Tracker of the Inverter.
3. For 2 Inverter 2 AJBs will be required.

6. **Inverter Interfacing LT Panel**

The Inverter Interfacing LT Panel should have the following

1. It should be made of Fire Proof, UV protected Poly Carbonate and should be IP 65 enclosure protection
2. It should have suitably rated MCB for each Inverter Input of 10 kA fault current
3. It should have Grid side MCB of suitable rating of 25 kA fault current
4. It should have Type II SPD, 25 kA Fault Current Three Phase type. Please enclose the catalogue of the SPD being used.
5. The Inverter Interfacing LT Panel should have a Class 1 accuracy import export energy meter.

7. **Switch Fuse Unit**

A Suitably rated Switch Fuse Unit will have to be provided at the input to the grid. The SFU will be Four Pole Type with metal enclosure and suitable handle. SFU make will be Siemens / ABB / Schneider.

8. **Earthing System**

A minimum of 4 Nos of Earthing Pits of Chemical gel type will have to be erected at the site. 2 Nos Interconnected earth pits will be used for system and earthing and 2 Nos interconnected earth pits will be used for the lightning arrestors. All the chemical gel earth pits will have copper electrodes. The system has to be designed using Copper Cables / Copper strips for interconnection and termination. Suitable Tinned copper earth busbars are to be placed for termination.

9.0 **Lightning Arrestors**

The lightning system should be so designed as to cover the whole array yard. A suitable number of Franklin rods are to be placed for protection against lightning and subsequent over voltages.

10.1 **Electrical Cabling**
10.2 DC Cabling – All DC Cabling will be done with Double Insulated, weather proof, UV protected, cross linked polymer cables of suitable cross section should be used. Cable make will be LAPP / Solar Kabel / POLYcab

10.3 AC Cables – Exposed cables shall be XLPE armoured cables of requisite dimension. Indoor cables will be PVC insulated cables suitable for carrying the requisite currents. When PVC cables are used it should be put through suitable ducts / conduits, no cables should be exposed. Cable make will be Polycab / RR Kabel / Lapp

This is a turn key project irrespective of any items not specifically mentioned but required for proper functioning of the equipment and the Power Plant the same shall be within the scope of this tender.

The RFP document can be downloaded from www.bckv.edu.in

For

BIDHAN CHANDRA KRISHI VISWAVIDYALAYA (BCKV), KALYAN, DIST-NADIA , WEST BENGAL, INDIA, PIN- 741235