Maulana Azad

National Institute of Technology Bhopal- 462 003

No. MANIT/ ESE/2025-26/26 Date: __19/01/2026_

NOTICE INVITING QUOTATON

To,

M/s_____

_____

Dear Sir/ Madam

Sealed quotations are invited for the supply of below mentioned goods/ item. The quotation in the prescribed proforma should reach in hard copy to the office of undersigned on or before 26-01-2026 up to 15.00 hours.

SN	Description of Material	Unit Price	Qty	Basic Price	GST Amount	Total Price
1	2	3	4	5 (3x4)	6	7(5+6)
1	**3Kwp Solar Tree fixed type with single pole structure** (As per annexure-1)		01 no.			
					TOTAL	
In words:						

Terms & Conditions:

1 The Seller should quote the rate F.O.R. Bhopal/ Institute Stores. The minimum period of delivery of the goods and Guarantee/ Warranty should be mentioned on the quotation.

2 The Envelope should be super-scribed as:

Email enquiry No: MANIT/ ESE/2025-26/26 Due on 26/01/2026 up to 15.00 hours

Quotation for supply of 3Kwp Solar Tree fixed type with single pole structure

with small DC Micro-Grid application

3 The rate quoted above shall be inclusive of basic Price, applicable Taxes, Transportation, Insurance, Loading/ Unloading, Installation etc.) at site.

4 Offered rate shall be valid for a period of 60 days from the date of opening of quotation.

5 Name of manufacturer, their make and model should invariably be mentioned in the quotation. Technical broucher should also be attached with the quotation if possible.

6 The seller should avoid the use of vague terms such as “extra applicable”.

7 Seller should mention Name of the contact person and his/ her mobile Number in the quotation.

8 Any other specific terms may also be mentioned by seller depending upon the nature of Goods.

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Designation Technical Assistant

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Annexure-1

Technical Specifications

3Kwp Solar Tree fixed type with single pole structure

with small DC Micro-Grid application

S.no	Parameter	Description	Compliance (Yes/No)
1	Civil Foundation – 1 set	**Key Components & Materials:** • **Concrete Grade:** Minimum M20/C20 for reinforced RCC, nominal mix ratio of 1:1.5:3 (cement:sand:aggregate) with 75mm plain cement concrete (PCC) • **Reinforcement:** High tensile steel, adequate cover, specific bar sizes and spacing (e.g., Ø8/10@250/300 c/c) • **Foundation Bolts:** Galvanized steel (Grade 6.8/E250), specific diameters M20 and lengths 550mm, with anchor plates and templates • **Anchor Bolts:** M20x550mm for 7m poles **Design Considerations:** • **Loading:** Must be designed for maximum wind loads (as per IS:875 Part-III) and dynamic forces, considering pole height and local wind speed • **Soil:** Design must account for actual safe soil bearing capacity at the site • **Dimensions:** min 1.6m square for a 7m height pole with six arms, with specific pedestal sizes (depth as per soil condition)	
2	Solar Tree Structure with six arms – 1 set	A 7m MS (Mild Steel) multi-arm pole typically features a 7-meter height, made of MS/GI, often octagonal/circular/tubular, multi-arms supporting multiple solar PV module panels size 1130x2250mm, Key specs include base/top dimensions (130mm/70mm for circular/octagonal), swaged design for strength, and a foundation plate **Key Specifications:** • **Height:** 7 meters (7m) • **Material:** Mild Steel (MS) or Galvanized Iron (GI) • **Shape:** Octagonal/Circular/Tubular • **Thickness (Wall):** Around 3mm (can vary) • **Finish:** Hot-Dip Galvanized (HDG) /weather proof paint for rust/corrosion resistance/protection • **Arms:** multi-arms for mounting solar pv modules 6 nos, 45 degree tilted & focused South	

		facing • **Design:** Often swaged (tapered sections joined) for better load bearing, engineering standards and calculations to determine the precise wind load and resulting stresses. Key factors include local conditions, pole geometry, and relevant design codes like the **IS 875 (Part 3)** or **ASCE 7** standards	
3	Solar PV modules – 6 sets (3KWp)	**Properties of Solar PV modules:** • **Make:** Waaree/Adani/Gautam/Equivalent • **Power Output (Wp):** 545 Wp (Watt-peak) • **Max Power Voltage (Vmp):** 38.7 V (Maximum Power Voltage) • **Max Power Current (Imp):** 10.62 A (Maximum Power Current) • **Open Circuit Voltage (Voc):** 46.7 V (Open Circuit Voltage) • **Short Circuit Current (Isc):** 11.22 A (Short Circuit Current) • **Cell Type:** Mono PERC (Monocrystalline Passivated Emitter Rear Cell), 144 Half-Cut Cells • **Efficiency:** 19 - 21.17% • **Frame:** Anodized Aluminum Alloy • **Glass:** Low Iron Tempered Glass (3.2mm/4.0mm) • **Junction Box:** IP65 Rated, weatherproof with bypass diodes • **Approval & Test:** ALMN, NABL	
4	Solar MPPT Charge Controller DC-DC Voltage Regulation – 2 sets	It supports all types of solar panels (12v/24v/36v/48v) available in the market like Polycrystalline, Monocrystalline, Mono PERC or Half-Cut Mono PERC, A DC regulation unit for a DC micro-grid is typically a **DC-DC power converter** that regulates the voltage on the DC bus by controlling the flow of power between sources like solar panels/batteries and the rest of the grid. these converters are used to maintain a stable voltage and can be implemented using different control methods, such as centralized or decentralized control, and converter topologies like boost or buck-boost converters **Properties of MPPT DC-DC Regulator:** • **Output Voltage:** 24v • **Max.PV Panel Voltage Range (Voc):** 96 to 165v • **PV Panels used in Watts:** 48 Voc (545wp PV module) x 1 Panel series = 48Voc,	

		545wp x 3 Strings in Parallel = 1635wp • **Max.PV Panels Applicable in Watts:** 1920wp **Note:** The battery will not be included in the supply, but the option for integration will be available in the future.	
5	DCDB 3 In & 1 Out– 2 sets	600V Inbuilt 3 x 20A DC Fuses/Breakers, 600V SPD • **DC Fuses:** Best quality self-blown DC fuse with DC fuse holder or DC Breaker for protection of solar panel strings and solar equipment from short-circuiting/high current (amperes). • **Surge Protective Devices (SPDs):** These divert excess voltage (surges) away from sensitive equipment like the MPPT/DC-DC Converter, protecting it from damage caused by lightning or other voltage spikes • **DC Disconnect Switch/MCB (Miniature Circuit Breaker):** This provides a manual means to safely disconnect the DC power source for maintenance or emergencies • **Enclosure:** A dustproof and waterproof (often IP65 rated) box to protect the internal components from environmental elements	
6	DCPDB – 1 set (DC Power Distribution Board outdoor type, with all necessary accessories, dimension should be perfect for)	for a DC micro-grid combines and routes DC power from sources (like solar PV, batteries, MPPT, DC-DC Converters) to various DC loads (laptops, mobile chargers, lighting, fan etc), offering crucial protection with fuses, circuit breakers, and surge protectors against overcurrent, short circuits, and voltage spikes, enabling simplified control and efficient energy use for isolated systems, acting as the central hub for safety and management, degree of protection IP65 in accordance with IEC-61439 **Power Aggregation:** Combines DC output from multiple sources (PV strings, batteries, converters). **Circuit Protection:** Houses DC Miniature Circuit Breakers (MCBs) and fuses for each circuit, preventing damage from overloads/shorts. **Monitoring:** Often features DC voltmeters, ammeters, energy meters and indicators for status **Isolation & Control:** Allows switching power on/off for specific circuits and provides blocking diodes to prevent back-feeding **Surge Protection:** Includes DC Surge Protective Devices (SPDs) to guard	

		against lightning/voltage transients. **DC Microgrid:** An electrical network operating on direct current (DC), ideal for renewable sources (PV), batteries, and DC loads **Efficiency:** Reduces conversion losses by directly using DC power.	
7	Miscellaneous	• **DC solar cable standards:** UV-resistant, halogen-free cables (like XLPO/XLPE) for 1500V DC systems, adhering to **EN 50618**, and **IS 17293** • **The MC4 connector:** UL rated at 20 A and 1500 V maximum, depending on the conductor size used, Insulation material to prevent from electric shock, IP 67 rated protection degree makes it waterproof • **Wireless Modem:** Brand: D-Link/Equivalent Connectivity Type: Wireless or Wi-Fi Color: Black/White/Blue Frequency: 2.4 GHz or latest Speed: 300 Mbps • **Weatherproof Outdoor CCTV Camera** Camera Technology: Analog Camera Recording Formats: H.264, MPEG-4 Display Frame Rate: NTSC: 25fps per channel, PAL: 25fps per channel Image Resolution: 1080p IR Distance: 15 m Network Interface type: RJ45/WiFi • **Earthing System:** 1) The earthing shall be done in accordance with latest Standards, 2) all electrical equipment, mppt, all junction boxes, etc. shall be grounded properly as per IS 3043-2018, All metal casing/ shielding shall be thoroughly	

		grounded in accordance with CEA Safety Regulation 2010. In addition, the lightning arrester should also be earthed 3) Earth resistance should be as low as possible and shall never be higher than 5 ohms. 4) For 3kw, separate two earth pits shall be provided for individual two earthing: DC side earthing, and lightning arrestor earthing. • **Lightning Protection:** The SPV modules shall be provided with lightning & over voltage protection, required with latest Standard, • **Surge Protection:** Internal surge protection, wherever required, shall be Provided • **Seating Arrangement:** For a 6-8 person seating arrangement, common and effective designs include with a rectangular or square table to accommodate 6-8 people	
8	**DC Load details**	**As per below table**	
9	**Scope of the work**	Supply, installation and commissioning of 3kwp Solar Tree Structure System along with the pole at designated, Civil Foundation with RCC with minimum depth of 1.2m meter below Ground	
10	**Solar Tree Component**	✓ Civil Foundation ✓ MS/GI Solar Tree Structure System (STSS) for PV modules mounting arrangements ✓ Solar Photo Voltaic (SPV) modules consisting of required number of	

		Crystalline PV modules ✓ MPPT/PCU DC to DC Voltage Regulation units ✓ Energy Meter, Volt Meter, Amp Meter (necessary power measuring devices) ✓ DC Distribution Box outdoor type (DCDB) ✓ DC-PDB for DC Power Distribution Box outdoor type ✓ Protections – Earthing, Lightning, Surge ✓ Cables – DC Cables, MC4 Connectors ✓ Miscellaneous – Protections, Lights, Fans, Mobile charging points & seating arrangement 6-8 people	

DC Load details

SR. NO.	PARTICULARS	RATING/UNIT (W)	QTY	TOTAL LOAD (W)
1	LED TUBE 24V	20	2	40
2	MOBILE CHARGING POINTS 5V	35	6	210
3	WI-FI ROUTER 5V	50	1	50
4	CCTV CAMERA 5V	50	1	50
5	WALL FAN 300MM 24V	75	2	150
6	OPERATION LOAD 24V	250	1	250
7	MISC LAOD 24V	1250	1	1250
	TOTAL DC POWER 24V (W)			2270