

## Technical specification for 2 kW Off-Grid Solar PV System

| Sl. No. | Name of Components        | Quantity           | Specification                                                                  | Bidders specification |
|---------|---------------------------|--------------------|--------------------------------------------------------------------------------|-----------------------|
| 1       | Solar PV Panels           | <b>06 Nos.</b>     | 350 Wp monocrystalline                                                         |                       |
| 2       | Off-Grid Solar Inverter   | <b>01 No.</b>      | 2 kW, pure sine wave, MPPT type                                                |                       |
| 3       | Solar Charge Controller   | <b>01 No.</b>      | MPPT type; rating selected according to PV voltage/current and battery voltage |                       |
| 4       | Battery Bank              | <b>01 Set</b>      | 48 V battery bank; LiFePO <sub>4</sub> or tubular lead-acid                    |                       |
| 5       | Battery                   | <b>1 Nos.</b>      | 48 V, 100 Ah $\approx$ 4.8 kWh nominal storage                                 |                       |
| 6       | Battery Rack/Stand        | <b>01 Set</b>      | MS/GI powder-coated battery rack suitable for battery bank                     |                       |
| 7       | PV Mounting Structure     | <b>01 Set</b>      | GI structure suitable for 2 kW PV array                                        |                       |
| 8       | DC Solar Cable            | <b>As required</b> | 4/6 mm <sup>2</sup> UV-resistant flexible copper solar cable                   |                       |
| 9       | Battery Cable             | <b>As required</b> | Heavy-duty flexible copper cable, sized according to inverter/battery current  |                       |
| 10      | AC Cable                  | <b>As required</b> | Suitable copper cable for 2 kW AC output                                       |                       |
| 11      | MC4 Connectors            | <b>3–4 pairs</b>   | IP67/IP68, compatible with PV panels                                           |                       |
| 12      | PV DCDB                   | <b>01 Unit</b>     | DC isolator, DC SPD and string protection as required                          |                       |
| 13      | Battery DC Protection Box | <b>01 Unit</b>     | DC fuse/MCB/MCCB and battery isolator                                          |                       |
| 14      | ACDB                      | <b>01 Unit</b>     | AC MCB, SPD and isolator suitable for 2 kW inverter output                     |                       |
| 15      | DC Earthing Kit           | <b>01 Set</b>      | Chemical/GI pipe earthing                                                      |                       |
| 16      | AC Earthing Kit           | <b>01 Set</b>      | Chemical/GI pipe earthing                                                      |                       |

|    |                            |               |                                                          |  |
|----|----------------------------|---------------|----------------------------------------------------------|--|
| 17 | Lightning Arrester         | <b>01 No.</b> | Suitable lightning protection system                     |  |
| 18 | LA Earthing                | <b>01 Set</b> | Dedicated lightning arrester earthing                    |  |
| 19 | Installation&Commissioning | <b>01 Lot</b> | Complete installation, wiring, testing and commissioning |  |
| 20 | Solar Monitoring           | <b>01 Set</b> | Inverter display/Wi-Fi/data logger, if available         |  |
| 21 | Labels&Safety Signage      | <b>01 Lot</b> | PV, battery, AC/DC danger and isolation labels           |  |

### **Area Requirements & Installation Notes:**

- **Roof Area Required:** 15–18 m<sup>2</sup>
- **Orientation:** South-facing
- **Tilt Angle:** Based on location's latitude.
- **Expected Daily Generation:** ~8–10 units/day (varies by region)

### **General Terms and Conditions for the Supplier:**

1. Scope: Supplier shall ensure complete Survey, supply, delivery, installation, testing, and commissioning of the 2 kW Off-Grid Solar PV System as per specified components and standards.
2. Compliance: All materials must comply with relevant BIS/IEC standards. Any deviation requires prior written approval.
3. Warranty:
  - Minimum 15 years on solar PV panels.
  - 1-year comprehensive warranty on installation/workmanship.
4. Documentation: Supplier must provide all manuals, datasheets, and warranty documents at the time of handover.
5. Required lightning arrester (LA) and Earthing shall be installed by the supplier.