

- The cable size (DC & AC) has been provided in BOQ. Vendor needs to submit the calculation and size to NKDA for approval.
- Cross sectional area of the control cable should not be less than 2.5 mm².

Make:

AC & DC Cable: KEC/RR Cable/KEI/ Universal/Polycab/ Mescab/Equivalent EIC approved

6. AC DISTRIBUTION SYSTEM:

The AC Distribution box shall be dust, vermin and waterproof and made of FRP /Thermo Plastic with front panel transparent type. The terminals shall be connected to copper bus bar arrangement of proper sizes. The junction boxes shall have suitable cable entry points fitted with cable glands of appropriate sizes for both incoming and outgoing cables. Suitable markings shall be provided on the bus bar for easy identification and cable ferrules shall be fitted at the cable termination points for identification. The junction boxes shall be of reputed make and should be as per IP 65 (for outdoor).

- Vendor needs to follow the working drawing to NKDA for approval.
- Details of cable used for the distribution and transmission purpose along with their current carrying capacity and make has to be submitted for approval.

7. EARTHING & LIGHTNING PROTECTION:

Earthing:

The earth for array, distribution system & power plant equipment shall be made with GI pipe, 3 m long 50 mm diameter including accessories and providing masonry enclosures with cast iron cover plate having locking arrangement, watering pipe using charcoal or coke and salt as required as per provisions of IS:3043. Necessary provision shall be made for bolted isolating joints of each earth pit for periodic checking of earth resistance.

Each array structure & array junction box in DC side of the SPV yard shall be grounded properly. The array structures are to be connected to earth through 50 mm X 6mm GI strip.

The PCUs and all equipment in AC side of SPV yard will have to be connected to earth through 50 mm X 6 mm GI strip. The basic design has been provided in Annexure. The vendor needs to submit the working drawing with numbers of earth pits to NKDA for approval.

[All earthing should be done as double earthing]

Lightning Protection:

The SPV Power Plant shall be provided with lightning protection. ESS type suitable numbers of lightning arrestors as per site conditions have to be provided throughout the array yard.

Separate earthing arrangements are to be provided to each lightning arrestor. The working drawing has to be provided to NKDA for approval.

8. CMC

- (i) The complete Solar PV Power Plant must be guaranteed against any manufacturing/ design/ installation defects for a minimum period of 5 years.
- (ii) PV modules used in Solar PV Power Plant must be guaranteed for their output peak watt capacity, which should not be less than 90% at the end of 10 years and 80% at the end of 25 years.
- (iii) During the CMC period, MNRE / NKDA / users will have all the rights to cross check the performance of the Solar PV Power Plant. NKDA may carry out the frequent inspections of the Solar PV Power Plant installed and randomly pick up its components to get them tested at Govt. / MNRE approved any test center. If during such tests any part is not found as per the specified technical parameters, NKDA will take the necessary action. The decision of NKDA in this regard will be final and binding on the bidder.

10.1 TEST REPORTS

The test certificate of various components of the proposed SPV system should be in accordance with guidelines of MNRE for off grid Solar PV systems under Jawaharlal Nehru National Solar Mission (JNNSM) and related Addendums /Minutes of meeting published on MNRE website. Test certificates from MNRE approved test centers shall also be considered valid.

10.2 OTHER FEATURES

- (i) The supplier must fulfill all the technical and other requirements as per provisions under JNNSM, MNRE, Govt. of India.
- (ii) Indigenously manufactured Solar PV Power Plant which fully confirm to the MNRE specifications may be procured. Fully imported Solar PV Power Plant shall not be procured. However, use of imported components of PV system would be permitted, subject to adequate disclosure and compliance to specified quality norms and standard.
- (iii) As trip containing the following details should be laminated inside the module to be clearly visible from the front side:
 - a. Name of the Manufacturer or distinctive Logo
 - b. Model or Type No.
 - c. Serial No.
 - d. Year of make.

15.3 Scope of Operation & Maintenance of SPV Power Plant for a period of 05 years from date of commissioning:

- Regular operation & maintenance of the SPV Power Plant for a period of 05 years after commissioning along with supply of consumable items as and when necessary and submission of daily performance data of the power plant shall come, under the operation & maintenance on tract.
- Installer should depute his Engineer for 3 months for operation & maintain of the proposed systems and for giving training to the personnel deputed by NKDA.
- The breakdown maintenance of the entire system including supply of necessary spare parts if any shall be for a period of 05 years from the date of commissioning of power plant. The operation and maintenance schedule of the SPV power plant during the 05 years contract period shall be as detailed below:
 - 05 years operation and maintenance period shall begin on the date actual commissioning of the power plant. The requisite number of qualified and trained personnel is to be deputed by NKDA round the clock from the very first day.
 - The power plant shall ON for twenty-four hours; therefore, the deputed personnel should be placed for round the clock. However, the security of the power plant shall rest with the suppliers till such time operation and maintenance of the power plant is not handed over to the purchaser.
 - The deputed personnel shall be qualified and well trained so that they can handle any type of operation hazard quickly and timely.
 - The deputed personnel should keep daily log sheet for the power plant as per format to be supplied by NKDA after commissioning of the power plant.
 - The deputed personnel shall be in a position to check and test all the equipment regularly, so that preventive actions, if any, could be taken well in advance to save any equipment from damage. Any abnormal behavior of any equipment shall be brought to the notice of respective NKDA immediately for appropriate action.
 - The deputed personnel shall keep clean the power plant in all time. Cooking in the control room will not be allowed under any circumstances.
 - Normal and preventive maintenance of the power plant such as cleaning of module surface, tightening of all electrical connections, etc. are also the duties of the deputed personnel.
 - Under no circumstances, the operator shall take such actions those are damaging to the

Power Plan. In case of non-availability of solar power, suitable notice board may be displayed in front of the control room to avoid local problems.

- During operation and maintenance of period of five year of the power plant, if there is any loss or damage of any component of the power plant due to mismanagement / mishandling or due to any other reasons pertaining to the deputed personnel, whatsoever, the supplier shall be responsible for immediate replacement / rectification. The damaged component may be repaired or replaced by new component. After replacement the performance of the component or the system shall not degrade.

15.4 QUALITY ASSURANCE, QUALITY CONTROL, INSPECTION & TESTING SYSTEM

The detailed item-wise quality assurance and inspection plan shall be finalized jointly with the successful applicant during award of contract.

The Vendor shall submit along with the technical proposal, comprehensive QA & QC systems adopted for this project for review and approval by NKDA during the detailed engineering.

- a. The applicant shall list out all major items/equipment / components equipments, BOS, along with their makes / manufacturers. Above lists will be submitted along with the proposal. Makes of all major items will be subject to NKDA approval before award of contract.
- b. All designs and drawings (electrical, civil & structural) and the specifications of main plant equipments, accessories, cables & structures has to be approved by NKDA before commencing of work.

A handwritten signature in black ink, followed by the date '03/03/2022' written below it.

Executive Engineer (E)
New Town Kolkata Development Authority