

29. Department may increase or decrease the number of PDS from listed qty (i.e. - 05 Nos) according to the requirement and financial implication of this project. Contractor must obey to this conditions and no any deviations from this conditions will be accepted by the department after award of work.

(16)

SPECIFICATION OF SOLAR POWER PLANT

S NO	SPECIFICATION	PARAMETERS
	Type of Solar Power Plant	
	Design, Supply, Installation, Testing and Commissioning of 5 KWp off Grid Solar Power Plant with Minimum (Six) Hours Battery Backup, mounted on a single suitable angle iron frame of minimum 1200 mm from front side ground clearance and fitted in a suitable angle to tap maximum sunlight. The angle iron frame should be as per the MNRE specifications and the panels can be of easily removable type for removing the same in the snow fall days (As per the specifications of MNRE GoI). The battery shall be of Lithium Ion / Lithium Phosphate type (Maintenance free battery type) as per the relevant specifications. The solar power plant shall be provided with Chemical earthing and lightning conductor including grouting the structure in cement concrete as per the site requirement. The complete solar power plant system shall be as per the specifications of MNRE/JAKEDA complete as required with following accessories :-	
a)	Solar PV module -	5 KWp.
b)	Moving type rust free mounting Galvanized structure.	
c)	Solar PCU (Havells Luminous ABB Microtech V Guard JAKEDA Approved Make)	
d)	Copper Cables size 6 Sqmm	50 Mtrs
e)	Batteries (Lithium ION Lithium Phosphate) (Make- ^{MNRE} JAKEDA Approved/ Exide Luminous/Microtech/Okaya) (BIS Certified)	50 Nos. 15000 WH
f)	Chemical Earthing, 2 Mtrs length -	01 Set.
g)	Lightning conductor standalone type 5 meter height.	
h)	All miscellaneous items such as connectors, ferrules, lugs, cable tray, and conduits as required.	
i)	Maintenance Tools -	01 set along with the solar plant.

TECHNICAL OVERVIEW:

Key Facts of the Plant:

Plant capacity in KWp	5 KWp Solar Power Plant-Hybrid
PV Technology Module:	^{A6} Mono Poly Perc modules (Luminous/UTL, Solarium, JAKEDA APPROVED ^{A7} MNRE/ ^{A8} Approved make)
PCU:	Luminous/UTL / JAKEDA Approved make
Power Evacuation:	Single Phase

परिवर्धन / Addition Eight (8)
 विलोपन / Deletion Three (3)
 मूल-सुधार / Correction Nil
 लिपि लेखन / Overwriting Nil

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Each system comprises of the following components:

1. Solar Module
2. PCU
3. Array Junction Box (AC DB/ DC DB)
4. Structure
5. Lightning Arrestor
6. Cables & Accessories
7. Solar Luminous Batteries
8. Earthing Kit
9. Installation

Technology Selections:

Solar Modules: The Solar PV system should be designed using ^{Mono} ~~poly~~ ^{PERC} silicon modules. Photovoltaic solar systems use the light available from the sun to generate electricity. PV panels convert the light reaching the system into DC power. The amount of power they produce is roughly proportional to the intensity and the angle of the light reaching them.

Inverter

A Hybrid inverter complement the solar power generated. Inverter based on MPPT based technology. The suggested type of inverter will meet the requisite reactive power supply and thus reliably participating in efficient backup management.

Others (Junction Boxes, Combiners, Protection Equipment):

In addition to disconnecting from the grid (islanding protection) on detecting no grid/DG supply or under and over voltage conditions, the PV system shall be provided with adequately rated fuses on the inverter input side (DC) as well as the output side (AC) side for overload and short circuit protection. Disconnect switches to isolate the DC and AC system for maintenance or other relevant functions are also provided.

Integration of PV Power Plant:

A Hybrid inverter is used to complement the solar power generated. In addition to regulating the voltage and current received from the solar panels, an Hybrid will ensure that the power supplied to the distribution panel of the building will be in correspondence. On the DC side will optimize the power output by varying the closed loop system voltage. On the AC side, this inverter will ensure that the sinusoidal output is synchronized to the grid frequency.

LIST OF MATERIAL:

S. No	Description	Make	Qty
1	Solar PV Module	⁶² MNRE/JAKEDA APPROVED Make: Luminous UTL-Module Size: 1956mm x 992mm Product Warranty: a). 10 Year Workmanship Warranty b) 25 Year Power Generation Guarantee (As per the JAKEDA Specifications)	5 KWP
2	Mounting Structure	Moving Type Rust free Structure, Galvanized Structure	1 Set

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3	Solar PCU	Inverter Type: Hybrid Brand Luminous Havells ABB Microtek A- Guard (JAKEDA Approved Make) Capacity: 5 KVA Warranty: 2 Year Phase-Single Phase	1 Set
4	Cables	Size Required rating: 6 Sqmm Earthing: 6 sqmm Cable Material: Copper Make: Polycab/Havells Finolex	1 set
5	Pipe	PVC Pipes	
6	Chemical earthing	Diameter: 50mm With Cover and Accessories Length -2 meter	1 set
7	Accessories	-Conduits -Cable Tray -Ferrules -Mounting Structure -Nut and bolts -Lugs -Tools -Ferrules -MC4 Connectors -Civil Materials -Installations	1 Set
7.1	Electrical Conduits and accessories	Reputed Make/PVC	
7.2	Cable Tray	Reputed Make/GI	
7.3	MC4 Connectors	Reputed Make	
7.4	Lugs	Reputed Make	
7.5		Reputed Make	
7.6	Design, Installation and Civil Work	As per Standards	
8	Solar Batteries	(C1) 15000WH 150 AH Flooded, Luminous, Microtek JAKEDA Approved Make(Lithium ION/Lithium Phosphate type) <u>should be (A1)</u> <u>functional as minus</u> <u>temperature.</u>	(D1) NO (5) years replacement Warranty/As per the MNRE specifications)

Physical Check: - In this category specifications of equipment will be checked physically by the BOO against the quality and functionality of the Solar Plant.

Submission of certificate:- Relevant certificate of tests shown against each will be provided by firm during physical trial of the equipment of Required brand .(Test report)

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 मूल-सुधार / Correction one (1)
 लिपि लेखन / Overwriting nil

SCHEDULE OF QUANTITY

NAME OF WORK :- Supply, Installation, testing and commissioning of 5 KWp off Grid Solar Power Plant at THE Gulmarg, FDS (Noori, Zasar Gali ADM base Boniyar and Banal) of 23 BN BSF, UNDER SHQ BSF SRINAGAR.

S. No	Description of Items	Qty	Unit	Rate	Amount
1	Design, Supply, Installation, Testing and Commissioning of 5 KWp off Grid Solar Power Plant with Minimum 6(Six) Hours Battery Backup, mounted on a single suitable angle iron frame fitted at suitable angle to capture maximum sunlight. The angle iron frame should be as per the MNRE specifications and the panels can be of easily removable type for removing the same in the snow fall day (As per the specifications of MNRE Govt). The battery shall be of lithium ferro phosphate with the relevant specifications. The solar power plant shall be provided with Chemical earthing and lightning conductor including grouting the structure in cement concrete as per the site requirement. The complete solar power plant system shall be as per the specifications of MNRE/JAKEDA complete as required with following accessories :- a) Solar PV module -5 KWp. b) Moveable type rust free mounting Galvanized structure. c) Solar PCU (Havells/Luminous/ABB/ Microtech/V Guard make) d) Copper Cables size 6 Sqmm-20 Mtrs. e) Lithium ferro phosphate - 4-50 Ah (With five years replacement warranty) - 08 nos. 15000WH (Should be functional on Minimum temperature) f) Chemical Earthing, 2 Mtrs length -01 Set g) Lighting conductor stand alone type 5 meter height h) All miscellaneous items such as connectors, ferrules, lugs, cable tray, and conduits as required i) Maintenance Tools -01 set along with the solar plant.	5	each		
2	Fabrication of rust free angle iron frame of size 40 MM X 40 MM X 5 MM thick angle iron frame of suitable size including cutting, welding Transportation, carriage at site etc as required PV Panel should be fixed above snow level at FDLs minimum height 10 feet (Where ever required) including grouting the same in 1:3:6 cement concrete mixture etc as required	5	job		

Signature of Contractor

Executive Engineer (Elect)
PTR HQ KASHMIR

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परिवर्धन Addition

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