



DEENDAYAL PORT AUTHORITY

ISO 9001:2008 | ISO 14001 | ISPS Compliant Port



Office of Executive Engineer (Electrical), Ground Floor, Nirman Building, New Kandla, Kutch, Pin Code 370210.

No.: EL/AC/2875

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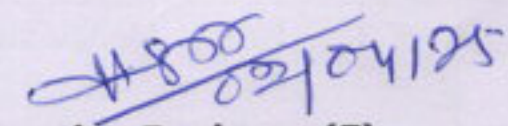
EXPRESSION OF INTEREST [EOI]

"Design, Supply, Installation, Testing & Commissioning of On-Grid Solar Rooftop Power Plants at various locations under CSR"

(This EOI does not constitute any binding commitment from the Deendayal Port Authority to proceed with the work or invite any or all the parties in the subsequent bidding process.)

Executive Engineer (Electrical), DPA invites Expression of Interest for the work of "Design, Supply, Installation, Testing & Commissioning of On-Grid Solar Rooftop Power Plants at various locations under CSR" from the reputed firms from those who have executed similar work in Government/public sectors and other leading private organizations. The Expression of Interest (EOI) documents containing details of Scope of Work & Technical Specifications are enclosed herewith.

The interested firms are requested to submit their rates in the Expression of interest for the said extra item work in BOQ format as enclosed at Annexure – I. The completed EOI (Expression of Interest) shall be submitted to the office of the undersigned on or before 10/04/2025. A scanned copy of EOI duly signed & stamped is also acceptable through e-mail Id deepak.hazra@deendayalport.gov.in and nikunj.solanki@deendayalport.gov.in


Executive Engineer (E)
Deendayal Port Authority

SCOPE OF WORK

Deendayal Port Authority (DPA) is one of the Major Port in India. The Specification is intended to cover the work of Design, Supply, Installation, Testing & Commissioning of On-Grid Solar Power Plants on Turnkey Basis at following Organizations under CSR by Deendayal Port Authority. The name of Organization & minimum DC Capacity of Rooftop Solar Power Plant to be installed & commissioned is as listed below:

Sr. No.	Name of Organization	Minimum Capacity of Rooftop Solar Power Plant to be installed & commissioned	New Installation/ Additional Installation
1.1	Kutch Kalyan Sangh (Garbh Sanskaran Kendra), Gandhidham	5 kW	New Installation
1.2	Kutch Kalyan Sangh (Shree Sarasvati Shishu Mandir), Gandhidham	10 kW	New Installation
1.3	Kutch Kalyan Sangh (Shree Sahyog Saraswati Vidya Mandir), Gandhidham	10 kW	New Installation
2	Ganeshnagar Maheshwari Samajvadi, Gandhidham	15 kW	New Installation
3	Jagjivan Nagar Maheshwari Samajvadi, Gandhidham	12 kW	New Installation
4	Lunang dham Maheshwari Nagar, Gandhidham	12 kW	New Installation
5.1	Maitri Mahavidhyalaya, Adipur	10 kW	New Installation
5.2	Maitri Mahavidhyalaya (Assembly Hall), Adipur	6 kW	New Installation
5.3	Maitri Mahavidhyalaya (Kanya Primary School), Adipur	10 kW	New Installation
6	S.H.N. Academy English School, Adipur	25 kW	New Installation

The scope of work consists of Design, Supply, Installation, Testing & Commissioning of On-Grid Rooftop Solar Power Plant on Turnkey Basis at above Organizations. Payment of any Cost / Charges / Fees towards Registration in GEDA, Energy Meter of PGVCL, Net Meter Agreement etc. will be in scope of Contractor. Any required liaison, submission & getting approval of document from CEI/GEDA/PGVCL for successful commissioning of the work of Rooftop Solar Power Plants at all the above mentioned Organisations will be in scope of Contractor.

The contractor shall arrange all types of tools, tackles, scaffoldings, temporary power

supply at his own cost for installation, testing & commissioning of the work. The contractor shall submit layout colored drawing of complete Rooftop Solar Power Plant System in two set hard copy & soft copy after completion of work to DPA. The work shall be executed to the satisfaction of the Engineer in-Charge.

TECHNICAL SPECIFICATION

GENERIC:

A Grid Tied Photo Voltaic (SPV) power plant shall consists of SPV Array, Module Mounting Structure, Power Conditioning Unit (PCU) consisting of Maximum Power Point Tracker (MPPT), Inverter and Controls and Protections, interconnected cables and switches.

PV Array shall be mounted on a suitable Structure.

Grid tied SPV System shall be without battery and shall be designed with necessary features to supplement the Grid Power during Daytime.

Components and Parts used in the SPV Power Plants including the PV modules, Metallic Structures, Cables, Junction Box, Switches, PCUs etc. shall be as per relevant BIS or IEC or International Specifications, as applicable.

Installation and Testing for Complete System shall be complete in all respect including Designing, Civil work, Fabrication, Cabling work with suitable Bolts, Nuts, Clamps, Connectors and Testing etc.

INVERTER:

Switching Device: IGBT

No. of Phases: 3

Inverter Output Waveform: Pure Sinewave

Technology: MPPT Based

No. of MPPT per Inverter: As per design requirement.

No. of String at input side of Inverter: As per design requirement.

Maximum Power Point Tracker: Integrated in the PCU/Inverter to maximize energy drawn from the array.

Operating Voltage range of Inverter: 200V to 1000V

Overload support at Input side, DC: 15% of maximum Input Voltage

Maximum Input Current for MPPT (in A): As per design requirement.

Service Condition: Outdoor

Ingress Protection rating of Inverter: IP 65

Cooling medium for Inverter: Intelligent fan cooling

Inverter mounting type: Wall mounted

Standard accessories for Inverter: MC4 DC Connectors, AC Connectors, Mounting Bracket, Nuts & Bolts and Inverter manual.

Manual switch for disconnecting DC Supply shall be provided. Isolation between Input DC and Output AC shall be provided.

INVERTER OUTPUT:

Overall Efficiency (in %): >98

Maximum current for 3 Phase Inverter (in A): As per design requirement.

Output Voltage (in V): 415V for 3 Phase

Auto-trip at Output side: Lower: at 160V, Higher: at 285V with adjustable

Frequency range: 50 Hz \pm 3

Grid Frequency Synchronization range: + 3 Hz or more

Grid Voltage tolerance: -20% and +15%

Efficiency Measurements for Power Conditioners / Inverters: As per IEC 61683 / IS:61683

Environmental Testing for Power conditioners / Inverters: As per IEC 60068-2 (1, 2, 14, 30) / Equivalent BIS Standard.

PCU/Inverter shall be capable of complete automatic operation for wake-up, synchronization and shutdown.

PROTECTION FOR INVERTER:

Input Over Voltage Protection,

Low/High Frequency Protection,

Short Circuit Protection,

Output Over Current Protection,

Output Over Voltage Protection,

Output Under Voltage Protection,

Surge Protection,

Grid Input Under Voltage / Over Voltage Protection with auto recovery,

DC disconnect Device,

DC reverse Polarity,

Anti-Islanding Protection as per the Standard,

Insulation Resistance Monitoring,

Overload Protection: 110% for 1 minute,

Over temperature Protection: At 65 °C Cooling Fan shall auto Switch-ON.

THD shall be less than 1.5%

Power Factor at rated Output Power: \geq 0.9

Material of Inverter Body: Aluminium Casting.

CABLE FOR OUTPUT:

ISI marked connecting Cables according to Inverter rating for each system: From Inverter to Net Meter.

Conformity of the Specification for Cable: Copper Cable as per IS 694: 2010 latest and Size of cable as per design requirement.

Cable length for output side (from Inverter to Net Meter for each System): As per site requirement.

Cabling work at Input side for each system: With HMS PVC conduit pipe with necessary clamps and screws.

Cabling work at Output side for each system: With HMS PVC conduit pipe with necessary clamps and screws.

Lightning Arrestor for each Unit: 1 No.

Chemical Earthing System for each Inverter: Minimum 3 Nos. & Size of Earthing Electrode as per design requirement.

Danger Boards and Signage: 2 Nos.

PV MODULE:

Bifacial Mono Crystalline Type

PV Module Rating (in Wp): 545 Wp and above

PV Module conforming to: IEC 61215 / IS 14286 latest for Crystalline Silicon Terrestrial PV Modules Construction, Testing and Safety Requirements: As per IEC 61730 (Part 1) and (Part 2) latest

PV Modules shall comply Salt Mist Corrosion testing: As per IEC 61701 / IS 61701 latest

Tolerance for rated output Power of PV Module: $\pm 3\%$

No. of PV Module for each Solar Power Plant System: As per design requirement.

The peak-power point voltage and the peak-power point current of any supplied module shall not vary by more than 2%.

Protective devices against surges at the PV module shall be provided.

Material for Module Frame (Corrosion Resistant): Anodized Aluminium

PV Module shall be supplied with IV Curve Sheet at STC.

ARRAY STRUCTURE:

Material of Mounting Structure: Hot dipped Galvanized MS mounting Structure.

Angle of inclination as per the site conditions to take maximum insolation for each mounting structure.

Material of mounting structure for mounting the modules/panels/arrays: Structural Steel, Grade: E300 (as per IS 2062: 2011 latest).

Galvanization of the mounting structure: As per IS 4759 latest

Structural material shall be corrosion resistant and electrolytic compatible: Module frame, fasteners, nuts and bolts.

Material of fasteners: Steel as per IS 1367 (Part 1) 2002 latest.

Structures Design shall allow easy replacement of any module.

Civil Structure shall be as per the load bearing capacity of the roof and the suitable structures based on the quality of roof.

Minimum clearance of the structure from the roof level: 1 meter.

JUNCTION BOX:

Junction Boxes shall be provided in the PV array for termination of connecting cables.
Junction Box on PV Module shall be sealed type.
Material of Junction Box shall be Fibre Reinforced Plastic (FRP).
Ingress Protection Class: IP 65.
Termination of Wire/Cable shall be through cable lugs.
Input & Output Termination shall be through single or double compression cable glands.
Copper bus-bars/terminal blocks shall be housed in the Junction Box with suitable termination threads.
Provision of Earthing System shall be provided as per design requirement.
Surge Protection Device shall be provided for each Junction Box.

WIND LOAD:

The mounting structure shall be designed to withstand the wind speed of 150 km per hour.

DISPLAY FEATURE ON INVERTER:

Type of Display: LED
Display Parameters: DC Voltage, DC Current, AC Voltage, AC Current, Output Frequency, Power Factor.
Display for Generating Power Data: Daily, Weekly, Monthly, Yearly with Total Generation.
Generating Power Data Storage Facility shall be for 2 years from the date of commissioning.

NET METER:

Approved by concerned Government Authority for connecting to the Grid.

DC DISTRIBUTION BOARD:

DC Distribution Panel to receive the DC output from the Array field with Surge Arrestors.
Ingress Protection Class: IP 65.
Bus-bar: Copper Bus-bar of size as per rating of Inverter.
Circuit Breaker for input size (DC side) for Inverter: MCB of suitable rating.

CABLE FOR INPUT:

ISI marked connecting cables according to Inverter rating for each system: PV Module to Inverter DC.
Cable for Input: Minimum 1C × 6 Sq. mm Copper Cable as per IS 694: 2010
Cable length for PV Module to Inverter DC: As per site requirement.

AC DISTRIBUTION BOARD:

AC Distribution Panel Board for controlling AC power from PCU/Inverter: 3 Phase 415 Volt ± 10%, 50 Hz ± 3 Hz.
Panel Construction: Wall/Floor mounted, air insulated, cubical type with change-over switch, as per design requirement.

Ingress Protection Class: IP 65

All switches and the circuit breakers, connectors shall conform to IS 60947 Part I, II & III.

Circuit Breaker for Output side (AC side) for Inverter: MCB of suitable rating.

WARRANTY & GUARANTEE:

Minimum Guarantee for maintaining of Output peak watt capacity: $\geq 90\%$ at the end of 10 years and $\geq 80\%$ at the end of 25 years.

Warranty for PV Modules as per MNRE specification: 25 Years.

Warranty for Inverter: 5 Years

Warranty Card shall be submitted containing the details of the system and information about the system and conditions of warranty.

15 Set of Operation and Maintenance manual for each Solar PV Module shall be submitted.

All the test reports and certificates shall be submitted to DPA.

In case of Grid failure, or low or high Voltage, Solar PV system shall be out of synchronization and disconnected from the Grid.

4 Pole Isolator shall be provided for isolation of Inverter output with respect to the Grid.

Locking facility for isolation switch shall be provided.

CERTIFICATIONS:

The PV Cell type, make of SPV Cell, make of SPV Module & make of PCU/Inverter shall be BIS approved. The contractor shall submit valid BIS Certificates for the same.

Contractor shall provide design report of STAAD PRO for Mounting Structure of Modules for compliance of the Structural Stability which shall be duly verified by TPIA of DPA.

Contractor shall submit type test reports for PV Module, PCU/Inverter.

List of make for Solar Panel:


LONGI/TRINA/GOLDI/VIKRAM/REWNYSIS/RAYZON/WAAREE or Equivalent subject to submission of relevant documents of successful operation of minimum one year in any Government Organization.

List of make for Solar Inverter:

LUMINOUS/MICROTEK/EVVO/LENTO/DELTA/ABB/HITACHI/HUAWEI/SUNGROW or Equivalent subject to submission of relevant documents of successful operation of minimum one year in any Government Organization.


The Solar Inverters shall have warranty of minimum 5 Years and individual Solar Panel warranty shall be minimum 25 Years from the date of commissioning.

Signature & Seal of Firm


Executive Engineer (E)
Deendayal Port Authority

ANNEXURE – I**Bill of Quantity**

Name of Work: Design, Supply, Installation, Testing & Commissioning of On-Grid Solar Power Plants at various locations under CSR.

Sr. No.	Description	Qty.	Unit	Rate	Amount
1	Design, Supply, Installation, Testing & Commissioning of On-Grid Rooftop Solar Power Plant at following locations along with necessary liaison & taking approvals from CEI/GEDA/PGVCL as per the Scope of Work & Technical Specifications.				
(i)	Kutch Kalyan Sangh (Garbh Sanskaran Kendra), Gandhidham	5	kW		
(ii)	Kutch Kalyan Sangh (Shree Sarasvati Shishu Mandir), Gandhidham	10	kW		
(iii)	Kutch Kalyan Sangh (Shree Sahyog Saraswati Vidya Mandir), Gandhidham	10	kW		
(iv)	Ganeshnagar Maheshwari Samajvadi, Gandhidham	15	kW		
(v)	Jagjivan Nagar Maheshwari Samajvadi, Gandhidham	12	kW		
(vi)	Lunang dham Maheshwari Nagar, Gandhidham	12	kW		
(vii)	Maitri Mahavidhyalaya, Adipur	10	kW		
(viii)	Maitri Mahavidhyalaya (Assembly Hall), Adipur	6	kW		
(ix)	Maitri Mahavidhyalaya (Kanya Primary School), Adipur	10	kW		
(x)	S.H.N. Academy English School, Adipur	25	kW		
Total					
(In words Rupees _____ only)					
(NOTE: The rates should be inclusive of all taxes, duties, fees, cess etc. and all incidental charges; but exclusive of GST).					
Signature & Seal of Firm			 Executive Engineer (E) Deendayal Port Authority		

Approved Make List of Electrical Items		
Sr. No.	Description	Recommended Makes
1	HV VCB	Siemens/ Crompton Greaves/ ABB/ Schneider
2	HV Gas Insulated Breaker	Siemens/ Schneider/ ABB
3	Power Transformer	Voltamp/ Crompton Greaves/ Bharat Bijlee/ BHEL/ Siemens/ ABB/ Schneider/ T&R
4	Distribution Transformer	EMCO/ Kirloskar/ Patson/ Voltamp/ ABB/ Schneider/ T&R
5	Resin Cast Transformer	Voltamp/ Kirloskar/ EMCO
6	Dry Cast Transformer	Voltamp/ Kirloskar/ EMCO
7	HT XLPE Cable	Polycab/ Torrent/ RPG Asian/ Gloster/ Unistar
8	LT XLPE Cable	Polycab/ Torrent/ RPG Asian/ Rallison/ Primecab/ Havells/ Unistar/ Avocab/ Allcab/ Adcab
9	LT ACB	Siemens/ L&T/ Schneider Electric/ C&S
10	Protection Relay	Areva/ L&T/ Siemens/ ABB/ C&S
11	LT Panel	CPRI Approved
12	Changeover Switch	Siemens/ L&T/ ABB/ C&S/ Schneider Electric/ Legrand/ Indoasian
13	SFU for Main LT Distribution Panel	Siemens/ L&T/ ABB/ C&S
14	SFU for Distribution Panel & Feeder Pillar	Siemens/ L&T/ ABB/ C&S/ Schneider Electric/ Legrand/ Indoasian/ Havells
15	MCCB for Main LT Distribution Panel	Siemens/ L&T/ ABB
16	MCCB for Distribution Panel & Feeder Pillar	Siemens/ L&T/ ABB/ C&S/ Schneider Electric/ Legrand/ Indoasian/ Havells
17	MCB/ELCB/RCCB/RCCBO for Main LT Distribution Panel	Siemens/ Hager/ L&T/ ABB
18	MCB for Distribution Panel & Feeder Pillar	Siemens/ L&T/ ABB/ C&S/ Schneider Electric/ Legrand/ Indoasian/ Havells/ Standard
19	Distribution Board	Standard/ Hensel/ Legrand/ Indoasian/ Havells

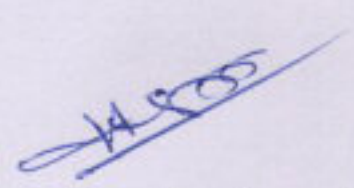
20	Multi-Function Digital Meter for Main LT Distribution Panel/ Digital kWh Meter	L&T/ Enercon/ Secure/ L&G/ Rishabh
21	Analog Volt/Ampere Meter for Distribution Panel & Feeder Pillar	Rishabh/ AE/ Enercon/ L&T
22	Selector Switch for Voltmeter/Ampere Meter	L&T/ Siemens/ C&S
23	Power Contactor & Overload Relay	L&T/ Siemens/ ABB
24	Quartz Time Clock Switch	L&T/ Indoasian/ Siemens
25	PVC Wire with Copper Conductor	RR Kabel/ KEI/ Polycab/ Milex/ Gujcab/ Standard/ Finolex/ Anchor
26	Flush type Switch, Socket, Holder, Ceiling Rose & Electronic Regulator	Anchor/ MK/ Northwest/ Vinay/ Panama/ Havells
27	Bells/ Call Bells	Anchor/ Legend/ MK/ Northwest
28	Modular Switch, Socket, Plate & Box	Anchor/ MK/ Northwest/ Legrand/ Havells/ Indoasian/ Siemens
29	PVC Conduit/ Oval Conduit & Casing Capping and Accessories	Precision/ Vulcan/ Finolex/ Garware/ Restoplast/ Swastik/ BPI
30	Lamp & Fluorescent Lamps	Philips/ Bajaj/ Wipro/ Crompton/ Osram/ Surya Roshni/ GE
31	HPMV & Metal Halide Lamps	Philips/ Bajaj/ Wipro/ Crompton/ Osram/ Surya Roshni/ GE
32	Ignitor for HPSV & Metal Halide Lamps	Philips/ Bajaj/ Wipro/ Crompton/ Osram/ Surya Roshni/ GE
33	Luminaries	Philips/ Bajaj/ Wipro/ Crompton/ Osram/ Surya Roshni/ GE
33	LED Luminaries	Philips/ Bajaj/ Wipro/ Crompton/ Surya/ Pyrotech/ Syska/ Nessa having Surge Protection $\geq 10\text{kV}$ for Fittings & Internal Surge Protection for Driver of $\geq 4\text{kV}$, LED Chip of only OSRAM/ CREE/ Philips Lumileds/ Citizen/ Nicia, with LM79 & LM80 Certification
34	Ceiling Fan	Bajaj/ Orient/ Usha/ Crompton/ Almonard/ GEC

35	Wall mounting Fan	Bajaj/ Orient/ Usha/ Crompton/ Almonard/ GEC
36	Exhaust Fan	Bajaj/ Orient/ Usha/ Crompton/ Almonard/ GEC
37	Heavy duty Industrial Wall mounting Fan	Bajaj/ Orient/ Usha/ Crompton/ Almonard/ GEC
38	Water Cooler	Voltas/ Usha/ Blue Star
39	Air Conditioner	Voltas/ Carrier/ Blue Star/ Usha/ Hitachi/ LG/ Samsung/ Onida
40	Refrigerator	Voltas/ Carrier/ Blue Star/ Usha/ Hitachi/ LG/ Samsung/ Whirlpool
41	Voltage Stabilizer	Veeline/ Capri
42	Inverter	Sukam/ Microtek
43	Engine for D.G. Set	Cummins/ Greaves/ Kirloskar/ Caterpillar/ Ashok Leyland/ Volvo
44	Alternator for D.G. Set	Stamford/ Crompton Greaves/ Jyoti/ Kirloskar Electric
45	Electric Motor	Alstom/ Crompton Greaves/ Siemens/ Kirloskar/ ABB
46	Water Pump	Swastik/ KSB
47	Water Geyser	Bajaj/ Usha/ Crompton Greaves/ Spherehot/ Racold
48	Lug & Cable Glands	Dowells/ Jainson/ Braco

TERMS AND CONDITIONS

1. Time Schedule: The work shall be completed within 4 (four) months from the date of issue of written order to commence the Work.
2. The bidder, at his own responsibility and risk is encouraged to visit and examine the site of work and its surroundings and obtain all information that may be necessary for preparing the Bid. The costs of visiting the site shall be at the Bidders' own expense.
3. The rates should be quoted in figures and words both. In case of difference in figure & words, the rate mentioned in words will be considered.
4. The contractor shall affix SEAL along with SIGNATURE in the Offer.
5. The work shall be carried out in accordance with the best standards of workmanship and to the entire satisfaction of the Engineer in-Charge.
6. The contractor shall not deposit any materials at such a place that may cause inconvenience to the public or staff or nearby offices.
7. The Contractor shall execute the work in such a way that not to cause inconvenience to the public or staff or nearby offices and not to cause hindrance to traffic. Necessary barricading shall be done by the contractor at his own cost if required.
8. All tools, plants, scaffolding, ladder etc. and other machinery etc. required temporary for the purpose of execution of work will have to be arranged by the contractor at his own cost and storing of such tools, plants etc. will have to be made by him.
9. All the materials should be got approved from Engineer-in-Charge before put into use.
10. Correction if any should be signed / initialed by the contractor. White ink correction will not be allowed and lead to rejection of quotation.
11. All the rules and regulations governing DPA will be applicable.
12. After completion of the work, the site should be neatly cleaned by the contractor.
13. The contractor shall ensure not to cause any damages to the port properties in the vicinity of work site during execution of work. If any damage occurs due to workmen/ machinery of the contractor, the contractor has to make good the loss / damage at his cost.
14. For Entry & exist of material and contractor personnel, pass shall be arranged by contractor.
15. All the work shall be carried out to the entire satisfaction of Engineer in-Charge.

Signature & Seal of Firm


Executive Engineer (E)
Deendayal Port Authority