

DEENDAYAL PORT AUTHORITY

(Erstwhile Kandla Port Trust)

An ISO 9001 : 2008 & ISO 14001 : 2004 Certified Port



**Office of the
Chief Mechanical Engineer**

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Date - 02.08.2024

To,

Subject: Green Hydrogen Demonstration Plant - Production, Storage and power generation with fuel cell at Deendayal Port, New Kandla - *reg.*

Sir,

Deendayal Port Authority intends to install the Green Hydrogen Demonstration Plant for Production, Storage and power generation with fuel cell at Deendayal Port, New Kandla.

Kindly submit your Expression of interest along with Annexure - credentials towards similar works & budgetary-offer for referred work & terms.

Last date of submission of your Expression of interest along with budgetary offer in this office for the above work is up to 16.08.2024.

Thanking you,

Yours faithfully,

-sd-

Chief Mechanical Engineer
Deendayal Port Authority

Terms & Conditions

1. Project Overview:

- Develop a Green Hydrogen demonstration plant of 10 Nm³/hr capacity at the premises of Deendayal Port in New Kandla.
- The project aims to leverage renewable energy (RE) power to produce hydrogen, which can be used for power generation through fuel cells or supply to Port or nearby industries based on demand.
- The bidder shall be responsible for Design, detailed engineering, procurement, fabrication, packing, forwarding, supply of materials, transportation and handling, custom duty (and any other duties), freight, insurance, unloading, storage, civil construction, erection, commissioning, Performance guarantee test for water Electrolyzer system, training including 1 year of Comprehensive Operation and Maintenance (O&M) works of all systems in turnkey basis.

2. Technical Specifications:

Hydrogen Generation Unit:

Broad parameters of the Electrolyzer is as below:

Sr. No.	Description	Parameters
1.	Hydrogen generation capacity	10 Nm ³ /hr
2.	Operating hours	24 hrs
3.	Electrolyzer technology	PEM
4.	Hydrogen generation pressure	Minimum 30 Bar
5.	Turn down ratio	20% - 100%
6.	Purity of hydrogen gas	99.99%
7.	Moisture content	0.05 g/m ³ (max)

Hydrogen shall be produced by electrolysis of water using the power drawn from the renewable energy. The electrolyzer shall comply with the following international standards or equivalent Indian standards/ applicable standards.

Fuel Cell:

Sr. No	Description	Parameters
1.	Technology	PEM Type Fuel Cell
2.	Capacity	10KW
3.	Construction	Containerized
4.	Output Power	415V AC

Hydrogen Decompression system:

Sr. No.	Description	Parameters
1.	Input & output pressure	40 bar / 4 bar (or required pressure for Fuel Cell)
2.	Valve	PRV, Slam shut off
3.	Flow Meter	Mass
4.	Construction	Containerized

Hydrogen Storage:

Sr. No.	Description	Parameters
1.	Storage capacity	8 to 10 kg
2.	Type of storage	PESO approved Storage System /cylinders

3. This specification includes, but not limited to supply part, services part & mandatory spares comprising of design (i.e. Preparation and submission of drawing / documents including "As Built" drawings and O&M Manuals), engineering, manufacture, fabrication, assembly, inspection / testing at vendor's & sub-vendor's works, painting, maintenance tools & tackles (as applicable), fill of lubricants & consumables, mandatory spares along with spares for erection, start up and commissioning as required, forwarding, proper packing, shipment and delivery at site, unloading, handling, transportation & storage at site, in site transportation, assembly, civil works, erection & commissioning, trial run at site, carrying out performance guarantee / Functional / Demonstration tests at site (As applicable), obtaining Chief Controller of Explosives (CCE) or any other statutory approvals, training of customer / client O&M staff & final handing over to end customer in flawless condition for Hydrogen generation plant.
4. The project shall be executed and commissioned within four months' time period and in consideration of proper engineering standard to the satisfaction of DPA.
5. Operation and Maintenance (O&M):
 - Bidder to provide 1-year comprehensive O&M services.
 - Includes all spares, tools, consumables, etc., required for maintenance.
 - O&M period extendable for one more year, on the same rates and terms with mutual consent.
 - All necessary approvals and statutory requirements to be fulfilled by the contractor.
6. The contractor shall execute the projects by abiding all statutory requirements. All necessary approvals and statutory requirements to be fulfilled are under the scope of the contractor. All statutory charges shall be borne by the vendor, which may be reimbursed by DPA, subject to submission of documentary evidences by the vendor.
7. Miscellaneous:
 - Supply of tools, instruments, consumables, and other supplies.
 - Charges for staff, labor, transportation, custom duty (and any other duties), freight, insurance, training, other auxiliary charges, etc. for successful completion of the project.
 - Compliance with safety standards and calibration of safety devices and instruments.
 - The safety devices, protection devices, measuring instruments, gauges etc. should be calibrated periodically to ensure accuracy. All safety standards applicable shall be complied with during the safe installation, commissioning and operation of all the units and components.
 - Painting and protection of equipment.
 - Coating & Painting of structures, equipment & piping etc.
 - Fire Protection System - The hydrogen production plant shall be equipped with suitable fire protection & firefighting systems for protection of entire equipment and systems as per CEIG / CCE requirements. The bidder shall comply all applicable statutory requirements, safety regulations in terms of fire protection.
 - Submission of operation and control philosophy, O & M manuals, engineering documents, drawings, calculations, data sheets, P&ID, tag numbers, instrument symbols, PLC specifications, HAZOP report, etc.
 - Hydrogen production curve variations at part load operation to be submitted and established during Performance Acceptance Test.
8. The scope of work as described in this document is not limiting to so far as the responsibilities of the vendor shall include inter alia, carrying out any and all works, and

providing any and all facilities those are required in accomplishing the project, complying fully with all requirements as are envisaged, complete in all respect and satisfying all performance and safety. The contractor shall complete the entire work at his cost, charges, expenses, risk, responsibilities, manpower and other arrangements within the scheduled period being a turnkey project. Any other service required for making the installation complete in all respect and for satisfactory erection & commissioning of the system as well as to meet any statutory requirement relevant to the package, unless specifically excluded from scope of services.

9. Inputs by DPA:

- (a) Port will provide required land for development of Green hydrogen plant on SoR,
- (b) RE power from the nearest source to the proposed green hydrogen demonstration plant will be provided by DPA on chargeable basis. Contractor shall be responsible for provisions of electrical installations, equipments, accessories, etc. for the operation of green hydrogen plant.
- (c) Potable water for the operation of green hydrogen plant will be arranged by Contractor. In case of availability, DPA will offer the potable water / Desal. Water on chargeable basis.

10. Safety Clause:

- The contractor should take all precautionary measures in order to ensure the protection of his own personnel moving about or working on the DPA premises and should confirm to the rules and regulations of the DPA.
- The Contractor should abide by all DPA regulations in force from time to time and ensure that the same are followed by his representatives, agents or sub- contractors, or workmen.
- The contractor should ensure that unauthorized, careless, or inadvertent operation of installed equipment which may result in an accident to staff and / or damage to equipment, does not occur.

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Chief Mechanical Engineer
Deendayal Port Authority

Submission to be made with Expression of Interest

Credentials of Firm

Sr. No.		
1.	Name of Firm	
2.	GST No.	
3.	Whether Similar Work like <u>Engineering, Procurement, and Construction (EPC) / supply & installation in at least any one of the following areas: Hydrogen Generation Plant, Hydrogen blending system, Hydrogen dispensing units, hydrogen mobility solutions, Refinery, Petrochemical, Onshore / offshore Oil & Gas Processing Facilities, Chemical, Fertilizer, Power, Metallurgy (Ferrous), and LNG / CNG / Biogas process plants</u> has been executed? If Yes, please provide the details of (a) capacity, (b) location and (c) employer of referred plant.	
4.	Please share the copy of Work Order / Completion Certificate of referred plant.	

Budgetary Offer

Sr.	Description	Unit	Qty.	Rate	Amount for the Qty.	
					in figures	in words
1	Design, Detailed Engineering, Procurement, fabrication, packing, forwarding, supply of materials, transportation and handling, unloading, storage, civil construction, erection, commissioning, performance test for Green Hydrogen plant (Electrolyzer) training, and other related works including DM Water plant, pressure vessel, storage system etc. in turnkey basis	1	No.			
2	Fuel Cell of 10 KW and its accessories – Hydrogen Fuel, 415 / 230 V application	1	No.			
3	O&M (3 Shift Operation) including PESO approved cylinders for storage of 8 to 10 kg	12	Months			

(Total Rupees _____ Only)

GST Charges shall be extra.

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Signature of Bidder with seal

Chief Mechanical Engineer
Deendayal Port Authority

Place:

Date: