Oil and Natural Gas Corporation Ltd
Materials Management Intelligence & Design (MIND)
2nd Floor, Tower-A, Deendayal Urja Bhawan,
5, Nelson Mandela Marg, Vasant Kunj,
New Delhi -110 070 Tel – (011)-26752010

Ref: DLH/MIND/EOI/ NT-8/2025 Dated: 18 July 2025

Expression of Interest(EOI) Notification

Design, supply, installation, testing and commissioning of 2MW electrolyzer system of 400 NM3/Hr capacity of Green Hydrogen on LSTK basis at ONGC Uran Plant

1. Introduction:

ONGC Uran Plant proposes to set up an Integrated Green Hydrogen plant at its complex. The facility shall have the capacity to produce 400 Nm3 /hr green Hydrogen. at a pressure of 30 bar (g) with final purity of a minimum of 99.998%.

The proposed facility shall comprise of green hydrogen production plant with 2MW electrolyzer stack & balance of Stack (BOS) system and other ancillary systems as required. The 2MW renewable energy power (solar rooftop) will be coming up shortly. The 2 MW electrolyser to be integrated with solar (solar will feed power to grid & grid power to be taken for electrolysis).

Raw water required for the process will have to be sourced from guard pond of the modern ETP plant. However, the system should be capable of utilizing readily available DM water in case of non-availability of ETP plant. The entire system shall be designed in such a way that, capacity of 400 Nm3/hr can be achieved continuously.

ONGC hereby invites expressions of interest (EOI) from capable and experienced parties / vendors for Supply, Installation & Commissioning of 2MW electrolyzer system of 400 NM3/Hr capacity of Green Hydrogen

2. Objective

The primary objective of this Expression of Interest (EOI) is to identify and collaborate with qualified partners who possess the expertise and experience in Green Hydrogen Production technology which can be installed in ONGC Uran Plant.

ONGC's Uran plant has four (04) gas turbines of 20MW capacity each. These gas turbines are operated 24*7. The nominal gas flow is 1,80,000 standard m3/day for each GT. The green hydrogen produced shall be blended with natural gas (up to 5%) and used in one of the gas turbines for power generation at Cogen plant at any given point of time. A common facility of blending is also to be made available to all the four GTs.

3. Scope of Work

Under the proposed project, the selected technology provider(s) will be required to design, supply, install, test and commission 2MW electrolyzer system of 400 NM3/Hr capacity of Green Hydrogen on LSTK basis**.** The scope of work, in general, will be as under:

1. The hydrogen generation system shall be containerized system.

2. Electrolyte circulating system with electrolyte tank and pump, electrolyte Heater, any other auxiliary pump, H2 moisture separator, O2 moisture separator, H2 Gas Cooler, O2 Gas cooler, O2 and H2 Synthesis tower, purification & drying system, condensate collection vessels, seal pot, aftercooler and moisture separator.
3. Rectifier, transformer, DC Bus Duct, PLC based control system including PLC, all instrumentation items related to operation, safety.
4. Blending system shall be provided as part of scope of work within battery limit along with all associated piping and auxiliaries.
5. All necessary power, control, signal and instrumentation cables, cable trays, lugs, supports, glands etc. as required within the battery limit.
6. Suitable analyzer system required for continuous display /record of hydrogen purity, oxygen content (ppm), moisture content (ppm) and dew point (ºC).
7. All process & utility piping, valves, instruments, fittings and piping are in the scope of BOS including insulation of all piping and equipment.
8. The piping system shall conform to all relevant National/ International standards of handling Hydrogen gas. All high pressure drains to be terminated through hydrogen traps and all low pressure drains to be terminated through U-bends. Piping / Tubing should be cleaned as per ASTM G93/G93M-19 standard on Oxygen side before putting in to commissioning / service.
9. The system shall be provided with the necessary connection with proper isolation devices, valves, piping manifolds to enable purging of the system with nitrogen.
10. All drains and vents shall be with flame arrestors.
11. Safety valves, restriction orifices, control valves, hydrogen gas purity meters, dew point meter oxygen gas analyzer.
12. Rectifier with rectifier transformer, DC bus duct between rectifier & electrolyzer stack, dedicated PLC for the electrolyzer system.
13. All internal electrical, control & signal cabling & wiring which includes cables, cable tray, conduit, lugs, glands and JB.
14. Internal earthing & providing earthing terminal points at the container for connection with underground earth mat.
15. Internal lighting of the container. Emergency stop push button & all LCS shall be provided. All internal field instruments for the electrolyzer system.
16. Supply of essential spares required for erection & commissioning including special tools and tackles.
17. Supply 2 year's O&M spares.
18. Supply of consumables, hardware for commissioning including supply of diesel, N2, chemicals & refrigerant.
19. Training Shall be imparted.
20. Electrolyzer Package shall use the latest suitable technology

The detailed Scope of work with technical datasheet for electrolyzer is placed as **Annexure-1** for ready reference**.**

4. Information Required from Interested Parties

Prospective partners are requested to furnish detailed responses covering the following aspects:

- **Technology Specifications**: Details of the Green Hydrogen Technology offered including technical brochure.
- **Financial Metrics**: Indicative capital and operational expenditures for proposed Scope of work

- **Infrastructure Requirements**: Specifications of land and infrastructure needs
- **Organizational Credentials & Deployment Experience**: Overview of the company's experience in the Green Technology domain, Relevant documentation of previous Green Hydrogen installations, including locations, operational metrics, and success rates.
- **Regulatory Framework**

5. Submission Details

Interested parties/ Vendors are invited to submit their EOI proposals electronically (PDF format) within 21 calendar days from publication of this notification in Newspapers, encompassing following:

- **Executive Summary**: A concise overview of the proposal.
- **Detailed Proposal**: Comprehensive responses to the information requirements outlined in Para 4 above.
- **Supporting Documents**: Relevant cases, electrolyzer package technology details, certifications, and any other pertinent documentation.
- **Contact Information:** Interested parties / Vendors to submit their EOI, including any details / queries /clarification required on the objectives and scope of the work projected in the subject EOI to:

  Head MIND, ONGC
  Deendayal Urja Bhawan,
  5, Nelson Mandela Marg, Vasant Kunj,
  New Delhi -110 070 Tel – (011)-26752010, 26754158
  Email: sanghi_sanjiv@ongc.co.in, dhulap_mp@ongc.co.in

6. Evaluation Criteria

Interested parties/Vendors may be asked to present a proposal/submission before a committee. Submissions will be assessed based on:

- **Technical Competence**: Proven capability and experience in supply, installing and commissioning of green hydrogen plant of electrolyzer system.
- **Regulatory Acumen**: Understanding of and experience of handling regulatory approvals for Hydrogen.

7. Confidentiality

All information received by ONGC as part of this EOI, will be ONGC’s property and will be kept strictly confidential and utilized for its internal purposes only.

8. Disclaimer

ONGC reserves the right to alter the scope or terms as needed. This EOI is an exploratory exercise and does not constitute a commitment to award a contract.

Annexure-1

Site Conditions:

Altitude above MSL	10 m
Ambient Temperature	23.1-38 Deg. C
Design Ambient Temperature	50 Deg. C
Relative Humidity	38.8 – 98.1 %
Annual Avg. Wind Speed	As per IS 875.
Seismic zone	Zone-III as per IS 1893

Technical datasheet of electrolyzer:

SL NO	DESCRIPTION	VALUE	REMARK
1	Electrolyzer Type	Pressurized Alkaline - bipolar/ Proton exchange Membrane (PEM) etc.	
2	Rated Hydrogen Output	400 NM3/hr (minimum)	24*7 operation
3	Rated Oxygen Output	230 NM3/hr.	
4	Normal Operating Pressure	30 Bar(g)	
5	Design Pressure	35 Bar(g)	
6	Hydrogen Final Purity (Dry basis)	>= 99.998% , dew point (-) 60 deg C at ATM pressure.	
7	Impurities: O2	Max. 5 ppm	
8	Impurities: Moisture	Max. 5 ppm	
9	Production capacity dynamic range (turn down ratio)	30-100%	
10	DM Water Consumption	20 Litre/kg of H2 approx.	

Process and Mechanical:

DM Water make up i.e. approx. 50 meters away from electrolyser stack. Instrument air outlet header i.e. approx. 50 meters away from electrolyser stack.

- All associated utility lines and storm water channel for water draining are approx. 50Metres away from proposed electrolyser plant location.
- All Condensate and water Drain of complete system up to and including seal pot to be part of supply. Further, drain to be extended up to 5.0 meters away from seal pot.
- All the vents up to safe height i.e. Minimum 3 meters height from nearest working platform along with flame arrester shall be provided.

Electrical:

- 6.6kV/415V Power supply is available from LPG-II substation by laying suitable size cable.
- One 230 V UPS supply shall also be taken from nearby LPG-I substation for the control system. Further internal distribution shall also be in electrolyser supplier scope.
- 2 nos. earthing connection points at the electrolyzer cabinet as well as at the rectifier cabinet will also be required.
- Display and monitoring for Gas detection and fire Protection system, CCTV and SCADA system shall be provided at Cogen control room.

Electrolyzer Control System:

Electrolyser control and monitoring to be done from Cogen control room.

Container mounted PLC based control system shall be considered for electrolyser operation and control. PLC shall be configured in fail-safe manner considering processor/ I/O module/ power supply failure. Touch screen display of min. 7 Inch size shall be connected to PLC for operation and status of all valves, process parameters, alarms etc. shall be visible on the touch screen.

For control & monitoring the process and carry out relevant automatic operations, all the field instruments/Equipment's such as pressure/level/temperature/flow/analyzer/valves for electrolyser package shall be connected to PLC.

Electrolyzer PLC shall be interfaced with BOP package PLC. Important Signal related to electrolyser package shall be communicated on Modbus RS485 for Monitoring. Modbus mapping details to be provided for BOP package PLC for Monitoring.

Rectifier On, Off & Trip signal FB shall be hardwired to BOP package PLC. Necessary Digital output shall be considered in electrolyser PLC. Rectifier trip due to process Interlock i.e. H2 purity & quality, electrolyte flow, temperature, synthesis tower Level, catalyst bed temperature etc. shall be interfaced with respective electrical MCC (supplied by BOP vender) and trip the incomer.

Necessary digital Input & output (Feeder On, Off, Tripp FB and Feeder On, Off Command) shall be considered in electrolyser PLC for KOH Pump & Heater, AUX KOH Pump & Heater, Doxy column heater, dryer heater, dry Cooler, Main Inc etc.

Electrolyzer trip due BOP package instrument / item i.e. H2 leak, ESD push button shall be Initiated by BOP PLC. Necessary digital input shall be considered in electrolyzer PLC to activate rectifier trip. Electrolyzer PLC will generate digital Output to start DM pump in case of low level hydrogen synthesis tower.

Codes and Standards:

- The design, construction, manufacture, supply, testing & other general requirements of the Electrolyzer system package equipment shall be in accordance with the data sheets,
- Indian Electricity Act /rules, regulations of Insurance Association of India and Factories Act while carrying out work as per the specifications.
- Any modification suggested by statutory bodies either during drawing approval or during inspection, if any,
- The Hydrogen Generation System / Process should comply with the following standards:

1. NFPA 2: Hydrogen Technologies Code 2016 edition or newer.
2. ISO 22734-1:2019: ISO 22734-1:2019
3. ISO 14687:2019. ISO 14687:2019
4. ASME B31.12
5. ASME B31.3
6. ISO/TR 15916:2015
7. ASTM G93/G93-M-19
8. IEC 60079
9. ISO 22734-1:2019

Safety:

The complete hydrogen generation plant system, equipment, layout etc shall be designed as per the stipulations of Explosives Authority and the Vendor will obtain the approval from Chief Controller of Explosives, India; and other statutory authorities for the design and installation of the plant.