Bharat Heavy Electricals Limited
Coal to Chemical
Power Sector Business Group – II

Ref.MS-5-22-E-0012
Dtd.10.04.2023

Corrigendum – 1

The due date for submission of the response against Expression of Interest (EoI) "for partnership with BHEL to address upcoming tenders of Electrolyser Systems for Hydrogen Production" on page no. 3, clause 5 A (EOI document reproduced below) may be read correctly as 26.04.2023. The due date stands on 26th April, 2023.

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BHARAT HEAVY ELECTRICALS LIMITED
(A Government of India Undertaking)

Notice for Inviting

Expression of Interest (EoI) for partnership with BHEL to address upcoming tenders of Electrolyser Systems for Hydrogen Production

EoI No: MS-5-22-E-0012

Date of Issue: March 29, 2023

Last date for submission of EoI response: April 26, 2023

Subject: Partnership with BHEL to address business of Electrolyser Systems for Hydrogen Production Applications

1. INTRODUCTION

Government of India has taken positive strides in Green Hydrogen space by releasing National Green Hydrogen Mission in January 2023. The mission document aims to scale up green Hydrogen production and utilization across multiple sectors in India. India's green hydrogen production could reach 5 MMT per annum by 2030 which translates to more than 50GW of installed capacity of electrolyser systems. In the last few years India has seen more than 50 MW of electrolyser tenders coming in market.

This Expression of Interest (EoI) seeks interest from Original Equipment Manufacturers (OEMs) of Electrolyser technology who are willing to partner with BHEL for bidding in upcoming tenders related to Electrolyser System for Hydrogen production applications.

2. ABOUT BHARAT HEAVY ELECTRICAL LTD (BHEL):

BHEL is a leading state-owned company, wherein Government of India is holding 63.17% of its equity. BHEL is an integrated power plant equipment manufacturer and India's largest engineering and manufacturing enterprise of its kind, catering to the core sectors of Indian economy viz. energy, transportation, Oil & Gas, heavy engineering industry, renewable & non-conventional energy and defence. The energy sector covers generation, transmission and distribution equipment for thermal, gas, hydro, nuclear and solar based power plants. BHEL has been in the business for more than 55 years and BHEL supplied power equipment account for more than 57% of the total thermal generating capacity in India. BHEL is also listed in both major stock exchanges of India. The company has 16 manufacturing units, 4 power sector regions, 8 service centers and 4 regional offices besides a host of project sites spread all over India and abroad. The annual turnover of BHEL for the year 2021-22 was around US $ 2.7 Billion (Rs. 20153 Cr). BHEL's highly skilled and committed manpower more than 30000 employees, the state-of-art manufacturing facilities and practices together with the latest technologies, have helped BHEL to deliver a consistent track record of performance. To position leading state-owned company as global industrial giant for their exemplary performance, Government of India categorized BHEL as "Maharatna Company" in 2013, empowering the company with enhanced autonomy in decision making. With the current order book exceeding US $14 Billion (Rs. 102000 Cr), BHEL is poised for an excellent future growth.

BHEL Corporate R&D, Hyderabad has requisite know-how in end-use application of Hydrogen Economy i.e. for Proton Exchange Membrane Fuel Cells (PEMFC) technology and has developed and demonstrated PEMFC system upto 5 KW for stationary application and upto 1.25 KW for mobility application.

Our ongoing major technology tie-ups include agreements with Siemens Energy Global GmbH & Co. KG., Germany (for Steam Turbines, Generators and Condensers); MHI, Japan (for Flue Gas Desulfurization Systems); Leonardo S.p.A, Italy (for Super Rapid Gun Mount); GE Tec GmbH, Switzerland (for Steam Turbine for strategic areas); Vogt Power International, USA (for Heat Recovery Steam Generators); NANO Company Ltd., Korea (for SCR Catalysts); HLB Power Company Ltd., Korea (for Gates and Dampers); Kawasaki Heavy Industries, Japan (for Stainless Steel Coaches for Metros); Valmet Automation Oy, Finland (for DCS System) and Babcock Power Environmental Inc., USA (for Selective Catalytic Reduction Systems); ISRO, India (for Space Grade Lithium-Ion Cells).

For more details, please visit our website http://www.bhel.com

3. SCOPE OF COOPERATION

This Expression of Interest (EoI) seeks interest from Original Equipment Manufacturers (OEMs) of Electrolyser technology who are willing to partner with BHEL for bidding in upcoming tenders related to Electrolyser System for Hydrogen production applications.

i. Based on the responses received wrt to this EOI by way of documents as per clause no. 4 and filled in Annexure – I & Annexure – II, shortlisted respondent(s) will be called for further discussions with BHEL.
ii. BHEL intends to enter into MOU with the shortlisted respondent(s) on mutually agreeable terms and decide on scope of work between BHEL & shortlisted respondent(s) to address the upcoming tenders.
iii. BHEL shall separately seek proposals from Prospective Partner(s), as and when tenders are floated in the market, for jointly bidding for the same.
iv. As per the actual requirement, detailed scope of work distribution & detailed terms and conditions will be discussed and mutually agreed upon on tender to tender basis.

4. PREQUALIFICATION REQUIREMENTS (PQRs)

Respondent shall be a manufacturer of either Alkaline Water Electrolyser (AEL) or Proton Exchange Membrane Electrolyser (PEM) (Suitable/relevant documentary evidence to substantiate the fulfilment of this PQR is to be submitted along with the response to this EOI).

AND

Respondent should have at least 5 years of experience of designing, engineering, manufacturing, assembling, testing, supply, installation and commissioning of Electrolyser System, as on the closing date of this EOI. (Suitable/relevant documentary evidence to substantiate the fulfilment of this PQR is to be submitted along with the response to this EOI).

AND

Respondent should have done system integration & supplied at least one (1) Electrolyser system (AEL/PEM) of capacity at least 400 kW as a single unit in the last 07 years and the system should be in successful operation for at least 06 months from the closing date of this EoI. (Requisite performance certificate from the end client/customer as documentary evidence to substantiate the fulfilment of this PQR is to be submitted along with the response to this EOI).

5. INSTRUCTIONS

A. The interested respondent shall ensure that their complete response along with following annexures are received by BHEL on or before ~~10~~ **26.04.2023**.
Annexure 1- Details required from Respondent
Annexure 2- Information on various parameters of Electrolyser System

B. The response to this EOI shall also be accompanied with details on :
   a. company background,
   b. technical features/ product catalogue,

c. reference list of customers,
d. details of current manufacturing facilities and relevant certificates,
e. annual audited financial reports for last three (3) years.

C. Language: All correspondences and documents related to the EOI response shall be in English language, provided that any printed literature furnished by the Respondent may be written in another language, as long as such literature is accompanied by a translation of its pertinent passages in English language in which case, for purposes of interpretation of the bid, the English translation shall govern.

D. The Respondent(s) shall abide by the terms & conditions, as applicable, of this EOI.

E. All pages of the response against this EOI shall be duly signed by the authorised signatory.

F. Any Respondent which has been debarred/blacklisted by Indian Central/State Governments or by any entity controlled by Indian Central/State Governments from participating in any of their project, as on date of submission of EOI, shall not be eligible to submit the EOI.

G. In case any amendment/corrigendum to this EOI is issued, it shall be notified only at www.bhel.com

H. Right to accept or reject any or all Applications:

i. Notwithstanding anything contained in this EoI, BHEL reserves the right to accept or reject any application and to annul the EoI Process and reject all applications at any time without any liability or any obligation for such acceptance, rejection or annulment and without assigning any reasons thereof. In the event that BHEL rejects or annuls all the applications, it may, at its discretion, invite all eligible OEMs/suppliers to submit fresh applications.

ii. BHEL reserves the right to reject any applicant during or after completion of EoI process, if it is found there was a material misrepresentation by any such applicant or the applicant fails to provide, within the specified time, supplemental information sought by BHEL.

iii. BHEL reserves the right to verify all statements, information and documents submitted by the applicant in response to the EoI. Any such verification or lack of such verification by BHEL shall not relieve the applicant of his obligations or liabilities hereunder nor will it affect any rights of BHEL.

I. Governing Laws & Jurisdiction: The EoI process shall be governed by and construed in accordance with, the laws of India and the Courts at New Delhi (India) shall have exclusive jurisdiction over all disputes arising under, pursuant to and/ or in connection with the EoI process.

J. Contact Details

The respondent shall submit their response with supporting documents (either in soft through email or hard copy) duly signed to the following official:

Additional General Manager
Coal to Chemical, Power Sector Business Group – II,
4th Floor, Bharat Heavy Electricals Limited, BHEL House, Siri Fort, New Delhi – 110049, India
Phone: +91 11 66337811 Mobile: +91 99686 51038; **Email:** ssverma@bhel.in

ANNEXURE – I

DETAILS REQUIRED FROM RESPONDENT

S. No.	Requirement	Response and remarks if any
1.	Whether the Respondent is an Original Equipment Manufacturer (OEM) of Electrolyser System	
2.	For how many years, Respondent is in business of Electrolyser System	
3.	Whether the Respondent has capability of engineering and product development of Electrolyser System	
4.	Whether the Company background and its product profile/ catalogues along with technical details of Electrolyser System , which is being offered to BHEL under this EOI, enclosed	
5.	Whether product data sheet has been enclosed	
6.	Whether Respondent's detailed reference list (including performance certificates, satisfactory operation certificates etc.) have been enclosed	
7.	Whether Respondent's annual audited financial reports including auditor's report for last 3 years have been enclosed	
8.	Respondent shall be a manufacturer of either Alkaline Water Electrolyser (AEL) or Proton Exchange Membrane Electrolyser (PEM) ***Whether Respondent meets above PQR and suitable/relevant documentary evidence to substantiate the fulfilment of above PQR has been submitted.***	
9.	Respondent should have at least 5 years of experience of designing, engineering, manufacturing, assembling, testing, supply, installation and commissioning of Electrolyser System, as on the closing date of this EOI. ***Whether Respondent meets above PQR and suitable/relevant documentary evidence to substantiate the fulfilment of above PQR has been submitted.***	
10.	Respondent should have done system integration & supplied at least one (1) Electrolyser system (AEL/PEM) of capacity at least 400 kW as a single unit in the last 07 years and the system should be in successful operation for at least 06 months from the closing date of this EoI. ***Whether Respondent meets above PQR and requisite performance certificate from the end client/customer as documentary evidence to substantiate the fulfilment of above PQR has been submitted.***	
11.	Whether the Respondent has any presence in India. If so, please specify head office/ company address.	

ANNEXURE – II

INFORMATION ON VARIOUS PARAMETERS OF ELECTROLYSER SYSTEM

S. No.	Specifications / Parameters	Response and remarks if any
1.	Type of Electrolyser Technology (Alkaline/PEM etc.) possessed by the Respondent	
2.	Annual Manufacturing capacity of MEAs/Stack/System	
3.	Whether the Respondent has in-house capability for all other sub-systems (Power supply system, Water management system, Hydrogen processing system, Cooling system, and Control system etc.)	
4.	Min. and max. capacity of Electrolyser system (range in Nm^3/hr)	
5.	Operating temperature range (^oC)	
6.	Outlet pressure of H_2 (in Bar)	
7.	Spc. energy consumption incl. auxiliary units (BOL kWh/Nm^3 H_2)	
8.	Certification and compliances of Electrolyser plant	
9.	Water required per kg of H_2 generated	
10.	Control range (% of nominal power)	
11.	Time taken for Cold start to nominal power in minutes	
12.	Time taken for Standby start to nominal power in sec.	
13.	Minimum guaranteed life of Stack in hours	
14.	Designed life of Electrolyser System in years	
15.	Whether the Control system panels and software are self-developed?	
16.	Whether the Respondent has the capability of making Electrolyser stack and system of 100 Nm^3/hr or more	**(YES/NO)**
17.	Whether the Respondent has supplied Electrolyser systems of at least 100 Nm^3/hr or more	**(YES/NO)**
18.	Number of Electrolyser stack and system supplied (numbers with capacity) in last three years	**(YES/NO)**
19.	Cumulative Operational hours of Stack and Electrolyser systems supplied by the Respondent in last three years	
20.	Minimum operational durability of Electrolyser stacks and systems with degradation rate	
21.	Nominal current density (A/cm^2)	
22.	Voltage range (Volts)	