

BHARAT HEAVY ELECTRICALS LIMITED
(A Government of India Undertaking)
INDIA

Notice seeking

Expression of Interest

from

Prospective Vendors

for

the Procurement of Refrigeration Package

for Syngas Purification (LSTK-2) Project

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SECTION-1

DISCLAIMER

- 1.1 The information contained in this Expression of Interest (EOI) document is provided to the Prospective Vendor, by or on behalf of Bharat Heavy Electricals Limited (BHEL) or any of its employees or advisors on the terms and conditions set out in this EOI document and all other terms and conditions subject to which such information is provided.
- 1.2 This invitation to EOI document does not purport to contain all the information that each Prospective Vendor may require.

This invitation to EOI document may not be appropriate for all persons, and it is not possible for BHEL, its employees or advisors to consider the business/investment objectives, financial situation and particular needs of each Prospective Vendor who reads or uses this invitation to EOI document.

Prospective Vendor should conduct his own investigations and analysis and should check the accuracy, reliability and completeness of the information in this invitation to EOI document and where necessary obtain independent advice from appropriate sources.
- 1.3 BHEL, its employees and advisors make no representation or warranty and shall incur no liability under any law, statute, rules or regulations as to the accuracy, reliability or completeness of the invitation to EOI document.
- 1.4 BHEL may at any time, in its absolute discretion, but without being under any obligation to do so, modify, amend or supplement the information in this invitation to EOI document.
- 1.5 The issue of this EOI does not imply that BHEL is bound to select and shortlist any or all the Prospective Vendor.

Even after selection of suitable Prospective Vendor, BHEL is not bound to proceed ahead with the participation in any or all business opportunities and in no case be responsible or liable for any commercial and consequential liabilities in any manner whatsoever.
- 1.6 The Prospective Vendor shall bear all costs associated with the preparation, technical discussion/presentation and submission of EOI.

BHEL shall in no case be responsible or liable for the costs regardless of the conduct or outcome of the EOI process.
- 1.7 Canvassing in any form by the Prospective Vendor or by any other agency on their behalf shall lead to disqualification of their proposals against this invitation to EOI.

SECTION-2

TIMELINES OF EOI PROCESS & CONTACT DETAILS

2.1 TIMELINE OF EOI PROCESS

The schedule of activities of the EOI Process shall be as follows -

Sl. No.	Description	Date
1	Publishing of Notice for EOI document	31.08.2026
2	Last date of Submission of EOI response (BHEL will reserve the right of extension of the date)	10.09.2026

2.2 CONTACT DETAILS:

All the correspondence shall be marked to the following:

Mr. Abu Tahir Malick Sr. Manager Engg / DABG, CTC & New Business Heavy Power Equipment Plant (HPEP) Bharat Heavy Electricals Limited (BHEL), Hyderabad, India, PIN 502032 Tel:(+91)- 40-23184621, 8500862582 E-Mail: abumalick@bhel.in	Mr. K Kishore Kumar Additional General Manager Engg / DABG, CTC & New Business Heavy Power Equipment Plant (HPEP) Bharat Heavy Electricals Limited (BHEL), Hyderabad, India, PIN 502032 Tel:(+91)- 40-23185275, 9490167505 E-Mail: kkk@bhel.in
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2.3 GUIDELINES FOR EOI SUBMISSION

The Prospective Vendor shall forward their documents as part of EOI, to the e-mail of the contact persons indicated above.

The size of the e-mail (with attachments) may be restricted to **15 MB** due to constraint at receipt. The attachments may be split and sent in no. of e-mails clearly mentioning in subject of mail 'Mail 1 of N', Mail 2 of Netc.

SECTION – 3

ABOUT BHEL

3.1 BHEL

Bharat Heavy Electricals Limited (BHEL) is a Central Public Sector Enterprise under ministry of Heavy Industry and Public Enterprises, Government of India.

It is an integrated power plant equipment manufacturer and one of the largest engineering and manufacturing companies of its kind in India having a turnover of around US \$ 2.6 billion and is a company listed in stock exchanges of India.

The company is engaged in the design, engineering, manufacture, construction, testing, commissioning and servicing of a wide range of products and services for the core sectors of the economy, viz. Power, Transmission, Industry, Transportation, Renewable Energy, Water Management, Oil & Gas and Defence with over 180 product offerings to meet the needs of these sectors.

BHEL has been in the business for more than 50 years and BHEL supplied power equipment account for about 58% of the total thermal generating capacity in India.

The company has highly skilled and committed manpower of approximately 30,000 employees spread across 16 manufacturing units, 4 project execution units, 8 service centres and 15 regional offices besides host of project sites spread all over India and abroad.

BHEL has its footprint in all the inhabited continents with references in 82 countries with cumulative overseas installed capacity of BHEL manufactured power plants nearing 10,000 MW.

BHEL invests more than 2.5% of turnover on R&D and innovation.

More details about the entire range of BHEL's products and operations can be seen at www.bhel.com.

3.2 DCN Group of HPEP (Unit of BHEL)

DCN (Defence & Aerospace, Coal to Chemical and New Business) Group is a part of HPEP, a BHEL unit located in Hyderabad, Telangana, in Southern India. The DCN Group undertakes engineering, design and procurement for projects in the Defence & Aerospace, Coal to Chemical, and emerging business domains such as Green Hydrogen, Fuel Cells and Sulphur Recovery Units (SRU).

The DCN Engineering Team has extensive experience in the engineering of Captive Power Plants (CPPs) and has successfully executed a diverse range of projects, including Solar Power Plants, Railway Electrification and Sulphur Recovery Units for refineries.

SECTION – 4

COAL TO CHEMICAL BUSINESS

- 4.1** Coal India Limited (CIL) and Bharat Heavy Electricals Limited (BHEL) have formed a Joint Venture Company, **Bharat Coal Gasification and Chemicals Limited (BCGCL)**, hereinafter referred to as the “**OWNER**”, with its registered office at Bandhabahal, Jharsuguda, Odisha.
- 4.2** BCGCL is developing a **world-class coal-based chemical complex** at the Lakhanpur area of Mahanadi Coalfields Limited (MCL), Odisha. The complex comprises a **Coal Gasification Plant, Syngas Purification Plant, Ammonia Plant, Nitric Acid Plant and Ammonium Nitrate Plant**, along with associated Offsite and Utility facilities. The Syngas Purification Plant is designed to receive raw synthesis gas from the upstream Coal Gasification Plant and produce **ammonia synthesis gas**.
- 4.3** BHEL has been entrusted with the **EPC implementation of the Syngas Purification Plant**, along with **5 years of Operation & Maintenance (O&M) services** for the plant.
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- 4.5** DCN Group, BHEL HPEP Hyderabad, is the lead agency within BHEL for **Engineering, Design and Procurement of Gasifier Downstream EPC Projects**, including **Syngas Purification Packages**, under BHEL’s Coal Gasification Business.

SECTION – 5

PROJECT DETAILS

5.1 Project details are as under:

Sl. no	Description	Details
1	Project Name	(Syngas Purification Unit for Coal to Ammonium Nitrate Plant)
2	Project Location	Lakhimpur, Jharsuguda- 768211, Orissa, India
3	Owner Name	BCGCL, India
4	Owner's Consultant	PDIL, Noida, Uttar Pradesh, India
5	EPC Contractor	BHEL, India
6	Process Licensor	Linde, Vadodara, India
7	EPC Contractor's Engineering sub-contractor	Linde, Vadodara, India

SECTION – 6

EOI

6.1 OBJECTIVE OF THIS NOTICE:

- a. The objective of this Notice is to seek Expression of Interest (EOI) from prospective Vendors/OEMs having proven experience and capability in the design, engineering, manufacture and supply of Refrigeration Packages for industrial/process applications.
- b. The Refrigeration Package is required for the Syngas Purification Plant being implemented by BHEL for BCGCL's Coal to Ammonium Nitrate Project at Jharsuguda, Odisha. The package shall provide the required refrigeration duty for cooling of process streams within the Syngas Purification Plant.
- c. **The EOI is intended to identify competent and experienced Vendors capable of undertaking the** Design, engineering, Hazop, 3D modelling, fabrication, assembly, inspection, testing, supply and supervision of erection, testing, commissioning, performance testing and AMC of Refrigeration Package with following major parameters:

- | | |
|--------------------------|-------------|
| i). Design Thermal Duty | : 5290 kWth |
| ii). Type of Refrigerant | : Ammonia |
| iii). Fluid to be cooled | : Methanol |

Technical and other project-specific requirements of the Refrigeration Package are specified separately in the subsequent sections of this Notice.

6.2 ELIGIBILITY CONDITIONS FOR PROSPECTIVE VENDOR

The Vendor during the last 15 (fifteen) years, should have designed, manufactured (under third party inspection agencies like Lloyds Register/TUV/BVIS) and supplied at least TWO similar Plant Equipment or Machinery for similar duties and operating conditions and same should be operating satisfactorily after installation for at least TWO years as of the date of publication of this EOI.

6.3 EXPECTATIONS FROM RESPONDENTS TO THIS NOTICE (AS PART OF EOI):

- a. Vendor shall submit adequate documentary evidence to substantiate compliance with the pre-qualification requirements specified in Clause 6.2 above. Minimum documents required are specified in Section 10 of this EOI notice.

6.4 RESULT OF EOI:

Based on the data furnished, BHEL will shortlist the vendors for future/ firm enquiry.

6.5 INSTRUCTIONS

- a) A prospective vendor requiring any clarification to the EOI documents may notify the same through e-mail or by post at the address indicated in Section 2 of this EOI.

BHEL will respond to any request for clarification or modification of the EOI

Prospective Vendors are advised to regularly visit BHEL's website for clarifications, modifications if any.

- b) BHEL at their sole discretion may inspect the Vendor works / office / reference project sites etc. for the purpose of evaluation, if required.

6.6 MISCELLANEOUS:

Right to accept or reject any or all Applications:

- iv). Notwithstanding anything contained in this invitation to EOI, BHEL reserves the right to accept or reject any EOI and to annul the EOI Process and reject all EOIs at any time without any liability or any obligation for such acceptance, rejection or annulment and without assigning any reasons, thereof.
- v). BHEL reserves the right to disqualify any Prospective Vendor during or after completion of EOI process, if it is found there was a material misrepresentation by any such Prospective Vendor or the Prospective Vendor fails to provide within the specified time, supplemental information sought by BHEL.
- vi). BHEL reserves the right to verify all statements, information and documents submitted by the Prospective Vendor in the EOI. Any such verification or lack of such verification by BHEL shall not relieve the Prospective Vendor of his obligations or liabilities hereunder nor will it affect any rights of BHEL.

6.7 Governing Laws & Jurisdiction:

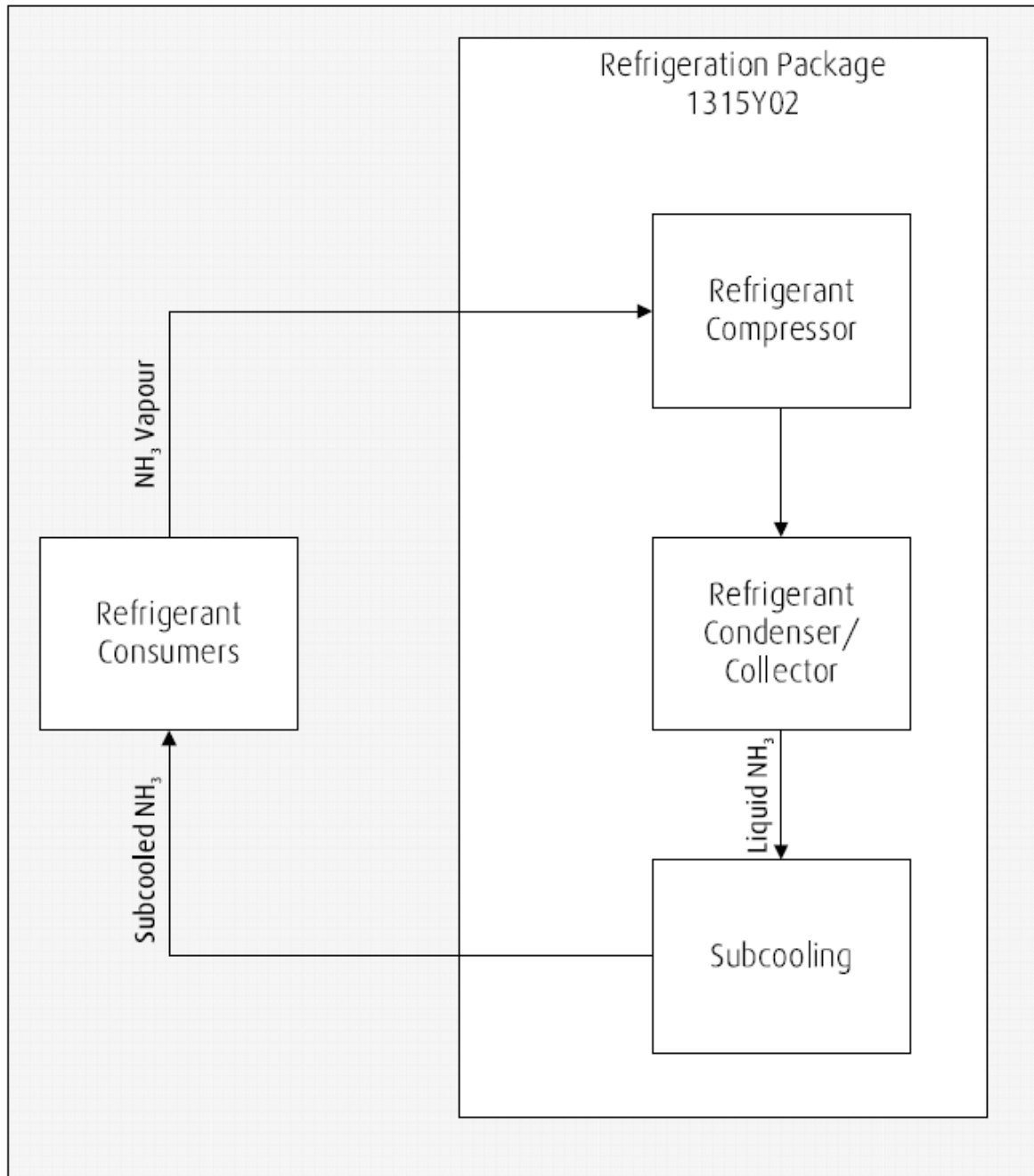
The EOI process shall be governed by, and construed in accordance with, the laws of India and the Courts at New Delhi (India) shall have exclusive jurisdiction over all disputes arising under, pursuant to and / or in connection with this EOI process

SECTION-7

TECHNICAL DETAILS OF REFRIGERATION SYSTEM

7.1 Introduction

The Refrigeration Package is a critical utility system for the Syngas Purification Unit and is designed to provide the required low-temperature refrigeration duty for process cooling requirements. For the present application, the refrigeration package is required to achieve the specified low-temperature process condition by providing liquid ammonia at a maximum outlet temperature of -12°C and pressure of $6 \text{ kg/cm}^2(\text{a})$ minimum, as defined by the process design.



7.2 Technical Input

The water-cooled industrial refrigeration system shall be designed to provide the total cooling capacity required for the refrigerant supplied to the process heat exchangers (by Purchaser) under the design conditions specified in this EOI notification.

1. Scope of Work

The VENDOR shall be responsible for the complete design, engineering (including 3D modelling, Hazop), fabrication, inspection, testing, assembly, and delivery of a skid-mounted, water-cooled industrial refrigeration system.

The VENDOR shall supply all equipment, components, piping, valves, instrumentation, controls including PLC, accessories, initial charge of refrigerant, Oil, mandatory spares, commissioning/start-up spares, and ancillary items necessary to provide a complete, fully integrated, factory-tested, and operational refrigeration system. Any item not specifically identified in this specification but required for the safe, reliable, and intended operation of the system shall be deemed to be included within the VENDOR's scope of supply.

Supervision services for the Erection and commissioning, Site Performance testing shall also be included in Vendor's scope.

2. Applicable Codes and Standards

All design shall conform but not limited to the latest edition of the applicable sections of ASME, ASTM, IEEE, NFC, TEMA, AISI, NEMA, AISC, ACI, OSHA, UBE and other governing codes or standard practices.

Compressor	: API619 with manufacturer comments
Pressure Vessel	: ASME Section VIII, Div. 1 with U-stamp
Oil Cooler	: ASME Sec.VIII Div.1, TEMA C with UStamp.
Condenser	: ASME Sec.VIII Div.1, TEMA C with UStamp

3. Utilities:

a. Cooling Water

Supply temperature min./norm/max	: -/33/ 33 deg C
Max. temperature increase	: 10K
Supply pressure min/norm/max	: 4/4/- kg/cm2 (g)
Allowable pressure drop of consumer	: 1 kg/cm2
Fouling Factor	: 0.0004m2.h.deg C/kcal

b. Nitrogen

Purity	: 99.99% N2
Quality	: Cryogenic ASU Nitrogen
Pressure min/norm/max	: 6/8/9 kg/cm2 (g)
Temperature min/norm/max	: Amb. /40/40 deg C

c. Instrument Air

Dewpoint @ 8kg/cm² (g) = -40 deg. C
 Quality : Dust and Oil Free
 Pressure min/norm/max : 6/8/10 kg/cm² (g)
 Temperature min/norm/max : 10/26/50 deg C

d. Power

HT Power Supply : 3.3kV / 11kV±10%, 50Hz +3%
 LT 3-ph Supply (normal) : 415V±10%, 50Hz +3%
 LT 1-ph Supply (normal) : 230V, 50Hz
 UPS Supply : 230V AC, 50Hz

4. Battery Limit Parameters and Guarantee condition

	Normal Operating Case		Equipment Design Case	
	Guarantee for thermal Duty and Utility Consumption		Guarantee for thermal	
Inlet conditions (Vapour) at B.L of Refrigeration Package				
	4540kWth	3906310 kcal/hr	5290 kWth	4551625 kcal/hr
Inlet Temperature at B.L.	-40 Deg. C		-40 Deg. C	
Inlet Pressure at B.L.	0.6307 kg/cm2(a)		0.6307 kg/cm2(a)	
Refrigerant Supply conditions(liquid) at B.L.				
Minimum Supply Pressure	6 kg/cm2(a)		6 kg/cm2(a)	
Maximum supply temperature	-12 Deg. C		-12 Deg. C	
Minimum degree of subcooling	3 kg/cm2(a)		3 kg/cm2(a)	

Notes:

- b. Ammonia to be used as Refrigerant.
 - i. Fouling factor 0.00020m².h.C/kCal
- c. Compressor configuration to be as recommended by vendor, no standby unit required.
- d. Minimum continuous refrigeration load is 2610kW thermal (2245698kcal/h thermal)
- e. Vendor shall guarantee the thermal duty for Equipment Design case and Normal operating case.
- f. Utility consumption to be guaranteed for Normal operating case.

- g. Maximum liquid entrainment from refrigeration consumers is <1% (to be considered in suction drum and refrigeration supply design)
- h. Maximum oil carries over of refrigerant supply to consumers <10ppm-wt (total oil).
- i. Compressor control and slide valve/bypass valve control to be engineered by vendor.
- j. It shall be possible to run the refrigeration system for 1 year without planned interruption.
- k. Start-up of the unit and operation with zero refrigeration load shall be possible.
- l. Area of installation of Refrigeration Package: Safe Zone

SECTION-8

CHECK LIST FOR DOCUMENTS TO BE FORWARDED ALONG WITH EOI

Prospective Vendor should submit following documents along with their Proposal:

Sl. No.	Document Description	Format	Vendor's confirmation (Yes / No)
1.	Duly filled and signed General information	Annexure – I	
2.	Duly filled and signed along with all the documents mentioned in the Section 10 Annexure - II	Annexure - II	

(Signature of Authorized Signatory)

Name:

Designation:

Address:

Date:

SECTION-9

Annexure-I

General Information

Date:

Legal name of company	
Country of constitution:	
Year of constitution:	
legal address in country of constitution:	
Mobile Number of the Concerned Person:	
Email id of the Concerned Person:	
<i>Willing to get registered as a Supplier in BHEL's Supplier Directory</i>	<i>Yes / No</i>
Attached are copies of original documents of	
☐ Articles of Incorporation or Documents of Constitution, and documents of registration of the legal entity named above.	

(Signature of Authorized Signatory)

Name:

Designation:

Address:

Date:

SECTION-10

Annexure-II

**PROVEN TRACK RECORD PROFORMA / EXPERIENCE RECORD
PROFORMA (FOR BIDDER QUALIFICATION)**

SECTION 10 (ANNEXURE- II)

PROVEN TRACK RECORD PROFORMA / EXPERIENCE RECORD PROFORMA (FOR BIDDER QUALIFICATION)			
SL NO	PARAMETER	INFORMATION ON REFERRED EXISTING INSTALLATIONS	
		REFERENCE - 1	REFERENCE- 2
1	Is the bidder a supplier of complete Refrigeration Package (Yes / No)		
2	The Vendor during the last 15 (fifteen) years, should have designed, manufactured (under third party inspection agencies like Lloyds Register/TUV/BVIS) and supplied at least TWO similar Plant Equipment or Machinery for similar duties and operating conditions and same should be operating satisfactorily after installation for at least TWO years as of the date of publication of this EOI.		
a	Project name (vendor to specify)		
b	Proof of order such as copy of Purchase Order (PO) / LOA / LOI / FOA / Work Order etc. (vendor to submit)		
c	Proof of Supply such as copy of Inspection Release Note (IRN) / Bill of Lading etc.(vendor to submit)		
d	Proof of commissioning such as copy of Commissioning Certificate/PGTR etc. (vendor to submit)		
e	Proof of minimum 2 Year Satisfactory performance of the supplied Refrigeration Package such as copy of Performance Certificate from the End Customer (vendor to submit)		
f	Capacity (Kcal/hr) of Refrigeration package supplied against above PO/LOA/LOI/FOA/Work Order etc. (vendor to specify)		
g	Name of Refrigerant (vendor to specify)		
h	Proof of Technical parameters such as General Arrangement (GA) dwg/ Technical Datasheet etc. (vendor to submit)		
i	End User's Details (vendor to specify)		
	i) Name of (Company / Organisation)		
	ii) Name of Contact Person		
	iii) Address including Telephone No / Email-ID		
j	General supply reference list. (vendor to submit)		
k	Valid Accreditation from third party inspection agencies like Lloyds Register, TUV, BVIS. (vendor to submit)		
l	Proof of Availability of After Sales Service and Spares in India. (vendor to submit)		
m	Proof of Availability of ASME Certification and its validity. (vendor to submit)		
Important Note:			
1	Wherever Vendor to specify is mentioned above, vendor to write the requested parameter/details for Reference-1 and Reference-2 column.		
2	Wherever Vendor to submit is mentioned above, vendor to attach the requested document along with the EOI response and write 'Submitted' in Reference-1 and Reference-2 column.		

(Signature of Authorized Signatory)

Name:

Designation:

Address:

Date: