

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

Notice seeking
Expression of Interest
from
Process Licensors
&
Process Integrators
for
(Ammonia, Nitric Acid and Ammonium Nitrate processes)
for the expected
Coal to Ammonium Nitrate Project
at
Lakhanpur Open Cast Plant, India

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SECTION-1

DISCLAIMER

- 1.1 The information contained in this Expression of Interest (EOI) document is provided to the Prospective Partner, 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 Partner 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 Partner who reads or uses this invitation to EOI document.

Prospective Partner 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 Partner.

Even after selection of suitable Prospective Partner, 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 Partner 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 Partner 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	07.12.2022
2	Last date of Submission of EOI response (BHEL will reserve the right of extension of the date)	31.12.2022

2.2 CONTACT DETAILS:

All the correspondence shall be marked to the following:

Mr. K. Srinivas Sr. Deputy General Manager Proposals, Project Engineering & Systems Division Unit Bharat Heavy Electricals Limited (BHEL), Hyderabad, India, PIN 502032 Tel:(+91)- 40-23185364, 9441277025 E-Mail: ksrinivas@bhel.in	Mr. Chintan Gajera Manager Proposals, Project Engineering & Systems Division Unit Bharat Heavy Electricals Limited (BHEL), Hyderabad, India, PIN 502032 Tel:(+91)- 40-23184759, 9705528244 E-Mail: chintangajera@bhel.in
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2.3 GUIDELINES FOR EOI SUBMISSION

The Prospective Partner 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 N,etc

SECTION – 3

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 PE&SD, Corporate R&D (Units of BHEL)

Project Engineering & System Division (PE&SD) is an Engineering Unit of BHEL and is located in Hyderabad, Telangana State in Southern India. It has capabilities to execute the projects on EPC basis and has rich experience of engineering the Captive Power Plants and has experience of executing wide variety of projects like Solar Power Plants, Railway Line Electrification and Sulphur Recovery Unit in Refinery.

Corporate Research & Development (CR&D) is central R&D unit of BHEL located in Hyderabad, Telangana State in Southern India for undertaking research & development activities for all the existing products of BHEL as well as developing new products and services for the company. It has 28 technical groups and 10 Centres of Excellences (CoE) catering to the R&D needs of the organisation.

SECTION – 4
PROJECT

4.1 National Coal Gasification Mission

Government of India has set a target to achieve gasification of 100 Million Tonnes of coal by the year 2030 through National Coal Gasification Mission

4.2 BHEL's experience in Coal gasification

Notably 75% of Indian coal has high ash content and gasification technologies developed abroad are not capable of handling such coal.

BHEL is pioneer in the development of coal gasification technology indigenously, i.e. Pulverised fuel Bed Gasification (PFBG) and has successfully gasified high-ash Indian coals.

BHEL's PFBG technology is most suited for this type of coal. The company has already successfully set up India's first high-ash Indian coal to Methanol (0.25 TPD) pilot plant at its Corporate R&D unit, Hyderabad

This technology was earlier utilised to establish a 6.2 MW IGCC-based Combined Cycle Plant at BHEL Trichy.

BHEL's coal gasification technology will not only help in gainful utilisation of India's large coal reserves in a sustainable manner and indigenous production of high-end chemicals, but can also boost Power Generation through Integrated Gasification Combined Cycle (IGCC) technology

A dedicated team within BHEL is now working in mission mode to commercialize this technology as well as execution of EPC projects for providing end-to-end solutions for businesses based on Coal Gasification.

4.3 MOUs

Aimed at gainfully utilising the country's vast reserves of coal & lignite, BHEL has entered into strategic MOUs with Coal India Limited (CIL) and NLC India Limited (NLCIL) for setting up Coal Gasification based plants.

4.4 Coal India Limited (CIL)

Coal India Limited is an Indian central public sector undertaking and is the largest government-owned-coal-producer in the world. It produces 82% of the total coal in India. CIL produces coal through seven of its wholly owned subsidiaries, one of which is Mahanadi Coalfields Limited (MCL)

4.5 NLC India Limited (NLCIL)

NLC India Limited (NLC) (formerly Neyveli Lignite Corporation Limited) is a central public sector undertaking and it annually produces about 30 million tonnes of Lignite from opencast mines at Neyveli and Barsingsar.

4.6 Projects

Under these MOUs, BHEL will jointly set up a ***Coal to Ammonium Nitrate Project*** with CIL based on gasification of high ash Indian coal, and a ***lignite-based gasification pilot plant*** with NLCIL for power generation, utilising BHEL's indigenously developed Pressurised Fluidised Bed Gasification (PFBG) technology.

SECTION – 5

EOI

5.1 OBJECTIVE OF THIS NOTICE:

2000 TPD Coal to Ammonium Nitrate project is envisaged through a Joint Venture Company between BHEL and CIL.

The work on it is shortly expected to commence. It will be set up at Bandhabal, Jharsuguda District, Odisha State, India using coal from Mahanadi Coalfields Limited, IB Valley coal Mines, Lakhanpur Open Cast Plant, Lajkura Seam (Co-ordinates : 21.7451, 83.8401).

It majorly involves (i) gasification of coal to produce Syngas, (ii) Syngas clean-up to suite ammonia synthesis requirements, (iii) Ammonia, Nitric Acid and ammonium Nitrate synthesis.

The objective of this Notice is to seek EOI from Partners who are

- (i) Licensors for Process of
 - Ammonia
 - Nitric Acid
 - Ammonium Nitrate

- (ii) Integrators of above processes

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

- (a) Licensors are expected to furnish
 - the technical aspects of their process
 - configuration (sizing of equipment) of their process to meet the **Project** requirement and data sought by BHEL (refer Section-6 for Technical Specifications for Ammonia, Nitric Acid and Ammonium Nitrate Synthesis Islands and the Notes mentioned therein)
 - list of the Proprietary equipment which shall be necessarily bought from Licensor
 - list of the recommended suppliers for other equipment
 - cost of the proprietary equipment which will be supplied by Licensor
 - indicative cost of other equipment
 - commercial conditions, validity of offer and terms of supply
- (b) Process Integrators are expected to furnish
 - the technical aspects of their offer
 - cost of their offer
 - commercial conditions, validity of offer and terms of supply

BHEL will decide to employ a Process Integrator or proceed on its own for the requirement.

5.3 ELIGIBILITY CONDITIONS FOR PROSPECTIVE PARTNER

- 5.3.1 Prospective partner should have technology in its own name / its Parent Company name and it should have been established in a commercial organisation.
- 5.3.2 The Prospective Partner can be Private, Public or Government owned legal entity.
Government entity shall be eligible only if they can establish that:
- I. They are legally and financially autonomous, and
 - II. They operate under commercial law
- 5.3.3 Prospective Partner which has been barred / blacklisted / expelled by the World Bank, Japan International Cooperation Agency (JICA) or any other International Financing Institution, Central / State Governments of India or by any entity controlled by Central / State Government of India from participating in any project, as on date of submission of EOI, shall not be eligible to submit the EOI.

5.4 EVALUATION OF EOI:

BHEL will evaluate the different EOIs received above and will take decision to suit its business need.

5.5 RESULT OF EOI:

After internal evaluation of EOIs, Joint Association Agreement (JAA) / Memorandum of Association (MOA) will be signed with the selected Partner – for the Process Licenses / Process Integration Work to be used in further expected orders subsequent to the **Project** - for an initial period of 5 years, which may be suitably extended based on mutual agreement.

Brief scope of work & services and responsibilities between BHEL and the Partner shall be finalised in the JAA / MOA.

BHEL and Partner will enter into Consortium / MOU / Pre-bid tie-up / any other mode of association to address applicable business opportunities which shall be subject to approval of respective management of BHEL and Partner.

All such future tender to tender associations/agreement shall however generally be in line with BHEL Purchase / Works Policies as applicable.

Business opportunities may be identified jointly or individually by the Parties from time to time during the validity of JAA/MOA.

Whenever any project/ assignment of such type has been identified to be undertaken, such projects shall be taken up on mutually agreed scope, cost, time, schedule, commercial and technical terms & Conditions on project to project basis.

5.6 INSTRUCTIONS

5.6.1 Extent of Exclusivity:

BHEL & Partner will jointly address all the business opportunities covered under JAA/MOA, however, if for any specific business opportunity, either of the party do not wish to participate, such party shall so intimate in writing to the other party.

After receipt of such intimation, other party is free to pursue such business opportunities either individually including its parent firm/associates/affiliates or with any other third party.

The party which has shown unwillingness to participate in the specific business opportunity shall not address such particular business opportunity either individually including its parent firm/associates/affiliates or with some other party.

5.6.2 Language of proposal:

All correspondences and documents related to EOI shall be in English language, provided that any printed literature furnished by the Prospective Partner 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 proposal the English translation shall govern.

5.6.3 Subsidiaries submitting their EOI based on their parent organizations credentials shall submit an unconditional undertaking /declaration from their parent company to support their subsidiaries & BHEL in all respect as per customer requirements.

5.6.4 A prospective Partner 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 that it receives within specified time.

BHEL will reply the clarifications by e-mail and may post if deemed pertinent for all others on its website.

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

5.6.5 BHEL at their sole discretion may inspect the Prospective Partner works / office / reference project sites etc. for the purpose of evaluation, if required.

5.6.6 Signing of EOI / Application

The Prospective Partner shall submit the EOI documents authenticated by an authorised person from any of its offices who will be interacting with BHEL during evaluation of bid.

The EOI submitted by Prospective Partner shall not contain any section like "clarifications / as orally told / to be discussed / interpretation and assumptions".

All pages of the EOI documents including formats and annexures, and all pages of this Invitation of EOI documents together with subsequent clarifications / corrigendum issued shall be duly signed, dated and stamped by the authorised signatory. The authorisation to sign the documents must be confirmed by a written power of attorney accompanying the EOI application as per **Annexure – 9**.

5.7 PROCESS TO BE CONFIDENTIAL:

Information relating to the examination, clarification, evaluation and comparison of EOIs and recommendations shall not be disclosed to Prospective Partner.

Any effort by Prospective Partner to influence BHEL in this regard may result in the rejection of the proposal.

5.8 MISCELLANEOUS:

5.8.1 Right to accept or reject any or all Applications:

- i. 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.
- ii. BHEL reserves the right to disqualify any Prospective Partner during or after completion of EOI process, if it is found there was a material misrepresentation by any such Prospective Partner or the Prospective Partner 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 Prospective Partner in the EOI. Any such verification or lack of such verification by BHEL shall not relieve the Prospective Partner of his obligations or liabilities hereunder nor will it affect any rights of BHEL.

5.8.2 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

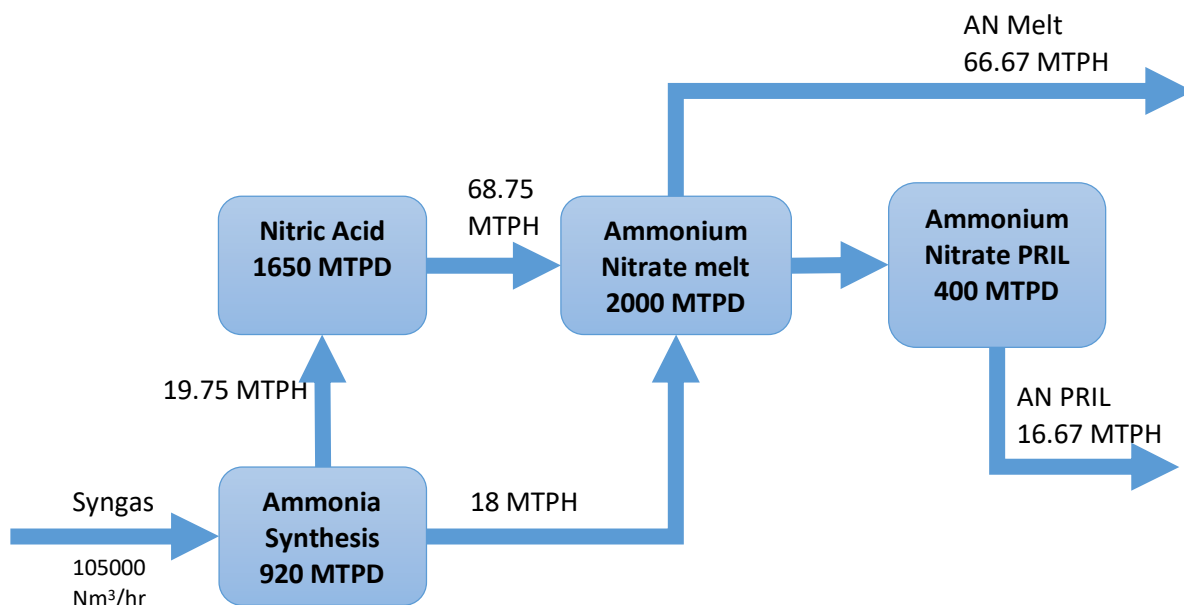
SECTION – 6

TECHNICAL REQUIREMENTS FOR AMMONIA, NITRIC ACID AND AMMONIUM NITRATE SYNTHESIS ISLANDS

Synthesis Island consists of three blocks,

viz. 1. Ammonia Synthesis, 2. Nitric Acid Production, 3. Ammonium Nitration Production

Technology Licensors can provide technology for **all the three blocks** *or* for individual blocks.



Specification of cleaned syngas at inlet to Synthesis Island

Syngas Pressure	15-20 bar
Syngas Temperature	20-40 °C
Syngas Volume flow	105000 Nm³/hr

Ammonia Synthesis Gas Composition

Ammonia Synthesis Gas exiting the gas conditioning system will be pure (100%) nitrogen and hydrogen gases in 1:3 molar ratio and will be the feedstock for the production of Ammonia

Typical Composition	Range (unit)
H ₂	≥ 74.76 (vol%)
N ₂	≥ 24.94 (vol%)
Ar	≤ 30 (ppmv)
Hg	NIL (ppmv)
CO+ CO ₂ + other Oxygen bearing components	≤ 5 (ppmv)

SPECIFICATION OF THE REQUIRED END PRODUCTS

Ammonia

920 MTPD of Ammonia is envisaged to be produced. Part of it will be utilised to produce Nitric Acid.

Specifications of Ammonia

Purity	≥ 99.8 % wt
Water and other traces	≤ 0.2 % wt

Nitric Acid

1650 MTPD of Nitric Acid (excluding any water content) is envisaged to be produced. It will be reacted with the remaining ammonia to produce Ammonium Nitrate.

Technology licensors can choose appropriate grade (concentration) of nitric acid based on their technology.

Ammonium Nitrate

2000 MTPD of Ammonium Nitrate is envisaged to be produced, of which 400 MTPD will be converted to prills and remaining will be in melt form.

Specifications of Ammonium Nitrate prills

Form	Round, Uniform prills
Ammonium Nitrate content	≥ 99% wt
pH (of 10% solution)	5-6
Total Nitrogen content	≥ 34.5 % wt
Moisture	≤ 0.2 % wt
Oil absorption	≥ 7.5 cc of oil per 100 g of prills
Bulk density	750-850 kg/m ³
Granulometry:	
Above 2.0 mm	≤ 5%
Between 2.0 to 1.0 mm	≥ 95 % wt
Below 1.0 mm	≤ 1 % wt
Non-volatile matter	≤ 0.1 % wt
Material soluble in water	≤ 0.2 % wt

Plant On-stream factor

Plant design and engineering are to be carried out for achieving a high degree of operational reliability. The plants are to be designed with high on-stream factor (not less than 330 days in a year) with minimum continuous operating cycle of 1 year between scheduled planned maintenance.

Turn-Down ratio

The synthesis island shall be designed to operate at 50% of plant design capacity.

Notes:

- Expected life of catalysts, Expected utilities like N₂, steam, O₂, DM water, cooling water, solvent, any other chemicals, instrument / process air requirements, Utilities available for export from gas conditioning island to be indicated
- Necessary guard bed to be considered to avoid catalyst poisoning
- Effluent generated in the synthesis island to be treated and discharged as per environmental regulations
- Design to meet applicable Statutory requirements and Indian codes and standards
- Performance guarantee of flow rates, compositions / purity of products to be provided and warranty conditions to be specified

SECTION-7

Check List for Documents to be forwarded along with EOI

Prospective Partner should submit following documents along with their Proposal:

Sl. No.	Document Description	Format	Bidder's confirmation (Yes / No / Not Applicable)
1.	Covering Letter	-	
2.	Power of Attorney including authority of the person issuing Power of Attorney	Annexure - 1	
3.	General information	Annexure - 2	
4.	Undertaking	Annexure - 3	
5.	Financial Information of last 5 years (Annual Audited Financial Statements including Auditors report in case of company)	Annexure - 4	
6.	List of Executed Projects	Annexure - 5	
7.	Comfort Letter from parent organization (If Applicable)	Annexure - 6	

ANNEXURE-1
POWER OF ATTORNEY

(To be typed on non-judicial Stamp Papers of appropriate value as applicable and notarised)

Know all mean by these presents that I/we do hereby make, nominate, constitute and appoint Mr. Whose signature given below herewith to be true and lawful Attorney of M/s hereinafter called 'company' for submitting bid / entering into contract and inter alia, sign execute all papers and to do necessary lawful acts on behalf of company with M/s Bharat Heavy Electricals Ltd, Integrated Office Complex, Lodhi Road New Delhi-110003 in connection with EOI no. BHEL/PESD/EOI/CTAN/001

And the company do hereby agree to ratify and confirm all acts, deeds, things of proceedings as may be lawfully done by the said attorney and by or on behalf of the company and in the name of the company, by virtue of the powers conferred herein and the same shall be binding on the company and shall have full force and effect.

In witness where of the common seal of the company has been hereunto affixed in the manner hereinafter appearing on the Documents.

Place & date

CEO/Country Head/Director/ Equivalent

Witness

Signature of Mr/Ms..... (Attorney)

Notary public

Attested by: CEO/Country Head/Director/ equivalent

Annexure – 2
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:	
Attached are copies of original documents of	
<ul style="list-style-type: none">○ 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:

Annexure – 3

Declaration for eligibility as per clause 4.3

(on non- judicial stamp paper of appropriate value)

We, (1) Mr _____ and (2) Mr. _____ aged (1) yrs., (2) yrs., respectively; Directors / Power of Attorney holder of the Firm / Company having its office at _____ hereby gives an UNDERTAKING as under:

AND WHEREAS the BHARAT HEAVY ELECTRICALS LIMITED has published the Expression of Interest for selection of Process Licensor(s) / Process Integrator for addressing the business opportunities in India.

And WHEREAS, we want to participate in the said EOI procedure, we hereby give an undertaking as hereinafter appearing: -

- We hereby agree and undertake that our Firm/Company is government owned legal entity and we are legally and financially autonomous, and operate under commercial law (Strike down if not applicable)
- We hereby agree and undertake that we have the technology in our own name and have requisite technology and experience to participate in this EOI.
- We hereby agree and undertake that our Firm/Company wish to exclusively tie-up with BHEL and we also confirm that our associates/affiliates (inclusive of parent firms) cannot directly or indirectly address the business opportunities either individually or in association with other parties in India during the currency of association agreement.
- We hereby agree and undertake that our Firm/Company is not barred or Blacklisted or put on holiday list by any Government, Semi Government & Government Under-taking and any Multilateral Funding Agency, urban local body in India or abroad etc., as on date of submission of EOI.
- We hereby agree and undertake that our Firm/Company is not expelled from any project or contract by any public entity in the last 3 years prior to submission of EOI.
- We hereby agree and undertake that our Firm/Company has obtained the security clearances from Govt. of India i.e. Ministry of Home Affairs or from any of its department and provided along with this proposal
- We hereby further agree and undertake that, at any stage of EOI Process if the said information is found incorrect, it should be lawful for BHEL to forthwith debar us from the EOI process and initiate appropriate penal action.

The undertaking is binding upon us/our heirs, executor's administrators and assigns and/or successor and assigns.

Place

Date:

Directors/POA Holder
(Seal of Firm/Co.)

Identified by me,
BEFORE ME

Annexure – 4
Financial Information

Date: [insert day, month, year]

Legal Name: [insert full name]

1. Financial Data

	2017-18	2018-19	2019-20	2020-21	2021-22
Net Worth (NW)					
Total Sales Turnover					
Profit Before Taxes (PBT)					

** Where values are in foreign currency, exchange rate for conversion to INR shall be as published by Reserve Bank of India will be considered.*

2. Financial documents

The Prospective Partner shall provide copies of the financial statements including balance sheets with all notes and related income statements for last three financial years

(Signature & Seal)

Annexure – 5

List of Commissioned / completed / Under Execution Projects in last 7 years

Date:

Prospective Partner 's Legal Name:

Prospective Partner should provide information of their executed projects

Process	Willingness to offer (Yes/No)	Reference plant			Remark
		Name of the Project & Location	Owner/Customer, Capacity, Date of order and commissioning of the plant	Customer, contact address/ Tel./ Fax	
Ammonia					
Nitric Acid					
Ammonium Nitrate					
Process Integration*					

(Signature & Seal)

Notes:

Copies of Work order / Purchase Order / Letter of Award Performance Certificate from customer to be forwarded later as per BHEL's request

*Technology providers offering technology for all the three above processes to confirm their willingness for offering process integration.

Separate sheet can be added to provide the above information.

Annexure – 6

Comfort Letter from Parent Organization of the subsidiary

To,

(Write Name & Address of officer of BHEL inviting the Tender)

Dear Sir/ Madam,

Sub: Comfort Letter

We hereby confirm that, for the joint association agreement/ memorandum of Association (MoA) under EOI no. BHEL/PESD/EOI/CTAN/001, Rev 00 Dated 03.12.2022 for selection of Process Licensors / Process Integrators for addressing the business opportunities in India by BHEL, _____(the name of Parent company) is willing to provide access to technical knowhow, technology, Resources, past experience, proven track record etc to _____(Name of Subsidiary Company) who is submitting the EOI to BHEL against the above referred invitation to EOI to BHEL.

On behalf of [name of the
Parent company]
[Signature & seal]
Place & date

Signature & seal of CEO/ country
head/ Director/ equivalent

Place & date