

Ref. No.: NRL/EOI/Furfural

Date: 19.02.2020

Expression of Interest (EOI) to prepare Basic Design and Engineering Package(BDEP)&Technology Licensing for production of Furfural Alcohol(FA) from Furfural by hydrogenation at Numaligarh, Assam, India

Numaligarh Refinery Limited (NRL) intends to invite Expression of Interest (EOI) from interested Domestic/International consultants/engineering companies/manufacturers for basic design & engineering of a process unit along with technology licensing for production of Furfuryl Alcohol (FA) by hydrogenation using Furfural as feed which will be produced from bio refinery plant being developed by Assam Bio Refinery Private Limited (ABRPL) at Numaligarh, Assam, India.

Numaligarh Refinery (NRL), a Group company of Bharat Petroleum Corporation Limited, is one of the youngest and most modern refinery in operation in India. It is located at Numaligarh in the District of Golaghat of state Assam, India. The Refinery is integrated and equipped with state-of-the-art technology.

The grass root refinery designed for processing 3 MMTPA of Assam Mix Crude was commissioned in the year 1999 and commenced commercial operations from October 2000 has emerged as a model industrial enterprise . NRL also gets clearance from Govt. of India to expand its capacity for additional 6MMTPA by 2024 with processing of Imported crude from Paradip port of India. NRL was conferred the status of "Category-I" Miniratna PSU by Govt. of India on 31st October, 2003.

NRL is certified under ISO 9001 for Quality Management, ISO 14001 for Environment Management, OHSAS 18001 for Occupational Health & Safety, ISO 27001 for Information Security Management System and ISO 50001 for Energy Management.

NRL have presently in joint venture share with Duliajan- Numlaigarh Pipe line (DNPL), Brahmaputra cracker &polymer Limited (BCPL),Mega gas grid project Indradhanush & Assam Biorefinery Private Limited(ABPRL).

The present authorised capital of the company is Rs.1000Crores and paid up capital 735.63 Crores.

The shareholding pattern of NRL is given below :

Bharat Petroleum Corporation Limited	::	61.65%
Govt. of Assam	::	12,35%
Oil India Limited	::	26.00%
Total	::	100%

NRL presently have following process units of modern technology which are licensed by different Indigeneous & Foreign licensing company.

SI No	Name of the Unit	Year of commissioning	Installed Capacity TMTPA	Licensors
1	Crude and Vacuum Distillation Unit (CDU/ VDU)	1999	3000	EIL, India
2	Delayed Coker Unit (DCU)	1999	306	EIL, India
3	Hydrocracker Unit (HCU)	2000	1450	Chevron, USA
4	Hydrogen Generation Unit (HGU)	1999	48	Haldor Topsoe, Denmark
5	Motor Spirit Unit (MSU)	2006	328	Axens, France
6	Coke Calcination Unit (CCU)	2004	100	Svedala, USA
7	Sulphur Recovery Block	2000	6	EIL, India
9	Wax Unit	2015	50	EIL, IIP and NRL, India & Axens France
10	Diesel Hydro Treater	2018	700	Haldor Topsoe, Denmark

Product slate of NRL from above processing unit comprises LPG, Naphtha, Motor Spirit, Aviation Turbine Fuel, High Speed Diesel, Superior Kerosene Oil, Paraffin Wax(Fully Refined)&Food Grade wax, Raw/Calcined Petroleum Coke and Sulphur. NRL has the largest Wax producing unit in the country. Post commissioning of the DHDT plant in January 2018, NRL is now capable of producing HSD upto BS-VI grade.

Assam Bio Refinery Private Limited (ABRPL), a joint venture company namely Assam Bio Refinery Pvt Limited has been incorporated with three promoters viz: Numaligarh Refinery Limited along with two other foreign companies Fortum and Chempolis from Finland. The equity share holding pattern of ABRPL is NRL (50%) , Fortum oyl 28% & Chempolis Oy 22%.

ABRPL is constructing one Bio-refinery in Numaligarh by using technology provided by Chempolis from Finland. The proposed Bio-refinery shall produce mainly four products using 300000 ton/annum of bamboo.

Bio-ethanol : 49 TMT/annum

Acetic Acid : 11 TMT/annum

Furfural : 19 TMT/annum

Bio-coal : 160 TMT/annum

The proposed bio-refinery is expected to be commissioned in 2021.

NRL intends to buy the entire quantity of Furfural from ABRPL and convert it to more valuable Furfural Alcohol using the excess Hydrogen available in the Hydrogen plant of NRL .

The bidder/companies to prepare Basic Design and Engineering Package(BDEP) of a process unit for production of Furfural Alcohol(FA) from Furfural at Numaligarh, Assam, India.

1. Objective of EOI:

- a) NRL intends to invite Expression of Interest from prospective manufacturers of Furfuryl Alcohol from Furfural to design, engineering along with technology licensing of the process plant.
- b) NRL, through this EOI intends to collect information for participation in the bidding process on above mentioned subject in para 1 a.

2. Proceeding after EOI:

- a) Prospective consultants/ manufacturers who express consent to design, engineering of the FA plant at Numaligarh as per EOI will consider for bidding process.
- b) Prospective consultants/ manufacturers will have to send their proposals of FA plant with an established technology of FA production having licensing capability of such technology. There will be a discussion between prospective consultants/ manufacturers and client at a convenient location as per the consent of both the party. Prospective consultants/ manufacturers also have to prepare and deliver the detail presentation of the proposal during the discussion. Prospective consultants/ manufacturers shall co-operate if client feels any necessary/requirement to visit the existing plant of FA at their site .
- c) After detail deliberation on FA proposal as above client will proceed for bidding process. Prospective consultants/manufacturers will have to submit both technical and commercial details of the proposal for BDEP& Technology licensing of FA plant during bidding process.
- d) The interested agencies will also have to specify the lead time for delivery and cost for each activity.
- e) Technical & financial acceptability and capability of the proposal, lead time and cost shall be the basis of selection of agency (ies).

3. Highlights of EOI

- a) The bidders are required to submit their past credentials, brief concept note, of design & engineering for manufacturing FA based on the above.

4. Submission of EOI:

- a) Interested parties are required to submit information complete in all respects as per the enclosed format (Annexure-B). The furnished information shall be supported with relevant documents, if any.
- b) Prospective parties may submit their "Expression of Interest" duly signed as per Annexure B latest by 30 days from date of publish of this advertise in a sealed cover or {submitted through Email} to:

Kind Attention : Mr. Ghanashyam Hazarika , GM (Technical service), NRL
 Numaligarh Refinery Limited
 Pankagrnat, P.O. NRP Complex, Post Box-03
 Numaligarh, Dist. Golaghat, Assam

Pin :785699
Contact No: 9435738716
Email: ghanashyam.hazarika@nrl.co.in

For any clarification, you are requested to contact

- 1) Rajib Changkakati ,Mobile No :9435152027 ,Email: rajiv.changkakati@nrl.co.in
- 2) Girindra Narayan Deka,Mobile No: 9435152811,Email:girindra.n.deka@nrl.co.in

5. Disclaimer:

- a) NRL has issued this Expression of Interest with the best intention to identify the interested and eligible bidders and has no compulsions to enter into definitive contractual agreements. This EOI does not guarantee conversion of this EOI into any definitive contractual agreements.
- b) It is also agreed that NRL in its sole discretion, may reject any and all proposal made by respondent(s), may change the conditions relating to the EOI or cancel this EOI at any time without assigning any reason.
- c) Prospective respondent(s) acknowledge and agree that response to the EOI is purely voluntary action on their part and for any expenditure on this account shall be borne by the respondent(s).
- d) NRL will have no obligation or liability to the respondent(s) in the event of cancellation of EOI.

Note: Respondents are requested to keep themselves updated with the website on regular basis for any addition / deletion / modification / clarification or notification in respect of this, at EOI stage.

No separate notification will be issued in any other media.

ANNEXURE A – BASELINE TECHNICAL PARAMETERS of FURFURAL

<u>Parameter</u>	<u>Specification</u>
<u>Chemical identifier</u>	<u>2-Furaldehyde</u>
<u>Formula</u>	<u>C₅H₄O₂</u>
<u>Appearance</u>	<u>Colorless to yellow oily liquid</u>
<u>pH</u>	<u>3.5–4.5</u>
<u>Melting point/freezing point (°C)</u>	<u>-37</u>
<u>Boiling point (°C) at 1,013 hPa</u>	<u>162</u>
<u>Flash point (°C)</u>	<u>60 (closed cup)</u>
<u>Evaporation rate (ether = 1)</u>	<u>75</u>
<u>Upper/lower explosive limits (vol%)</u>	<u>2.1–19.3</u>
<u>Vapor pressure at 25 °C (hPa)</u>	<u>3.33</u>
<u>Vapor density (air = 1)</u>	<u>3.3</u>
<u>Relative density (water = 1)</u>	<u>1.16</u>
<u>Solubility in water at 20 °C (g/l)</u>	<u>83</u>
<u>Partition coefficient (log K octanol/water)</u>	<u>0.41</u>
<u>Auto-ignition temperature (°C)</u>	<u>392</u>
<u>Viscosity at 25 °C (mPa.s)</u>	<u>1.49</u>

ANNEXURE B – DETAILS OF THE RESPONDENT

Sl. No.	Parameters	Details
1	Name of the Company	
2	Country where the company is registered	
3	Address	
4	Contact Person: a) Name & Address b) Email id c) Phone no.	
5	Status of the Company a. Whether registered under the Companies Act 1956 or the Companies Act 2013 b. If not, Country of Incorporation	
6	Net Worth of the Company (as on 31/03/2019 & 31/03/2018)	
7	Annual Turnover of the Company (as on 31/03/2019 & 31/03/2018)	
8	Past experience	
	a. Total cumulative capacity of manufacturing (MT) per year	
	b. Current capacity utilisation in %	
	c. Type of Technology	
	d. Technology Licensor	
9	Willing to undertake the technology licensing of FA project ? if yes submit a detailed proposal	
10	Attach brief design , engineering for FA project at Numaligarh, Assam	