

Sub: Expression of Interest (EOI) for R&D Collaboration with NALCO

1.0 General Information about Company:

National Aluminium Company Limited, (a Government of India Enterprise), is the largest integrated Aluminium Complex of Asia, capable of mining 68,25,000 TPA Bauxite, refining 22,75,000 TPA Alumina, smelting 4,60,000 TPA Aluminium and generating 1200 MW Captive Power. NALCO has its Registered/Corporate Office at BHUBANESWAR, the capital city of Odisha, which is well connected by rail/air from major cities like, Delhi, Kolkata, Chennai, Mumbai, Bangalore, Hyderabad etc. The Mines and Refinery Complex is located on the Eastern Ghats in Koraput District near Visakhapatnam Sea Port and the Smelter and Power Complex is located at Angul, 120Kms from Bhubaneswar adjacent to Talcher Coal fields. It is accredited with ISO 9001, ISO 14001, OHSAS 18001 and SA 8000 certificates besides registration of its Aluminium Ingots in London.

1.1 Brief of Financial Highlights:

All figures are as on 31st March, 2014 and for FY 2013-14

Sl No	Particular	In INR Crores*	Equivalent in US \$Million
1	Paid-up Share Capital	1288.62	203.6
2	Net Worth	12122	1915
3	Sales Turnover	7024	1110
4	Net Profit after Tax(PAT)	642	101.4

*1Crores equals to 10 Million.

1.2 About R&D Activities of NALCO.

National Aluminium Company Limited (NALCO) Research & Developmental activities are carried out by R&D dept at S&P Complex and M&R Complex of the Company along with a corporate level R&D department. NALCO is giving importance to R&D activity either by in-house effort or with in collaboration with National / International Laboratories / academic institutions/JNARDDC/IIT/Engineering College/CSIR Labs etc depending on the needs.

NALCO in its pursuit towards organizational growth through sustained development in process, product and technology through research & development activity, is setting up new facilities and revamping its R&D Centres to have the state of the art research and development facility to be created progressively.

Mission:

In line with the vision and mission of the company, following has been drawn as the mission for R&D:

1. Creation of facilities at R&D Centres to develop and strengthen technological expertise pertaining to Bauxite Mining, Alumina Refining, Aluminum Smelting for improvement of efficiency, reduction of cost in various units including CPP, in association with site R&D.
2. To continuously work on development of improved raw materials, new products, improve quality, waste utilization and analytical innovation.
3. To provide continuous technical assistance to all production units, in association with site R&D.

Goals and Objectives:

The main thrusts areas which form the goals and objectives are given below:

- Increasing extraction efficiency and productivity to maximise production;
- Reduction in the cost of production of bauxite, power, alumina and aluminium;
- Development of new aluminium alloys and value added products;
- Waste utilization and disposal and
- Attain analytical excellence along with development of reference standards.

NALCO is in the process of setting up a corporate level R&D and Technology development centre named NRTC (Nalco Research and Technology Centre) at Bhubaneswar for further strengthening its Research and Developmental activity. In view of above Expression of Interest (EOI) is being sought from different Universities, Central organizations etc. such as: CSIR, ICAR, ICMR, DRDO, JNARDDC, S&T and other National /International academic institutions or private institutions/companies on the following areas.

1.3 Possible areas of R&D Collaboration:

1. Bauxite Ore beneficiation for removal of silica (Kaolinite) from raw bauxite ore.
2. Red mud treatment and its utilization after neutralization on site for separation of iron oxide, titanium oxide, alumina for commercial use.
3. Online measurement / estimation of assay for gases mixture composition to find its constituents like CO, CO₂, water vapour, nitrogen etc.

4. Development & implementation of specialized energy saving motors in generators, wind mills, conveyor, agitators etc.
5. Generation of chilled air using thermal acoustics principles method for using in cooling of electric panels etc.
6. Development of solid state refrigeration for panels cooling both for smelter and refinery.
7. Development of clad free anode stem for electrolytic pots.
8. Measurement of in situ bulk density of petroleum coke
9. Developing a method for reduction of Power transmission loss through cooling of cables / bus bars in smelters
10. Sensor designing for measuring temperature above 1400°C in induction furnace used in rodding shop.
11. Waste heat recovery in smelter/Refinery/ CPP for useful application.
12. Development of high purity aluminum
13. Manufacturing of aluminum from alumina or bauxite using micro wave plasma technique.
14. Waste utilization and Waste treatment that are generated from Alumina Refinery, Smelter & CPP (Red mud, Fly ash etc).
15. Development of Aluminium alloys (Matrix alloys, Special alloys etc)
16. New analytical technique developments.
17. Metal matrix composites and nano materials of alumina/aluminium etc.
18. R&D Project on simulation/modeling pertaining to above areas or relevant areas.
19. Any other field in line with the vision & objective of the company.

1.4 Criterion for participating in the Expression of Interest (EOI):

- (a) The Govt organizations like CSIR, ICAR, ICMR, DRDO, JNARDDC, S&T and other National /International Laboratories/ academic institutions or private institutions/companies having expertise as described above in Clause No 1.3.
- (b) The organization/companies/Institute in India wish to collaborate with NALCO should have been certified/applied their facilities by Department of Scientific and Industrial research (DSIR) for recognition (Proof to be submitted).

1.5 Applicants are requested to go through the following & submit required supporting documents.

- (a) Experience of collaborative R&D Projects with National Labs/International Labs/PSU's /Govt Agencies along with proof of document to be submitted.
- (b) The firm should furnish details about technical capability (facilities & experts), Intellectual Property Rights (IPR, Details of Patent filed/granted), previous experience in R& D.
- (c) Firm may also submit any other information he desires to furnish on his own to supplement his capabilities pertaining to this EOI.
- (d) Applicant should not be under liquidation, court receivership or similar proceeding.
- (e) Applicant to submit certificate stating that the applicant or its Proprietor/Partner(s)/Director(s) of the firm/organization should not have been convicted by a court of Law for an offence involving moral turpitude in relation to business dealings during the past seven (7) years. The applicant shall give an affidavit/ certificate to this effect. The affidavit/certificate must be affirmed before the competent judicial authority or duly notarized by the Notary. NALCO will reject a proposal, if it is determined that any applicant participating in the EOI is engaged in corrupt and fraudulent work practice.
- (f) NALCO reserves the right to withdraw this EOI without notifying the reason.
- (g) NALCO shall not be responsible for any expense incurred by the applicants in connection with the preparation and delivery of their applications or any other expenses incurred as regards the subject EOI.
- (h) Telefax/ E-mail/ CD shall not be accepted unless accompanied by formal signed documents. NALCO takes no responsibility for delay, loss or non-receipt of document sent by Post/Courier.
- (i) The applicants may note that mere submission of application shall not entitle automatic qualification of the EOI application.
- (j) NALCO does not guarantee taking up any collaborative R&D Projects.
- (k) Application of EOI from any individual will not be accepted.

- (l) Combined proposal from two institute/organization may be accepted; however one institute will be nodal agency, the detail of which shall be decided by NALCO, in case of award of the project.
- (m) Any R&D Projects if found suitable shall be processed for selection as per NALCO's approved procedure.
- (n) Any applicant requiring any clarification on the terms and conditions for this EOI request document may notify NALCO in writing or facsimile or e-mail. The applicants must send their queries at least 7 days prior to the last date for submission of application.
- (o) Any clarification may be sought from: Mr P.Bandopadhyay, Asst General Manager(R&D),Telefax:+91674-2300665,E-mail: parthab541@gmail.com or partha.bandopadhyay@nalcoindia.co.in

1.6 PREPARATION/SUBMISSION OF EOI

The interested Companies/Organization/Institutes are invited to submit proposal in a format as outlined below.

I: LETTER OF SUBMISSION OF THE PROPOSAL

II: EOI requirement in brief (as per Para 1.4 and 1.5 above) indicating the area /R&D Projects with abstract of proposal for collaboration and having capability for taking up the proposal to scale up level.

III: INFORMATION ABOUT ORGANIZATION as below.

The Applicant is requested to furnish details pertaining to place of registration, principal place of activity of the organization/company/Institute, number of years in the relevant activity, organization structure along with qualification & experience of key personnel intended to engage them in the collaborative R&D.

1.7 SUBMISSION OF EXPRESSION OF INTEREST (EOI):

Applicant are expected to prepare EOI in accordance with requirement vide Para 1.3, 1.4 and 1.5 may be submitted in hard/soft copies. The language of the proposal shall be "English". The proposal duly signed along with all information and requisite documents should be delivered through post or courier in printed format at the following address within the stipulated date.

General Manager (R&D)
National Aluminium Company Limited
Nalco Bhawan
P/1, Nayapalli
Bhubaneswar-751 013
INDIA.

Last date for submission of proposal is 27.04.2015.