



BHARAT HEAVY ELECTRICALS LIMITED
(A Government of India Undertaking)

Delhi – 110 049

India

Notice for Inviting
Expression of Interest (Eoi)
for
Technology tie-up
for
Resin Impregnated Paper (RIP) Bushing

Eoi Ref No.: BHEL/AA/TL/0404

Date: 24 December, 2022



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SECTION-1
Disclaimer

The information contained in this Expression of Interest (Eoi) document provided to the Prospective Collaborator(s), by or on behalf of Bharat Heavy Electricals Limited (BHEL) or any of its employees or advisors, is provided to the Prospective Collaborator(s) 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. The purpose of this Eoi document is to provide the Prospective Collaborator(s) with information to assist the formulation of their proposal. This Eoi document does not purport to contain all the information each Prospective Collaborator may require. This 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 Collaborator who reads or uses this Eoi document. Each Prospective Collaborator should conduct his own investigations and analysis and should check the accuracy, reliability and completeness of the information in this Eoi document and where necessary obtain independent advice from appropriate sources.
2. 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 Eoi document.
3. BHEL may, in its absolute discretion, but without being under any obligation to do so, modify, amend or supplement the information in this Eoi document.
4. The issue of this Eoi does not imply that BHEL is bound to select and shortlist any or all the Prospective Collaborator(s). Even after selection of suitable Prospective Collaborator, BHEL is not bound to proceed ahead with the Prospective Collaborator and in no case be responsible or liable for any commercial and consequential liabilities in any manner whatsoever.
5. The Prospective Collaborator(s) shall bear all costs associated with the preparation, technical discussion/presentation and submission of response against this Eoi. BHEL shall in no case be responsible or liable for these costs regardless of the conduct or outcome of the Eoi process.
6. Canvassing in any form by the Prospective Collaborator(s) or by any other agency on their behalf shall lead to disqualification of their Eoi.
7. 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 Prospective Collaborators to submit fresh applications.



8. BHEL reserves the right to disqualify 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.
9. 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.



SECTION-2

SCHEDULE OF Eoi PROCESS & CONTACT DETAILS

A. SCHEDULE OF Eoi PROCESS

The schedule of activities during the Eoi Process shall be as follows -

Sl. No.	Description	Date
1.	Issue of Eoi document	24 December, 2022
2.	Last date of submission of Eoi response	16 January, 2023

B. CONTACT DETAILS:

Senior Deputy General Manager (CTM)
Corporate Technology Management,
Bharat Heavy Electricals Limited (BHEL),
BHEL House, Siri Fort, New Delhi 110049
Tel: +91-11- 66337213 / 66337198
Mobile: +91 9818103430
E-Mail: techeoi@bhel.in



SECTION – 3

Details of Expression of Interest (Eoi)

3.1 Introduction:

This Expression of Interest (Eoi) seeks response(s) from Original Equipment Manufacturer(s) (OEMs)/Prospective Collaborator(s) of Resin Impregnated Paper (RIP) Bushing, who are meeting the requirements of this Eoi and are willing to be associated with BHEL through a license & technology collaboration agreement on long term basis, to enable BHEL to design, engineer, manufacture, assemble, quality control, test, supply and repair state of the art Resin Impregnated Paper (RIP) Bushings to meet market requirements.

3.2 ABOUT 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 one of the largest engineering and manufacturing organization in India, catering to the core infrastructure sectors of Indian economy viz. energy, transportation, heavy engineering industry, defence, renewable and non-conventional energy. The energy sector covers generation, transmission and distribution equipment for thermal, gas, hydro, nuclear and solar photo voltaic. BHEL has been in this business for more than 50 years and BHEL supplied equipment account for more than 57% (approx. 180 GW) of the total thermal generating capacity in India. BHEL is also listed in Indian stock exchanges. BHEL has 16 manufacturing units, 4 power sector regions, 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 88 countries including Malaysia, Oman, Iraq, Syria Sudan, Libya, Cyprus, Malta, Afghanistan, Bangladesh, Bhutan, New Zealand etc. with cumulative overseas installed capacity of BHEL manufactured power plants nearing 10,000 MW. The annual turnover of BHEL for the year 2021-22 was around US\$ 2.65 Billion. BHEL's highly skilled and committed manpower of approx. 30000; state-of-the-art manufacturing, R&D facilities and latest technologies helped BHEL to deliver a consistent track record of performance since long. To position leading state-owned companies as Global Industrial giant and as a recognition for their exemplary performance, Government of India categorized BHEL as "Maharatna Company" in 2013.

The high level of quality & reliability of BHEL products is due to adherence to international standards by acquiring and adapting some of the best technologies from leading companies in the world, together with technologies developed in its own R&D centres.

Our ongoing major technology tie-ups include agreements with Siemens Energy Global GmbH & Co. KG., Germany (for Steam Turbines, Generators and Condensers); MPL, Japan

[*Note: Currency conversion rate considered: 1 US \$=Rs. 76.20 as on 31st March 2022]

(for Flue Gas Desulfurization Systems); Leonardo S.p.A, Italy (for Super Rapid Gun Mount); GE Tech. GmbH, Switzerland (for Steam Turbine for Nuclear Power Plant); Vogt Power International, USA (for Heat Recovery Steam Generators); Indian Space Research Organization (ISRO) (for Space Grade Lithium-Ion Cells); CSIR-IIP (PVSA based Medical Oxygen Plant); 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).

***More details about the entire range of BHEL's products and operations can be viewed by visiting our web site www.bhel.com**

3.3 About Heavy Electrical Plant (HEP), Bhopal:

The Heavy Electrical Plant (HEP) at Bhopal, Madhya Pradesh in Central India is one of the biggest & oldest units of BHEL which started operations in the year 1960. The unit manufactures a wide range of electrical products like switchgears, traction & industrial controls, transformers, capacitors, bushings, rectifiers & power electronics, heat exchangers, thermal sets for power & industrial applications, DG sets, hydro turbines & generators, traction machines, industrial machines etc.

Transformer is one of the major product of this unit. The manufacturing range of transformers includes Generator Transformers upto rating of 765kV/400MVA, Interconnecting Transformers upto rating of 765kV/500MVA, HVDC Converter Transformers upto rating of 800kV/500MVA, Shunt reactors upto rating of 765kV/125MVAr and other special transformers like phase-shifting transformers, controlled shunt reactors etc.

Besides Bhopal unit, another unit at Jhansi, Uttar Pradesh also manufactures smaller rating transformers. The total bushing requirements of these two plants are partly addressed through manufacturing facility at Bhopal.

3.4 Market in India:

In India, most of the Central utilities, state utilities and private EPC developers have shifted to Resin Impregnated Paper (RIP) Bushings for all of their requirements upto 420 KV Bushings. As per estimates, the present annual average demand is around 3000 Nos. which translate to US\$ 40 Million (upto 420 KV voltage class).

In order to address the market requirement and upgrade to the state of art technology for RIP Bushings, BHEL intends to enter into a Technology Collaboration Agreement (TCA) with a leading Original Equipment Manufacturer (OEM)/ Prospective Collaborator.

3.5 Scope of Cooperation:

BHEL is seeking Expression of Interest(s) from Original Equipment Manufacturer(s) (OEMs) / Prospective Collaborator(s) for Technology Collaboration Agreement (TCA) for state-of-the-art & proven RIP Bushings in the voltage class up to 420 kV. The TCA shall enable BHEL to design, engineer, manufacture, assemble, quality control, test, supply and repair of RIP Bushings.

The RIP Bushings being proposed under the TCA should be type tested successfully at reputed and international test laboratories as per latest revision of IEC 60137.

Prospective collaborator(s) shall be responsible for transferring necessary know-how & know-why to BHEL for RIP Bushings. Interested reputed OEMs/prospective collaborator(s) with proven RIP Bushing technology are invited to submit their offer in response to this Eoi, as per indicative scope of technology transfer given in **Annexure-1**.

Upon receipt of response(s) against this Eoi, BHEL will review the response(s) to ascertain suitability of the offer and shortlist Prospective Collaborator(s) for further discussions. Detailed discussions on commercial and other terms and conditions to finalize the Technology Collaboration Agreement (TCA) shall be held with shortlisted Prospective Collaborator(s). The detailed terms and conditions for such a paid-up license agreement shall be mutually agreed upon.

Business sharing option, during the initial period of technology assimilation by BHEL can also be considered.

3.6 Prequalification requirements (PQR):

The Prospective Collaborator(s) shall meet the following qualification requirements as on the date of submission of Eoi:

- a) Prospective Collaborator should have designed and manufactured bushings, which includes all stages of manufacturing and supply from the single site location which is operational for last 5 years as on the date of closing of this Eoi. **(Prospective collaborator is required to substantiate this PQR by providing suitable self-certified supply reference as documentary evidence)**

AND

- b) The Prospective Collaborator should have designed, engineered, manufactured, type tested and supplied at least 100 nos. of RIP Bushings and out of which at-least 25 nos. should be of 400 kV or above ratings, which should have completed 2 years of satisfactory operation as on the date of closing of this Eoi. **(Prospective collaborator is required to substantiate this PQR by providing unpriced Purchase Order (PO) copy and dispatched document/test report for supply of minimum 25 nos. of RIP Bushings of 400 kV or above ratings)**



3.7 INSTRUCTIONS:

- 3.7.1 The interested Prospective Collaborator(s) shall ensure that their complete duly filled up response(s) along with enclosed annexures are received by BHEL on or before **16 January, 2023**.
- Annexure-1: Indicative Scope of Technology Transfer
Annexure-2: Prospective Collaborator's Experience in the field of RIP Bushings
Annexure-3: General technical specifications of RIP Bushings proposed for TCA
Annexure-4: Reference List: The Prospective Collaborator's major supplies in last 5 years
- 3.7.2 The response shall necessarily be accompanied with following details:
1. Company Background
 2. Product Profile
 3. RIP Bushings technical details
 4. Reference list of Customers
 5. RIP Bushing data sheet and
 6. Annual audited financial reports for last 3 (three) years.
- 3.7.3 **Language:** All correspondences and documents related to the EoI response shall be in English language, provided that any printed literature furnished by the Prospective Collaborator(s) 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.
- 3.7.4 The Prospective Collaborator(s) shall abide by the terms & conditions, as applicable, of the EoI.
- 3.7.5 All pages of the response against this EoI shall be duly signed by the authorised signatory.
- 3.7.6 Multiple proposals from the same Prospective Collaborator should not be submitted.
- 3.7.7 BHEL at its discretion shall inspect the Prospective Collaborator's works/office/reference site premises for the purpose of evaluation, as deemed necessary before selection of Collaborator. BHEL decision in this regard shall be final.
- 3.7.8 Any Prospective Collaborator which has been debarred/blacklisted by Central/State Governments or by any entity controlled by 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.
- 3.7.9 BHEL shall receive applications pursuant to this EoI in accordance with the terms set forth herein, as modified, altered, amended and clarified from time to time by BHEL, and all applications shall be submitted in accordance with such terms on or before the date specified in this EoI for submission of applications.



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

3.8 PROCESS TO BE CONFIDENTIAL:

Information relating to the examination, clarification, evaluation and comparison of EoI and recommendations shall not be disclosed to Prospective Collaborator(s). Any effort by Prospective Collaborator(s) to influence BHEL in processing of EoI or selection decisions may result in the rejection of the response against EoI.

3.9 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.

Annexure-1**Indicative Scope of Technology Transfer**

a)	Licensing & transfer of state of the art technology relating to the design, engineer, manufacture, assemble, quality control, test, supply and repair of the RIP Bushings
b)	Transfer of improvements/modifications/developments/up gradations carried out by the Prospective Collaborator over the duration of the technology transfer for taking care of new market requirements and obsolescence.
c)	Transfer of information to enable BHEL to source/procure those items, which the Prospective Collaborator sources from outside (as these are not manufactured by the Prospective Collaborator) for use in the RIP Bushings.
d)	Transfer of site feedback and troubleshooting information
e)	Transfer of applicable computer programs including logics and source code if any
f)	Support through engineering services from Prospective Collaborator's design office / manufacturing facilities for RIP Bushings
g)	Deputation of Prospective Collaborator's experts to assist BHEL in absorbing the technology for RIP Bushing
h)	Training of BHEL engineers at OEM's & BHEL's work in the design, engineer, manufacture, assembly, quality control/quality assurance, testing, maintenance & operation of the above RIP Bushings
i)	Assist BHEL in stabilizing manufacturing of various critical components in RIP Bushing. Assist BHEL in identifying sub vendors for all the sub systems and bought out items.

Signature & Seal:

Authorized Signatory of the Prospective Collaborator

Annexure-2

Prospective Collaborator's Experience in the field of RIP Bushings

Sl. No.	Requirement	Prospective Collaborator's response Yes/No and remarks, if any
(a)	Whether the prospective collaborator is an Original Equipment Manufacturer (OEM) of RIP Bushings	
(b)	Whether the prospective collaborator agrees for technology transfer as per scope given in Annexure-1.	
(c)	Whether self-certified supply reference has been enclosed in support of meeting PQR as mentioned in Clause-3.6 (a) of this Eoi.	
(d)	Whether unpriced Purchase Order (PO) copy and dispatched document/test report for supply of minimum 25 nos. of RIP Bushings of 400 kV or above ratings have been enclosed in support of meeting PQR as mentioned in clause 3.6 (b) of this Eoi.	
(e)	Whether the prospective collaborator's RIP Bushings meet the minimum technical requirements specified in Annexure-3.	
(f)	Whether the prospective collaborator's RIP Bushings are successfully type tested for ratings mentioned in Annexure-3 as per latest IEC 60137.	
(g)	Whether details of company background, product catalogues have been enclosed	
(h)	Whether the prospective collaborator's Approval certificate from any renown utility has been enclosed	
(i)	Whether prospective collaborator's detailed reference list has been enclosed in Annexure-4.	



Sl. No.	Requirement	Prospective Collaborator's response Yes/No and remarks, if any
(j)	Whether prospective collaborator's annual audited financial reports for last 3 years has been enclosed	
(k)	Whether prospective collaborator is having positive net worth for last 3 years	
(l)	Whether the RIP Bushings offered for technology transfer is the latest being marketed by the prospective collaborator	
(n)	Whether the prospective collaborator owns the IPRs for the technology being proposed for transfer under the Technology Collaboration Agreement (TCA) or have unencumbered right from the owner of the IPRs to sub-license the technology, if applicable. If yes, list of such IPRs to be enclosed.	

Signature & Seal:

Authorised Signatory of the Prospective Collaborator

Annexure-3

General technical specifications of RIP Condenser Bushings proposed for TCA

Parameters	52 / 72.5 kV	145 / 170 kV	245kV	420kV
Rated voltage	52/ 72.5 kV	145/ 170 kV	245 kV	420 kV
Rated Current	1250 A to 3150 A	1250 to 3150 A	1250 to 3150 A	1250 to 3150 A
Creepage	25-35 mm/kV	25-35 mm/kV	25-35 mm/kV	25-35 mm/kV
Tan delta (max.)	0.4%	0.4 %	0.4 %	0.4 %
Max. PD level	10 pC max.	10 pC max.	10 pC max.	10 pC max.
Test tap withstand voltage	2 kV rms	2 kV rms	2 kV rms	2 kV rms
Bushings to comply with	IEC 60137:2017	IEC 60137:2017	IEC 60137:2017	IEC 60137:2017
CT space	100- 600 mm	100- 600 mm	100-600 mm	Min.400 mm
Type of connection	Option-1: Bottom Palm type Option-2: Draw Rod type with half connector at Flange level	Option-1: Bottom Palm type Option-2: Draw Rod type with half connector at Flange level	Option-1: Bottom Palm type Option-2: Draw Rod type with half connector at Flange level	Option-1: Bottom Palm type Option-2: Draw Rod type with half connector at Flange level

Note:

1. The detailed technical specification shall be finalized during discussion stage.
2. There shall be provision of other ratings and parameters within the voltage range of RIP Bushings in the TCA.

Signature & Seal:

Authorized Signatory of the Prospective Collaborator



Annexure-4

Reference List: The Prospective Collaborator shall furnish a summary of RIP Bushings with composite insulators supplied in last 5 years.

Signature & Seal:
Authorized Signatory of the Prospective Collaborator