Subject: Joint Venture for Resin Impregnated Paper (RIP) Bushings

1 Introduction:

This Expression of Interest (EoI) seeks response from Original Equipment Manufacturers (OEMs) of RIP Bushings, who are willing to be associated with BHEL through participation in equity for formation of a Joint Venture Company, to enable both partners to leverage their strengths / USPs in design/ engineering, manufacturing, assembly, quality control, testing, supplying, installation, erection & commissioning, repairing, servicing and retrofitting state of the art Resin Impregnated Paper (RIP) Bushings up to 800 kV class to meet market requirements.

1.1 About Bharat Heavy Electricals Limited (BHEL)

BHEL is a leading state owned company, wherein Government of India is holding 63.06% of its equity. BHEL is an integrated power plant equipment manufacturer and one of the largest engineering and manufacturing organizations 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 hydro, thermal, nuclear and solar photo voltaic. BHEL has been in this business for more than 50 years and BHEL supplied equipment accounting for more than 57 % of the total thermal generating capacity in India. BHEL is also listed in stock exchanges of India. The company has 17 manufacturing Units, 4 power sector regions, 8 service centers, 8 overseas offices and 15 regional offices besides host of project sites spread all over India and abroad. The annual turnover of BHEL for the year 2015-16 was nearly **US $ 4.09 Billion***. BHEL's highly skilled and committed manpower of approximately **42200** employees, the state of art manufacturing facilities and latest technologies, has helped BHEL to deliver a consistent track record of performance. To position leading state owned companies as Global Industrial giant & as a recognition for their exemplary performance, Government of India categorized BHEL as "Maharatna Company" in 2013, empowering the company with enhanced autonomy in decision making. With an outstanding order book of nearly **US $ 15.6 Billion*** at the end of September 2016, BHEL is poised for excellent future growth.

Currently, we have the following operational Joint Ventures Companies namely:

- BHEL-GE Gas Turbine Services Pvt. Ltd. (BGGTS) - repair & servicing of GE designed Gas Turbines;
- NTPC BHEL Power Projects Private Limited (NBPPL) - with NTPC Limited for carrying out EPC contracts for Power Plants and other infrastructure Projects in India and abroad:
- Raichur Power Corporation Limited (RPCL) - with Karnataka Power Corporation Limited (KPCL) for setting up of supercritical thermal power plants on build, own and operate (BOO) basis;

Over the years, BHEL has entered into technology collaboration agreements with leading global manufacturing and engineering companies to increase technology depth and to meet the challenges of present and future business environments. Our ongoing major technology tie-ups include agreements with GE, USA (for gas turbines); Siemens, Germany (for steam turbines, generators and condensers); Metso Automation Inc., Finland (for control & instrumentation); Alstom, France (for Super-Critical Boilers & pulverisers); MHI, Japan (for pumps); MHPS, Japan (for Flue Gas Desulfurization Systems); Vogt Power International, USA (for HRSG); GENP, Italy (for compressors); Turbo Lufttechnik, Germany (for fans) and Sheffield Forge masters International, UK (for forgings). More details about the entire range of BHEL's products and operations can be obtained by visiting our web site www.bhel.com.

[*Note: Currency conversion rate considered: 1 US $=Rs 66.25 as on 31st December 2016]

1.2 About Heavy Electrical Plant (HEP), Bhopal Unit of BHEL:

The Heavy Electrical Plant (HEP) at Bhopal is one of the biggest & oldest Units of BHEL which started operations in the year 1960. It is located in Bhopal, the capital city of the central state of Madhya Pradesh, India. 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 products of this Unit. The manufacturing range of transformers includes Generator Transformers up to 765kV/400MVA, Inter-connecting Transformers up to 765kV/500MVA, HVDC Converter Transformers up to 800kV/500MVA, Shunt reactors up to 765kV/125MVAr and other special transformers like phase-shifting transformers, controlled shunt reactors etc.

The total installed capacity at Bhopal as on date is 30,000 MVA/annum. Besides Bhopal Unit, another Unit at Jhansi, Uttar Pradesh also manufactures smaller rating transformers and has an installed capacity of 15,000MVA/annum. The total bushing requirements of these two plants are partly addressed through manufacturing facility at Bhopal.

1.3 Experience of HEP, Bhopal in Bushings:

HEP, Bhopal started manufacturing High Voltage Bushings in 1962. The manufacturing range of OIP bushings includes; Oil-to-air, bushings of rating 52 kV to 525 kV /3150 Amps, Air-to-air, wall bushings upto 300kV/2000A. Bushings for miscellaneous applications such as roof bushings, T.G. bushings etc. are also being manufactured to suit various customer requirements. The installed capacity of OIP bushings is 2,000 Nos per annum of all ratings. HEP Bhopal has supplied more than 40,000 bushings of various rating till date which are in service.

1.4 Current RIP Bushings Market in India:

Owing to the superiority of Resin Impregnated Paper (RIP) Bushings over Oil Impregnated Paper (OIP) Bushings, POWERGRID (a state owned electric utilities company) and NTPC Ltd (a major Public Sector Undertaking in the business of electricity generation) have started specifying RIP Bushings for all voltage ratings from 52 kV to 420 kV (400 kV Class) for their annual requirements of RIP Bushings of about 670 Nos. for new Transformers and Reactors.
For enquiries presently being floated by these utilities for higher voltage class 765/800 KV Transformers and Reactors, the requirement of Bushings on an average works out to about 130 Nos. annually. In these requirements of bushings of 765/800kV class, RIP Bushings are not mandatory, but are only preferred due to the reasons explained above. It is quite likely that these customers will migrate to RIP Bushings in this category also, once sizeable number of RIP bushing manufacturers are ready with type test certificates conforming to this rating.

As per estimates, the present demand for RIP Bushings up to 400 kV Class is about **US $ 12.83 Million**[#] and total demand including 800 kV Class is about **US $ 22.64 Million**[#] in financial terms. In the next 5 years with gradual adoption by State transmission utilities (25% adoption by state utilities), the demand is estimated to reach around **US $ 49.8 Million**[#] for all ratings up to 800 kV Class.

1.5 In order to address upcoming market requirements with an upgraded state of the art technology partner for RIP Bushings, BHEL intends to enter into a Joint Venture Agreement (JVA) with a leading OEM of RIP Bushings.

[[#] Note: Currency conversion rate considered: 1 US $=Rs 66.25 as on 31st December 2016]

2 Scope of cooperation :

BHEL seeks a partner for entering into a JVA for state of the art & proven RIP Bushings in the voltage class of 52kV up to 800 kV having current rating up to 3150 A. The type and ratings of the bushings proposed to be taken up for manufacturing by JV Company are as under:

- Oil to Air RIP Bushings: 52 to 765 kV, (800 to 3150 Amps)
- Oil to SF6 RIP Bushings : 52 to 420 kV, (800 to 3150 Amps)
- Air to Air Wall Type RIP Bushing: 52 to 300 kV, (800 to 2000 Amps)
- Oil to Air High Current RIP Bushings: 36kV, (12 to 20 kA)

The proposed JV Company should be in a position to design, engineer, manufacture, assemble, test, supply, install, erect, commission, repair, service and retrofit RIP Bushings. The detailed terms and conditions and other definitive documents including the Joint Venture Agreement, the Memorandum and Articles of Association and the long-term Business Plan for such a Joint Venture shall be mutually agreed upon. The proposed JV Company shall have a Technology Transfer Agreement with the OEM (prospective Joint Venture partner).

The RIP Bushings proposed to be manufactured by the JV should be type tested successfully at reputed and internationally test laboratories as per latest revision of IEC 60137.

The Prospective Joint Venture partner shall submit confirmation for participation in the EoI process as per Annexure – 1.

3 Prequalification requirements (PQR):

The Prospective Joint Venture partner shall meet the following conditions as on the date of submission of EoI:

Technical Experience:

3.1. Prospective Joint Venture partner should have at least 5 years of experience in design, engineering, manufacturing, assembly, quality control, testing, supplying, installation, erection & commissioning, repairing, servicing and retrofitting of state of the art RIP Bushings. (To be substantiated by documentary evidence.)

3.2. The Prospective Joint Venture partner should have designed, engineered, manufactured, type tested and supplied at least 100 nos. of RIP Bushings since last 10 years, 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. The reference projects/list may be furnished as per format detailed in Annexure-2. (To be substantiated by end user certificate(s) for supply of minimum 25 nos. of RIP Bushings of 400 kV or above ratings only.)

3.3. Prospective Joint Venture partner should also have design and manufacturing capability for 765 kV RIP Bushings

Financial Position:

3.4. Net Worth of the Prospective Joint Venture partner for last three (03) financial years should be positive.

3.5. The Prospective Joint Venture partner should have made profit for at least three (03) out of the last five (05) financial years.

4 Selection of Prospective Joint Venture partner

Based on the information provided under this EoI, the Prospective Collaborators (Applicant) shall be technically shortlisted on the basis of the above mentioned PQR and Prospective Collaborators (Applicant) not meeting any of the parameters of Technical Evaluation Criteria of this EoI shall not be considered. The Prospective Collaborators (Applicant) who are technically qualified may be further evaluated on the basis of commercial proposals which shall be invited for the second stage of evaluation.

5 Brief Description of EoI Process:

The interested prospective Joint Venture partners shall ensure that their response along with annexures is received by BHEL on or before **February 28, 2017**. The response shall necessarily be accompanied with details on company background, technical features/product catalogue, information on market share, reference list as per Annexure-2 and annual audited financial reports for last three (03) years including auditor's report.

In case any further information is needed, kindly feel free to contact us.

The respondent shall submit their offer with all annexures duly signed.

Your response may be sent to the following address:

General Manager

Joint Ventures, Mergers & Acquisitions (JV, M&A)
Corporate Technology Management (CTM)
Corporate Office, Bharat Heavy Electricals Limited
BHEL House, Siri Fort
New Delhi – 110049, India
Phone: +91 11 66337809 / 66337219
Mob: +91 9871094069 / 8800010823
Fax: +91 11 26492974
Email: shakil@bhel.in / james@bhel.in

6 Miscellaneous:

6.1 Right to accept or reject any or all Applications:

6.1.1 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 OEMs of RIP Bushings to submit fresh Applications.

6.1.2 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.

6.1.3 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.

6.2 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 the EoI process.

Annexure -1

Joint Venture Partner's Confirmation

Sl. No.	Requirement	Joint Venture Partner's response Yes/No and remarks if any
(a)	Whether the prospective Joint Venture partner is an Original Equipment Manufacturer of RIP Bushings	
(b)	Whether the prospective Joint Venture partner agrees for technology transfer	
(c)	Whether the prospective Joint Venture partner is meeting Prequalification requirements (PQR) as per Clause 3 of this EoI mentioned below: Technical 3.1. At least 5 years of experience in design, engineering, manufacturing, assembly, quality control, testing, supplying, installation, erection & commissioning, repairing, servicing and retrofitting of state of the art RIP Bushings 3.2. Designed, engineered, manufactured, type tested and supplied at least 100 nos. of RIP Bushings since last 10 years, out of which at least 25 nos. should be of 400 kV or above ratings, which should have completed 2 years of satisfactory operation 3.3. Have design and manufacturing capability for 765 kV RIP Bushings. Financial 3.4. Net Worth for last 3 financial years is positive 3.5. Have made profit for at least 3 out of last 5 financial years	
(d)	Whether customers (end users) letters / documentary evidence for satisfactory operation of RIP Bushings have been enclosed in support of meeting PQR in Clause 3 of this EoI, and mentioned in (c) above	
(e)	Whether the prospective Joint Venture partner's RIP Bushings are successfully type tested for 52/72.5 KV, 145/170 KV, 245 KV, 420 KV & 765 KV as per latest IEC 60137	
(f)	Whether details of company background, product catalogues have been enclosed	
(g)	Whether information on market share has been enclosed	

Sl. No.	Requirement	Joint Venture Partner's response Yes/No and remarks if any
(h)	Whether prospective Joint Venture partner's detailed reference list has been enclosed	
(i)	Whether prospective Joint Venture partner's annual audited financial reports for last 3 years have been enclosed	
(j)	Whether a summary of experience & reference as per Annexure-2 has been enclosed	
(k)	Whether the RIP Bushings proposed to be manufactured by the JV Company is the latest being marketed by the prospective Joint Venture partner	
(l)	Whether the prospective Joint Venture partner owns the IPRs for the technology for the RIP Bushings proposed to be manufactured by the JV Company, or have unencumbered right from the owner of the IPRs to sub-license the technology, if applicable	

(SIGNATURE)

Reference List: The Joint Venture Partner shall furnish a summary of their product reference as per the format given below

Annexure - 2

RIP Bushings meeting PQR for major supplies in last 5 years

Sl. No.	RIP Bushings Rating	Contract No. & Date	Number of RIP Bushings	Customer Details			Year of Delivery	Year of commissioning
				Name	Category - End User/ Equipment supplier	Site Location		
1.								
2.								
3.								
4.								

(SIGNATURE)