



Expression of Interest for technology tie-up (with IPR)/collaboration for
joint development of 30 mm Naval Surface Gun for Indian Navy

Bharat Heavy Electricals Limited
(A Government of India Undertaking)
Delhi – 110 049
India

Notice for Inviting

**Expression of Interest for Technology tie-up (with IPR)/
Collaboration for joint development of 30 mm Naval Surface
Gun for Indian Navy**

Eoi Ref No.: BHEL/AA/TL/0206

Date: 05 August 2023



Expression of Interest for technology tie-up (with IPR)/collaboration for joint development of 30 mm Naval Surface Gun for Indian Navy

INDEX

Sl. No.	Section/Annexure	Description
1.	Section 1	Disclaimer
2.	Section 2	Schedule of EoI process & contact details
3.	Section 3	Details of EoI
4.	Annexure-1	Indicative Scope of Technology Transfer
5.	Annexure-2	Prospective Collaborator's Experience
6.	Annexure-3	General technical specifications
7.	Annexure-4	Reference List: The Prospective Collaborator's major supplies in the last 10 years



Expression of Interest for technology tie-up (with IPR)/collaboration for joint development of 30 mm Naval Surface Gun for Indian Navy

Section-1: Disclaimer

The information contained in this Expression of Interest (Eol) document has been provided to the Prospective Collaborator(s), by or on behalf of Bharat Heavy Electricals Limited (BHEL) on the terms and conditions set out in this Eol document and terms & conditions specified below:

1. The purpose of this Eol document is to provide the Prospective Collaborator(s) with information to assist the formulation of their proposal. This Eol document does not purport to contain all the information the Prospective Collaborator may require. This Eol 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 Eol document. Each Prospective Collaborator should conduct his own investigations & analysis and should check the accuracy, reliability and completeness of the information in this Eol 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 Eol 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 Eol document.
4. The issue of this Eol 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 Eol. BHEL shall in no case be responsible or liable for these costs regardless of the conduct or outcome of the Eol 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 Expression of Interest.
7. Notwithstanding anything contained in this Eol, BHEL reserves the right to accept or reject any application and to annul the Eol 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,



Expression of Interest for technology tie-up (with IPR)/collaboration for joint development of 30 mm Naval Surface Gun for Indian Navy

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.



Expression of Interest for technology tie-up (with IPR)/collaboration for
joint development of 30 mm Naval Surface Gun for Indian Navy

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	05 August 2023
2.	Last date of submission of EoI response	25 August 2023

B. Contact Details:

Senior Deputy General Manager
Corporate Technology Management,
Bharat Heavy Electricals Limited,
BHEL House, Siri Fort, New Delhi 110049
Tel: +91-11- 66337458/66337213
Mobile: +91 9441176267
E-Mail: techeoi@bhel.in

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



Expression of Interest for technology tie-up (with IPR)/collaboration for joint development of 30 mm Naval Surface Gun for Indian Navy

Section- 3: Details of Expression of Interest

3.1 Introduction:

This Expression of Interest (Eoi) seeks responses from Original Equipment Manufacturers (OEMs), who are willing to be associated with BHEL through technology tie-up (with IPR)/collaboration for joint development for 30 mm Naval Surface Gun for Indian Navy under Make-I Category of DAP 2020 to enable BHEL to Design, Engineer, Manufacture, Assemble, Test, Supply, Install, Commission, Repair, Service and Retrofit the gun system.

30 mm Naval Surface Gun is intended for fitment onboard small ships as the primary weapon and on large ships as a secondary weapon for engaging fast-moving surface targets/ boats.

3.2 About BHEL:

BHEL is an integrated power plant equipment manufacturer and largest engineering & manufacturing enterprise of its kind in India, catering to core infrastructure sectors of Indian economy viz. Energy, Transportation, Oil & Gas, Industrial, Renewable & non-conventional energy and defence. BHEL is listed on both major stock exchanges of India (BSE and NSE), wherein the Govt of India (GoI) is holding 63.17% of its equity. To position the company as global industrial giant, GoI categorized BHEL as “Maharatna Company” in 2013, empowering the company with enhanced autonomy in decision-making.

BHEL has 16 manufacturing units, 4 power sector regions, 8 service centers and 4 regional offices besides a host of project sites spread all over India and abroad. The annual turnover of BHEL for the year 2022-23 was around USD \$2.8 Billion (Rs 23,365 Cr). Highly skilled and committed manpower of approx. 29000 employees, state-of-art manufacturing facilities and technologies have helped BHEL to deliver a consistent track record of performance. With the current order book exceeding US \$ 14 Billion (Rs. 102000 Cr), BHEL is poised for an excellent future growth.

Our ongoing major technology tie-ups include Siemens Energy Global GmbH & Co. KG., Germany (for Steam Turbines, Generators and Condensers); MHI, Japan (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 and for Gas Turbines); 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 Co. Ltd., Korea (for SCR Catalysts); HLB Power Co. Ltd., Korea (for Gates and Dampers); Kawasaki Heavy Industries, Japan (for Stainless Steel Coaches for Metros); Valmet Automation Oy, Finland (for DCS System), Sumitomo SHI FW, Finland (CFBC Boilers) and Babcock Power Environmental Inc., USA (for Selective Catalytic Reduction Systems).

For more details about the entire range of BHEL's products and operations please visit our website <http://www.bhel.com>.



Expression of Interest for technology tie-up (with IPR)/collaboration for joint development of 30 mm Naval Surface Gun for Indian Navy

3.3 BHEL in Defence Sector:

BHEL presence in Defence business is more than three decades with proven track record of being competitive, quality products, reliable supplies and life time product support. In the field of Defence, BHEL has long term association with Ministry of Defence (MOD) and key Indian Organisations viz. Indian Armed Forces, Defence Shipyards, DRDO Labs, HAL, erstwhile OFB, Indian Coast Guard for various projects including but not limited to the following -

1. Manufacture & supply 76/62 Super Rapid Gun Mount, since 1994, in collaboration with M/s Leonardo, Italy.
2. Integrated Platform Management System for Warships.
3. Manufactured and supplied Armored Recovery Vehicles to Indian Army
4. BHEL was part of development team for Main Battle Tank (BMT) Arjun and has integrated tanks & supplied Gun Control System for MBT Arjun.
5. Castings & Forgings for Defence and Strategic applications
6. Designed, engineered, manufactured and supplied Launchers for Trishul Missile & Brahmos Missiles
7. Designed, engineered, manufactured and supplied Permanent Magnet Based Motors & Frequency converters, Bidirectional converters, alternators, mechanical auxiliaries, Turbines, Turbo-generators, condensers for warship and submarines.
8. One of select few firms worldwide with proven capability of design, engineering, manufacturing & testing of Compact Heat Exchangers & Pump Modules for Aerospace applications.
9. Long term association with various ISRO centres and is a regular manufacturer and supplier of Space Grade Li-ion cells & Batteries, Solar Panels for Satellites & Launch Vehicles, Hot forming of Titanium Shells/ Domes and Cryogenic Tanks.
10. Core capability for machining & fabrication of exotic materials including Al-alloys, Titanium alloys etc.

3.4 Scope of Cooperation:

BHEL is seeking Expression of Interest(s) from Original Equipment Manufacturer(s) (OEMs) / Prospective Collaborator(s) for technology tie-up (with IPR)/collaboration for joint development for 30 mm Naval Surface Gun for Indian Navy under Make-I Category of DAP 2020

Interested OEMs/Prospective Collaborator(s) meeting the PQR requirement as specified in clause 3.5 below are invited to submit their 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



Expression of Interest for technology tie-up (with IPR)/collaboration for joint development of 30 mm Naval Surface Gun for Indian Navy

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.

3.5 Prequalification requirements (PQRs):

The Prospective Collaborator(s) shall meet all the following qualification requirements as on the closing date of the EoI (to be substantiated by documentary evidence):

a) The Prospective Technology Partner should have designed, developed, engineered, manufactured, integrated & successfully tested and proven at least 1 (one) no. similar equipment matching with the broad technical specifications mentioned at Annexure-3 or higher capacity.

AND

b) The Prospective Collaborator (s) should have the capability to engineer, design and customize/ undertake joint development of the systems/equipment defined at clause 3.5 (a) to meet the parameters as required by the Indian Navy as and when defined explicitly.

3.6 Instructions:

3.6.1 The interested Prospective Collaborator(s) should submit their response(s) along with enclosed annexures on or before **25 August 2023**.

Annexure-1: Indicative Scope of Technology Transfer

Annexure-2: Prospective Collaborator's Experience

Annexure-3: General technical specifications

Annexure-4: Reference List: The Prospective Collaborator's major supplies in last 10 years

3.6.2 The response shall necessarily be accompanied with the following details:

1. Company Background
2. Product Profile
3. Technical details
4. Reference list of customers
5. Annual audited financial reports for last 3 (three) years.

3.6.3 Language: All correspondences and documents related to the EoI response shall be in the 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 the English language in which case, for purposes of interpretation of the bid, the English translation shall govern.

3.6.4 The Prospective Collaborator(s) shall abide by the terms & conditions, as applicable, of the EoI.



Expression of Interest for technology tie-up (with IPR)/collaboration for joint development of 30 mm Naval Surface Gun for Indian Navy

- 3.6.5** All pages of the response against this EoI shall be duly signed by the authorised signatory.
- 3.6.6** Multiple proposals from the same Prospective Collaborator should not be submitted.
- 3.6.7** 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.
- 3.6.8** Any Prospective Collaborator which has been debarred/blacklisted by Central/State Governments of India or by any entity controlled by Central/State Governments of India from participating in any of their project, as on date of submission of EoI, shall not be eligible to submit the EoI.
- 3.6.9** 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.

3.7 Confidentiality:

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.

3.8 Governing Laws and 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.



Expression of Interest for technology tie-up (with IPR)/collaboration for joint development of 30 mm Naval Surface Gun for Indian Navy

Annexure-1

Indicative Scope of Technology Transfer

(a)	Licensing & transfer of state-of-the-art technology (with IPR)/collaboration for joint development relating to Design, Engineering, Manufacturing, Assembly, Testing, Supply, Field Installation, Commissioning, Repair, Service and Retrofit 30 mm Naval Surface Gun for Indian Navy under Make-I Category of DAP 2020
(b)	Transfer of improvements/modifications/developments/upgradations to be carried out by the Prospective Collaborator(s) during the period of TCA for taking care of new market requirements and obsolescence. Subsequent updates required due to component obsolescence or updates implemented by Prospective Collaborator(s) due to safety consideration would also be provided.
(c)	Assistance in planning & establishing the new manufacturing, assembly and testing facilities & processes/ suitable augmentation at BHEL's existing facilities/processes by way of expert advice in terms of identifying, sizing & selection and preparation of specification of equipment/machinery required for manufacturing, their layout and foundation etc. Deputation of Collaborator's expert for commissioning of the manufacturing facilities, design of special tools and dies, jigs & fixtures etc.
(d)	Support through engineering services from Collaborator's design office / manufacturing facilities for licensed products.
(e)	Training of BHEL engineers to Engineer, Manufacture, Assemble, Test, Supply, Field Install, Commission, Repair, Service and Retrofit 30 mm Naval Surface Gun for Indian Navy.
(f)	Deputation of Collaborator's experts to assist BHEL in absorbing the technology for licensed products.
(g)	Transfer of applicable Proprietary software/computer programs including logics and source code, if any.
(h)	During the field trials and regular operation, if any modifications/updates are carried out to improve the performance/reliability of the system the same shall also be transferred to BHEL with complete know-how.
(i)	Technology being proposed should be the latest/ state-of-the-art being marketed by the Prospective Collaborator.
(j)	Transfer of information to enable BHEL to source/procure those items, which Prospective Collaborator sources from other vendors (as these are not manufactured by the Prospective Collaborator) for use in 30 mm Naval Surface Gun for Indian Navy.

Signature & Seal

Authorized Signatory of the Prospective Collaborator



Expression of Interest for technology tie-up (with IPR)/collaboration for joint development of 30 mm Naval Surface Gun for Indian Navy

Annexure-2

Prospective Collaborator's Experience of 30 mm Naval Surface Gun

Sl.	Requirement	Response (YES/NO) and remarks, if any
(a)	Whether the Prospective Collaborator is an Original Equipment Manufacturer (OEM) of the proposed 30 mm Naval Surface Gun.	
(b)	Whether documentary evidence to substantiate the PQRs specified at clause 3.5 has been submitted by the Prospective Collaborator.	
(c)	Whether the Prospective Collaborator has designed, developed, engineered, manufactured, integrated & successfully tested and proven at least 1 (one) no similar equipment matching with the broad technical specifications mentioned at Annexure-3 or higher capacity.	
(d)	Whether the Prospective Collaborator has the capability to engineer, design and customize/ undertake joint development of the systems/equipment defined at (a) to meet the parameters as required by the Indian Navy as and when defined explicitly.	
(e)	Whether the Prospective Collaborator has supplied at least 1 Nos 30mm NSG which is operational/ successfully inducted for Naval applications.	
(f)	Whether information on market share has been enclosed.	
(g)	Whether Prospective Collaborator's detailed reference list have been enclosed.	
(h)	Whether Prospective Collaborator's annual audited financial reports for last 3 years have been enclosed.	
(i)	Whether the 30 mm Naval Surface Gun offered for technology transfer is the latest being marketed by the Prospective Collaborator.	
(j)	Whether customers (end users) letters / documentary evidence for satisfactory operation of 30 mm Naval Surface Gun which is being offered to BHEL under this EoI have been enclosed.	
(k)	Whether the Prospective Collaborator owns the IPRs for the technology being proposed for transfer under the Technology Collaboration Agreement (TCA) or have an unencumbered right from the owner of the IPRs to sub-license the technology, if applicable. If yes, whether list of such IPRs is enclosed.	

Signature & Seal

Authorized Signatory of the Prospective Collaborator



Expression of Interest for technology tie-up (with IPR)/collaboration for joint development of 30 mm Naval Surface Gun for Indian Navy

Annexure-3

Indicative operational characteristics/features of 30 mm Naval Surface Gun with Electro-optical Fire Control System and Ammunition

Sl.	Parameter	Compliance (Yes/No) or Offered Spec.
a)	Calibre: The gun and ammunition should be of 30 mm calibre.	
b)	Range: The Max Effective Range (MER) of the gun and ammunition should be > 3 kms.	
c)	Rate of Fire (RoF): The RoF of the gun should be > 200 rounds per min. The gun should be capable of firing in single shot and rapid/ burst mode.	
d)	Magazine Capacity: The magazine capacity as per the latest standards.	
e)	Ammunition: The gun should be capable of firing full range of HE, tracer, practice, armour piercing and incendiary cartridges of NATO standard.	
f)	Weight: The total weight of the gun should be < 2000 Kgs (without ammunition).	
g)	Electro-optical Fire Control System (EOFCS): The EOFCS should be capable of being interfaced with ships gyro, log and anemometer and should comprise of an Electro-Optical Device (EOD), Multi-Function Display Unit (MFDU) and a System Control Panel (SCP).	
h)	Multi-Functional Display Unit (MFDU): The EOFCS should have a MFDU consisting of a LCD monitor with soft touch keys/ push buttons capable of all initializations, operational settings, calibration, and diagnostics and operating various software menus.	
i)	System Control Panel (SCP): The EOFCS should have a SCP consisting of joystick(s)/ soft touch keys/ knobs.	
j)	Modes of Operation: The 30 mm NSG should be able to operate in the following modes: - a. Remote Mode: In this mode the 30 mm NSG with EOFCS should be able to be controlled and fired from remote position i.e., from the System Control Panel (SCP) of the EOFCS.	



Expression of Interest for technology tie-up (with IPR)/collaboration for joint development of 30 mm Naval Surface Gun for Indian Navy

	<p>b. Manual Mode: In this mode, the 30 mm NSG should be able to be controlled and fired from a position on/ near the gun mount in case of failure of EOFCS or loss of power supply.</p>	
k)	<p>Safety Requirements: The 30 mm NSG should have the following safety features incorporated into it: -</p> <p>a. Physical Safety Provision: Mechanical and electrical stoppers to limit the firing arcs.</p> <p>b. Safety Switch: The system should have a remotely located safety switch (Permit/ Inhibit Switch) to enable/ disable firing of the gun.</p>	
l)	<p>Power: The system should be compatible with ship-borne (AC/ DC) power supply.</p>	
m)	<p>Built In Test (BITE): The 30 mm NSG with EOFCS should have a Built-In- Test (BIT) feature incorporated into the system. The BIT should operate as part of the normal start-up procedure of the system. The system should be provided with both on-line as well as off line Built in Test Facility/ Equipment, which should identify the defective sub unit, up to the level of LRU.</p>	

Signature & Seal
Authorized Signatory of the Prospective Collaborator



Expression of Interest for technology tie-up (with IPR)/collaboration for joint development of 30 mm Naval Surface Gun for Indian Navy

Annexure-4

Reference List: The Prospective Collaborator shall furnish a summary of their product reference as detailed below for major supplies in the last 10 years

Sl.	Project name/location	Year of Supply	Year of Commissioning

Signature & Seal
Authorized Signatory of the Prospective Collaborator