

BHEL, HEEP, HARIDWAR

## **Expression of Interest**

155mm/52 Caliber Mounted Gun System (Mounted on a vehicle chassis)



## **Expression of Interest**

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**Technology Transfer / Collaboration**

**for**

**155mm / 52 Caliber Mounted Gun System  
(Mounted on a vehicle chassis)  
for Indian Army  
(Ministry of Defence, Govt. of India)**

**Bharat Heavy Electricals Limited  
HEEP, HARIDWAR**

**DISCLAIMER**

The information contained in this Expression of Interest document (the “EOI”) or subsequently provided to Applicant(s), whether verbally or in documentary or any other form, by or on behalf of BHEL or any of its employees or advisors, is provided to Applicant(s) on the terms and conditions set out in this EOI and such other terms and conditions subject to which such information is provided.

This EOI is not an agreement and is neither an offer nor invitation by BHEL to the prospective Applicants or any other person. The purpose of this EOI is to provide interested parties with information that may be useful to them in the formulation of their application for qualification pursuant to this EOI.

BHEL also accepts no liability of any nature whether resulting from negligence or otherwise howsoever caused arising from reliance of any Applicant upon the statements contained in this EOI.

The issue of this EOI does not imply that BHEL is bound to select and shortlist Applicants for next stage or to enter into any technology tie-up agreements with shortlisted Applicants for the Project.

## Bharat Heavy Electricals Limited

### 1. INTRODUCTION:

#### 1.1. Background:

1.1.1. **Bharat Heavy Electricals Limited (BHEL)** a Government of India undertaking, is the largest Engineering and Manufacturing organization in India and is one of the leading international companies for providing total business solutions in the field of Power Generation & Transmission, Defence, Transportation, Oil & Gas, Telecommunication etc. The company has 15 manufacturing units, 4 power sector regions, 8 service centres, 10 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 2012-13 was US\$ 9.20 Billion with profit before tax of US\$ 1.69 Billion. BHEL's highly skilled and committed manpower of approximately 49390 employees, the best of manufacturing facilities and practices together with the latest technologies, has helped BHEL to deliver a consistent track record of performance. With the current order book exceeding US\$ 21.19 Billion, BHEL is poised for excellent future growth. Entire range of BHEL's products and operations can be obtained by visiting our web site **[www.bhel.com](http://www.bhel.com)**

1.1.2. BHEL is in Defence Sector for last 2 decades. Different Units of BHEL are engaged in manufacturing of various Defence Equipments. BHEL Haridwar has been manufacturing Super Rapid Gun Mount 76/62 for Indian Navy and Coast Guard through collaboration with a reputed OEM since 1992.

1.1.3. For 127mm MCGS and 30mm small caliber gun system for Indian Navy and Coast Guard Ministry of Defence, Govt. of India has nominated BHEL as Production Agency for indigenous manufacture alongwith suitable OEMs.

1.1.4. To manufacture and supply of 155mm / 52 Caliber Mounted Gun System (Mounted on a vehicle chassis), BHEL intends to enter into a long term technology tie-up with OEMs/Suppliers as per the indicative scope of work given at [Annexure A](#).

1.1.5. 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 prepared and submitted in accordance with such terms on or before the date specified in this EOI for submission of Applications.

#### 1.2. Brief Description of EOI Process:

- 1.2.1. The EOI process involves identification of interested OEMs/suppliers who make an application in accordance with the provisions of this EOI (the "Applicant"). At the end of this process, BHEL expects to invite OEMs/suppliers for further deliberations.
- 1.2.2. The EOI in 2 copies (original plus one) can be submitted by hand or sent by Registered Post so as to reach at the following address within 3 weeks from the date of publishing. EOI received after the due date for submission (and any extension thereof) will not be considered. Alternatively, a signed copy of the EOI may be sent by e-mail as advance copy, to be followed by original signed copy which shall be received within 7 days of e-mail.

**The Additional General Manager**

Commercial – Defence

Bharat Heavy Electricals Limited

HEEP, Ranipur, Haridwar-249403

Uttarakhand, INDIA

Telephone : +91-1334-285633

Telefax : +91-1334- 226770

Email : [pjain@bhelhwr.co.in](mailto:pjain@bhelhwr.co.in)**The Additional General Manager**

Engineering – EC &amp; DPE

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Uttarakhand, INDIA

Telephone : +91-1334-285256

Telefax : +91-1334- 223954

Email : [rkohli@bhelhwr.co.in](mailto:rkohli@bhelhwr.co.in)

- 1.2.3. Any request for further information or clarification on the EOI document may be submitted in writing at the above address. BHEL may respond to the queries raised/clarifications sought to the best of its ability. No extension of the time or date of EOI submittal would be granted. BHEL at its discretion may extend the due date for submission of EOI and the decision of BHEL in this respect would be final & binding on the respondents.
- 1.2.4. EOI submittals should be in English. Duly authorized representative shall sign on each page of the documents. EOI should be prepared in such a way so as to provide a straight forward, concise description of Applicants capabilities.
- 1.2.5. If at any time during the evaluation of EOI, BHEL requires any clarification on the documents submitted by the prospective parties, it reserves the right to request a clarification so as to complete the evaluation.

## **2. INSTRUCTION TO APPLICANTS:**

### **2.1. Eligibility of Applicants:**

For determining the eligibility of Applicants the following shall apply:

2.1.1. The Applicant for the EOI may be (i) a single entity; or (ii) a Group of Entities ("GOE") coming together to meet the scope of the EOI. The GOE shall elect one of their members as the lead member of the GOE. The term Applicant used herein would apply to both a single entity and the GOE. The technology transfer agreement would be entered into with the single entity applicant or the lead member of the GOE. The lead member of the GOE would be responsible to BHEL for the entire scope of work and shall ensure back to back tie ups with other members of the GOE.

2.1.2. An Applicant shall fulfill the following conditions of eligibility:

A. Technical Capability: For demonstrating technical capability and experience, the Applicant should have designed / integrated / produced / supplied/developed 155mm / 52 Caliber Mounted Gun System and the system should preferably be in satisfactory operational service. Details to be provide as per [Appendix-I of Annexure-B](#).

B. Financial Capability: Details to be provided as per [Appendix-II of Annexure-B](#).

2.1.3. In case the Applicant is a GOE, it shall comply with the following requirements:

- i. The Application should include a brief description of the roles and responsibilities of individual members of the GOE including that for technical, financial and other obligations.
- ii. Members of the GOE shall have to enter into a binding agreement with the lead member, committing to transfer the technology to BHEL for the work in their scope, under the overall responsibility of lead GOE member, before finalisation of Agreements with BHEL.

### **2.2. Right to accept or reject any or all Applications:**

2.2.1. 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 therefore. In the event that BHEL rejects or annuls all the Applications, it may, at its discretion, invite all eligible OEMs/Suppliers to submit fresh Applications.

2.2.2. 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.

2.2.3. 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.

**2.3. Documents to be submitted with EOI:**

- i. Letter comprising the Application as per format enclosed at [Annexure B](#) along with information and data required as per Attachments and supporting documents thereof.
- ii. Copy of Articles & Memorandum of Association or partnership deed;
- iii. Copies of Applicant's duly audited balance sheets and profit and loss accounts for the preceding three years.

**3. Miscellaneous:**

- 3.1. 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 A

Indicative Scope of Work for the Applicant

- 1) Transfer of Technology (ToT) under a single Technology License agreement, with fully paid up rights and to continue using the same even after expiry of agreement for manufacturing and Integration of 155mm /52 Caliber Mounted Gun System as per requirement of Indian Army.
- 2) In case of execution of the contract as per order from MoD (Ministry of Defence, Govt. Of India) the supplier (as technology provider / collaborator to BHEL) would need to meet the obligation of Indigenous content in line with the requirements of extant Defence Procurement Policy. As of now under "**Buy & Make (Indian)**" category indicated by MoD, GOI the indigenous manufacturing has to progressively reach a level of minimum of 50 % on cost basis.
- 3) Assistance in planning & setting up of the facilities by way of expert advice in terms of identifying, sizing & selection of equipment required for manufacturing and assembly, their layout and foundation etc.
- 4) Assistance for establishing manufacturing processes, commissioning of the manufacturing facilities, design of special tools and dies, jigs & fixtures etc. by way of deputation of experts for agreed number of man days as and when required by BHEL.
- 5) Transfer of complete set of manufacturing documentation, subsequent updates required due to component obsolescence or updates implemented by Applicant due to safety consideration would also be provided.
- 6) Any other as deemed necessary for successful execution of the contract as per Purchaser's requirement.



Annexure B

**Expression of Interest Letter**

(To be submitted on the letter head of the party submitting the EOI)

To,

**The Additional General Manager** (Commercial – Defence)  
Bharat Heavy Electricals Limited  
HEEP, Ranipur, Haridwar-249403  
Uttarakhand, INDIA  
Telephone : +91-1334-285633  
Telefax : +91-1334- 226770  
Email : [pjain@bhelhwr.co.in](mailto:pjain@bhelhwr.co.in)

**Subject:** EOI for being technology provider for BHEL 155mm / 52 Caliber Mounted Gun System ( Mounted on Vehicle Chassis)

With reference to your EOI document Ref. No **EOI/155x52MGS/2013/01 Rev.00** dated \_\_\_\_\_, we have examined the EOI document and understood its contents and hereby submit our Application for pre-qualification for the aforesaid project.

1. We acknowledge that BHEL will be relying on the information provided in the Application and the documents accompanying such Application for qualification of the Applicants for the aforesaid project, and we certify that all information provided in the Application and in Appendix I & II to Annexure B are true and correct; nothing has been omitted which renders such information misleading; and all documents accompanying such Application are true copies of their respective originals.
2. We confirm to make available to BHEL, within the stipulated time, any additional information it may find necessary or require to supplement or authenticate the qualification statement.
3. We certify that the technology and design for the projects for which experience is claimed is our own technology.
4. We agree and undertake to abide by all the terms and conditions of the EOI document.

In witness thereof, I / we submit this application under and in accordance with the terms of the EOI document.

Yours faithfully,

(Signature, name and designation of the Authorized Signatory  
Name and seal of the Applicant)

Date:

Place:

**Appendix-I to Annexure-B**

**Physical Parameters:**

1. Dimensions.
  - a) What is the length, width and height of the equipment in meters?
  - b) What is the ground clearance of the vehicle in meters?
  - c) What is the weight of the equipment in tonnes?
2. Details of Ordnance.
  - a) What is the length of barrel in meters?
  - b) What is the equivalent Full Charge (EFC) value of the barrel?
  - c) Please specify the chamber capacity of the barrel.
3. Crew.
  - a) How many personnel are required as crew (including the commander and driver to operate the equipment?
  - b) Can the vehicle cabin accommodate the crew?
  - c) What are the arrangements to provide protection to the crew from splinters?
  - d) Does the driver and crew cabin cater for environment control? Also please specify inside temperature maintained in the cabin.
4. Vehicle Characteristics.
  - a) What fuel is used by the vehicle?
  - b) What is the maximum speed of the vehicle on metalled roads and on semi desert tracks?
  - c) What is the capacity of fuel tank in litres?
  - d) What is the cruising range of the vehicle on a full tank of fuel on a metalled road and cross country?
  - e) What is the maximum gradient negotiable by the vehicle?
  - f) What is the emission norms to which the vehicle is compliant?
  - g) What is the depth of water body which can be crossed / negotiated by the vehicle without any additional preparation or equipment?
  - h) What is the on board ammunition carrying capacity in terms of :-
    - i. Fully prepared shells.
    - ii. Charge bags.
  - i) Please confirm availability of central tyre inflation and pressure regulation system in the vehicle.

**Operational Parameters:**

5. Arc of Fire.
  - a) What are the traverse limits at all angles of elevation?
  - b) What is the maximum and minimum elevation?
6. Ammunition System in Use. Give out the details of ammunition system in use under the following heads:-
  - a) Projectiles.
  - b) Fuzes.
  - c) Charges.
7. Compatibility with Indigenous Ammunition - Is the gun system compatible with current types of ammunition used by the Indian Army?
8. Range: Indirect Fire.
  - a) What is the maximum range with standard high explosive (HE) ammunition?
  - b) What is the maximum range with assisted (Base Bleed) ammunition?
  - c) What is the minimum range achievable in high angle with standard HE ammunition?
  - d) What is the maximum range for direct fire / anti tank fire?
9. Endurance and Rate of Fire at 80 Per Cent of Maximum Range at Low Angle.
  - a) What is the intense rate of fire of the gun system?
  - b) What is the maximum duration for which it can fire at intense rate?
  - c) What is the burst rate of fire of the gun system?
  - d) What is its sustained rate of fire for 60 minutes with highest charge?
10. Accuracy and Consistency in Low Angle at 80 Per Cent of Maximum Range for Standard HE Ammunition and HE Base Bleed Ammunition in Low Angle.
  - (a) What is the consistency of the equipment in terms of the following:-
    - I. Range.
    - II. Line.
  - (b) What is the accuracy of the equipment in terms of the following:-
    - I. Range.
    - II. Line.
11. Sighting System.
  - (a) Is the sighting system based on GPS supported Inertial Navigation System?
  - (b) What is the accuracy of fixation of the gun?
  - (c) What is the accuracy of aiming for the following?
    - I. Azimuth (in mils).
    - II. Elevation (in mils).
  - (d) Optical Sight for Indirect Fire.

- I. Does the equipment have an optical sight with recordable collimator as a back-up for indirect fire?
  - II. What is the accuracy of the optical sight?
- (e) Night Sight.
  - I. At what ranges can the night sight identify a tank sized target?
  - II. What is the maximum and minimum range of Laser Range Finder (LRF)?
- 12. Fire Control System (FCS).
  - (a) Is the FCS capable of receiving the gun data from the Command Post in digital as well as manual feed by the gun crew?
  - (b) Is the FCS capable of laying the gun automatically, after input of command from the crew, at the desired bearing and elevation?
  - (c) Can the FCS be integrated with indigenously produced Auto Fire Control System?
- 13. Muzzle Velocity Radar (MVR).
  - (a) Is the equipment equipped with MVR?
  - (b) Would the MVR automatically compute the shells initial MV?
  - (c) Would the MVR provide digital update of the MV on as required basis?
- 14. Automatic Functions - Would the loading and ramming functions be automatic?
- 15. Power Source - What is the source of power for automatic functions? Please provide details of Auxiliary Power Unit (APU).
- 16. Backup Arrangements - Would the equipment have alternate back-up arrangements for enabling automatic functions including laying as well as to bring the MGS into and out of action?
- 17. Recoil System - What is the type of recoil system in the equipment?
- 18. Obturation System - What type of obturation system is in use with the equipment?
- 19. Communication System.
  - (a) What are the arrangements for inter-communication within the gun crew?
  - (b) What are the arrangements for Detachment Commander to communicate with the Command Post within range of minimum one kilometer?
- 20. Environmental Performance - What is the temperature range in which the gun system will function efficiently?
- 21. Transportability - Is the MGS transportable by rail, sea and air?

### **Operation and Maintenance**

22. Time Into / Out of Action - What are the time limits for the equipment to come into and out of action both for day and by night?
23. Safety Arrangements - What are the safety arrangements on the equipment to ensure the following:
  - (a) The gun does not fire till breech block is closed?
  - (b) The gun does not fire till fully run out?
24. Warning Arrangements - What warning arrangements are incorporated to ensure safe operation and maintenance of the gun?
25. Onboard Test Equipment. Give out the details of following:-
  - (a) On line test facilities.
  - (b) Off line test facilities.
  - (c) Hardware test facilities.

### **Miscellaneous Details**

26. Status of Production:
  - (a) What is the current status of production of the gun system?
  - (b) Please specify time lines for fielding the product for evaluation.
  - (c) What is the infrastructure available to produce the MGS?
  - (d) What is the annual production capability of the firm?
27. Indicative Cost - What is the rough indicative cost of one MGS?
28. Details of Joint Venture (JV) Partners. Please specify details of foreign firm(s) as JV partner(s).
29. Conformance to Standards - Please confirm that the assemblies, sub-assemblies, components, parts and materials used in the equipment conforms to relevant MIL STD(S) and in the absence of MIL STD(S), other internationally accepted standards.

## Appendix-II to Annexure-B

**INFORMATION PERFORMA**

1. Name of Vendor/Company/Firm.

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(Company profile, in brief, to be attached)

2. Type (Tick the relevant category).

- a) Original Equipment Manufacturer (OEM) :Yes/No
- b) Government Sponsored Export Agency :Yes/No (Details of registration to be provided)
- c) Authorized Representatives of OEM :Yes/No (Attach Details)
- d) Group of Entities / Others (give specific details).

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3. Contact Details:

Postal Address \_\_\_\_\_

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City \_\_\_\_\_ State \_\_\_\_\_ PIN Code \_\_\_\_\_

Fax \_\_\_\_\_ Tele \_\_\_\_\_ URL/Website \_\_\_\_\_ Email \_\_\_\_\_

4. Local Branch/Liaison Office/Authorized Representative, in India (if any).

Name & Address \_\_\_\_\_

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City \_\_\_\_\_ State \_\_\_\_\_ PIN Code \_\_\_\_\_

Fax \_\_\_\_\_ Tele \_\_\_\_\_ URL/Website \_\_\_\_\_ Email \_\_\_\_\_

5. Financial Details.

- a) Annual turnover \_\_\_\_\_

## b) Information on Net worth

	Cash accruals Year 1	Cash accruals Year 2	Cash accruals Year 3	Net worth Year 1
Single Entity/ Lead Member of GOE				

**Instructions:**

- i. The Applicant shall attach copies of the balance sheets, financial statements and Annual Reports for 3 (three) years preceding the Application Due Date.
- ii. The financial statements shall:
  - (a) reflect the financial situation of the Applicant;
  - (b) have been audited by a statutory auditor;
  - (c) be complete, including all notes to the financial statements; and
  - (d) Correspond to accounting periods already completed and audited.
- iii. Net Cash Accruals shall mean Profit After Tax + Depreciation.
- iv. Net worth shall mean (Subscribed and Paid-up Equity + Reserves) less (Revaluation reserves + miscellaneous expenditure not written off + reserves not available for distribution to equity shareholders).
- v. Year 1 will be the latest completed financial year, preceding the EOI. Year 2 shall be the year immediately preceding Year 1 and so on.
- vi. The Applicant shall provide an Auditor's Certificate specifying the Net worth of the Applicant and also specifying the methodology adopted for calculating such Net worth.

## c) Earlier contracts with Indian Ministry of Defence/Government agencies:

S No	Agency	Contract Number	Equipment	Quantity	Cost

## 6. Certification by Quality Assurance Organisation(s) viz. ISO:9000 etc. (If Applicable):

S No	Name of Agency	Certificate	Applicable from (Date & Year)	Valid Till (Date & Year)

7.

- a) Is the applicant manufacturing the complete equipment or it is being integrated? Please provide details.
- b) What are the components, sub system or sub assemblies of the equipment which are not manufactured by the applicant? Please give details.
- c) Following supporting documents are to be provided:
  - i. Reference list with details of customer
  - ii. Recent End User Certificates for satisfactory performance ( as applicable)

8. Equipment/Product Profile (to be submitted for each product separately):

- a) Name of Product \_\_\_\_\_  
(Should be given category wise for e.g all products under Night Vision Devices to be mentioned together).
- b) Description (attach technical literature).
- c) Whether OEM or Integrator.
- d) Status (in service / design development stage) \_\_\_\_\_
- e) Production capacity per annum \_\_\_\_\_
- f) Countries where equipment is in service \_\_\_\_\_
- g) Whether export clearance is required from respective government  
\_\_\_\_\_
- h) In case of equipment and ammunition, JB MOU compliance to be specified.
- i) Details of any collaboration/joint venture/co production/ authorized dealer with Foreign Industry.  
Name & Address \_\_\_\_\_  
Tele \_\_\_\_\_ Fax \_\_\_\_\_

9. Details of 155mm/52 caliber Mounted Gun System(s) supplied:

SN	Year of Supply	Indicative No. Produced/supplied	Name of customers	Remarks
1	2010-2011			
2	2011-2012			
3	2012-2013			
	Total			

10. Details of participation in similar procurement cases in India / foreign countries in the past.

11. Any other Relevant Information:

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