

Ref : EOI/KGF/R&D/ARV

Dt : 02 March 2022

**M/s. BEML LIMITED,
BEML SOUDHA,
SAMPANGIRAMNAGAR ,
BENGALURU - 560002**

Invitation for Expression of Interest (EOI) for Partnership for long term Partnership for supply and manufacture of Aggregates of ARV (Armoured Recovery Vehicle) under the “Make in India” policy

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| Eoi Reference | Ref. No. EOI/KGF/R&D/ARV |
| Eoi closing date | Closing date : 4th April 2022, Time : 17:00 Hrs |
| Eoi response mail Id | bemleoi@beml.co.in |
| Contact for technical clarifications | Name : Mr. Shivkumarappa.V DGM(R&D) email: shivkumar.v@beml.co.in Contact No.:08153 279196 / 7 |
| PLEASE MENTION Eoi Reference in e mail subject | |

Expression of Interest (Eol) for long term Partnership for supply and manufacture of Aggregates of ARV (Armoured Recovery Vehicle) under the "Make in India" policy

Objective: "Make in India" and Self Reliability

BEML Ltd is seeking manufacturing and technology partnerships with reputed OEMs/Aggregates manufacturers looking to establish and/or expand their supply chains/manufacturing base in India for the manufacture of various goods and/or service business in the areas of Defence & Aerospace, Rail & Metro, Mining & Construction, Engines and aggregates with the overarching objective of "Make in India" and enhancing Self-Reliance in line with the vision of Honorable Prime Minister of India.

1.0 Back ground

BEML Ltd has three business verticals viz Defence & Aerospace, Rail & Metro and Mining & Construction with four manufacturing complexes located at Bengaluru, Kolar Gold Fields (KGF), Mysuru and Palakkad.

All the manufacturing divisions of BEML have been accredited with ISO 9001 - 2015 and ISO 14001 (HSC) certification. BEML has its own world-class composite R&D establishment for Design & Development of products.

The Company has a nationwide Marketing Network and an International Business Division for Exports activity.

Details of the BEML Ltd is available on www.bemlindia.in

2.0 Overview of BEML Capabilities:

BEML Limited, a Central Public Sector Enterprise coming under the Ministry of Defence was incorporated in 1964. Subsequently it became a listed company and is engaged in the design, development and manufacturing in the areas of Defence & Aerospace, Rail & Metro and Mining & Construction equipment's.

2.1 Defence & Aerospace

BEML Ltd is engaged in the business of High Mobility vehicle for all terrain operations, Heavy Recovery Vehicle, Pontoon Mainstream Bridge Systems, Crash Fire Tenders, Mobile Mast Vehicle, Engineering Mine Ploughs, Tank Transportation Trailers, Weapon Loading equipment, Armoured Recovery Vehicle, Milrail Coaches and Wagons, Ground support vehicles and other products to the Indian and other Armed Forces.

2.2 Rail & Metro

BEML Ltd is engaged in the business of Integral Rail Coaches, Overhead Inspection Cars, AC/DC Electrical Multiple Units, Stainless steel EMUs, Utility vehicles, Track Laying Equipment, Broad-gauge Rail bus, Treasury Vans, Spoil disposal Units to the Indian and other Railways.

BEML Ltd has also successfully diversified into manufacturing state-of-the-art technology stainless steel Metro Cars for various urban Metro Corporations and enjoys a dominant market share in this segment.

2.3 Mining & Construction

BEML Ltd is engaged in the business of Hydraulic Excavators, Bulldozers, Wheel Loaders, Wheel Dozers, Dump Trucks, Motor Graders, Pipe Layers, Tyre Handlers, Water Sprinklers and Backhoe Loaders to customers in the Mining and Construction segments.

BEML has also developed Mining Dump trucks of 150 Ton and 200 Ton class and Excavators of both Hydraulic and Electrical of 180 Ton capacity.

3.0 Research & Development:

BEML Ltd has R&D establishment for Design & Development of high-tech engineering products for its three verticals. It employs over 300 professionals with high experience and skills spanning a wide range of technology areas.

The R&D establishment has CAD Centre, Fluid-power, Powerline, Structural Engineering & Material Science laboratories and is continuously engaged in New Product Development and upgradation of existing products to meet customer requirements. More than 65% of Company's Sales Turnover is through in-house developed R&D products. The R&D expenditure is around 2 ~ 3% of its turnover.

4.0 International Business Division:

BEML has a sizeable market share in export markets with exports to 68 countries across the globe. Over the years this division has exported over 1200 machines covering all the three verticals.

5.0 BEML Ltd seeks partnership with reputed OEMs/Aggregate manufacturers for Armoured Recovery vehicle

BEML has taken up the Indigenous design & development of Armoured Recovery Vehicle of 42 tonnes weight class. It is a high-speed, tracked armour vehicle designed to fulfill some activities on a modern battlefield, in particular

- Evacuation & Towing of tracked vehicles.
- Immediate participation in vehicle repairs due to rich equipment of tools and instruments.
- Execution of disassembly & assembly works by means of the down crane.
- Keeping constant two-sided communication among the vehicles by the use of ARV transmitter-receiver.

Business prospects: after the successful completion of development and testing, the expected quantity for further production is 300 nos.



ARV (Illustrative Image)

6.0 EOIs invited for the major sub-systems listed below

A. INTERMEDIATE GEAR BOX (IGB) WITH PUMPS

It is of mechanical with intermediate over-drive gear, two side gearboxes and two coaxially mounted side gears for matching to 780 hp Engine.

It is a toothed gear increasing revolutions and transmitting the engine crankshaft torque to the gearboxes L.H. and R.H. and to the main winch, drive of hydraulic

pumps, fan drive, air compressor, drive of drain pump.

B. THERMO-PRESS FLOOR PLATES

These are 5 types of armoured floor plates of 20 mm thick with formed by cold thermo-press process by using 10000 t hydraulic press with suitable dies & fixtures.

C. TORSION BAR

It is an elastic element of suspension. It is round steel shaft with large and small heads with splines.

The mandrel of torsion bar is wrapped with insulation tape preventing it from damage.

D. MAIN WINCH

It is a drum type, mechanical drive with the rope outlet toward the vehicle front. Force in the rope is 280 KN with rope length of 200 m. Drive by mechanical from intermediate gear through winch gear light and found for the rope end with indicator rope overlading.

E. WINCH REDUCER GEAR BOX

It is of spur-planetary reducing gear type with two ranges of winding up and drive clutching-off. Playing out and winding up gear clutch-in by hydraulic clutching-in. Clutches engagement control by special 5-stage, 7-path directional control valve. Directional valve control is mechanical type.

F. AUXILIARY WINCH

It is a drum type, hydraulically driven pulling out of the main winch rope or exeution other jobs for which the pulling force do not exceed 20 KN and drive by hydraulic pump. Auxiliary winch control by manually operated directional flow valve.

G. ROPE FEEDER

It is the type of two-parted worm-spur gear driving feeding rollers in opposite direction. Drive is of automatic, by a hydraulic power, proportional to the rope speed of the main winch, independently to the speed and direction of the rope movement.

H. CRANE

It is a hydraulic crane with two segments with hydraulic telescope. It shall handle loads of mass up to 15 t at 5.8 m with maximum jib length of 8 m.

I. HYDRAULIC SYSTEMS

It is with 280 dm³ system capacity and 20 MPa maximum pressure and consists of 4 hydraulic pumps of gear type as below

- a. 48 dm³/min at 1500 rpm
- b. 62 dm³/min at 1500 rpm
- c. 28 dm³/min at 1500 rpm
- d. 4 dm³/min at 1500 rpm

With electrically controlled, three-stage four-paths type directional control valves.

J. VISION SYSTEMS

Commander's sight is combined (day / light), electro-optical, binocular, prismatic type with temperature regulation.

Driver's device with passive binocular type with temperature regulation.

K. NBC SYSTEM

It is the type of collective, protecting crew and internal equipment against shock wave toxic and radioactive agents. System primary element with GO-27 instrument for radioactive and chemical contamination searching with overpressure producing means and devices with filtro-ventilation device (UVW) and operated mechanically and automatically.

L. PNEUMATIC SYSTEM

It consists of a air compressor piston type, three stage, two-cylinder air cooled with the operating pressure of 15 MPa and output of 2.4 m³/h.

7.0 Minimum requirements for qualifying as Nodal agency

The Nodal agencies expressing interest in participating in the above design, development, testing and supply of selective or all the above aggregates said at para '**major sub-systems**' can provide their proposal for the above work. The Nodal agency shall meet the following minimum requirements.

- a. The manufacturer should be in the business of the supply and installation of any aggregate of Armoured Recovery Vehicle for the last twenty calendar years. Document proof shall be submitted for the same.

- b. The company should have supplied aggregates of T-72 ,T-90, MBT ARJUN in bulk in the past 5 years.
- c. Vendor shall be an Indian company/Fully owned subsidiary in case of Multinational OEM.
- d. Firms showing interest for manufacturing and supply of any of the above sub-systems with the given specification should have in-house facility and the testing facilities may be in-house or within India.
- e. Should have a design team/Application engineering team of not less than 10 engineers.
- f. Should be an ISO 9001 certification and established QMS.
- g. The turnover of the nodal agency shall be more than Rs 5 Cr for the past three financial years.
- h. Should have experience in sourcing mechanical parts and services from foreign countries.
- i. The nodal agency should be able to develop the selective or all the above said aggregates and provide a commitment to supply for a minimum period of 15 years after completion of Development.
- j. Prospective partner should be willing to associate with BEML for conducting the Field Evaluation Trials conducted by various agencies.
- k. The vendor shall have a strong base and should posse's expertise and facilities for design, manufacturing, inspection and testing.
- l. The vendor shall be familiar with the global practice of entering and execution of consultancy for design of above said aggregates / machine elements.
- m. Documents to support of the above requirements shall be provided along with the specification including the make & model.

8.0 How to participate

Prospective vendors meeting the above qualification criteria shall provide their willingness for participating in the design, development, testing & supply and also provide technical proposal for carrying out the above activity indicating their technical expertise, design capability, experience in carrying out similar development activity for Armoured Recovery or Defence Tracked Vehicles with details of manufacturing, assembly, testing and qualification infrastructure available with them.

The vendor having potential in all or selective aggregates is acceptable. Suitable vendors are welcome to express their willingness to participate in the above EOI, the area of expertise, the phase in which they would like to participate shall be spelt out in their technical proposal.

9.0 Contact Person

Interested parties may forward their interest by providing the details of their organization with credentials and areas of interest by e mail to bemleoi@beml.co.in please mention **Eoi reference EOI/KGF/R&D/ARV** in subject) **on or before 04.04.2022 Time: 17 :00 Hrs**

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