DEMAND NOTIFICATION

INVITATION FOR EXPRESSION OF INTEREST FOR MECHANICALLY INTEGRATED - MOBILE AUTONOMOUS LAUNCHER (MAL)

BrahMos Aerospace Private Limited (BAPL) , a Joint Venture between India's Defence Research and Development Organization (DRDO) and Russia's NPO Mashinostroyeniya, is a leading Aerospace and Defence Corporation in India specializing in the design, development, and production of supersonic cruise missile systems.

BAPL invites Expression of Interest (EOI) from prospective manufacturing industries for development and supply of Mechanically Integrated Mobile Autonomous Launcher (MAL).

Name of Special Vehicle/Equipment Mobile Autonomous Launcher (MAL)

Scope of work:

To develop, manufacture the MAL and qualify the same as per technical requirements which will be shared with shortlisted manufacturers.

Brief Description:

I. Introduction

a. BrahMos Mobile Autonomous Launcher (MAL) System is a part of launch complex for launching articles from land. The system is used to store, transport and launch 3 articles.

b. In the present case, following systems forming a part of BrahMos Mobile Autonomous Launcher System, need to be supplied:

- 12X12 High Mobility Vehicle.
- Mechanical System
- Base Frame
- EMI/EMC equipment shelter
- Launch Beam
- Saddles
- Container
- Ground Resting Unit
- Hydraulic System
- Vehicle PTO
- Electric Pump
- Electromechanical DC valve Banks
- Sensors integrated with system and LCS
- Power Supply System
- 50 KVA Diesel Genset
- 40 KVA PTO Alternator
- Mains Supply
- 2 x 20 KVA UPS with battery bank
- Air Conditioning Unit
- Thermal Conditioning Unit

II. Preliminary Technical Specifications

The system is to be developed to meet the technical specifications given below.

S. No.	Requirement	Specification
1.	Base frame	(a) Base frame is a fabricated and machined structure. (b) It is made in two parts; the Front Base Frame and Rear Base Frame. (c) It is attached to the vehicle chassis. (d) It has an arrangement for articulation of launch beam, firm seating and locking of the launch beam. (e) Outrigger mounting brackets are welded to the base frame. (f) Base Frame has arrangements for mounting of Hydraulic Tank, Accumulator, TCU, Toolbox, Latch Box, Water Tank etc.
2.	Launch beam	(a) Launch Beam holds three articles on it. (b) It gets articulated to 90^{o} through hydraulic cylinder.
3.	Front and rear saddle	(a) The MAL unit consists of two Front and two Rear saddles. Saddles support the containers.
4.	Front support assembly	(a) The Front Support Assembly consists of three supports. (b) Front Support Assembly lock the Containers when the Launch Beam and Containers are in the horizontal position.
5.	Containers	(a) Container is a cylindrical shell structure (suitably stiffened) for providing necessary support to canister. (b) It contains: Thermal insulation, piping for thermal conditioning system, interfaces for canister mounting, sliding channels which facilitate the sliding of canister inside container and container lifting mechanism to facilitate handling and transportation of the container.
6.	Ground Resting Unit (GRU)	(a) GRU is a cylindrical structure with a spherical end. It facilitates transfer of launch load to the ground.
7.	Hydraulic system	(a) The hydraulic system is integrated on the mobile vehicle. (b) The hydraulic system in the MAL is designed to make the system ready for launch and retrieve. (c) The hydraulic system has options for auto launch (through Launcher Control System) and through manual control system.
8.	Major components of hydraulic system	(a) Oil tank (b) Main pump assembly (c) Auxiliary pump motor assembly (d) Filtration pump motor assembly (e) Alternator drive pump assembly

		(f) Hydraulic cylinders • Beam Locking Cylinder (01 qty) • Front Support Locking Cylinders (06 qty) • Canister Loading Cylinders (03 qty) • Outrigger Cylinders (04 qty) • Beam Articulation Cylinder (01 qty) • Slider Cylinders (03 qty) • Hydraulic Mast Cylinder (01 qty) • Mast Articulation Cylinders (02 qty) • Mast Locking Cylinder (01 qty) (g) Hydraulic Power Pack (h) Sensors (i) Low pressure filter (j) High pressure filter (k) Heater (l) Accumulators (m) Valve Bank (n) Hydraulic Oil
9.	Equipment shelter	(a) Equipment shelter is a lightweight, leak proof, EMI / EMC shelter. (b) It is meant for housing electronic rack mounted equipment and alignment unit. (c) All corner blocks of the shelter are of ISO type.
10.	Power supply system	(a) A rugged mobile 50 KVA DG Set inside shelter. (b) A rugged mobile UPS of total 20 KVA capacity.
11.	Air Conditioning Unit (ACU)	(a) ACU of 3.0-ton capacity at + 55^{o}C is required to maintain the temperature and humidity inside the equipment cabin to provide comfort to operators. (b) ACU shall be mounted on the roof of Equipment cabin. (c) Parts of ACU (Compressor, Condenser, Evaporator etc.) should be compact, rugged, light weight and of reputed make.
12.	Thermal Conditioning System	Thermal Conditioning Unit (TCU) of 3.0-ton capacity is required to maintain the temperature between +5^{o}C to 35^{o}C inside the three containers of Mobile Autonomous Launcher.
13.	EMI-EMC / NBC	Equipment Shelter should be EMI-EMC NBC protected
14.	Sensors and integration with LCS	Fitment of sensors such as Limit switches, Proximity sensors, rotary angle sensors, Angle sensors, Pressure sensors, Pressure switches, Temposonic sensors, Float Switch, Temperature sensors etc. After installation of Hydraulics Systems, supplier should install the necessary sensors and valves for automated operations using LCS-integrated FCS. The tuning of the sensors is also under the scope of Supplier.
15.	Operating conditions	The entire system must function seamlessly in all extreme climatic conditions i.e.

		• Desert conditions (+ 55 ^{0}C ambient), • High altitude area (- 20 ^{0}C & 4000 Above MSL) • Coastal areas (24x7 Marine environment)
16.	Storage Temperature	- 40 ^{0}C to +70 ^{0}C and Relative Humidity 95% @ 35 ^{0}C
17.	Testing / inspection / Trials	• Stage inspection by BAPL and nominated agencies such as CQA / DGQA / MSQAA etc. • Fitment and Functional tests as per ATPs • Static and dynamic load tests • Acceptance tests and Qualification tests of sub systems as per applicable standards JSS: 55555, JSG-0521, JSG-0256, MIL-461 E/F, EMI/EMC shielding effectiveness, CPCB norms and their latest amendments; depending on their applicability on sub systems / systems. • Track trials of the complete mechanically integrated MAL at VRDE, Ahmednagar for evaluation.
18.	Deliverables	(a) Units as per Para I(ii). (b) Tools and spares. (c) Drawings, models and documents as per Para III.
19.	Prototype development	The first integrated system will be under prototype development and will be subjected to Qualification Tests (QT) as per approved document.
20.	MET trials	The system will also be subjected to Maintainability Evaluation Trials (MET), where in the Joint teams of BAPL, MSQAA and End user will evaluate the system for maintainability.
21.	Inspection Agency	DGQA / CQA / MSQAA or any authorised Government Agency defined by End User.

III. APPLICABLE STANDARDS

The following standards and their latest amendments to be followed as reference :-

Process	ASME Sec IX	Welding Process Specifications Welder Qualifications
	ASME Sec II Part C	Welding Consumables
	ASME Sec II Part A Part B	Ferrous and non-ferrous material specifications
	ASTM	Ferrous and non-ferrous material specifications
	IS standards	Painting - Colour shades
	IS standards	Fasteners
	BS 970	Material specifications
	MIL 498	Software development & documentation
Quality	ISO 9001:2008	Quality Management Systems
	ASME Sec V	Nondestructive examinations

	ASME Sec VIII	Acceptance for Non-destructive examinations & Fabrication standard
	IS 2102	For machining tolerances.
	ISO 13920	For fabrication tolerances.
Workmanship	*Will be prepared by Prime Vendor/ Sub Vendor*	
Environmental	JSS 55555	Environmental testing
	MIL 461 E/F	EMI EMC testing

IV. DRAWINGS / DOCUMENTS TO BE SUBMITTED

Following drawings, models and documents are to be generated by the supplier and shared with R&DE(E), Pune (DRDO Lab) / BAPL for review and approval.

S. No.	**Drawing / Document**
1	Manufacturing drawings (AutoCAD format) and Bill of Materials.
2	Detailed 3D model, Design report and FEA report.
3	User manual with Illustrated Spare Part List (ISPL) for each sub system.
4	Maintenance Manuals for each sub system
5	Manufacturer Recommended List of Spares (MRLS) for each sub system.
6	Components Catalogue for bought out items.
7	Draft Quality Assurance Plan (QAP) and Acceptance Test Plan (ATP) will be prepared and submitted to BAPL. Based on draft QAP and ATP, final QAP and ATP will be prepared by vendor after due deliberation and approval by BAPL, MSQAA and R&DE(E). QAP to cover raw material checks, heat treatments checks, welding checks, surface treatment checks, painting checks, visual and dimensional checks, functionality checks, Load tests, Pre-delivery inspection.
8	Test reports as per QAP (Raw material test reports, WPS/WPQ/PQR, stage wise inspection reports, DP reports, certificates of conformance, dimensional inspection reports, Paint reports, Torque application report, Acceptance test / Qualification test report).
9	CoC and data sheet to be submitted against make and model for all electrical items. CoC of FLP panels and Motors to be submitted as part of documents.
10	Detailed list of COTS items, imported items and locally bought / manufactured items for full assembly is to be provided.

V. CRITICALITIES IN MANUFACTURING PROCESS

i. Process Control Specification

The processes adapted during fabrication, machining, assembly shall be stringent, calibrated, and accurate to generate the stringent requirements of

specified tolerances. Only qualified welders as approved by inspection agency shall be employed for the job. The Industry Partner shall employ only qualified welding processes for the job. The welding processes employed should result in following.

(a) Minimum HAZ
(b) Optimum heat input
(c) Optimum balance of phases
(d) Least distortion

The Industry Partner shall evolve a detailed Non-destructive Test Plan (NDT Plan) specifying nature of inspection, acceptance level for each of the welded joints.

ii. Machining

To achieve stringent accuracy, surface finish and features required on various components, the Industry Partner shall employ proper machining processes. Calibrated machine tools, jigs, fixtures, skilled machine operators, properly selected and calibrated inspection tools and gauges.

iii. Assembly

The Industry Partner shall assemble the manufactured container, Ground Resting Unit, Container Saddle Locking mechanism, Container Lowering mechanism, Linear Motion Guide, Articulation Beam and various other mechanisms as given in the General Assembly Drawings. The Industry Partner shall achieve all the functional requirements & specified accuracy / alignment as laid down in ATP.

To facilitate the assembly and to achieve the desired accuracy, the Industry Partner shall rig up infra-structural facilities like provision of working shed with clear height of about 15 m up to crane hook. Other assembly jigs and fixture shall be designed and made by the Industry Partner for facilitating the assembly.

iv. Critical Testing and Inspection

Since this job involves stringent requirements as regard to critical materials, welding, machining accuracy, alignment accuracy in the assembly, it is essential to have critical examination at all stages from raw material quality control to final inspection at site. MSQAA will provide coverage at various stages as per QAP.

Eligibility Criteria and EOI submission:

The eligibility criteria and instruction for submission of EOI are available at our website www.brahmos.com. Only eligible vendors meeting the requirements specified in EOI document “BMR/WDC/EOI/MAL/01” shall be considered.

Eligible manufacturing industries may furnish their Expression of Interest in the prescribed format (Annexure A of EOI document BMR/WDC/EOI/MAL/01) in Sealed Envelope quoting our Demand Notification No. BMR/WDC/DN/MAL/01 with all

essential information and supporting documents. The EOI shall reach on or before 15/07/2025 [16:00 Hrs.] to the following address:

The Executive Director (Production)
BrahMos Aerospace Private Limited
Near DRDL Rear Gate, Kanchanbagh
Hyderabad-500058
Contact No : 040-2408 7095 (LL)

Note: BAPL reserves the right to accept or reject any or all responses. Mere compliance to the EOI terms does not guarantee further consideration for qualification in the procurement process.