

**GOVERNMENT OF INDIA  
DEPARTMENT OF SPACE, ISRO  
VIKRAM SARABHAI SPACE CENTRE  
PURCHASE & STORES DIVISION  
PURCHASE UNIT-III**

Tel: (0471) 2563676/3775/3609

email: spso\_prso\_pur@vssc.gov.in, ps02\_prso\_pur@vssc.gov.in

**EXPRESSION OF INTEREST / अभिरुचि की अभिव्यक्ति**

Ref. No. VSSC/SPRE-PUR/EOI-01/PYROIGN/2021-22

Date: 26/02/2021

वीएसएससी के विनिर्देशनों के अनुसार प्राक्षेपिकीय मूल्यांकन मोटर (बीईएम) के लिए अग्निकी प्रज्वालकों के विकास, योग्यताप्राप्ति तथा उत्पादन एवं आपूर्ति हेतु अभिरुचि की अभिव्यक्ति

**EXPRESSION-OF-INTEREST FOR “Development, Qualification and Production and Supply of Pyrotechnic Igniters for Ballistic Evaluation Motors (BEM) as per VSSC Specifications”**

वीएसएससी, प्रत्याशित बोलीकारों से वीएसएससी के विनिर्देशनों के अनुसार प्राक्षेपिकीय मूल्यांकन मोटर (बीईएम) के लिए अग्निकी प्रज्वालकों के विकास, योग्यताप्राप्ति तथा उत्पादन एवं आपूर्ति हेतु अभिरुचि की अभिव्यक्ति आमंत्रित करता है। इच्छुक पार्टी अपनी अभिरुचि की अभिव्यक्ति, हमारे संदर्भ सं. VSSC/SPRE-PUR/EOI-01/PYROIGN/2021-22 का उद्धरण करते हुए, मोहरबंद लिफाफे में दिनांक 26/03/2021 (16:00 बजे) को या उससे पहले निम्नलिखित पते पर प्रस्तुत करें।

VSSC invites EOI from prospective bidders for Development, Qualification and Production and Supply of Pyrotechnic Igniters for Ballistic Evaluation Motors (BEM) as per VSSC Specifications. Interested parties may furnish their Expression of Interest in Sealed Envelope quoting our Reference No. VSSC/SPRE-PUR/EOI-01/PYROIGN/2021-22 on or before 26/03/2021 [16:00 Hrs.] to the following address :-

वरि. क्रय एवं भंडार अधिकारी / Sr. Purchase & Stores Officer,  
क्रय यूनिट III पीआरएसओ /Purchase Unit- III, PRSO  
आरएफएफ क्षेत्र, इसरो पीओ/ RFF Area, ISRO PO,  
तिरुवनंतपुरम/Thiruvananthapuram- 695022  
फोन/Ph: 0471-256 3775/3609

**नोट/Note :-** मेक इन इंडिया नीति के अनुसार केवल श्रेणी-I तथा श्रेणी-II के स्थानीय आपूर्तिकार इस बोली में भाग लेने हेतु पात्र हैं। / Only Class-I and Class-II Local suppliers as per Make in India policy are eligible to participate in the bid.

हस्ताक्षरित/Sd/-

वरि.प्रधान, क्रय एवं भंडार/ Sr.Head, Purchase & Stores



Government of India  
Department of Space  
**Vikram Sarabhai Space Centre**  
Indian Space Research Organization  
Thiruvananthapuram-695022, Kerala

No. VSSC/SPRE-PUR/EOI-01/PYROIGN/2021-22

Date: 26/02/2021

### **INVITATION FOR EXPRESSION-OF-INTEREST**

**Vikram Sarabhai Space Centre (VSSC)** invites **Expression-Of-Interest (EOI)** for Development, Qualification and Production supply of **Pyrotechnic Igniters for Ballistic Evaluation Motors (BEM)** to VSSC, Thiruvananthapuram. It is proposed to entrust the scope of processing, qualification and supply of Pyrotechnic igniters for BEM as per the VSSC specifications to VENDORS for supply of igniters as per schedule stipulated by VSSC.

This activity is closely related to the launch vehicle programmes of ISRO and hence involves precise timelines and critical milestones in development and production. For the vendor to carry out uninterrupted production, continuity of work force is an essential aspect. Hence, it is necessary that the vendor should have a proven track record and financial/human resources. The vendor is responsible to supply the product as per the production schedule to meet the critical requirements.

The processing of Pyrotechnic igniter includes handling of metal or metalloid fuels, oxidizer, binders, resins, solvents, chemicals etc. It also involves processing and testing of first fire elements, pyrotechnic charges, nitrocellulose sheet and pyrotechnic igniters. Hardware realization, hardware inspection etc. are also in the scope of the work.

Safety and quality are of utmost importance with this product. Proper storage facility for raw materials, provision for chemical analysis by NABL certified laboratory (either in-house or third party), facility for electrical characterization testing of first fire elements, composition analysis, calorific value analysis, closed vessel firing of pyrocharges and pyrotechnic igniters are very essential for this work.

Instruments/equipment such as various types of gauges and measuring instrument for hardware inspection, analytical weighing balance, hot air oven, DC power supply, Data Acquisition System, Bomb Calorimeter, Oxidizer grinding machine, granulator, tableting machine etc. will be required for the processing and testing of pyrocharges and igniters. First fire element processing and testing facility is also essential to execute the work. Overall management of the production also needs to be taken care and all issues and concerns must be addressed on a timely manner adhering to the stipulated production and supply schedule.

Vendor shall have valid PESO, Government of India authorization/license for processing, testing, storage and transportation of explosives/high energy materials.

Interested VENDORS having adequate know-how, in-house facilities, PESO, Government of India license for handling and processing of explosives/high energy materials, ISO certification, qualified and skilled technical personnel, experience in pyrotechnic charges handling and having sound financial background, commitment and desirous of long-term partnership with ISRO are invited to participate in the Expression of Interest. On receipt of EOI, VSSC shall evaluate the proposals, prior to short-listing of Vendors.

This invitation call for EOI does not carry any guarantee for allotment of contract. VSSC team may visit and assess the adequacy of available facilities to take up and execute the aforesaid work successfully.

EOI document can be downloaded from website [www.isro.gov.in](http://www.isro.gov.in) and the same also shall be submitted within the due date and time. **"Expression of Interest"** with all essential information shall reach the Senior Purchase and Stores Officer, Purchase Unit III, Vikram Sarabhai Space Centre, ISRO Post, Thiruvananthapuram 695022, Kerala, on or before **26/03/2021 16:00 HRS.** This EOI is issued as a "Pre-Bid Qualification". Inadequate or incomplete information will result in rejection of the offer. VSSC reserves the right to accept or reject all or any of the EOI. Mere compliance to the EOI terms does not guarantee further consideration for qualification. Also, VSSC reserves the right to hold pre-bid meeting/seek clarifications with all the parties or with some of the parties, on need basis.

Addendum, if any, to this EOI shall be hosted in our website [www.isro.gov.in/](http://www.isro.gov.in/) [www.vssc.gov.in](http://www.vssc.gov.in)



Department of Space  
**Vikram Sarabhai Space Centre**  
Indian Space Research Organisation  
Thiruvananthapuram-695022  
Kerala

No. VSSC/SPRE-PUR/EOI-01/PYROIGN/2021-22

Date: 26/02/2021

**INVITATION FOR EXPRESSION-OF-INTEREST**

**"Expression-Of-Interest for Development, Qualification and Production Supply of Pyrotechnic Igniters for Ballistic Evaluation Motors (BEM) as per VSSC Specifications"**

**1. Preamble**

Vikram Sarabhai Space Centre (VSSC) is the lead Center of Indian Space Research Organisation (ISRO) that specializes in the design and realization of satellite launch vehicles. To meet the increasing demand of launches, ISRO has decided to look forward to participation of private industries for the production and supply of launch vehicle systems and sub-systems. Among other technologies, Ignition system used for solid propulsion is one of the key areas in which VSSC has been working since its inception and in this area also, production through external parties/industries (VENDORS) is being explored. **Pyrotechnic Igniter for BEM** as per VSSC specification is the products being offered for processing, qualification and supply.

The objective is to develop, qualify and supply the pyrotechnic igniters for BEM as per the specification and time schedule stipulated by VSSC maintaining safety and quality protocols. Specifications for the igniter and its pyrocharges along with the drawings of hardware components will be provided by VSSC. Dimensional inspection reports of hardware components and raw material analysis reports shall be submitted to VSSC prior to commence the processing. Processing shall take place only after obtaining clearance and all process logs and test results shall also be submitted to VSSC, prior to dispatch of item. Vendor shall execute the order and supply the igniters after successful qualification.

**2. Scope of work**

Ballistic evaluation motors (BEM) are the sub scale motors used to evaluate the performance of propellant. Motor ignition is achieved using a pyrotechnic igniter having overall dimensions of approx. Dia. 100 mm x length 270 mm. The requirement is approximately 750-1000 nos. over a period of about 2 years including development, qualification and production phases. During the development phase, the requirement is around 100 nos. The remaining numbers will need to be supplied in the production phase on a quarterly basis.

The major activities for the processing of igniters include procurement of raw material, fabrication and dimensional inspection of hardware components as per the VSSC supplied

drawings, processing and qualification of squibs, booster and main charge as per approved procedure, processing of igniters in batches as per approved process document, qualification of igniter using closed chamber testing and dispatch. Fabrication of fixtures and closed chambers shall be taken care by VENDOR and VSSC will provide the necessary support for designing the same, if sought by the vendor. Quality control shall be taken care by party's internal QC and overall quality assurance will be done by VSSC. All deviations in the hardware level, material specifications, and process deviations along with test results shall be referred to VSSC for assessment and clearance purpose. Since the processing of igniters include preparation and assembly of explosive charges, the VENDOR should be conversant with safety practices and carry out all the activities with utmost safety. VENDOR must have the sufficient manpower, machinery and experience to execute the full order so that the explosive processing activities are carried out in the Vendor's site itself and in any case shall not be sub-contracted. No Free Issue Material (FIM) will be issued by VSSC to the VENDOR.

### **3. Support provided by VSSC**

VSSC will provide the specification and process document containing fabrication drawings for components, details of pyro charges and pyrotechnic igniter to execute the order. All necessary support for process development, designing of fixtures and closed chambers will be provided, based on the requirement.

Stage clearance for processing will be provided by VSSC based on the submission and acceptance of dimensional inspection and analysis reports of raw material as well as pyrocharges.

### **4. Major operations during processing**

	<b>Operation</b>	<b>Activities involved</b>
4.1	Hardware Preparation	Material properties verification based on test certificates, fabrication of igniter components viz, head end (AISI 304), igniter holder (AISI 304), charge holder (PVC), squib holder (PVC) and end cap (PVC), identification number providing, visual as well as dimensional inspection and cleaning of hardware
4.2	Pyrocharge processing	Volatile matter and purity analysis for fuel (micron sized pyrotechnic grade metalloid and transition metal) and oxidizer (nitrate based), oven drying and size reduction of oxidizer using mechanical milling process, sieving using vibratory sieve shaker, blending using automatic/manual, binder (cellulose based) preparation, granulation using automatic/manual, pelleting using tableting machines, pyrocharge percentage composition analysis, calorific value analysis of granular charge and pressure output measurement of powder charge and pellets in closed chamber.
4.3	First fire elements (FFE) processing and fixing	Processing of first fire elements of electrical characteristic specified by VSSC, Identification of FFE as per the specification having minimum one-year shelf life, leadwire extension, bridgewire resistance measurement, electrical characterization testing,

		assembly of qualified FFE to squib holder for igniter batch processing, resin weighing, mixing and application as per procedure.
4.4	Booster filling	Preparation of Nitrocellulose (NC) sheet, trimming to required diameter, filling of specified quantity of booster charge in squib holder cavity, resin mixing and sealing with NC disc.
4.5	Squib holder, charge holder assembly to head end	Riveting of squib holder with charge holder using PVC pins, assembly of charge holder with head end, resin mixing
4.6	Main charge filling	Wrapping of charge holder with cellophane tape, weighing of specified qty. of main charge (pellets), filling & tapping, riveting of end cap using PVC pins
4.7	Head end to igniter holder assembly	preparation of CAF gasket, application of PTFE tape for head end to igniter holder threaded assembly
4.8	Visual inspection	Inspection of processed igniter for any damage in hardware, cellophane tape and pellets
4.9	Resistance measurement	Measurement of igniter resistance and recording in log book
4.10	Pressure output measurement	Firing of igniters in closed chamber (volume specified by VSSC) as a part of batch acceptance test and post test assessment of its performance as per the specification.
4.11	Packing & Storage	Packing, sealing & storage in store and Loading to explosive van as specified by VSSC
4.12	Documentation	Generation of production document based on log sheet / log book information as well as product evaluation parameters from laboratory.
4.13	Quality Control	Quality control of all the process operations by qualified engineers/supervisors and recording all the parameters in separate log books. Real-time alerting of quality lapses and corrective action.
4.14	Safety	Deploying process engineers with adequate knowledge of safety for surveillance of all the activities and processing as per safety norms. Ensuring man & material limit for all the activities. Real-time alerting of safety lapses and corrective actions.

## **5. Other requirements**

**Secrecy** : The VENDOR and their production team shall abide by the INDIAN OFFICIAL SECRETS ACT 1923 in vogue and shall provide information of awareness of the above in writing.

## **6. Criteria for scrutiny of EOI proposals**

### **6.1 General**

The EOI shall contain complete information of the VENDOR, its human resources, infrastructure, assets, financial standing, line of business and credentials.

### **6.2 Essential criteria for evaluation of EOI**

**6.2.1 Only Class-I and Class-II Local suppliers as per Make in India policy are eligible to participate in the bid.**

**6.2.2** VENDORS having prior experience in explosives/high energy materials processing and executed similar works for Government of India Organizations only need to apply. Vendor shall have valid PESO, Government of India authorization/license for processing, testing, storage and transportation of explosives/high energy materials

**6.2.3** The Vendor should be a profit making Company during the last 3 financial years (FY-2017-18, 2018-19 & 2019-20) ending 31<sup>st</sup> March of the corresponding year. This shall not be applicable for Government undertakings/Central PSUs/State PSUs. Copy of audited balance sheet to be submitted as proof.

**6.2.4** VENDOR should have prior experience of more than 3 years in working with aerospace/defense/space sectors, an established management structure, human resources with qualification, knowledge, skill and experience in the areas of processing of explosives/high energy materials. This is stipulated due to the critical nature of the work and due to the similarity of these fields in technological sophistication, high precision process, short production cycles, established guidelines in management, control of data in maintaining traceability, comprehensive documentation as well as strict compliance to quality and safety standards.

**6.2.5** The VENDOR should have successfully executed one purchase order of value INR 60 lakhs or two purchase orders of value INR 30 lakhs each or three purchase orders of INR 24 lakhs each in the past 3 years. Purchase orders shall be of explosive devices/end products containing explosives/high energy materials and not of explosive materials alone.

**6.2.6** The VENDOR should be ready to complete developments, qualification within 1 year of Purchase Order and thereafter execute products supply within 1 year of completion of qualification.

**Note:**

1. For Clause No. 6, all information provided by the VENDOR shall be supported with documentary evidence. Brochure, if any detailing the VENDOR profile may be submitted. Copy of the previous similar purchase/work orders executed by the VENDOR also may be appended. Testimonials from customers/users agencies shall also be appended.
2. The final evaluation of the responses will be based on inputs furnished against our criteria, assessment based on facility visit, if required, feedback from customers and overall assessment.

VENDORS who are meeting the requirements as specified in clause 6 of the EOI and are interested in associating with ISRO for Development, Processing, Qualification and Supply of Pyrotechnic Igniters for Ballistic Evaluation Motor (BEM) may submit their interest in writing along with copies of supporting documents for verification/evaluation at VSSC. Qualified VENDORS will be shortlisted and detailed proposals from such VENDORS will be solicited through a RFP. This pre-qualification is valid for a period of 1 year from the date of pre-qualification.

***A checklist (Annexure-1) for the supporting documents to be submitted by the VENDOR along with the EOI is enclosed.***



## Annexure - 1

### **Checklist** for the supporting documents

***(Filled checklist to be submitted by the Vendor along with the Expression of Interest)***

Sl. No.	Document/Proof	Attached or Not-attached with EOI	Remarks
1.	Company registration details		
2.	Proof for experience in the area of explosives/high energy materials		
3.	Certified copies from Chartered Accountant for balance sheet showing profit/loss for the last 3 years (FY 2017-18, 2018-19, 2019-20)		
4.	Documents in support of prior experience of more than 3 years in working with aerospace/defense/space sectors in the processing of explosives/high energy materials		
5.	Copy of previous purchase orders executed with ISRO/Defense/Aerospace sectors		
6.	Company profile, management structure and human resources and their experience		
7.	Company brochure		
8.	Copies of similar purchase/work orders executed by the Company		
9.	Attach proof of successful execution of one purchase order of INR 60 Lakhs or two purchase orders of INR 30 Lakhs each and three purchase orders of INR 24 Lakhs each during the last 3 years		
10.	Testimonials from customers/user agencies		