



भारतसरकार / Government of India
अंतरिक्षविभाग / Department of Space
यू.आर. रावउपग्रहकेंद्र / U.R.RAO SATELLITE CENTRE
एच.ए.एल. एयरपोर्टरोड, विमानापुराडाक / HAL Airport Road, Vimanapura Post,
बेंगलूरु/ BENGALURU – 560 017

Ref No.:URSC/B-PUR/ISIP2025067053/EoI/2026-27

06.04.2026

विषय: चार बार फिक्स्चर का संविरचन के लिए इच्छा की अभिव्यक्ति का आमंत्रण
Invitation for Expression of Interest [EoI]
for Fabrication, Assembly, Testing and Supply of Four Bar Integration Fixture-
Reg

यू.आर.राव उपग्रह केंद्र (यू.आर.एस.सी), (पूर्व में इसरो उपग्रह केन्द्र के रूप में जाना जाता था) सभी भारतीय उपग्रहों की अभिकल्पना, विकास, संविरचन तथा परीक्षण के लिए भारत सरकार के अंतरिक्ष विभाग के तहत भारतीय अंतरिक्ष अनुसंधान संगठन (इसरो) का अग्रणी केंद्र है। वर्तमान में यू.आर.एस.सी, अंतरिक्ष उपयोग हेतु चार बार फिक्स्चर का संविरचन के उत्पादन, स्क्रीनिंग, अर्ह बनाना तथा आपूर्ति हेतु स्वदेशी उद्योग भागीदारों को आमंत्रित करता है।

U.R. Rao Satellite Centre [URSC] (Formerly known as ISRO Satellite Centre), of Indian Space Research Organization [ISRO] under Department of Space, Government of India is responsible for Design, Development, Fabrication and Testing of all Indian made Satellites. URSC is currently inviting indigenous Industry Partners for manufacturing, Screening, Qualification and supply of Fabrication, Assembly, Testing and Supply of Four Bar Integration Fixture for space applications.

केवल उन भारतीय उद्योगों से इच्छा की अभिव्यक्ति को आमंत्रित करने का प्रस्ताव है जिनके पास तकनीकी अवसंरचना है और चार बार फिक्स्चर का संविरचन की अभिकल्पना, विकास, उत्पादन तथा परीक्षण करने की क्षमता है और अर्हता सिद्ध करने के लिए तैयार है। ऐसे विक्रेता जो स्वीकार योग्य अंतरिक्ष श्रेणी के चार बार फिक्स्चर का संविरचन की अर्हता सिद्ध कर सकते हैं, इसकी सुपुर्दगी कर सकते हैं वे इस प्रस्ताव के लिए प्रतिक्रिया दे सकते हैं। चार बार फिक्स्चर का संविरचन की आवश्यकताओं को इस दस्तावेज के साथ अनुबंध के रूप में संलग्न किया जाता है।

This proposal is to invite Expression of Interest exclusively from Indian industries having technical infrastructure and capability for design, development, manufacturing and Testing of Fabrication, Assembly, Testing and Supply of Four Bar Integration Fixture & are ready to perform qualification. Those vendors which are interested to qualify & deliver the acceptable space grade Fabrication, Assembly, Testing and Supply of Four Bar Integration Fixture may respond to this enquiry. The requirements of Fabrication, Assembly, Testing and Supply of Four Bar Integration Fixture is attached as Annexure to this document.

इस संबंध में जिनके पास पूर्णतः सुसज्जित चार बार फिक्स्चर का संविरचन काउत्पादन और परीक्षण करने की क्षमता है अथवा इसे स्थापित करने की प्रक्रिया में है और यू आर एस सी को स्वीकृतअंतरिक्ष श्रेणी के चार बार फिक्स्चर का संविरचन की सुपुर्दगी कर सकते हैं, से इच्छा की अभिव्यक्ति का आमंत्रण करता है।

In this regard, URSC invites the Expression of Interest [EOI] from Indian Industries/Vendors who have or are in the process of establishing full-fledged Fabrication, Assembly, Testing and Supply of Four Bar Integration Fixture Manufacturing and Testing Facility and deliver the acceptable Space Grade Fabrication, Assembly, Testing and Supply of Four Bar Integration Fixture to URSC.

ई ओ आई का मूल्यांकन बोलीकर्ताओं के अनुभव, कार्यक्षेत्र की जानकारी, सुविधा अवसंरचना, प्रस्तावित कार्यप्रणाली और कार्य योजना, कुशल जनशक्ति और उद्योग की वित्तीय ताकत के आधार पर किया जाएगा।

The EOI will be evaluated on the basis of bidder's experience, understanding of scope of work, facility infrastructure, proposed methodology and work plan, skilled manpower and the financial strength of the industry.

यूआरएससी आवश्यकता पड़ने पर ईओआई की प्रक्रिया को रद्द करने/पुनः जारी करने या और जानकारी/विवरण मांगने का अधिकार सुरक्षित रखता है।

URSC reserves the right to cancel/re-issue the process of EOI if the necessity so arises or to seek further information/details.

यदि कोई कंपनी/फर्म किसी भ्रष्ट या धोखाधड़ीपूर्ण व्यवहारमें लिप्त पाई जाती है, तो उसे निविदा प्रक्रिया में भाग लेने से रोक दिया जाएगा और उसके ईओआई दस्तावेज़ पर विचार नहीं किया जाएगा।

Companies/Firms, if found to have indulged in any corrupt or fraudulent practices, will be debarred taking part in the Tendering process and their EOI Document will not be taken up for consideration.

इच्छा की अभिव्यक्ति के साथ-साथ आपूर्तिकर्ताओं/फर्मों को निम्नलिखित जानकारी भी विस्तार से प्रस्तुत करनी चाहिए:

Along with "Expression of Interest" Suppliers/ Firm[s] should furnish the following information also in detail:

1. कंपनियों का पंजीकृत पता के साथ, फोन, फैक्स, ईमेल, वेब आदि।
Registered address of the Companies with Phone, Fax, Email, Web etc.
2. कंपनी/संगठन की स्थिति (स्वामित्व/साझेदारी/निजी/सार्वजनिक लिमिटेड आदि) के साथ मालिक, भागीदारों, निदेशक मंडल आदि के नाम और पता।
Company/Organization Status (Proprietary/Partnership/Private/Public Ltd. etc.) with Name and Address of Proprietor, Partners, Board of Directors, etc.
3. सहयोगी: (ए) भारतीय (बी) विदेशी।
Associates: (a) Indian (b) Foreign.
4. पिछले 3 वर्षों के दौरान प्रमुख ग्राहकों की सूची, पूर्ण पता और उनके संपर्क व्यक्ति।
List of Major Customers during the last 3 Years with full address and their Contact Persons.

5. स्वामित्व वाली/उपलब्ध अवसंरचना सुविधाओं का विवरण।
Details of Infrastructure Facilities owned / available.
6. कंपनी के प्रमुख शेयरधारकों के नाम और पते तथा उनकी शेयर पूंजी का प्रतिशत।
Names and addresses of the major Shareholders of the Company and the percentage of their share capital.
7. नवीनतम वार्षिक रिपोर्ट की प्रति के साथ पिछले 3 वित्तीय वर्षों के लिए पूंजी और कारोबार।
Capital and Turnover for the preceding 3 Financial Years with copy of latest Annual Report.
8. उपलब्ध वित्तीय क्षमता /क्रेडिट सुविधाएं।
Financial Capacity/Credit facilities available.
9. बैंकों का नाम और पता।
Name and Address of Bankers.
10. व्यापार संघ जिससे उद्योग जुड़ा/ जुड़े हैं।
Trade Association to which Industry/ies belong to.
11. संस्था/बिक्री/सेवा कर पंजीकरण संख्या।
Establishment/Sales/Service Tax Registration Number.
12. व्यापार का प्रकार।
Nature of Business
13. बैंकों द्वारा जारी फर्म की सॉल्वेंसी/वित्तीय क्षमता।
Solvency/Financial capacity of the Firm issued by their Bankers.
14. उद्योगों की अन्य कोई प्रासंगिक जानकारियाँ।
Any other information the Industry/ies consider relevant.
15. सामर्थ्य और कमियों के क्षेत्रों को स्पष्टतः प्रकट करते हुए कंपनी/कंपनियों के प्रोफाइल
The Profile of the Company/ies clearly bringing out the areas of Strength and Weaknesses.
16. ई ओ आई में भाग लेने के लिए तकनीकी और संगठनात्मक सामर्थ्य का स्व-मूल्यांकन।
Self-Assessment Technical and Organizational Competence to take part in the EOI.
17. ई ओ आई में उल्लिखित प्रत्युत्तर प्रपत्र
Response forms as mentioned in the Eoi

ईओआई प्रतिक्रिया को पूरा करना/Completion of the EOI Response:

- a. कंपनी/फर्म को ईओआई दस्तावेजों के सभी अनुदेशों, निबंधन और शर्तों, प्रपत्रों, आवश्यकताओं और अन्य सूचनाओं का सावधानीपूर्वक अध्ययन करने की सलाह दी जाती है। ईओआई प्रस्तुत करना ईओआई दस्तावेजों के सावधानीपूर्वक अध्ययन और जांच के बाद किया गया माना जाएगा, जिसमें इसके निहितार्थों की पूरी समझ हो।
The Company/Firms are advised to study all the instructions; Terms and Conditions; Forms; Requirements and other information in the EOI documents carefully. The submission of EOI shall be deemed to have been done after a careful study and examination of the EOI documents with full understanding of its implications.
- b. इस ई ओ आई का जवाब सभी मामलों में पूर्ण और संपूर्ण होना चाहिए। ई ओ आई दस्तावेज द्वारा आवश्यक सभी जानकारी प्रस्तुत करने में विफलता या ईओआई दस्तावेजों के हर पहलू के प्रति पर्याप्त रूप से उत्तरदायी न होनेवाला प्रस्ताव प्रस्तुत करना कंपनी/फर्म के जोखिम पर होगा और इसके परिणामस्वरूप दस्तावेज को अस्वीकार किया जा सकता है।

The response to this EOI should be full and complete in all respect. Failure to furnish all the information required by the EOI document or submission of proposal not substantially responsive to the EOI documents to every aspect will be at the risk of the Company/Firms and may result in rejection of the document.

- c. प्रस्तुत किए गए ईओआई के सभी पृष्ठों पर क्रमांक होना चाहिए और अधिकृत हस्ताक्षरकर्ता द्वारा हस्ताक्षरित होना चाहिए।
All the pages of the EOI submitted must be numbered and signed by the authorized signatory.
- d. ईओआई के संबंध में प्रचार करना सख्त वर्जित है और एजेंसीद्वारा प्रस्तुत किए गए ऐसे प्रचार किए गए ईओआई को अस्वीकार किया जा सकता है।
Canvassing in connection with the EOI be strictly prohibited and such canvassed EOI submitted by the Agency are liable to be rejected.

क्रियाकलापों को अच्छी तरह समझने और यदि कोई संदेह हो तो उसका निवारण करने हेतु यू आर राव उपग्रह केन्द्र द्वारा एक पूर्व ई ओ आई बैठक का आयोजन किया जाएगा। तदुपरांत, आर एफ पी में मांगे गए विवरण के साथ विक्रेताओं को इच्छा की अभिव्यक्ति की प्रतिक्रिया प्रस्तुत करना होगा।

A Pre-Eoi meeting will be arranged by U.R. Rao Satellite Centre, Bengaluru in order to have a better understanding of the activities involved, clarify doubts, if any. Subsequently, the vendor(s) shall submit the response to Expression of Interest along with the details sought in RFP

सुरक्षा अनुमति की व्यवस्था करने हेतु इच्छुक विक्रेताओं को निर्दिष्ट प्राधिकार को सारणी -1 में विनिर्दिष्टानुसार नियत दिनांक से पहले पूर्व ई ओ आई प्रतिनिधियों का विवरण प्रदान करना है। विक्रेता के प्रतिनिधि, को पूर्व ई ओ आई बैठक में उपस्थित होने हेतु एक "प्राधिकारपत्र" लाना होगा। सदस्य प्रतिनिधियों की संख्या एक बोली कर्ता/कंपनी/संगठन से अधिकतम दो (2) होगी।

Interested Vendor[s] may please provide the details of the representative[s] taking part in the Pre-Eoi meeting well in advance prior to dates specified in Table-1 to the Focal Point in order to arrange for Security clearance. Vendor[s] representative shall carry an "Authorization Letter" for attending the Pre-Eoi meeting. Member Representative shall be limited to maximum of two (2) per bidder/company/organisation

विक्रेता द्वारा पूर्व- ई ओ आई पूछताछ पूर्व ई ओ आई बैठक के दिनांक से 05दिन पहले यू आर एस सी ई मेल आई डी psob@ursec.gov.in पर प्राप्त होना होगा। किसी भी परिस्थिति में ई ओ आई बैठक के दिनांक को पूर्वित करने/स्थगित करने के अनुरोध पर विचार नहीं किया जाएगा।

Pre-EOI Queries from vendor [s] shall reach URSC 5 days prior to date of Pre-EOI meeting to Mail ID: psob@ursec.gov.in. Please note that request for "Pre-ponement/postponement of Pre-Eoi meeting" will not be entertained under any circumstances.

उपरोक्त सभी जानकारी के साथ इच्छा की अभिव्यक्ति नीचेदिए गए पते पर, उपरोक्त संदर्भ संख्या का उल्लेख करते हुए, नियत तिथि औरसमय तक पहुंच जानी चाहिए।

“Expression of Interest” with all the above information shall reach the address given below, quoting the above Reference Number on or before the due date & time.

वरिष्ठ प्रधान, क्रय एवं भंडार/Sr. Head, Purchase & Stores
यू आर राव उपग्रह केंद्र/U R Rao Satellite Centre,
एचएएल एयरपोर्ट रोड/HAL Airport Road,
विमानपुरा पोस्ट, बेंगलूरु/ VimanapuraPost, Bengaluru560 017,
कर्नाटक, भारत/Karnataka, India

कृपया ईओआई बैठक संख्या का उल्लेख करते हुए अपने स्पष्टीकरण ई-मेल पर भेजें: psob@urisc.gov.in पूर्वईओआई बैठक में भाग लेने के लिए अनुरोध 14-04-2026 16:00 IST याउससे पहले यहाँ उल्लिखित ई-मेल पर पहुँच जाना चाहिए। तथापिईओआई का जवाब (हार्डकॉपी) केवल ऊपर उल्लिखित डाक पते पर भेजा जाएगा। ईमेल औरफैक्स कोटेशन स्वीकार्य नहीं हैं। नियत तिथि और समय के बाद प्राप्त कोटेशनस्वीकार्य नहीं हैं।

Please address your clarifications quoting the EOI number to E-mail: psob@urisc.gov.in. Request for participation in Pre-Eoi meeting shall reach on or before 14.04.2026@16:00 Hrs IST to the Email mentioned herein. However, response to EOI (hardcopy) shall be sent to above mentioned postal address only). E-mail & Fax quotations are not acceptable. Quotation received after due date & time are not acceptable.

तालिका 1

Table 1:

ईओआई विवरण की प्रस्तुति Submission of EOI Details	
पूर्व-ईओआई बैठक (सम्मेलन कक्ष, स्वगत कक्ष, यू आर एस सी में): Pre-EOI meeting (at Conference Hall, Reception, URSC)	17.04.2026 10:00 Hrs IST
स्पष्टीकरण प्रस्तुत करने की अंतिम तिथि Last date of submission of clarification	23.04.2026 16:00 Hrs IST
ईओआई प्रस्तुत करने की अंतिम तिथि Last date for submission of EOI	02.05.2026 13:00 Hrs IST
ई ओ आई की खोलने की तिथि Opening date of EOI	04.05.2026 14:00 Hrs IST

उपरोक्त सभी जानकारी के साथ इच्छा की अभिव्यक्ति **02.05.2026@ 13:00 IST** बजे तक या उससे पहले उपरोक्त संदर्भ संख्या का उल्लेख करते हुए, नीचे अधोहस्ताक्षरी को पहुँच जानी चाहिए। यह प्रस्ताव पूर्व-ईओआई अर्हता के रूप में आरंभ किया गया है। यूआरएससी बिना कोई कारण बताए सभी या किसी भी इच्छा की अभिव्यक्ति को स्वीकार या अस्वीकार करने का अधिकार सुरक्षित रखता है।

"Expression of Interest" with all the above information shall reach the undersigned, Quoting above Reference Number on or before **02.05.2026 @13:00 Hrs IST**. This proposal is initiated as a Pre-EOI Qualification. URSC reserves the right to accept or reject all or any such "Expression of Interest" without assigning any reasons what so ever.

हस्ता/sd-
व. प्रधान, क्रय व भंडार
Sr. Head, Purchase & Stores

ANNEXURE-TECHNICAL Document

1. INTRODUCTION TO PROJECT

The Four Bar fixture (FBF) is used to orient the spacecraft from zero to 90 degrees to facilitate Assembly Integration and Test operations. It also has provision for spin axis rotation.

This document describes the Four Bar fixture and defines the prerequisites of the vendor for fabrication, assembly, testing and supply of Four Bar fixture (FBF) at URSC-Bangalore.

2. DESCRIPTION

Figure-1 shows the overall view of the Four Bar Fixture (FBF). It consists of a Base Frame over which spacecraft mounting frame is assembled. One steerable twin wheel assembly and two sets of fixed wheels are provided at the bottom of the Base Frame to enable mobility of the fixture. Four sets of worm driven screw jacks with provision for mounting Air pads are provided for stable positioning of the fixture and levelling on the floor. With aid of motor , carriage block, LM guide and rails ,spacecraft can be oriented from zero to 90 degrees on Spacecraft mounting frame. A worm driven spin axis manual drive assembly coupled with a gear driven cross roller slewing ring bearing helps in rotation of the spacecraft about its longitudinal axis.

It contains following major assemblies:

- Base Frame Assembly.
- Electrical Control Panel.

2.1 Base Frame Assembly

The base assembly is a welded box section fabricated using ST-52 grade plates. Interface are provided for assembly of steering wheel, rear wheels, Jacks sub assembly, Lead screws, LM guide and rails, Helical worm geared motor & disc springs. Alignment and assembly of all the standard parts such as lead screw, LM Guides, Geared Motor, etc., are to be performed as recommended in the manual / catalogue of the respective manufacturer.

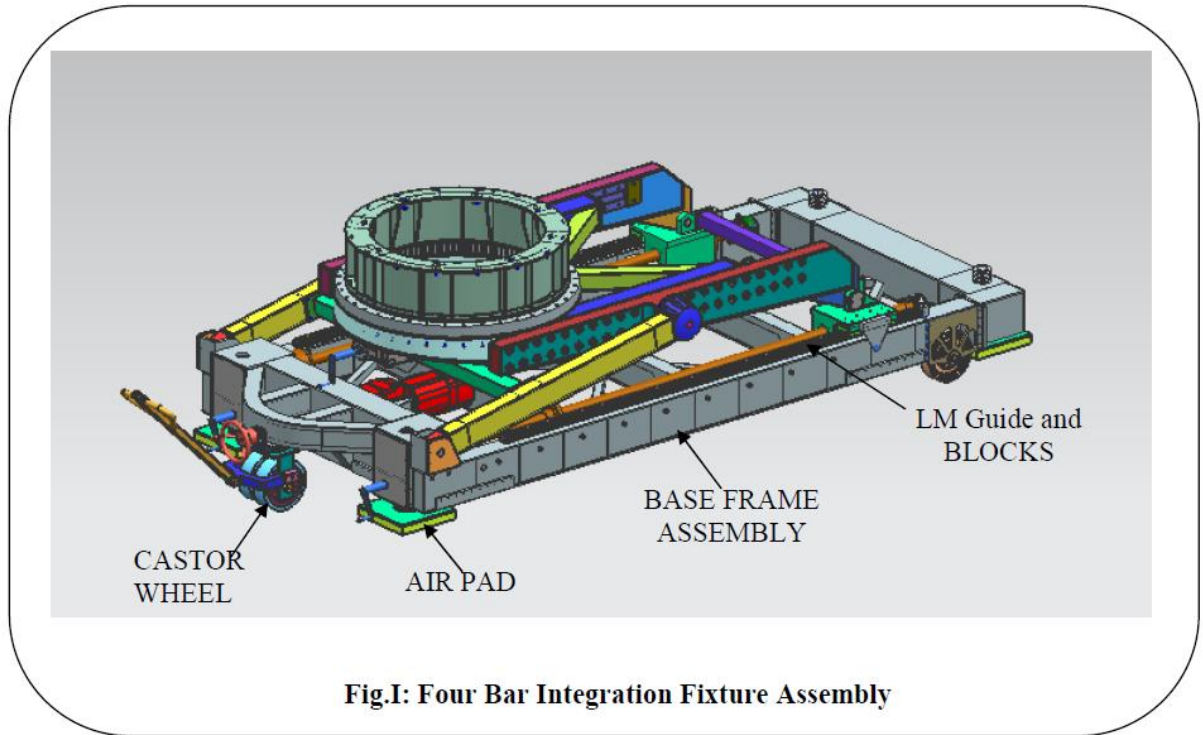


Fig.I: Four Bar Integration Fixture Assembly

2.2 Electrical Control Panel

Electrical control panel controls drives, sensors, hotter. Different drives, sensors, hooter and safety interlock switches. It contains variable frequency drives to control the drive for different motions.

3. SCOPE OF WORK AND DELIVERABLES

S.NO	Description	Quantity
1	Fabrication of Structural sub-assemblies as per drawings	02
2	Assembly of structural parts and standard components <ul style="list-style-type: none"> i) Standard Parts (Geared Motor, Power screw, Caster, Geared coupling Wheels, , Screw Jacks , Disc Springs , Proximity Sensors, Limit Switches, Linear Motion Guides , slew Bearing)and ii) S/C mounting frame (Free issues Material) iii) Electrical control panel 	
3	Testing and Finishing of Four Bar Integration System with Electrical Control panel	
4	Fabrication of Test Mass	01

3.1 Fabrication, Assembly, Testing, and Supply of Four Bar Fixture (FBF)

Vendor shall start the Fabrication, assembly, testing, qualification of Four Bar Fixture (FBF) as per fabrication document and approved design drawings supplied by ISRO. The fabrication and shop floor drawings are to be prepared by the vendor.

Onsite updates on parts & assembly during the fabrication processes, if any, shall be incorporated in the final version of fabrication drawings by the vendor, and handed over to ISRO along with the delivery of the system.

IMPORTANT: The vendor shall provide Non-Disclosure Agreement (NDA) with regard to the copy right of the design drawings and all the relevant documents of this system. Tender Enquiry will be sent to vendors qualified through EOI process ONLY after receipt of duly signed NDA.

3.2 Standard parts procurement and supply

The supply includes all the standard parts included in the sub assembly drawings and major/ critical standards as listed in Table 1. These standard parts are to be procured by vendor and need to be assembled as shown in the assembly drawings adhering to the manufacturer's guideline given in their respective manuals / catalogue of the parts. Other standard parts and accessories which are not part of assembly shall be supplies as accessories along with FBF delivery.

TABLE-1

The following are the major items to procured and integrated in the system. The break- cost of all these components are to be quoted in the commercial offer with make.

S.No	Item
1.	Non-Marking Swivel Castor steer wheels assembly
2.	Non-Marking Swivel Castor fixed wheels assembly
3.	20 Ton metric actuator (worm reducer and lead screw)
4.	Linear motion guide and blocks
5.	Helical worm geared motor
6.	Slewing Ring bearing set
7.	Screw Jack
8.	Bearings
9.	Geared Flexible Couplings
10.	Swivel Hoist
11.	Webbing Slings
12.	DISC Spring
13.	Wireless Load Cell
14.	Canister Cover for LM Guides Flexible Square bellows for Lead Screw
15.	Cover sheet
16.	TOOLS

Note: The Detail list and Specifications of the above parts will be supplied during tender enquiry.

3.3 Wiring diagram, Integration, Testing and Supply of Electric Control Panel for Four Bar Fixture

Vendor should prepare the Electrical Control Circuit diagram for control of geared motors, limit switches, proximity switches, brake release, hooter etc of the FBF as per the basic inputs, specifications and scope of work. The exact quantum and details shall be supplied during tender enquiry.

3.4 Fabrication and Supply of Test mass Assembly:

Vendor shall fabricate and supply 01 nos. of Test mass of approx.6000 kg mass. The test mass shall be modular mass construction with a basic test mass of approx. 1500 Kg and remaining individual test plates of 500Kg each having mounting interfaces to mount over the basic test mass.The Test mass assembly is a Mild steel (IS-2062E350B or equivalent) welded construction have the interfaces to mount on spacecraft adaptor. The drawing of test mass shall be supplied during tender enquiry.

3.5 Miscellaneous Work

- a) Other miscellaneous work like stickers printing and pasting/ fixing of ISRO Logo, handling point, lifting points, earthing points, jack movement directions etc. shall be provided by the vendor.
- b) The vendor shall provide the Cart with steerable wheels for movement of Electrical control panel of FBF. Drawing will be provided during tender enquiry.
- c) The control panel design and layout will be reviewed and cleared by ISRO engineers before implementation.
- d) Supply of five number water resistant Tarpaulin (~GSM 500) for Four Bar Fixture. Details will be provided during tender enquiry.
- e) Corrections due to fabrication, machining, welding, assembly and minor deviation in components necessary for the performance of the system should be implemented by the vendor after ISRO Engineer's approval.

The execution of the project depends on the expertise of the vendor in the following areas:

- Large size Quality structural fabrication to withstand the heavy working loads.
- Precise machining over a large surface with accurate geometric tolerance
- Proper assembly techniques and expertise for Linear motion guides, lead screw, geared motors, large size slew ring bearings, gear drives, screw jacks are primary requirements for proper functioning of the Four Bar Fixture (FBF).
- Expertise with required in-house facilities to perform static load test and performance test with proper safety environment.
- Leak proof& flawless welded joints.

- Maintaining accurate dimensional and geometric accuracy as per the drawings for the proper performance of integrated system.
- Strict compliance to quality during every process such as adapting fixtures for machining, testing & use of proper facilities during Heat Treatment and Stress Relieving processes.
- Expertise in selection and usage of proper measurement techniques & instruments during stage and final inspection.

NOTE: *Compliance matrix is provided in Form A, Form B, Form C. Vendors need to go through the document thoroughly and show the Expression of Interest by filling the compliance matrix.*

4. FABRICATION AND MACHINING

Vendor is required to procure all raw materials, fabricate, machine & assemble the necessary components as per the approved drawings by URSC/ ISRO engineers.

Vendor is responsible for procuring all the standard items as listed in Table-1 such as Linear motion guides, Ball screw, Geared motors, screw jacks, castor wheels, slew ring bearings etc. along with required accessories and integrate them with the fabricated parts.

Vendor shall submit process planning for the major activities, such as structural fabrications, large machining, surface treatment and finishing of large surface, standard parts procurement, integration of sub-assemblies and testing etc., along with technical offer during tender enquiry. The planning shall comprise TYPE OF TOOLING, SOURCE OF SUCH TOOLING facilities, TIME SCHEDULE for all such major activities.

5. INSPECTION AND ASSEMBLY

5.1 Mandatory Inspection Parameters:

Mandatory Inspection shall be carried out by the vendor and submitted for clearance by ISRO Engineers at various stages.

- Raw material Inspection:** Inspection of raw material by NDT methods/certificate of conformance by the vendor is required prior to fabrication process.
- Inspection before Welding:** For all the structural plates and parts which need to be welded, their edge should be prepared properly as per applicable weld standards.
- Inspection in tag welded condition:** All the structural parts will be inspected in tag welded conditions by the ISRO engineer. After obtaining the clearance from ISRO engineer only, full welding shall be started.

- d) Inspection after Welding:* All the welded structures should be checked for proper weld and compliance to standards. NDT test should be done at required places wherever doubted for defects during visual check. Ultrasonic weld inspection will be done for the critical weld locations Vendor shall arrange for a portable ultrasonic/ X-ray weld inspection machine for this purpose wherever required. The weld inspection should be done as per BS EN 970: 1997 (for visual inspection), BS EN1289: 1998 (For NDT-penetrant testing), BS EN 12062: 1998 (NDT general rules) or equivalent applicable standards.
- e) Fabricated Part inspection:* The fabricated part should be inspected as per drawings confirming to geometric and dimensional deviations within specified tolerance limits. The inspection report shall contain the dimensions and geometric relations as per drawing compared with the measured value, deviations observed, etc submitted for auditing by ISRO engineers.
- f) Standard Parts inspection:* All the standard parts given in Table-1 are to be inspected and inspection compliance report is to be submitted for the audit by ISRO Engineers before starting assembly. Following checks should be done by the party:

5.2 Assembly

Proper assembly sequence (as per standard part manufacture catalogue guidelines and ISRO engineers guidelines) should be adopted to meet the functional requirement of the fixture. Any minor corrections (in fabrication assembly and testing) required during the assembly should be carried out without change in the quoted price.

Apart from dimensional inspection and conventional checks, the following qualification tests are to be executed by the party in the given sequence. A dimensional inspection report should be provided for the details as well as the assembly before the load test of the fixture.

Following are the critical assemblies which needs a high level of accuracy both on mounting surface and also assembly skills:

- Linear motion guide assembly
- Lead screw and nut assembly
- Disc spring assembly
- Assembly of mounting frame assembly
- Spin axis drive assembly
- Screw jack assembly
- Castor wheel assembly

6. TESTING AND QUALIFICATION

The Completely assembled Four Bar Fixture is to be tested for workmanship verification under following conditions

6.1 Static Load Test FBF

This test is carried out on the completely assembled FBF to evaluate its strength and stiffness in static condition. The test is carried out in two orientations of the S/C frame sub assembly, i.e., S/C axis vertical and S/C axis horizontal.

S/C Axis Vertical

After ensuring that the s/c mounting frame adaptor is horizontal and the complete fixture is on jacks, on a levelled surface, a dummy load of 4375 kg of CG 2500 mm from spacecraft mounting adaptor having interface to match the adaptor (M12 – 16 Nos. on 1200 PCD) is mounted and rigidly fastened with the adaptor. The load should be added in steps of 500 kg and the corresponding deflections at the S/C mounting frame and base frame are to be recorded.

The setup is left undisturbed for 2 hours. After 2 hours, the loads are removed in the same sequence as loading and the corresponding deflections are observed.

S/c axis Horizontal

The fixture is operated to orient the s/c axis horizontal. The loads are attached in steps of 500 kg to the adaptor similar to the above test and the corresponding deflections are noted. The procedure outlined above shall be followed for this test also.

Major Equipment /Facilities to be arranged by Vendor:

- Simulation masses :5000 kg.(in steps of 500 kg)
- Dial gauge 0 to 50mm with 0.1 least count - 20 nos.
- 300 mm scale and Vernier.
- Dye penetrate test kit.

6.2 Performance test on the drive assembly

The drive assembly is used for tilting the S/C from vertical to horizontal position and rested on jacks.

The drive system is operated from s/c axis vertical orientation to a horizontal orientation without Load for checking the smooth operation of the system. The current drawn by the system in all the three phases are recorded during forward and reverse directions. The functioning of the limit switches is verified. The time taken from vertical to horizontal orientation is also observed. The above procedure is repeated for 50 cycles.

A load of 3125 kg having a CG of 2500 mm should be assembled with the MS adaptor in the s/c vertical orientation. With this mass, the drive system is operated and the time taken, current drawing in the three phases for forward and reverse strokes and the functioning of the limit switches are verified.

All operations through electrical control panel, pendant and manual hand wheels are carried out for a minimum of 50 cycles. The time taken for manual forward and reverse operations is also measured. The deflection of both the 20-ton jacks during each cycle is observed and noted.

After completion of the above test, the jacks are relieved and the fixture is kept on the wheels. The assembly with 3125 kg load is towed using tow bar to check for mobility and manoeuvring on a concrete floor.

Equipment / Facilities:

1. Simulation masses up to 3125 kg and it's C.G.:2500mm from the mounting surface. A single mass with mounting holes Ø 13 – 16 Nos on 1200 PCD at its base to suit the FBF interface. This mass should be rugged in construction and interface surface shall be machined to match at FBF mounting plane – AA.
2. Ammeter for measuring current.

6.3 HANDLING AND MOBILITY TESTS

The empty fixture and fixture with the working load shall be handled using a handling system with the attachment fitted at the designated and satisfactory handling shall be demonstrated.

The fixture shall have the working load on the spacecraft mounting frame and the assembly shall be moved on the plane level surface to demonstrate free movement with load. Care shall be taken to prevent any damage to the wheels during the test.

Visual observations are made to be to find no cracks or permanent deformation of any of the parts/fasteners. All the welded joints are subjected to Dye penetrate checks for any weld defects. After load test, all fasteners has to undergo radiography/ X-ray test.

This test is to be carried out on the completely assembled FBF to evaluate its workmanship, strength & stiffness in static condition.

7. DELIVERY OF THE FIXTURE

The finished FBF with control panel e has to be neatly covered and delivered to URSC stores safely. Care should be taken during transportation to avoid damages (such as scratches) on the painted parts and failure of parts. In all aspects completed fixture shall be delivered to URSC-ISITE, Bangalore **6 months** from date of acceptance of purchase order.

8. Procedure for finalising Contract

Execution of Fabrication, Assembly, Testing and Supply Four Bar Fixture

The entire exercise of selecting viable vendors is carried out in two stages i.e. Expression of Interest (EOI) stage and Request for Proposal (RFP) Stage. The following is the flow chart depicting the structure process flow that would be adopted in the vendor selection process.

Steps:

- 1) Call for Expression of interest
- 2) Pre EOI conference
- 3) EOI Response Submission

- 4) Technical & Managerial Competence Audit EOI Evaluation & short listing of Vendors of RFP
- 5) Release of Request for proposal (RFP)
- 6) RFP Response submission in Two part
- 7) Opening of Price Bid
- 8) Vendor Commercial Evaluation & selection

Note: Vendors qualified in EOI will be given opportunity to participate in tendering process

9. Terms and Conditions

9.1 Terms and Conditions: Finance

This EOI is for Fabrication, Assembly, Testing and Supply of Four Bar Fixture does not have any relation with respect to the previous Tender floated for similar activities.

9.2 Terms & Conditions: Organization Portfolio

- The applicant may be a Proprietorship, Registered Partnership Firm, One Person Company (OPC), Indian Company/Domestic Company-Private or Public Company-Listed or Unlisted. Vendor shall submit the interest in the given EOI response sheet
- An Indian Company would be deemed to be owned by Indian Citizen and by an Indian Company if more than 51 percent of equity interest in the company is beneficially owned by Resident Indian Citizens and Indian Companies that are, in turn, ultimately owned and controlled by Resident Indian Citizens.
- Control has been defined as the right to appoint the majority of the Directors or to control management and policy decisions, including by virtue of their shareholdings or management rights or shareholders or agreement or voting arrangements.
- The applicant must be registered in India as required by law with minimum three years of continuous operation up to the date of publication of this EOI.
- The vendor should also have a valid GST registration. The Vendor should submit Self attested copies of the Certificates of Incorporation and other certificates that are legally required for carrying out its business activities in India.
- The certificates should be valid at the time of EOI submission and should be certified by an authorized signatory. A copy of PAN Card should also be submitted.

- Income Tax Returns of the last three assessment years duly certified by a Chartered Accountant has to be submitted.
- An undertaking (self-certificate) is to be submitted that, the Organization hasn't been blacklisted by any Central/ State Government Department/ Central Government funded organizations/ State Government funded organizations/ World Bank, or other World Bank organizations and is not under any illegal expression by Government of India.
- The applicant, should not have, during the last three years, either failed to perform on any agreement, or been expelled from any project or agreement or have any agreement terminated for breach by the applicant.
- Persons who are individually or institutionally, in any manner, involved with the selection/screening process of the EOI, and employees of ISRO/URSC are ineligible for applying.
- An undertaking (self-attested) is to be submitted that there has been no outstanding bankruptcy, judgment or pending legal action that could impair operating as a going Concern. Also the Vendor must be solvent, in the Legal Court of Law

9.3 Terms & Conditions: General

- This EOI is not an offer and is issued with no commitment. URSC reserves the right to withdraw the EOI or change or vary any part thereof at any stage. URSC also reserves the right to disqualify any vendor/proposal, should it be so necessary at any stage.
- Timing and sequence of events resulting from this EOI shall ultimately be determined by URSC.
- By submitting the EOI proposal, each vendor shall be deemed to acknowledge that the vendor has carefully read all chapters of this EOI, and has fully informed himself as to all existing terms and conditions.
- The EOI and all correspondence and documents shall be written in English.
- Vendor shall compulsorily fill up the Response format and compliance matrix
- **Participation of Vendors for Pre-EOI Meeting:** A Pre-EOI Meeting will be arranged at UR Rao Satellite Centre, Bengaluru in order to have a better understanding of the EOI document with regard to Technical and Commercial aspects, clarify doubts if any, and other allied details. Interested vendors are requested to take part in the Pre-EOI meeting. Attending Pre- EOI meeting is mandatory.
- **Non-Disclosure Agreement:** All documents prepared for fabrication, assembly, testing procedures, drawings, schematics and any other communication revealed during the project will be exclusive property of URSC and vendor shall have no right whatsoever

on them and shall not disclose to any other person/party not involved in the execution of the allotted work.

- Further, the vendor must not quote any of these works in any publications or to any of their customers/public domain without explicit permission from URSC and adhere to strict confidentiality.

GST Registration:

IMPORTANT NOTE:

Government of India has implemented Goods and Services Tax [GST] w.e.f 01.07.2017. The Vendor should mandatorily possess a valid GSTIN along with the GST Registration Certificate.

10. Secrecy and Security

- All documents prepared for test procedures, log books, drawings, schematics and any other communications, codes revealed during the process realization will be exclusive property of URSC and vendor shall have no right what so ever on them.
- These documents are to be strictly confidential and should not be reproduced, copied / transmitted to any media
- Further, the vendor must not quote any of these works in any publications or to any of their customers without explicit permission from URSC and adhere to strict confidentiality.

11. Eligibility and Evaluation criteria

Eligibility Criteria:

- i. The Bidder should be a company registered under Indian Companies Act 1956 or a firm registered under Limited Liability Partnership (registered under LLP Act, 2008). The industry should have been in existence for a minimum of three years in India.
- ii. Vendor shall mandatorily submit ISO 9001: 2015 / aerospace AS9100D certification.
- iii. The realization of FBF requires skilled & experienced work force as it is being interfaced and executed directly on the spacecraft. Vendor shall have good experience in realization this kind of critical systems. As the activity concerns safety, protection aspects & critical sequences, it is mandatory to provide/submit documents with aerospace/ space sector in the domain of mechanical system realization & testing or of similar nature as proof.
- iv. Vendor shall have minimum infrastructure having covered industrial shed, smooth floor surface with strong foundation, welding facilities, machining centers and testing and

inspection equipment. Submit proof in the form of document, photographs and address. URSC reserves the right to inspect the same, if required.

- v. The bidder should not have been blacklisted by any Central/State Government institution. A signed declaration to this effect must be submitted along with the EOI response.

Note: Startup and MSME companies/organizations shall also satisfy the above-mentioned eligibility and evaluation criteria.

12. TECHNICAL Evaluation Process:

- a) URSC will evaluate the responses of the bidders.
- b) The engineers by URSC shall evaluate the responses to the EOI and all supporting documents & documentary evidence. Inability to submit requisite supporting documents or documentary evidence, lead to rejection of the EOI proposal.
- c) Bidder need to submit the supporting documents as per technical evaluation matrix. Each of the responses shall be evaluated to validate compliance of the bidders according to the eligibility criteria.
- d) The decision of the TEC in the evaluation of responses to the EOI shall be final. No correspondence will be entertained outside the evaluation process of the Committee.
- e) To evaluate the proposals, URSC reserves the right to visit the premises of industries participated in EOI with a notice of 24 hours. The evaluation of vendors will be based on response forms and verification of the same during the industry visit.
- f) The TEC may ask for presentation / meetings / clarifications with the bidders to evaluate its EOI response.
- g) The TEC reserves the right to reject EOI responses.
- h) A Request for Proposal (RFP) will be issued only to the short- listed (technically qualified) agencies from this EOI and asked to submit their detailed techno-commercial bid in two parts.

13. Technical Evaluation Matrix

MANDATORY INHOUSE FACILITIES AT VENDOR PREMISES			
S.No	Description	Marks	Response Form
1.	<p>Facilities</p> <ul style="list-style-type: none"> Covered Fabrication Shop with Area 10mx6m with 8metes (minimum) height for carrying out Fabrication activities (10marks) EOT crane with capacity minimum of 10-ton, cross travel minimum 4 meters and vertical travel 6 meters (5marks) Assembly Floor area of dimensions 6x3m with height of 6meteres.Floor area shall be dusting free and smooth surface for assembly and testing operations. (10marks) 	25	Form F: Annexure-1
2.	<p>Fabrication</p> <p>Demonstrate past experience in handling complex fabrication specifically.</p> <ul style="list-style-type: none"> MS welded Structures (10marks) Availability of certified and qualified welders for welding IS2062 and SS304 materials (10 Marks) Availability of Vibration Stress reliving system (5marks) 	25	Form F: Annexure-2
3.	<p>Metrology</p> <p>1) The vendor must possess operational and calibrated dimensional inspection equipment including but not limited to</p> <ul style="list-style-type: none"> Surface plate 1mx10 (1mark) Electronic Micrometer and Digital caliper (1mark) Precision Feeler gauges (1mark) Digital dial gauges with 50-100 mm stroke (1mark) Thread plug and Ring gauges (1mark) <p>2) Availability of NDT inspection facilities for testing the welding defects and precision components (5marks)</p>	10	Form F: Annexure-3
4.	Capability in executing precision Assembly and alignment jobs which includes linear motion guides, power screw, AC induction motor, Gear boxes, slewing ring bearings etc.	10	Form F: Annexure-4
5.	Capability of testing of welded structures of dimension 5mx2m using simulation mass minimum of 3 Ton (5marks)	5	Form F: Annexure-5

OVER ALL MARKS	75	
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Facilities for executing the project			
S.No	Description	Marks	Response Form
6.	Capability of Generation of Fabrication Drawings <ul style="list-style-type: none"> • Generation of Fabrication drawings in Siemens NX Software following drawing standards (5marks) 	5	Form F: Annexure-6
7.	Raw Material and Standard Bought Out items <ul style="list-style-type: none"> • Certification of raw material as per NABL standards (1 marks) • Capability in archival and traceability of Raw materials from initial phase to final phase of fabrication (1marks) • Capability in Procurement of standard items likes linear motion guides, power screw etc. (1 marks) 	3	Form F: Annexure-7
8.	Machining <ol style="list-style-type: none"> Availability of CNC machining facility (min 3axis) with minimum bed size of 4mx3m, with vertical travel of 1.6m <ul style="list-style-type: none"> • CNC Milling Machine (3marks) • CNC Turning machine (3marks) • CNC Vertical machining centers (3marks) Availability of Heavy machineries <ul style="list-style-type: none"> • Plano Milling machines (1mark) • Vertical turret Lathes (1mark) • Radial Drilling machines (1mark) 	12	Form F: Annexure-8
9.	Electrical Activities Capability in PLC programming and Integration of electrical components like MCB, VFD, HIM, relays, contacts, Limit switches, Sensors etc. (5 marks)	5	Form F: Annexure-9
OVER ALL MARKS		25	

Note:

- Vendor has to clearly indicate whether activities are performed using in-house facilities or outsource facilities
- If Vendor is outsourcing, completely details of outsourcing party shall be furnished during submission of EOI
- Vendor will be qualified in EOI if vendor scores ≥ 75 marks

14. RESPONSE FORMS AND ANNEXURES

FORM A, B, C, D and E are mandatory forms to be filled by vendor. Without submission of these forms, FORM F will not be considered and vendor will not become eligible EOI.

Form – A: General details of the industry

1	Name of the Industry	
2	Year of Establishment	
3	Core capabilities of the industry	Type brief profile of the industry not more than 2 pages (Any other report/s can be provided as Annexure)
4	Head office location and address with contract number & email id:	
5	Local address in Bangalore, if any, with contact number & email id:	
6	Addresses of manufacturing and/or operational setup in India (highlight the address where ISAC representative will visit for audit)	1. 2. 3
7	Corporate website URL:	

Form B - Experience in Aerospace sector: in case the industry is having/had any Purchase order/work order/contract (not more than 6 Purchase orders) from June 01, 2020 onwards in Skilled manpower engaged for realization of fixtures for aerospace industries, provide the details in the specified format for each work order.

Document-1

Name of the Aerospace Industry	
Scope of work	
PO Details	
Present Status of the PO	
Type of System*	
Application **	
In any part of the above work subcontracted to other industries? If yes provide the details	
Name of the sub-contracts	Description of activity outsourced to sub-contractors

Form C - Financial Details**Financial information of Industry /Lead Industry in case of consortium**

Heads	FY 2022-23	FY 2023-24	FY 2024-25
Revenue from operations (in INR Crores)			
EBTD (Earnings Before Tax and Depreciation)			
% of Revenue from Aerospace Segment/Unit			
Net Worth			
Share capital			
% of shareholding by Indian			
% of Shareholding by Foreign			

Form D: Mandatory supporting documents

- I. Auditor certified statements for the last three years, FY 2022-2023, FY 2023-24 and FY 2024-25 as Annexure (please provide the profit and loss statement and balance sheet)
- II. Unaudited certified statements certified by the company auditors for the latest year 2025-26 (in case auditor certified statement for 2024-25 is not available). Certification by the company auditors supporting the revenue break up.

Form E: Quality Management:

1	State the quality policy of the industry (max in 200 words)	(type overall quality management system and mention about quality department reporting, non-conformance management system, quality control practices, records maintenance, onsite activity QMS, internal review mechanism)	
2	Quality standards /certification obtained by the Industry [Tick the appropriate box]		AS9100Rev C
			Applicable as per ISO 9001 standard
			Others (if others kindly mention)

Form F

Mandatory Requirements: Failure to demonstrate full compliance (“Complied”) with any item in FORM F annexures shall result in the immediate disqualification of the vendor. These criteria are non-negotiable conditions for execution of job

Evidence: The vendor must reference specific annexures or page numbers in the “Remarks/Supporting Documents” column where proof of compliance can be verified

Annexure-1			
Sl.NO.	Description	Compliance status (YES/NO)	Remarks/Supporting Documents/Details Offered by Vendor
1	Covered Fabrication shop floor with minimum Area 10mx6m for carrying out Fabrication of FBF activities		Shop floor area
2	Assembly Floor area of dimensions 6x3m with height of 6meteres.Floor area shall be dust free and smooth surface for assembly and testing operations.		Assembly floor dimension <ul style="list-style-type: none">• Length:• Width• Height
3	EOT crane with minimum capacity of 10-ton, Vertical travel , vertical travel 6 meters, cross travel minimum 4 meters and speed 3m to 5m /min is required for operations.		<ul style="list-style-type: none">• Crane capacity• Vertical Travel• Cross Travel

Annexure-2			
Sl.NO.	Description	Compliance status (YES/NO)	Remarks/Supporting Documents/Details Offered by Vendor
1	Capability in structural Fabrication of MS Structures		Details of welded structure showing dimensional and welding details:
2	Availability of certified and experienced welders for welding Mild steel and SS304.		No of AWS or ISO certified welders:
3	Availability of Non Heating stress reliving equipment like Vibration Stress Reliving machine		Provide documentary proof

Annexure-3			
Sl.NO.	Description	Compliance status (YES/NO)	Remarks/Supporting Documents/Details Offered by Vendor
1	Availability of NDT inspection facilities for testing the welding defects and precision components		Provide documentary proof
2	Availability of Vibration Stress reliving system		Provide documentary proof
3	Availability of inspection tools with calibration certificate <ul style="list-style-type: none"> • Surface plate • Electronic Micrometer and Digital caliper • Feeler gauges 		Provide documentary proof

	<ul style="list-style-type: none"> • Digital dial gauges with 50 mm stroke • Thread plug and Ring gauges 		
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Annexure-4			
S.No	Description	Compliance status (YES/NO)	Remarks/Supporting Documents/Details Offered by Vendor
1	Capability in executing precision Assembly and alignment jobs which includes linear motion guides, power screw, AC induction motor, Gear boxes, slewing ring bearings etc.		Provide documentary proof

Annexure-5			
SI.NO.	Description	Compliance status (YES/NO)	Remarks/Supporting Documents/Details Offered by Vendor
1	Capability of testing of welded structures of dimension 5mx2m using simulation mass minimum of 3 Ton		Provide documentary proof

Annexure-6				
S.No	Description	Compliance status (YES/NO)	Operational model (specify : "In-house" or "Outsource")	Remarks/Supporting Documents/Details Offered by Vendor
1	Capability of Generation of Fabrication Drawings in Siemens NX11 or higher version software following drawing standards			<ul style="list-style-type: none"> • Software: • Version:

Annexure-7				
Sl.NO.	Description	Compliance status (YES/NO)	Operational model (specify : "In-house" or "Outsource")	Remarks/Supporting Documents/Details Offered by Vendor
1	Material Testing as per NABL standards			Provide documentary proof
2	Archival and Traceability of Raw materials form initial phase to final phase of fabrication			Provide documentary proof
3	Experience in Procurement of standard items likes linear motion guides, power screw, AC induction motors etc			Provide documentary proof

Annexure-8

Sl.NO.	Description	Compliance status (YES/NO)	Operational model (specify : “In-house” or “Outsource”)	Remarks/Supporting Documents/Details Offered by Vendor
1	Availability of CNC machining facility (min 3axis) with minimum bed size of 4mx3m, with vertical travel of 1.6m <ul style="list-style-type: none"> • CNC Milling Machine • CNC Turning machine • CNC Vertical machining centers 			i. Machine Model Number ii. Machine Make iii. Table Movement <ul style="list-style-type: none"> • X –axis travel • Y- axis travel • Z- axis travel
2	Availability of Heavy machineries <ul style="list-style-type: none"> • Plano Milling machines • Vertical turret Lathes • Radial Drilling machine 			
3	Capability in executing machining jobs with precise tolerance and surface finish.			Provide documentary proof

Annexure-9				
SI.NO.	Description	Compliance status (YES/NO)	Operational model (specify : “In-house” or “Outsource”)	Remarks/Supporting Documents/Details Offered by Vendor
1	Capability in PLC programming and Integration of electrical components like MCB, VFD, HIM, relays, contacts , Limit switches, Sensors etc.			Provide documentary proof

Note:

- i) Provide Documentary Proof as supporting documents, topics where ever it is deemed necessary sheets can be attached
- ii) Photographs/brochure/Catalogues of facilities, equipment may be provided as part of annexures
- iii) Clearly fill the column with the regard to the availability of facilities in-house (OR) outsourcing.
- iv) All these facilities will be visited and evaluated as part of technical evaluation process. Industries need to cooperate in showing their facilities, failing to which they would be disqualified.

15. Compliance of matrix

S.No	Description	Compliance (YES/NO)
1	Introduction to Project	
2	Description	
3	Scope of work and Deliverables	
4	Fabrication and Machining	
5	Inspection and Assembly	
6	Testing and Qualification	
7	Delivery of Fixture	
8	Procedure for Finalising the contract	
9	Terms and Conditions	
10	Secrecy and Security	
11	Eligibility and Evaluation Criteria	
12	Technical Evaluation Process	
14	Technical Evaluation Matrix	
15	Response Forms and Annexures	

16. EOI Response Format Contents

The proposal should be submitted as an Expression of Interest (EOI) as a collation of the forms as mentioned in para 14, clearly providing the details requested with documentary proof/supporting documents as Annexures. Vendor has to fill the compliance matrix as per para 15. All these inputs shall also be furnished in MS word document neatly typed in the said formats.