भारत सरकार/ Government of India
अंतरिक्ष विभाग/ Department of Space
इसरो जड़त्वीय प्रणाली यूनिट (आईआईएसयू)/ ISRO INERTIAL SYSTEMS UNIT (IISU)
तिरुवनंतपुरम/ Thiruvananthapuram - 695 013

अभिरुचि की अभिव्यक्ति के लिए सूचना का आवेदन / NOTICE FOR INVITING EXPRESSION OF INTEREST

अंतरिक्ष यान केलिए प्रतिक्रिया पहिया समुच्चय की प्राप्ति / Realization of Reaction Wheel Assemblies for Spacecraft

विज्ञा.सं./ सा.नि/विज्ञा/ईओआई-04/2026 दिनांक 25 नवंबर, 2026
ADVT.NO. IISU /PT/ADVT/EOI-04/2026 dated November 25, 2026

भारत के राष्ट्रपति के लिए और उनकी ओर से, वरिष्ठ क्रय एवं भंडार अधिकारी, इसरो जड़त्वीय प्रणाली यूनिट (आईआईएसयू), वट्टियूरकावु, तिरुवनंतपुरम, प्रस्ताव हेतु अनुरोध (आरएफपी) जारी करने के लिए लघुसूचीबद्ध किए जाने हेतु प्रतिष्ठित एवं विश्वसनीय विक्रेताओं से "**अंतरिक्ष यान केलिए प्रतिक्रिया पहिया समुच्चय की प्राप्ति**" के लिए अभिरुचि की अभिव्यक्ति (ईओआई) आमंत्रित करते हैं।

For and on behalf of the President of India, Senior Purchase and Stores Officer, ISRO INERTIAL SYSTEMS UNIT (IISU), Vattiyoorkavu, Thiruvananthapuram invites Expression of Interest (EoI) from reputed and reliable vendors, to be shortlisted to issue Request for Proposal (RFP) for the **"Realization of Reaction Wheel Assemblies for Spacecraft".**

संभावित एवं विश्वसनीय विक्रेताओं से अनुरोध है कि वे अपनी ईओआई मोहरबंद लिफाफे में, जो वरिष्ठ क्रय एवं भंडार अधिकारी, आईआईएसयू क्रय, वट्टियूरकावु पी.ओ. तिरुवनंतपुरम - 695 013 का संबोधन करता है, ऊपर "**ईओआई -अंतरिक्ष यान केलिए प्रतिक्रिया पहिया समुच्चय की प्राप्ति**" लिखकर, उपर्युप्त जैसे प्रस्तुत करें।

Potential and reliable vendors are requested to submit their EoI in a sealed cover superscribing " **EOI-Realization of Reaction Wheel Assemblies for Spacecraft**" addressed to Senior Purchase and Stores Officer, IISU Purchase, Vattiyoorkavu P.O, Thiruvananthapuram-695 013, as per below schedule:-

स्पष्टीकरण नियत तिथि / EoI Clarification Due Date	**03/12/2026 को/ upto 14.00 बजे/ hrs. तक**
पूर्व- ईओआई चर्चा पर / Pre-EoI Discussion on	**09/12/2026 at 10.00 hrs.**
ईओआई प्रस्तुतीकरण की नियत तारीख / EoI Submission due date	**08/01/2027 को/ upto 14.00 बजे/ hrs तक**

विस्तृत निबंधन एवं शर्तें, लघुसूचीबद्ध करने के पात्रता मानदंड, लघुसूचीबद्ध करने हेतु दिशा-निर्देश हमारे **ईओआई दस्तावेज़** पर उपलब्ध हैं। इच्छुक संभावित विक्रेता हमारे संदर्भ संख्या आईआईएसयू/पीटी/एडीवीटी/ईओआई-04/2026 का उद्धरण करते हुए **08 जनवरी, 2027 को 14.00 बजे या उससे पहले** वरिष्ठ क्रय एवं भंडार अधिकारी, आईआईएसयू क्रय, वट्टियूरकावु पी.ओ. तिरुवनंतपुरम 695 013 को अपनी अभिरुचि की अभिव्यक्ति प्रस्तुत कर सकते हैं।

Contd.....

Detailed Terms and Conditions, eligibility norms for short-listing, guidelines for short-listing are available in our EoI document. Interested prospective vendors can furnish their Expression of Interest quoting our reference No. IISU/PT/ADVT/EOI-04/2026 **on or before 08 January, 2027 [14:00 Hrs.]** to Senior Purchase and Stores Officer, IISU Purchase, Vattiyoorkavu P.O, Thiruvananthapuram 695 013.

शुद्धिपत्र, यदि कोई हो तो, केवल हमारे वेबसाइट www.isro.gov.in पर प्रकाशित किया जाएगा।
Corrigendum, if any will be published in our website www.isro.gov.in only.

हस्ताक्षरित / Sd/-
वरिष्ठ क्रय एवं भंडार अधिकारी/ Senior Purchase & Stores Officer
दूरभाष सं./ Phone No.0471-2569317/2569547
ई- मेल/ Email: spso_iisu_pur@vssc.gov.in

EXPRESSION OF INTEREST (EOI)

Realization of Reaction Wheel Assemblies for Spacecraft



ISRO Inertial Systems Unit

Indian Space Research Organization

Government of India

Table of Contents

General Terms 5
1.1 GOALS OF THIS EXPERSSION OF INTEREST (EoI) 6
1.2 EoI ISSUING AUTHORITY 6
1.3 CALENDER OF EVENTS 6
1.4 AVAILABILITY OF THE EoI DOCUMENTS 6
1.5 PRE-BID DISCUSSION 6
1.6 VENUE & DEADLINE FOR SUBMISSION OF PROPOSALS 6
1.7 REQUIRMENT ON THE PRODUCTION CENTRE 7
Scope of Services 8
2.0 BACKGROUND 9
2.1 About ISRO Inertial Systems Unit 9
2.2 Need of Expression of Interest 9
2.3 Scope of Activities by Vendor towards Reaction Wheel Production 9
2.4 Responsibilities by IISU 11
2.5 Reaction Wheel Specifications 11
3.0 FABRICATION AND INSPECTION 12
3.1 Component Details 12
3.2 Pre-Requisite of Fabrication & Metrology Facility 13
3.3 General Term and Conditions for Material Procurement 13
3.4 Possible Suppliers of Material 13
3.5 Guidelines for Fabrication and Inspection of Components 14
3.6 Acceptance Criteria 14
3.7 Fabrication and Inspection 15
3.8 List of Equipment used for Fabrication and Inspection 15
4.0 Bearing Unit Realization 15
4.1 Bearing Unit Component List 15
4.2 Consumables for Bearing Unit Realization 16
4.3 Equipment Required for Bearing Unit Realization 16
4.4 Bought Out/Standard Components 18
4.5 Specification for Pecision Angular Contact Ball Bearings 18
5.0 Drive Motor Realization 19
5.1 Drive Motor Component List 19

5.2 Consumables for Motor Realization 19
5.3 Equipment required for Motor realization 20
5.4 Bought out components 20
5.5 Drive Motor Specifications 20
5.6 Motor Realization Flowchart 20
6.0 System Integration 21
6.1 Parts list of fabricated and brought out components 21
6.2 Overall System Integration Workflow 21
6.3 Pre-Requisites for Assembly/Integration 21
6.4 Incoming Inspection of mechanical elements 21
6.5 Bought out/Standard Components 21
6.6 List of Equipment and Consumables required 22
7.0 Functional Testing 23
7.1 List of Equipment required for testing 23
7.2 Documentation 24
Bidding Terms & Pre-Qualification Criteria 25
6.0 Conditions under which this EOI is Issued 26
7.0 Rights to the Content of the Proposal 26
8.0 Acknowledgement of Understanding of Terms 27
9.0 Evaluation of Prequalification Proposal 27
10.0 Language of Proposals 27
11.0 Pre-Qualification Criteria 27
12.0 Response Requirements 27
13.0 Prequalification requirements proposal 28
14.0 Purchase Preference Policy – Make in India (divisible items Class I & II Local Suppliers) 29
15.0 Conditions for Bidder from a country which shares land border with India 31

General Terms

1.1 GOALS OF THIS EXPERSSION OF INTEREST (EoI)

The objective of this EoI is to solicit proposals from the interested bidders for participation in a bid process for selection of parties for production of Reaction Wheel Assemblies for Spacecraft applications

1.2 EoI ISSUING AUTHORITY

This Expression of Interest (EoI) is issued by IISU, intended to short-list potential bidders. IISU's decision with regard to the short-listing of bidders through this EoI, shall be final and the IISU reserves the right to reject any or all the bids.

The details of EoI and contact person are given below.

Sl No.	Item	Description
1	Project Title	Production of REACTION WHEEL ASSEMBLIES for Spacecrafts
2	Project Initiator Details	ISRO Inertial Systems Unit
3	Contact Person	M H Ravichandran Group Director, MSTG
5	Contact Details	ISRO Inertial Systems Unit Vattiyoorkavu PO, Thiruvananthapuram – 695 013

1.3 CALENDER OF EVENTS

The last date for receiving the EoI response at IISU from the bidders is **08/01/2027 up to 14.00 hrs.**

1.4 AVAILABILITY OF THE EoI DOCUMENTS

The bidders are expected to examine all instructions, forms, terms, project requirements and other details in the EoI documents. Failure to furnish complete information as mentioned in the EoI documents or submission of a proposal not substantially responsive to the EoI documents in every respect, will be at the bidder's risk and may result in rejection of the proposal.

1.5 PRE-BID DISCUSSION

IISU will host a bidder's Pre-Bid Discussion on **09/12/2026 at 10.00 hrs.** and the participation in the pre-bid discussion is mandatory for considering the party.

1.6 VENUE & DEADLINE FOR SUBMISSION OF PROPOSALS

Proposals, in its complete form in all respects as specified in the EoI, must be submitted to IISU at the address specified in Section 2.

IISU may, in exceptional circumstances and at its discretion, extend the deadline for submission of proposals by issuing an addendum to be made available, in which case, all rights and obligations of IISU and the bidders previously subject to the original deadline will thereafter be subject to the deadline, as extended.

1.7 REQUIRMENT ON THE PRODUCTION CENTRE

The requirements given in this Expression of Interest are indicative only and IISU will seek inputs from the pre-qualified bidders in further refining the requirements and all aspects of services before finalizing the bidders.

Scope of Services

2.0 BACKGROUND

2.1 About ISRO Inertial Systems Unit

ISRO Inertial Systems Unit (IISU) is responsible for the design and development of Inertial Systems for Launch Vehicles and Spacecraft programmes for ISRO. Major Systems like Inertial Navigation Systems based on mechanical gyros and optical gyros, attitude reference systems, Rate Gyro Packages, Accelerometer Packages are developed indigenously and used in various missions of ISRO. IISU also design and develop actuators and mechanisms viz. Solar Array Drive, Reaction wheel, Momentum wheel, Scan mechanisms for spacecraft and allied applications. IISU has crossed major milestones starting from design & development phase, competence building phase and is presently engaged in the process of consolidation and productionisation of the sensor systems, actuators and mechanisms for a variety of launch vehicle and spacecraft applications. Over the years, IISU has mastered in the development and realisation of sensors, testing and evaluation etc. IISU has also established state of the art facilities for realisation of various types of sensors, actuators and mechanisms.

The orbital accuracies achieved by launch vehicle inertial systems are of world class and at par or better than other launch vehicle missions. Similarly the performance of Inertial Reference Unit and Reaction Wheel for spacecraft missions has significantly contributed in enhancing the spacecraft operation and mission life in number of missions.

The experience and knowledge gained over the years are used for perfecting the present class of sensors and actuators. Further, IISU has initiated technology development programme in niche areas to adopt itself as a centre of excellence in inertial sensors and systems. IISU strives to make the systems cost effective, reliable and realizable in tune with global trends.

2.2 Need of Expression of Interest

The aim is to develop parties for production of Reaction wheel of different capacities after due understanding of the technological challenges, risks, investments and returns.

2.3 Scope of Activities by Vendor towards Reaction Wheel Production

This section provides a brief description of the various stages of realization of Reaction Wheel Assembly (RWA) and scope of activities. Activities related to initial 6 models will be carried out,in three different stages with varying level of guidance and support from IISU (Table 1), in order to make the party familiar with the technology. Before the initiation of the vendor qualification stages, necessary training for the party will be provided at IISU.

Stage	Vendor Responsibility	IISU Responsibility
Stage 1 (2 models)	• Familiarization of handling, integration and testing of RWA and its components.	• Integrated Bearing Unit (BU) will be provided as FIM • All reaction wheel hardware will be

	• Integration of RWA with IISU support and guidance, at vendor facility • Carrying out Designer level testing, workmanship level environmental tests and documentation of RWA • Submission of documentation and test results to IISU review forum for clearance	provided as FIM • All consumables and bought out components will be provided as FIM • Support and guidance in RWA integration, designer level testing and documentation • Test and evaluation of Reaction Wheels realized, to provideclearance for next stage
Stage 2 (2 models)	• Fabrication and clearance of RW components (excluding BU components) • Familiarization in handling, integration, testing and documentation of BU with support from IISU • Obtain BU clearance from IISU review forum for integration • Integration of RWA without IISU guidance at vendor facility • Carry out Designer level testing, workmanship level environmental tests and documentation of RWA • Submission of documents and test results to IISU review forum for clearance	• BU components (hardware + bearings) to be provided as FIM • Support and guidance in BU integration testing and documentation • Review of BU test results before integration • All consumables and bought out components will be provided as FIM • Test and evaluation of Reaction Wheel by SR and review of results by IISU review forum to provide clearance for next stage
Stage 3 (2 models)	• Procurement of materials and consumables required for realization of the system • Carry out all activities related to realization of RWA without IISU support	• Test and evaluation of realized reaction wheels by SR. Review and clearance of test results by IISU review forum

Once the stage three is complete the party will be responsible of the following activities.

- Procurement of materials and consumables used in the realization of reaction wheels
- Realization of Reaction Wheels as per the process control document shared by IISU
- Functional testing of the Reaction Wheels and environmental testing
- Obtain clearance from committee constituted by IISU for delivery of the reaction wheels
- The following documents shall be provided by the party along with the hardware

- Material inspection and clearance report of all raw materials
- Components clearance report of all components fabricated
- Integration logbook
- Functional Test results (including environment test vibration, thermo vac etc)

- Delivery of cleared reaction wheels to IISU as per delivery schedule.

Clearance for reaction wheels delivery shall be obtained after review of all documents and test results by committee constituted at IISU. The following activities at all stages shall be under scope of the vendor:

(a) Collection of FIM items from IISU and transport to vendor facility
(b) Safe transport of realized wheels to IISU from vendor facility (by Road)
(c) Any intermittent transport of components / wheel elements between vendor site and IISU

2.4 Responsibilities by IISU

IISU responsibilities during the vendor qualification phase in described in table no. 1. Once the vendor is qualified, IISU have to provide all the documents related to realization of Reaction wheels that includes, fabrication drawings, process control documents, subassembly and system datasheet formats, integration logbooks and checklists. A sub-committee under IISU systems review board (ISRB) shall review the test results during the production phase of the reaction wheel and clear the system realized. IISU will carry out the test & evaluation on the delivered reaction wheels, inorder to clear the reaction wheels for flight use.

2.5 Quantity and Schedule of Delivery

Based on the projected schedule for the coming 5 years, 50Nos of reaction wheels of 5Nms to 20Nms are required. After successful completion of stage 3, party shall realize50 nos. of reaction wheels over a three-year period, with following delivery schedule

(A) 10 reaction wheels by end of year 1
(B) 15 reaction wheels by end of year 2
(C) 25 reaction wheels by end of year 3

2.5 Reaction Wheel Specifications

Reaction wheel is a type of actuator used in zero momentum system based spacecraft for attitude control. The reaction wheel consists of a flywheel driven by a slotless BLDC, that can accelerate or decelerate based on the command input. Since the spacecraft minimum lifetime extends for more than 7 years, the reaction wheel should be also operational for that period for complete utilization of the spacecraft. The reaction wheel bearing unit, is a critical part of the system enables longer and reliable life after experiencing vibrations and shock during the launch phase.

The major specifications of the reaction wheel are shown below.

- Angular momentum : 5 to 20 Nms ± 1.5 % @ 3500 rpm
- Reaction torque : 0.1Nm/0.3Nm± 10%
- Speed range for operation : < ± 3500 rpm
- Loss torque : <0.03 Nm
- Torque Constant : 0.04/0.08 Nm/A ± 5%
- Static Unbalance : < 2 gcm
- Dynamic Unbalance : < 8 gcm^2
- Power supply : 28-42 V
- Dimensions and Mass of Wheels
    - Diameter : 284 mm ± 1 mm
    - Height : 100 mm± 1 mm (+ 25 mm for Cube)
    - Mass : < 6.6 kg

3.0 FABRICATION AND INSPECTION

3.1 Component Details

The complete component list for one reaction wheel is shown below.

Sl No	Part Description	Material	Qty/Set	Machining Process	Minimum Tolerances (mm)
1	Base plate	AA6061/AA6351-T6	1	Turning, milling, heat treatment, fitting, anodizing	0.05
2	Top cover	AA6061/AA6351-T6	1	Turning, milling, heat treatment, fitting, anodizing	0.01
3	Spindle	Maraging Steel 250/300	1	Turning, milling, heat treatment, fitting	0.01
4	GTMS Top cover	AA6061/AA6351	1	Turning, milling, heat treatment, fitting, anodizing	0.05
5	Centering Washer	AISI 304	1	Turning, milling, fitting	0.01
6	GTMS Holder	AA6061/AA6351	2	Turning, milling, fitting, anodizing	0.05
7	Mount	AA6061/AA6351	1	Milling,fitting, surface treatment	0.1
8	Cube Cover	AA6061/AA6351	1	Milling,fitting, surface treatment	0.1
9	Clamp	AA6061/AA6351	1	Milling,fitting, surface treatment	0.05
10	Indium Locating Pin	AISI 304	1	Turning,	0.01
11	Grub Screw	AISI 304	1	Turning, milling	0.01
12	Fly wheel Hub	AA2014/AA2024-T6	1	Turning, milling, heat treatment, fitting,	0.01
13	Fly wheel Ring	AISI 304	1	Turning, milling, heat treatment, fitting,	0.01

14	Damper Ring	AA2014/AA2024-T6	1	Turning, milling	0.05
15	Tuning Mass	Wcu.	1	Turning	0.05
16	Locating Pin	AISI 304	3	Turning	0.01
17	Grub Screw	AISI 304	3	Turning, milling	0.05

3.2 Pre-Requisite of Fabrication & Metrology Facility

Fabrication of hardware must be carried out by ISRO certified parties listed in section 3.4

- The party / their vendor shall have well maintained precision fabrication and metrology facility to execute the scope of work without any deviation.
- Party / their vendor shall have skilled mechanical production team to execute the precision fabrication activity.
- Party / their vendor shall have streamlined fabrication set up with maintained quality system including certification

3.3 General Term and Conditions for Material Procurement

- Material should be as per the technical specification provided.
- Material has to be procured from a reputed mill or through trading agency. If it is from trading agency, the details of the material manufacturer or the source mill should be known.
- All material certificates have to be verified and endorsed by a reputed third party agency or by government approved, NABL accredited labs.
- Following tests to be done (as per relevant standard) and reports has to be available with every raw material batch
    - Dimensional inspection
    - Mechanical properties test (in case manufacturer datasheet is not available)
    - Chemical composition test
    - Non-destructive testing
- All material properties have to be well within the acceptable limit given in the specification.
- 100% non-destructive test to be conducted on all material and cleared as per AMS 2630 class A1.
- Each of the above report shall contain the information like Material, Heat/Lot No., Size, Quantity, Supply condition etc.

3.4 Possible Suppliers of Material and ISRO certified fabrication agencies

Sl No	Material	Suppliers
1	AA6061	M/s. Jai Ambe Mumbai, M/s. Sri Asha Forgings, M/s. Virat Aluminium, M/s Rachamallu, Hyderabad

2	AISI 304	M/s.Rajhans Metal Syndicate, M/s. CMI Aerospace
3	Beryllium Copper	M/s. Kalva Engineers, Hyderabad & M/s. Kalapurna Steel Engineering, Mumbai
4	AA2024	M/s. First Source Impex, M/s Jai Ambe, M/s. Asha Forgings
5	AISI440C	M/s. Virat Aluminium, M/s. Jai Ambe, M/s. Sunflag steel
6	Maraging Steel	M/s. Kalapurna Steel Engineering, Mumbai, M/s. Umac Avionics, Bangalore
7	Nylasint	
8	Isola	
Sl No	**ISRO Certified fabrication agencies**	
1	M/s. Travancore Aerospace, Trivandrum	
2	M/s. CTTC, Bhubaneswar	
3	M/s. Brahmos Aerospace, Trivandrum	
4	M/s. Harsha CNC, Coimbatore	
5	M/s. MTAR, Hyderabad	
6	M/s. ART Industrial School, Nazareth	
7	M/s. Amado Tools, Bangalore	
8	M/s. Jaya Aluminum Industries, Varkkala	
9	M/s. Hycrome Industries, Mumbai	

3.5 Guidelines for Fabrication and Inspection of Components

- Detailed study and preparation of fabrication and inspection process sheet for the items and submit to IISU for approval.
- After approval, fabricate the item with the identified materials.
- Party should machine the item in all respects within the tolerance limits mentioned in the drawings.
- Preparation of all required tooling, fixtures etc for fabrication.
- Party has to maintain a foolproof system to control the material flow to avoid any type of mixing/change of raw material.
- Necessary helicoil for thread inserts, as per standards, should be purchased by party and helicoil insertion is to be done.
- Identification number has to be neatly engraved on the surface as given in drawing or surface which has open tolerance.
- Items are to be inspected and complete inspection report has to be prepared in the Inspection format. FCD inspection has to be repeated and separate report to be made available.

3.6 Acceptance Criteria

- After completion of fabrication and inspection process, the component can be used, if all dimensions are meeting the specification with the tolerances.
- In case of components with deviations, if nonconformance (NC) is applicable, clearance shall be obtained from review committee constituted at IISU
- After verification and clearance, the items can be used for assembly.
- The complete inspection report with NCs if applicable and material certificate have to be submitted the consolidated report provided along with each RW.

- IISU reserves the right to inspect and verify the hardware at any phase at vendor site.

3.7 Fabrication and Inspection

The fabrication and inspection flow chart is shown in Annexure 2.

3.8 List of Equipment used for Fabrication and Inspection

Sl No	Equipment	Activity
1.	CNC machining centre	Machining
2.	CNC Lathe	Machining
3.	Jig Boring M/c	Machining
4.	EDM M/c	Machining
5.	Grinding M/c	Machining
6.	Manual Milling M/c	Machining
7.	Manual Lathe	Machining
8.	Drilling M/c	Machining
9.	Fitting equipments	Fitting
10.	Vernier Caliper	Inspection
11.	Height Gauge	Inspection
12.	CMM	Inspection
13.	Talyrond	Inspection
14.	3D Microhite	Inspection
15.	Video measuring machine	Inspection

4.0 Bearing Unit Realization

Bearing unit is the critical part of the Reaction wheel, that determines its performance for the qualified lifetime. The various mechanical elements and consumables used in the realization of a singlebearing unit for reaction wheel is detailed below.

4.1 Bearing Unit Component List

Sl.No.	Part Description	Material	Quantity /Set	Machining process	Minimum Tolerance
1	Bearing Housing	AISI440C	1	Turning, milling, heat treatment, grinding, thread grinding, fitting	0.0015
2	Bearing Shaft	AISI440C	1	Turning, milling, heat treatment, grinding, thread grinding, fitting	0.0015
3	Inner Spacer	AISI440C	1	Turning, heat treatment, grinding	0.0015
4	Outer Spacer	AISI440C	1	Turning, heat treatment, grinding	0.0015
5	Beleville Spring	AISI440C	1	Turning, heat treatment, grinding	0.0015
6	Housing basenut	AISI440C	1	Turning, milling, heat treatment, grinding, thread grinding, fitting	0.010
7	Housing topnut	AISI440C	1	Turning, milling, heat treatment, grinding, thread grinding, fitting	0.010
8	Shaftnut	AISI440C	1	Turning, milling, heat treatment, grinding, thread grinding, fitting	0.010

9	Lubricant reservoir	Nylasint	1	Turning	0.050
10	Locating pin	AISI 304	1	Turning	0.020

4.2 Consumables for Bearing Unit Realization

Sl.No.	Item	Part no	QC certification/ expiry date	Preferred source
1	Gloves	Nitrile powder free type compatible for cleanroom Cl100	Manufacturer CoC	Valuetech, Vcare Impex, Nulife
2	Lint free cloth	Size 4" x4" (10cmx10cm) Super Polx SE 4 x4 / PUF 1010C	Manufacturer CoC	Berkshire, Propack
3	Iso propyl alcohol	HPLC Electronic grade	Manufacturer CoC	Nice Chemicals, Merck, Sigma Aldrich
4	Special solvents	Lubricant compatible	Manufacturer CoC	Chemours, Fuchs
6	Lubricant oil	MAC	Manufacturer CoC	Fuchs
7	Grease	MAC	Manufacturer CoC	Fuchs
8	Adhesive	LCA-4 + BA-5	Manufacturer CoC	Bacon Industries

4.3 Equipment Required for Bearing Unit Realization

Sl.No.	Instrument/ Equipment	SuggestedSuppliers
1	Humidity Chamber , RH<5%	Dr Storage , Hamco India, Memmert GmbH
2	Thermal chamber, temperature range : -30°C to 100°C with dehumidifier and compressed air dryer	Weiss Technik, Thermotron Industries, Angelantoni Test Technologies
3	Vacuum oven Vacuum range : upto 10^{-2}mbar temperature range : ambient to 100°C	MMM GmbH, Bionics Scientific, Temp Instruments
4	Vacuum chamber Vacuum range : upto 10^{-2}mbar	HHV, Vacuum Techniques, Ranvac Technologies
5	Dynamic Balancing machine (G0.4 grade)	Schenck, Rokade Rototechnik, Proteq
6	Microscopes (10x to 40x magnification with image capturing option)	Leica, Caltex, Zeiss
7	Contact Type Deflection probe Range : 500 microns Resolution : 0.5 micron	Tesa, Micro-epsilon, Amphenol
8	Precision height measurement (Microhite) Range : 200mm Resolution : 0.5 micron	Tesa, Hexagon, Mitutoyo, Mahr

9	Reaction torque transducers Range : 500mNm Resolution : 1gm.cm	Modia, Magtrol, Futek, Honeywell
10	Laminar floor Table CL10	Kleinzeids, Terra Universal, Microflow devices
11	Fume hoods	Kleinzeids, Labconco, Airclean Systems
12	Tabletop plasma cleaner	Harrik Plasma, Plasma Etch, PIE Scientific
13	Jet cleaning machine	Merck Millipore, Parth Engineers, Prism Pharma
14	Tabletop Ultrasonic Cleaner	Crest Ultrasonics, Omegasonics, Branson Ultrasonics
15	Autocollimator with 90° viewing and double micrometer	Trioptics, Moller Wedel, Nikon Metrology
16	Alignment cubes Fused silica material with surface quality Scratch and Dig 60-40 as per MIL 48616	Goal, Prisms India, Lap laser
17	Air gauge for clearance matching Range : 35-45mm Resolution : 0.5 micron	Baker Gauges, Mahr, Versa Control Measurement Technologies
18	Granite Surface Tables, Lapping plate, V-blocks, parallel blocks	Micro-flat Datums, Luthra, Bagson, Jash
19	Micro-weighing balance 0.01mg Range : 200 mg Resolution : 0.01 mg	Cole Palmer, Metler Tolledo, Sartorius
20	Vacuum Pump Oil free type for cleanroom use	Pfeiffer, Edwards, Agilent
21	Industrial PCs	Dell, HP, Advantech
22	Power Supply	TDK-Lambda, Delta Electronics, Keysight Technologies
23	Torque Wrenches 5-15 Nm	Gedore, Torque Master, Snap-on
24	Accelerometer	PCB, Bosch, ADI
25	Data acquisition unit with multiplexer	Keysight Technologies, National Instruments, GWInstek
26	Magnifier upto 20x	Mahr, Optics & Allied Engg, Optelec
27	Tweezers	Ideal Tek, Dumont, Gogna Tools
28	Glass accessories- Petridishes, Beakers, Syringes, filtration cups	Borosil, Pyrex, Glassco laboratory
29	Arbor Press	Sokhi Industries, Amit Engineering, Concept Engineers
30	Special fixtures for assembly, deflection measurement, torque testing etc.	
31	Demagnetiser	Maurer Magnetic AG, MPI, Kanetec
32	Magnetic stirrer	Tarsons Spinot , Borosil, IKA
33	Vacuum cleaner	3M, Ruwac, Roots Multiclean
34	Checkout racks	Schneider Electric, Microsheetcrafts, Racksmart
35	Electric Heat gun	Bosch, DeWalt, Black Decker

4.4 Bought Out/Standard Components

Sl.No.	Item	Part no	Suggested Manufacturer
1	Ball Bearings	ABEC9P 20x42x12mm	ADR France, Barden USA, NEI Jaipur
2	Thermistor (Spacegrade)	10kohm; -55 to +90degC	Thakarson, Amphenol, TDK
3	Heater (Spacegrade)	Foil heater size of size 20x42mm, 5W 156ohm	Minco, RICA, Zoppas Industries
4	External Circlip	Shaft dia 25 mm X groove dia 23.9 mm	JC Gupta&Sons, Divya Circlips, Eagle Industries

4.5 Specification for Pecision Angular Contact Ball Bearings

- Type: Separable and inner ring relieved angular contact ball bearing to be supplied as non-interchangeable matched and preloaded duplex pairs in back to back mounting with customised bearing race design.
- Size of single bearing : ID 20mm x OD 42 mm x width 12 mm
- Ball Complement for single bearing: dia 6.35mm x 11 nos.
- Cage : One piece machined outer ring land piloted type with non-ball retaining cylindrical pockets
- Contact angle: 15 deg +/-2 deg
- Bearing tolerances : Rings shall conform to ABEC – 9P (ANSI/ ABMA 12.2:1992) and complementary tolerances and balls shall conform to grade 3 or grade5 of ANSI/ABMA/ISO3290-1:2014
- Materials :
    - Rings : AISI 440C stainless steel CEVM (VAR) per AMS 5618 with hardness 58HRC min.
    - Balls : Titanium carbide (TiC) coated AISI440C CEVM
    - Cage : Extra fine weave cotton based phenolic composite
    - Lubrication : MAC based oil and grease
- Inspection Procedure : All bearing rings, balls and cages shall be visually inspected 100 %and ensured that they are free of any observations.
- Low Speed Torque Testing : All assembled bearing pairs shall be tested for low speed torque trace.
- Documentation : 100% measurement in bearing rings covering OD, bore, osculation, land diameters, contact angle, preload, low speed torque and weight measurements
- Certificates : Certificate of conformity from original manufacturer with lot reference number for bearing steel, rings, balls, TiC coating, cages and lubricant
- Packaging : Bearings shall be packed appropriately for safe transport and long storage.

5.0 Drive Motor Realization

The function of the drive motor is to accelerate or decelerate the flywheel for the generation of positive or negative torque on the spacecraft. The drive motor used is a Brushless DC motor. The motor consists of two subassemblies the rotor that houses the permanent magnets and stator that houses the coils and hall sensors encapsulated in a spacegrade potting compound. Based on the choice of torque constant of 0.4Nm/A and 0.8Nm/A, two stator configurations are available. The stator differs in the number of turns per coil while all other motor hardware remains the same.

5.1 Drive Motor Component List

Sl.No.	Part Description	Material	Quantity /Set	Machining process	Minimum Tolerance
1	Inner Return Ring	AISI 410	1		+0.025
2	Outer Return Ring	AISI 410	1		+0.010
3	Coil Holder	Tecapeek	1		+0.035

5.2 Consumables for Motor Realization

Sl No	Item	Part No	QC certification/Exp Date	Source
1	Winding Wire	28AWG Heavy Build	Nema Specification MW1000/16C	Sanghvi Aerosapce/MWS USA
2	Adhesive	Dobeckot 605		Elantas Beck , India
3	Grease	Sylgard Elastomer		Dow Corning, USA
4	Insulation Paper	Kapton 100micron		3M
5	Liquid Flux	RMA	MIL-F-14256	
6	Solder			
7	Connection leads	Spec 55 wire 28AWG,22AWG		Raychem
8	Polyester Lacing Tape	LC162 Black		Alpha Wire
9	Heat Shrinkable Sleeve	FIT 350, 1.6mm dia		Alpha Wire
10	Low Expansion Adhesive	LCA4		Bacon Industries
11	Potting	P80C		Bacon Industries

	Compound			
12	Iso Propoyl Alcohol	Propan-2-ol		Nice Chemicals

5.3 Equipment required for Motor realization

Sl.No.	Instrument/ Equipment	Preferred Brand
1	Multimeter	Keysight 34461A 61/2 Digit Multimeter
2	LCR Meter	Keysight E4980AL LCR meter
3	High Resistance meter	Agilent 4339B High Resistance Meter
4	Gaussmeter	Model 6010 Laboratorion Elettrofisico LDJ Scientific
5	Fume Extractor	Zero Smog TL
6	Thermal Chamber	Votsch VT 4021
7	Humidity Chamber	Super Dry (<10% humidity)
8	Hot Tweezers	M-20 Meisei Corporation
9	Soldering Iron Station	Weller WSD 81
10	Power Supply	Lambda

5.4 Bought out components

Sl.No.	Item	Part no	Suggested Manufacturer
1	Hall Sensor	Optek OMH 3075S (Source Screened)	TT Electronics
2	Magnet	Samarium Cobalt (Sm2Co17) 28MGOe	EEC, Arnold
3	GTMS		

5.5 Drive Motor Specifications

Motor Type : Slotless BLDC Motor
Motor OD : ø100
Motor Torque Constant : 0.04/0.08 Nm/A
Rotor Type : Enclosed Rotor
No of Rotor Poles : 16
Magnet : Annular Samarium Cobalt Magnets (Sm2Co17 28MGOe)
Stator Type : Slotless Stator
No of Coils Per phase : 4
Turns Per coil : 12/24
Resistance per phase : 0.4/0.8
Position Sensor : Optek 3075S Hall Sensor
Airgap : 0.5mm mechanical
Peak Airgap Flux Density : 0.4 T

5.6 Motor Realization Flowchart

The stator and rotor realization flowchart is given in annexure 3.

6.0 System Integration

6.1 Parts list of fabricated and brought out components

Refer table 1

6.2 Overall System Integration Workflow

See Annexure 4

6.3 Pre-Requisites for Assembly/Integration

All fabricated mechanical parts, brought out elements are to be cleared by inhouse QC. In case of any deviation, the party has to take it to Non-conformance review board at IISU. Only QC/NCRB cleared components are to be used for the integration and assembly.

Before integration, component clearance certificates to be verified for any action suggested by NCRB and make sure that all actions are closed. Check for any deviations specifically on FCD dimensions in reports. All the QC clearances and NCRB report if any, has to compiled and submitted along with the reaction wheel during the time of delivery.

6.4 Incoming Inspection of mechanical elements

After thorough cleaning with Iso Propyl Alcohol (IPA) all fabricated parts are to be visually inspected under 10x magnification.100% inspection is to be carried out for all the critical areas.

- Parts should be free from burrs, dent marks and scratch marks.
- Thread should be free from dent marks and burrs.

6.5 Bought out/Standard Components

6.5.1 Bought Out Components

Sl. No.	Item	Part no.	Suggested Manufacturer
1	Connector	ESCC – 340100201BDBMA25PNMBFO GSFC – S311P409-3P-B12 MIL – M24308/8-3	SOURIAU, ITT
2	Indium Wire	Indium wire reel, dia 1.0 mm, 99.999%	Otto Chemie Pvt Ltd
3	Alignment Cube Stepped mirror	12 mm size, ,BK7, 60-40 as per MIL-0-13830, Lambda/4, coating-aluminium with Sio protective layer as per MIL-13508-B. Ø 18 mm, Total thickness 6.50 mm	General Optics (ASIA) Limited, Prism India
4	GTMS	Ø5.5 mm max. dia, 16 mm total height, Shell kovar, lead kovar, electrotinned finish.	Vistara hermetics Bangalore

6.5.2 Fasteners and Washers

Mechanical fasteners of A2 class (UTS 700MPa) and HTS 12.9 class, used should be aerospace grade, from VSSC approved vendors. Ensure that test certificates for material composition and mechanical properties are available for all types of fasteners.

Sl No	Description	Material	Qty per package
1	Hex. Socket head cap screw M4x12 mm with spring and plain washer	HTS	8
2	Hex. Socket head cap screw M3x10 mm with spring and plain washer	AISI 304	3
3	Hex. Socket head cap screw M3x30 mm with spring and plain washer	HTS	6
4	Hex. Socket head cap screw M3x10 mm with spring and plain washer	AISI 304	25
5	Hex. Socket counter sunk screw M3x6 mm	AISI 304	4
6	Hex. Socket counter sunk screw M3x8 mm	AISI 304	6

6.6 List of Equipment and Consumables required

Sl No	**Equipment/Consumables**
Work Table and Storage Systems	
1	Class 1000 clean room facility for BU. Class 10000 for RW Integration
2	Laminar flow table for integration
3	Humidity controlled chamber for storage
4	Storage Bins for hardware and fasteners
Assembly Tools	
1	Assembly tools
2	Torque Wrench
3	Allen Key sets
Electrical Integration	
1	Soldering Station
2	Multimeters
3	High Resistance meter
4	Hot Tweezer for stripping
5	Hot Air Gun
6	Smoke absorber
7	Crimping tools and locators
8	Solder, Flux and Alcohol
9	Tweezers, Cutter, pliers and bending tools
10	Wax coated threads
11	Brushes and wipers
12	Cotton waste
13	Connectors and wires
14	Magnifiers
Consumables	

15	RTV
16	Loctite/LCA4 Bacon
17	Iso Propyl Alcohol (IPA)
18	Lint free cloth
19	Wax coated thread

7.0 Functional Testing

Functional testing shall be carried out during different stages of integration and final assembly, inorder to ensure the performance of the subassembly and the reaction wheels as a whole. Typical tests include

- Baseplate He Leak test
- Bearing Unit Level Run-in
- Motor level testing after electrical integration of baseplate
- Flywheel thermal run-in
- Actuator level 500hrs run-in

The test procedure for individual tests and the report format will be shared by IISU. After testing, the test results shall be compiled and presented to IISU level review committee to reaction wheels clearance

7.1 List of Equipment required for testing

Sl No	Test	Instrument/Equipment required
1	**Sub-assembly level**	
1.1	BLDC motor stator parameter measurement	LCR meter
1.2	BLDC motor insulation/isolation test	High resistance meter, Digital Multi-meter
1.3	BLDC motor rotor parameter measurement	Gauss meter
1.4	Inertia measurement setup	Frequency meter Non-contact optical counter
1.5		
2	**Integration**	
2.1	Motor level tests	BLDC motor run-in station with PC interface Thermal chamber High resistance meter Digital Multi-meter CRO
2.2	Mirror alignment	Autocollimator with optical flat
2.3	Balancing	Horizontal two plane balancing machine BLDC motor run-in station Thermal chamber
2.4	Hermetic Sealing	Sealing arrangement with Vacuum pump Thermal chamber

		Leak rate detector
3	**Designer level tests**	
3.1	Run-in tests	BLDC motor run-in station with constant speed and torque control with >10Hz or better data acquisition LCR meter CRO High resistance meter Digital Multi-meter Accelerometer with charge amplifier High speed data Acquisition with sampling rate not lower than 50KHz
3.2	Critical tests Torque ripple measurement: Disturbance torque measurement Stiction Torque measurement	Single axis Piezoelectric based Kistler torque sensor with charge amplifier High speed data Acquisition with sampling rate not lower than 50KHz
3.3	Environmental tests	Thermo vacuum chamber Vibration shaker

7.2 Documentation

The party shall present all documentation in a manner consistent with good commercial practice in content and quality of material. The party shall maintain the following documents during realization and shall be submitted to IISU for clearance.

- Process documents for verification
- Hardware clearances
- Part log book
- Checklist for various critical activities
- Mechanical and electrical reports
- Non-conformance report
- Inspection & deviation report
- Test Report

Bidding Terms & Pre-Qualification Criteria

6.0 Conditions under which this EOI is Issued

I. This EoI is not an offer and is issued with no commitment. IISU reserves the right to withdraw the EoI and change or vary any part thereof at any stage. IISU also reserves the right to disqualify any bidder, should it be so necessary at any stage.

II. IISU reserves the right to withdraw this EoI if IISU determines that such action is in the best interest of the Government of India.

III. Short-listed bidders would be issued formal tender enquiry / Request for proposal inviting their technical and commercial bids.

IV. Timing and sequence of events resulting from this EoI shall ultimately be determined by IISU.

V. No oral conversations or agreements with any official, agent or employee of IISU shall affect or modify any terms of this EoI and any alleged oral agreement or arrangement made by a bidder with any Department, agency, official or employee of IISU shall be superseded by the definitive agreement that results from this EoI process. Oral communications by IISU to bidders shall not be considered binding on IISU, nor shall any written materials provided by any person other than IISU.

VI. Neither the bidder nor any of the bidder's representatives shall have any claims whatsoever against IISU or any of their respective officials, agents, or employees arising out of, or relating to this EoI or these procedures (other than those arising under a definitive service agreement with the bidder in accordance with the terms thereof).

VII. Applicants who are found to canvass or attempt to influence in any manner the qualification or selection process, including without limitation, by offering bribes or other illegal gratification, shall be disqualified from the process at any stage.

VIII. Each applicant shall submit only one pre-qualification requirements proposal.

7.0 Rights to the Content of the Proposal

For all the bids received before the last date and time of bid submission, the proposals and accompanying documentation of the pre-qualification proposal will become the property of IISU and will not be returned after opening of the pre-qualification proposals. IISU is not restricted in its rights to use or disclose any or all of the information contained in the proposal and can do so without compensation to the bidders. IISU shall not be bound by any language in the proposal indicating the confidentiality of the proposal or any other restriction on its use or disclosure.

8.0 Acknowledgement of Understanding of Terms

By submitting a proposal, each bidder shall be deemed to acknowledge that it has carefully read all sections of this EoI, including all forms, schedules and annexure hereto, and has fully informed itself as to all existing conditions and limitations.

9.0 Evaluation of Prequalification Proposal

The bidders' pre-qualification proposal in the bid document will be evaluated as per the requirements specified in the EoI and adopting the pre-qualification criteria spelt out in this EoI. The bidders are required to submit all required documentation in support of the pre-qualification criteria specified (eg. detailed project citations and completion certificates, client contact information for verification and all others) as required for evaluation.

10.0 Language of Proposals

The proposal and all correspondence and documents shall be written in English

11.0 Pre-Qualification Criteria

This invitation for bids is open to all entities registered in India who fulfil prequalification criteria as specified below.

a) IISU reserves its right to subject the bidders to security clearances as it deems necessary.
b) The participation is restricted to companies registered in India under THE COMPANIES ACT 2013.

Notes:

1. In case of bidders where the ISO certification is under renewal, the bidders shall provide the details of the previous ISO certification and current assessment details.
2. In respect of the cited projects, the bidder should have been directly responsible for the implementation of the projects and not just a member of a consortium.
3. Only project citations completed/started in the last 5 financial years (2021-2025) will be considered for the evaluation.

12.0 Response Requirements

I. The Response to the pre-qualification requirements shall be prepared in accordance with the requirements specified in this EoI and in the format prescribed in this document for each of the above mentioned qualifying criteria as proof of having the minimum requirements.
II. Proposals must be direct, concise and complete. All information not directly relevant to this EoI should be omitted.
III. The pre-qualification proposal shall be sealed and superscribed "Response to pre-qualification requirements – Reaction Wheel Actuator Production" on the top right hand corner and addressed to IISU at the address specified in this document.

IV. The pre-qualification proposal should be submitted with two printed copies of the entire proposal, one marked ORIGINAL and the second one as DUPLICATE with all the contents of the pre-qualification proposal. The Hard copy shall be signed by the authorised signatory on all the pages before being put in the envelope and sealed.

V. The proposal should contain the copies of references and other documents as specified in the EoI.

VI. A board resolution authorising the Bidder to sign/execute the proposal as a binding document and also to execute all relevant agreements forming part of EoI shall be included in this envelope.

VII. IISU will not accept delivery of proposal in any manner other than that specified in this EoI. Proposal delivered in any other manner shall be treated as defective, invalid and rejected.

13.0 Prequalification requirements proposal

The pre-qualification proposal should be submitted in the sealed envelope with the following details. Bidders are requested to submit their responses for the pre-qualification requirements in four (4) parts, clearly labelled according to the following categories.

Part I. **Covering Letter and Board Resolution**

- Covering Letter from the Bidder as per the format provided in Annexure – Form 1
- Board Resolution authorising the bidder to sign/execute the proposal as a binding document and also to execute all relevant agreements forming part of EoI.
- Note explaining the strengths of the bidder and motivating factors for the bidding.

Part II. **Details of the Organization**

- This part must include a general background of the respondent organisation (limited to 400 words) along with other details of the organisation as per the format provided in the EoI (Annexure – Form II). Enclose the mandatory supporting documents listed in format.
- The bidder must also provide the financial details of the organisation as per format provided in the EoI(Annexure – Form III). Enclose the mandatory supporting documents listed in format.

Part III. **Relevant project experience**

- Respondents must provide details (Client organisation, nature/scope of the project, project value) of precision fabrication and system integration services experience. The experience mentioned here should match with the experience quoted by the respondent. Enclose the mandatory supporting documents.

Part IV. **Proof of Fulltime Technical Personnel in the Bidders Organization**

- The bidder must enclose certified copy by Statutory Auditor or Company secretary of the bidder's organisation with the number of full time professionals in the bidder's organization.

14.0 Purchase Preference Policy – Make in India (divisible items Class I & II Local Suppliers)

In line with Public Procurement (Preference to Make in India), Order 2017 & its amendments issued by Govt. of India from time to time with a view to support the Indian industries, ISRO has implemented "Purchase Preference Policy". The "Purchase Preference" is applicable for the "Class-I Local Supplier" for the goods/ services/ works covered in this EOI, subject to the following terms & conditions:

1. The Public Procurement (Preference to Make in India), Order 2017 issued by Govt. of India indicates that if there are any general or specific restrictive clauses to restrict participation of Indian companies in those countries procurement EOIs, reciprocity clause need to be invoked as per the order. Hence, if ISRO or Govt. of India come across that Indian suppliers of an item are not allowed to participate and / or compete in procurement by your government, the bid submitted by you will not be considered and excluded from eligibility for procurement. Please note this point.
2. **Purchase Preference Policy: Goods/Works which are not divisible (ie., required quantity is 1 or as a package) and Services:**
    a) If L1 is from a 'Class-I local supplier, the contract will be awarded to L1 bidder.
    b) If L1 is not from a 'Class-I local supplier', the lowest bidder among the 'Class-I local supplier' will be invited to match the L1 price subject to local supplier's quoted price falling within the margin of purchase preference (i.e. 20%) and the contract shall be awarded to such 'Class-I local supplier' subject to matching the L1 price (inclusive of duties, taxes and freight & insurance).
    c) In case such lowest eligible 'Class-I local supplier' fails to match the L1 price, the 'Class-I local supplier' with the next higher bid within the margin of purchase preference shall be invited to match the L1 price and so on, and order/contract shall be awarded accordingly. In case where none of the 'Class-I local supplier' within the margin of purchase preference agree to match the L1 price, then the order/contract shall be awarded to the originalL1 Bidder.
3. Work means all works as per Rule 130 of GFR-2017, and will also include 'turnkey works' Works include Engineering, Procurement and Construction (EPC) contracts and services include System Integrator (SI) contracts.
4. 'L1' means the lowest technically accepted tender / bid / quotation (i.e. lowest landed cost including duties, taxes and freight & Insurance).
5. 'Margin of purchase preference' means the maximum extent to which the price quoted by the "Class-I local supplier" above the L1 (landed cost).
6. The margin of Purchase Preference shall be upto 20%.
7. 'Local content' means the amount of value added in India (i.e. indigenous items/services added in the offered products/ services/ works) be the total value of the item offered (excluding net domestic indirect taxes) minus the value of imported content in the item

(including all customs duties/IGST) as a proportion of the total value (excluding net domestic indirect taxes), in percent.

8. Definitions: A supplier or service provider, whose goods, services or works offered for procurement, has local content: i. Equal to or more than 50%: Class-I local supplier. ii. More than 20% but less than 50%: Class-II local supplier. iii. Less than or equal to 20%: Non-local supplier.
9. The 'Class-I & II local supplier' should provide a "Self Certification" along with technical offer indicating that the item offered meets the minimum local content [as per SI. No.(3)] as called for in the EOI and provide the percentage of local content along with details of the location(s) at which the local value addition is made. In case of two bid tenders, it is mandatory to indicate compliance to MLC (minimum Local Content) in technical bid zone.
10. The ink-signed certificate shall be provided on vendors letter head along with the offer (, copy of ink-signed certificate shall be attached along with your offer under concerned tab. Original in Hard copy shall be produced on request). In case of non-submission of certificate, the purchase preference shall not apply.
11. In cases the quoted price is in excess of Rs.1000 Lakhs (including duties, taxes and freight & Insurance) the 'Class-I & II local supplier shall provide a certificate from the statutory auditor or cost auditor of the company (in the case of companies) or from a practicing cost accountant or practicing chartered accountant (in case of suppliers other than companies) giving thepercentage of local content.
12. A committee (with an external expert from a practicing cost accountant or practicing chartered accountant, if required) constituted for independent verification shall verify the self-declarations & auditor's / accountant's certificates on random basis, as per the requirements.
13. In case of a complaint received from any local supplier indicating a need for review / verification of Local content of successful vendor / awarded vendor, for accepting a complaint from such complainant (w.r.t the false declaration given by the successful vendor on the local content), a complaint fee of Rs.2Lakhs or 1% of the locally manufactured items being procured (subject to a maximum Rs. 5Lakhs), whichever was higher, to be paid by demand draft by the complainant. In case, the complaint is found to be incorrect, the complaint fee shall be forfeited. In case, the complaint is upheld and found to be substantially correct, deposited fee of the complainant would be refunded without any interest.
14. False declarations will be in breach of code of the integrity for which a bidder or its successor's will not be eligible/debarred for purchase preference from further tenders / pending tenders for two years along with other actions as may be applicable.

15.0 Conditions for Bidder from a country which shares land border with India

1. Any party from a country which shares a land border with India will be eligible to respond against this EOI, only if the party is registered with the Competent Authority. Competent Authority for the purpose of registration shall be the Registration Committee constituted by the Department for Promotion of Industry and Internal Trade (DPIIT).

2. Validity of Registration: Registration should be valid at the time of submission of EOI and should be valid at the time of placement of order.

3. Any false declaration and non-compliance of the above would be a ground for immediate rejection of offer / termination of the contract and further legal action in accordance with the laws.

ANNEXURE 1. RESPONSE FORMAT

FORM I: COVERING LETTER

(Company Letterhead)

(Date)

To

Sr. Purchase and Stores Officer
ISRO Inertial Systems Unit (IISU)
Vattiyoorkavu P O
Trivandrum 695 013

Ref: Expression of Interest Notice for 1Nms Reaction Wheel Production

Sir

Having examine the Expression of Interest (EoI), the receipt of which ishereby acknowledged we the undersigned, intent to submit a prequalification requirements proposal in response to the Expression ofInterest (EoI) for 1Nms Reaction Wheel Production.

Attach here to the response as required by the EoI, which constitutes ourproposal.Primary and Secondary contacts for our company are

	Primary Contact	Secondary Contact
Name		
Title		
Company Name		
Address		
Phone		
Mobile		
Fax		
E Mail		

We confirm that the information contained in this response or any partthereof, including its exhibits, and other documents and instrumentsdelivered or to be delivered to IISU is true, accurate, verifiable and complete. This response includes all information necessary to ensure thatthe statements therein do not in whole or in part mislead the department inits short - listing process.

We fully understand and agree to comply that on verification if any of theinformation provided here is found to be misleading the short listingprocess, we are liable to be dismissed from the selection process ortermination of the contract during the project, if selected to do so, forproviding 1Nms Reaction Wheel Production.

We agree for unconditional acceptance of all the terms and conditions setout in the EoI document.

It is hereby confirmed that I/We are entitled to act on behalf of ourcompany/corporation/firm/organisation and empowered to sign thisdocument as well as such other documents, which may be required in thisconnection.

Dated this Day of 202

(Signature) (In the capacity of)

(Name)

Duly authorized to sign the Tender Response for and on behalf of:

(Name and Address of Company) Seal/Stamp of Bidder

Witness Signature:

Witness Name:

Witness Address:

CERTIFICATE AS TO AUTHORISED SIGNATORIES

I,……. The company Secretary of ……..certify that …….. who signed the above Bid is authorized to do so and bind the company by authority of its board/governing body.

Date

Signature

(Company Seal)

(Name)

2. FORM II. GENERAL DETAILS OF THE ORGANISATION

Details of Organization
Name of the Organisation
Nature of the legal status in India
Legal Status Reference details
Nature of Business of India
Date of Incorporation
Date of Commencement of Business
Address of the Headquarters
Address of the Registered Office in India
Other Relevant Information
Mandatory Supporting Documents: a. Certificate of Incorporation from Registrar of Companies (ROC) b. Relevant sections of Memorandum of Association of the company or filings to the stock exchanges to indicate the nature of business of the company.

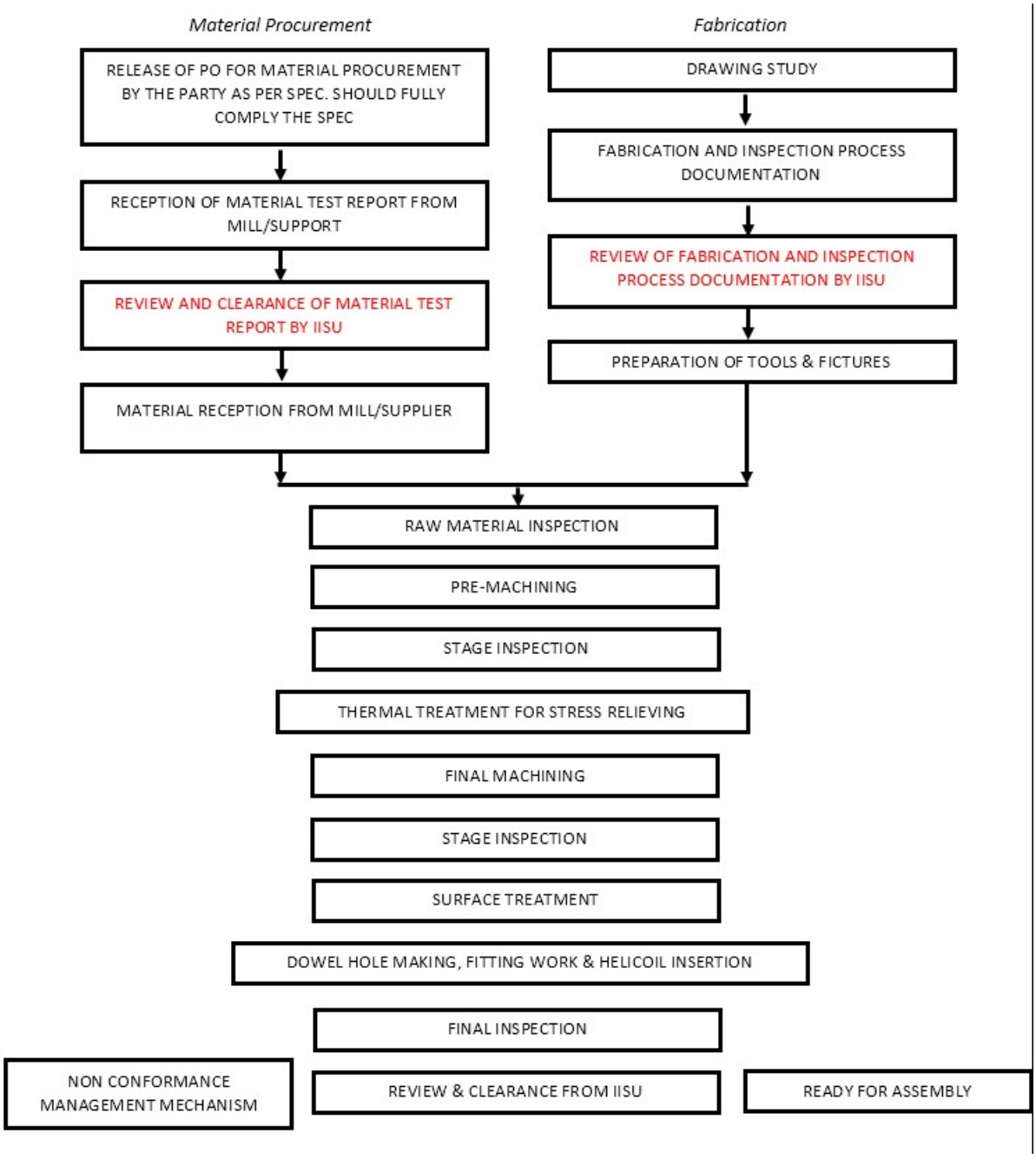
3. FORM III. FINANCIAL DETAILS OF THE ORGANISATION

Revenue (in INR Crores) Profit Before Tax (in INR Crores)	FY2024-25	FY2024-25	FY2025-26
Other Relevant Information			

Mandatory Supporting Documents

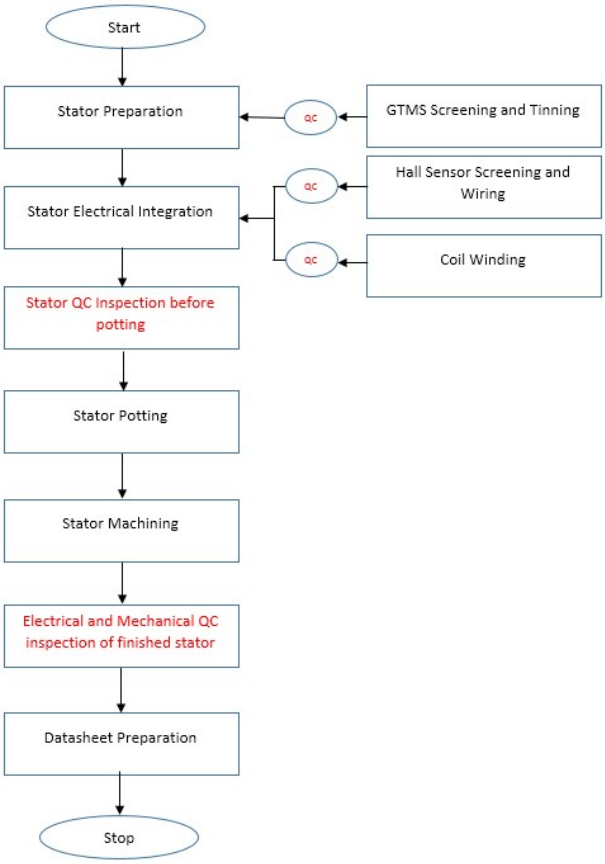
a. Auditor Certificate financial statements for the Last three financial years: 2023-24, 2022-23,2021-22 (Please include only the sections on P&L, revenue and the assets, not the entire balance sheet).
b. Unaudited financial statements certified by the company auditor for the latest year (2023-24) (in case the auditor certified statement for 2022-23 is not available)

Annexure 2 : Mechanical Hardware Fabrication and Inspection Workflow

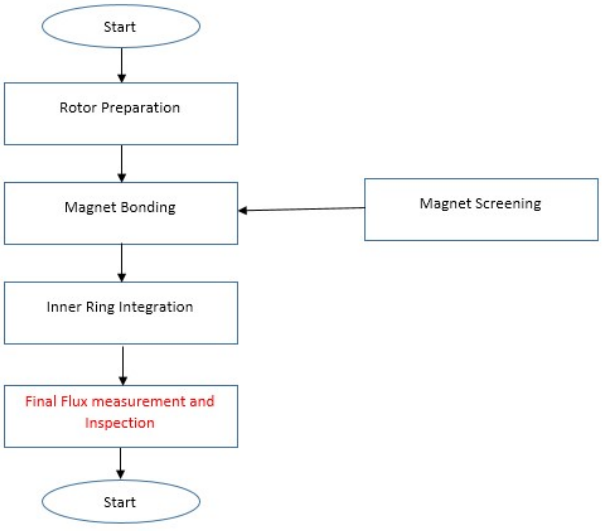


Annexure 3: Motor Realization Workflow

Stator Realization



Rotor Realization



Annexure 4: System Integration Workflow

