

Section No (RFQ)	Title	Sub-Title / Details	M/s AMPL, Coimbatore	M/s RR Industries, Hyd	M/s L&T, Coimbatore	M/s Kineco , Goa	M/s RAPS, Vijaywada	M/s RASU Industries, Hyd	M/s Hi- Tech Projects, Bangalore	M/s WIL, Hyd
5.1		Scope of Work by Vendor	✓	✓	✓	✓	✓	✓	✓	✓
6.1.d		The facilities at party site and at sub-contractor's site shall be available for audit by NSIL/ ISRO for its compliance to requirements as mentioned in Sec 6.1, before clearance for processing. Tooling's/fixtures to be realized as per the fixture drawing/design provided/approved by NSIL/ ISRO. General Quality Requirements Due to any anomaly, re-test or re-inspection (if required) shall be carried out by the party based on the recommendations by NSIL/ISRO non-conformance review board, without any additional cost Dispatch of 1 st off motor case to VSSC for structural qualification test, & remaining cases to SDSC/SHAR. Documentation	✓	✓	✓	✓	✓	✓	✓	✓
7			✓	✓	✓	✓	✓	✓	✓	✓
8			✓	✓	✓	✓	✓	✓	✓	✓
9.3			✓	✓	✓	✓	✓	✓	✓	✓
9.7			✓	✓	✓	✓	✓	✓	✓	✓
14			✓	✓	✓	✓	✓	✓	✓	✓
17.1	Eligibiltiy Criteria	Vendor should have experience and facilities for general composite manufacturing and filament winding of minimum 1000mm diameter product.	✓	✓	✓	✓	✓	Not complied. Previously realised products max. diameter is 800 mm only	Not complied	Not complied
		Vendor shall have an ISO/AS/NADCAP certified quality system for composite product manufacturing.	✓	✓	✓	✓	✓	✓	✓	✓
17.5		Delivery Schedule	✓	✓	✓	✓	✓	✓	✓	✓
	Type-A	<u>CNC Filament winding machine</u> a. 2m dia. class CNC Winding Machine with 4-axis (minimum) simultaneous interpolation capability, with center-to-center distance of 3.5 m (minimum) having wet winding capability and equipped with fiber tensioning systems. Spool creel chamber shall have heating facility to heat the spools up to 100oC. b. Standard Mobile Industrial dust collection system c. Work tables (1.2 m x 2.4 m) d. CCTV surveillance and archival of process Dustproof & humidity-controlled facilities shall be ensured for case realization 2m dia. class CNC Filament Winding Machine with the following 4-axis (minimum) simultaneous interpolation capability • Axis1: Mandrel rotation • Axis2: Feed eye rotation • Axes3: Carriage movement along the mandrel axis • Axes4 : Cross-carriage horizontal movement	✓	✓	✓	✓	✓	No details on no. of axes, tensioning system. spool chamber & CCTV	✓	✓
	Type-A	<u>Resin preparation facility</u> a. Weighing balance with accuracy of 0.5g and capability of 3 kg. b. Plate heater of 1.5 kW capacity with a fume hood	✓	✓	✓	✓	✓	Not complied. Spec not metting the min. requirement	Will be augmented prior to PO	✓
	Type-A	<u>Rubber processing facility</u> Autoclave to handle products of size 1m X 1m X 0.2 m Pressure capability: 5 bar atm. Rubber chopper and stirrer to prepare rubber solution Rubber lining tools and fixtures	✓	✓	✓	✓	✓	No details available on rubber chopper, rubber lining tools	✓	✓
	Type-A	<u>Oven</u> a. Shall handle 3mx 3m x 4m length (product + mandrel) b. Temperature up to 1800C c. Temperature uniformity: +/- 3 C d. Heating rate: controllable up to 30 C/ hour e. Data recording capability (Thermocouple: 8 channels min) f. Vacuum Pump-Direct drive rotary vane pump with oil trap, Capacity: 63m3/hr minimum The Oven shall cater to all the listed activities: i. Curing of Product ii. Dehumidification for Doily (Aramid fabric) iii. Dehumidification for Roving's (Aramid roving's) CCTV surveillance and archival provision to be made	✓	✓	✓	Oven - temperature uniformity given as +/- 30C against 3C requirement	✓	Not complied. Spec not metting the min. requirement	✓	Not meeting the specifaicon. Size available is 2x 2 x3 m
	Type-A	<u>Cold storage</u> Shall be capable of working at -20oC continuously (cold storage of -180C is also acceptable) -for storage of prepreg and intermediate process raw material: Size 1m X 1 m X 1 m (min)	✓	✓	✓	✓	✓	✓	✓	Will be augmented prior to PO

Facilities	Type-A	Product and Tool handling Crane – 5 ton Fork Lift – 3 ton	✓	✓	✓	✓	✓	✓	✓	
	Type-A	Generator Essential to ensure uninterrupted winding & skirt layup process, Pressure & structural Testing.	✓	✓	✓	✓	✓	✓	✓	
	Type-B	Grit blasting Facility Grit Blasting machine kept in enclosed space Shall handle products of size 1m X 1m X 0.5 m	✓	✓	✓	✓	✓	Will be installed after PO	✓ Sub contracted to Mythri Bangalore	✓
	Type-B	Mandrel preparation facility a. Collapsible mandrel b. CNC machining of mandrel to required profile with 2m swing and length 3 m c. Dust collection system	✓	✓	✓	✓	✓	No details on CNC swing & length	✓	✓
	Type-B	Dimensional Inspection facility CMM / Laser Tracker system for dimensional inspection of the 2m class case. Any other system proposed by vendor shall be approved by NSIL/ ISRO before implementation. Other standard dimensional measurement instruments (such as Vernier, micrometer etc.)	✓	✓	✓	✓	CMM sub contracted to SAHE, Vijaywada	Clarification required	✓	✓
	Type-B	NDT facility a. Infra-red Thermography b. Ultrasonic equipment with Dry-coupled Through-transmission capability. (Make: SONATEST, with 10 dia. roller probes of 1.25 MHz nominal frequency). Shall employ accessories to inspect 2m dia cylindrical region (shear-ply location). c. Radiography machine: 4 MeV (minimum) (LINAC or BETATRON) with handling provision for 2m class case d. Film Digitizer – 11-line pairs per mm with geometric accuracy better than 1% or two pixels) – Film size of 30 cm X 40 cm nominal – Bit depth of 8 or finer Full HD video recording of the activity to be supplied to NSIL/ ISRO	IR - available UT available RT sub-contracted to SQS,Trichy	✓ NDT IR Subcontracted to Sachu NDT-RT Subcontracted PEL, Katepally	✓ NDT IR Subcontracted to Vamara Techware, Coimbatore NDT-RT Subcontracted to Super Quality Services (SQS), Trichy	✓	Subcontracted to SQS, Coimbatore	✓ NDT IR will be procured after PO NDT-RT Subcontracted to SQS	IR, UT available RT sub contracted to SQS	Subcontracted to SQS, Coimbatore
	Type-B	Test facility For hydraulic testing (with potable water) a volume of 6000 lit. vessel till 100 bar – Storage capacity shall be planned accordingly – Overhead tank capacity: 1000 lit. minimum – Rate of pressurization: 0.75 to 1 bar/s – Pressure capability: 120 bar minimum Test fixtures and accessories Instrumentation (strain gauge and LVDT) and Real-time Data display, recording and data archival capability No of channels: 3 pressure measurements channels, 50 strain channels, 20 LVDT channels Data cables CCTV surveillance and archival system during the test Pressure test facility safe industrial safety practices should be followed.	✓ Instrumentation subcontracted to Himalaya Services, Hyd	✓ Instrumentation subcontracted to Venkateswara, Hyd	✓	✓	✓	✓	Will be augmented prior to PO	✓
	Type-B	Chemical Testing Facility To handle resin characterization, the facility shall have essentially: i. Viscometer - Evaluation of viscosity to 7000 cPs with temperature range up to 1000C. ii. Weighing balance – Evaluation of specific gravity, Capacity; 200 g, Accuracy: 0.1 mg iii. Oven– Gel time evaluation, Size: 300 mm X 300 mm X 300 mm, Temperature: ambient to 200o C iv. Resin evaluation for epoxy content v. Hardener evaluation for amine content, moisture content, flash point and insoluble content	✓	✓ Gel time, epoxy content, hardener evaluation Subcontracted to Lucid Lab, Hyd	✓	✓	✓	No details available on epoxy & hardener evaluation	Will be augmented prior to PO	✓ Subcontracted to Lucid, Hyderabad
	Type-B	Forging, Machining, Surface coating etc. For realization of End bosses, end closure plates and skirt ring. i. CNC Lathe of 1m class and Vertical Turning Machine of 2m class. ii. Surface coating facility (Anodization) for anodizing end bosses and skirt ring. iii. Heat treatment facility (Annealing) of the metallic systems iv. The realization shall be by the vendor or through sub-contracting v. Drilling machine vi. Dye-Penetrant test facility	✓ Subcontracted to Manjira, Hyd	✓ Subcontracted to MTAR, Hyd & Hyd Electro plating works	✓	✓	✓ Machining sub contracted to Varsha Technologies, Hyd Heat treament/surface coating sub contracted to Electro plating works Hyd	✓	✓ Heat treament/surface coating sub contracted to Alcoats Mysore/Electro plating works Hyd	✓ Anodising sub contracted to Gokhale, Pune
	Type-B	Calibration facility For equipment's, instruments etc.	✓ Subcontracted	✓	✓	✓	✓	✓	✓	