

TECHNICAL SPECIFICATIONS AND OTHER ALLIED REQUIREMENTS

SI No.	Description of items	Quantity
PUR/155/SET/MP/E/2020-21		
1	SUPPLY, INSTALLATION, DEMONSTRATION AND TRAINING OF 4 AXIS CNC FILAMENT WINDING MACHINE WITH STANDARD CONTROLS UNIT.	1 SET

1. DELIVERY, INSTALLATION, COMMISSIONING AND TRAINING

- 1.1. The ordered goods are to be Delivered, installed, Commissioned within 100 days of receipt of goods at CSIR-CMERI, Durgapur. Installation should be carried out only by expert engineers of Supplier / Manufacturer at Free of Cost basis.
- 1.2. After installation, minimum 3 working days onsite training at CSIR-CMERI shall be imparted to Institutes Scientist / Engineers/Technicians within above mentioned period of 100 days.

2. WARRANTY

- 2.1. Warranty for a period of 12 months (one year) must be provided to be effective from the date of successful Installation, Commissioning and Training and final acceptance of the items / equipment at the user's laboratory / Institute.

3. PERFORMANCE SECURITY

- 3.1 3 % of the Invoice Value.

4. PAYMENT TERM

- 4.1 80% of the contract price of goods dispatched shall be paid against delivery and inspection.
- 4.2 20% of the contract price of the goods received and accepted shall be paid within 30 days of delivery, Installation, commissioning, training and acceptance of the material upon submission of claim supported by the acceptance certificate issued by the purchaser and the Performance Security.

Annexure-I
Technical Specification

Supply and commissioning of 4 axes CNC filament winding machine with standard controls unit to CSIR-CMERI for fabrication of carbon fiber wrapped high pressure storage vessel.

Sl.No.	Technical Specifications
01.	Machine Type: Horizontal Bed type Description: 4 axes CNC filament winding machine with standard controls unit.
	Machine Specifications: <ul style="list-style-type: none">a. Winding diameter : 300 mm or moreb. Winding length : 1500 mm or morec. Rotating weight (Job + Mandrel) : 200 kg or mored. Number of axes (Simultaneous controls) : Foure. Number of Spindles: One
	Axes Configuration: X-axis [Rotary Axis] <ul style="list-style-type: none">• Stroke of traverse : 0 -360°• Speed of rotation : 0 - 100 rpm Y-axis [Longitudinal Axis] <ul style="list-style-type: none">• Winding length capacity : 1500 mm or more• Stroke of traverse : 2500 mm or more• Speed of traverse : 0 - 40 m/min or more Z-axis [Cross Carriage] <ul style="list-style-type: none">• Stroke of traverse : 250 mm or more• Speed of traverse : 0 - 30 m/min or more U-axis [Payout Eye Axis] <ul style="list-style-type: none">• Rotating range : 0 to 360°• Speed of rotation : 0 - 50 rpm or more Fiber delivery speed : 0 to 60 m/min or more

Construction:

- The winder machine should have head stock, tail stock and bed as individual entities.
- Preferably Siemens CNC control system
- The frame should be fabricated, stress relieved, machined structure and coated with epoxy paint. The tensioning frame along with spool creel and tensioners should be mounted independently. This is the 'Y' axis.
- Cross axis should be mounted on carriage and steel guideways must be provided for its movement. It should be fully protected against the resin dripping from the rovings. This is the 'Z' axis
- The payout Eye axis can be mounted on 'Z' axis and should be fully enclosed in an aluminium housing with timer belt enclosed in the structure. This is 'U' axis.
- The rack & pinion assembly should be hardened and ground with helical teeth for fast and smooth movement.
- Motors, controls, control pannel, drives, cables, connectors and electronics should be from repuated companies preferably siemens.
- Gearboxes should be from some of the best manufacturers in the world.

Mandrel Holding arrangement options:

Manual Chuck + Tail stock revolving center

Safety features:

- a. Emergency switches should be provided at the control panel, both sides of the carriage, headstock and tailstock.
- b. Door interlock switch must be provided and the power connection to the control panel is to be interrupted upon opening the door.
- c. A rotating hazard light is to be provided on moving carriage.
- d. Headstock cover is to be provided. Belts and other moving parts are to be covered.
- e. Guard at the chuck is mandatory.
- f. Safety support rollers at the headstock and tailstock is to be provided
- g. Safety stop using hardwired limit switch, software limit switch and mechanical stopper is to be provided for carriage at both ends of travel.

Now
Striper Chander
Handed by
Donixcamay
Philip Sinter

02	Creel Stand: <ul style="list-style-type: none"> • External unwinding creel stand with minimum 6 no.s of spools • tensioners for external unwinding
03	Resin Bath <ul style="list-style-type: none"> • Type of resin bath : Drum and temperature controlled • Capacity of resin bath : 10 litres or more • Number of rovings : minimum 6 no.s • Scraper blades : minimum 3 no.s • Resin film control device : Doctor blade
04	Software: <ul style="list-style-type: none"> • The software package, for the generation of part programs for interpretation by CNC filament winding machines is to be provided. The software should be capable of generating high accurate CNC part programs for the control of NC filament winding machines. • The software should be capable in generating codes for the following patterns <ul style="list-style-type: none"> a. Helical winding on cylindrical parts b. Hoop winding and multi-stage hoop winding on cylindrical parts c. Helical geodesic windings on cylinders with dome ends d. Helical geodesic windings on cylinders with cone ends e. Joining paths on cylinders • A comprehensive manual should be provided for the software.
05	Service and Local support: <p>The party shall provide service support for the supplied items and should be able to take AMC. The price of AMC should be quoted as Optional,</p>
06	Proof of Excellence: <p>The supplier should have installed similar machines in any of centrally funded institutes or any other reputed educational organization/Industry/Research Lab in India, also please attach performance certificate from user for reference.</p>

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Nripin Chande

Aditya

Himadri

Pranav
Sudip Saha

Terms and Conditions:

- 1) Technical manuals for the machine including diagrams etc. should be attached in support of specifications provided by the vendor.
- 2) Validity of the quotation should be for minimum of 6 months from the date of opening of tender.
- 3) Items should be delivered at CSIR-CMERI, Durgapur.
- 4) Installation and commissioning at CSIR-CMERI, Durgapur is responsibility of vendor.
- 5) The vendor should demonstrate the working of the items showing all capabilities after supply at CSIR-CMERI, Durgapur.
- 6) Firm should quote as a whole system. **Partial quotations** are not accepted
- 7) **Warranty** - One year from the date of installation.
- 8) **Training:** The supplier should provide minimum 3 working days onsite training at CSIR-CMERI after installation.
- 9) The price of standard accessories along with the price of filament winding machine will be considered for deciding L1 bidder
- 10) Vendors should quote only one model best suitable to the indented specification. Vendors quoting more than one model will be rejected.

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Nripen Chandra

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