

Pre-bid Meeting (ONLINE Mode) held on 15-03-2024 at 1500 hours

Tender No.: TENDER/2023-24/589 dated 06-03-2024

SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF FRICTION STIR WELDING AND PROCESSING MACHINE

Table A indicates the Authorized Representatives of the firms that participated in the Pre-bid Meeting.

Table A

S. No.	Name of the Firm and details of the Authorized Representative(s) who participated
1.	Mr Rohit, - M/s ETA Technology Pvt Ltd, Bengaluru
2.	Mr Srinivasan Iyer – M/s Interface Design Associates Pvt. Ltd, Thane
3.	Mr Venkatesh Balakrishnan – M/s RV machine tools, Coimbatore

Table B indicates the queries raised by the bidders and the clarifications provided by the institute.

Table-B

SI No.	Specifications	Query	Clarification
1.	Capacity- Table load- ≥ 500 Kg	500 kgs is the dead weight? What is the max thickness of sheet/weld depth	≥ 100 Kg is the table load. Plate thickness may not exceed above 50 mm for welding and processing
2.	Workpiece dimensions (XYZ)- ≥ 300 mm x 300 mm	OK, what about Z axis	Welding < 50 mm thick Al sections. However, the backing plate dimensions could vary between 200 mm to 400 mm
3.	Table- Table size (XY)- ≥ 500 mm x 350 mm	We will need larger Y dimensions maybe 400 or 450mm, else the t-slots will not fit. Also, special clamps for the max size jobs	≥ 500 mm x 500 mm
4.	Travel - Z-travel ≥ 400 mm (excluding tool length of ~ 100 mm)	Can this be reduced to 200mm z axis travel?	Needed for multi-layer surfacing
5.	Spindle - Taper BT40 or BT50 whichever is convenient (water cooled) + Liquid cooled tool holder for FSW of harder alloys like steel and Ti alloys	"Can IIT Palakkad provide the spin design? The design for the pusher for consumable rod? Design for the hollow tool?"	Design for the hallow tool can be discussed. The rest should be taken care by the supplier
6.	Provision to tilt - ± 5 degrees	Manual or motorised.?	Either Manual or Motorized (Motorized system price should be mentioned explicitly)
7.	Bore diameter- ≥ 9 mm and ≤ 15 mm	We will need design for the hollow bore - see point no. 4.2 Drawbar diameter itself is small, how to give 20mm bore?	4.2 amended with BT50 spindle, but it should meet the requirements mentioned in 4.3 to 4.5
8.	Traverse feed rate • 1. X-axis ≤ 0.01 to ≥ 2 m/min	• Design speed of axis is 2 m / minute, however actual max.	It is fine

	<ul style="list-style-type: none"> • 2. Y-axis ≤ 0.01 to ≥ 2 m/min • 3. Z-axis ≤ 0.01 to ≥ 2 m/min 	<p>welding speed will depend on process</p> <ul style="list-style-type: none"> • Design speed of axis is 2 m / minute, however actually welding speed will depend on process • Design speed of axis is 2 m / minute, however actually welding speed will depend on process 	
9.	<p>Motors Spindle</p> <p>X-axis ≥ 1.0 kW Y-axis ≥ 1.0 kW Z-axis ≥ 1.5 kW</p>	<p>"Such high power is not required. Shall use 1kW for all axes with gearbox and 1.5kW for Z axis Why 1.5 kW for Z axis"</p>	<p>It is fine as long as the machine is able to process the material for the given processing conditions</p>
10.	<p>Plunger (for surfacing)</p> <ul style="list-style-type: none"> • A solid SS316 plunger must be provided to push the consumable rod through spindle bore and hallow tool shoulder. • The plunger must allow the free rotation of consumable rod along with the spindle without creating the heat at the interface • The axial force required to push the plunger must be ≥ 15 kN 	<p>"We will need the design for the plunger. Should it be actuated with hydraulic actuator?</p> <p>Can this be made a separate line item since this involves RnD".</p>	<p>This should be an integral part of the system. Item 4.2 is amended appropriately to meet the requirements mentioned in 4.3 to 4.5.</p>
11.	<p>Accuracy - Spindle Runout</p>	<p>Pls give value for spindle runout</p>	<p>< 0.5 mm</p>
12.	<ul style="list-style-type: none"> • Other specifications Controller: Siemens/Fanuc/ Equivalent OEM • Should control 3-axes simultaneously - Should be demonstrated at the time of commissioning • A mechanism to protect the spindle during power interruption - Should be demonstrated at the time of commissioning by interrupting the power supply • One set of tool holders and tool should be supplied for FSW of Al alloy and mild steel plates. A hollow shoulder and AA6061 consumable rods must be supplied for surfacing 	<ul style="list-style-type: none"> • We will offer our PC-based SC04E controller • XYZ will have servo motors. • In case of power fail, the spindle will come to a halt. Is there any other protection expected? The spindle motor drive has overcurrent protection. • "Tool Raw Material (alloy steel / Tungsten Carbide / W-La) to be specified Quantity to be specified, Drawings to be provided" 	<p>It is fine</p> <p>Fine</p> <p>Over current protection is sufficient for the spindle motor.</p> <ul style="list-style-type: none"> • Standard WC and W-La tools for welding 3 mm and 6 mm thick mild steel plates should be supplied. Shoulder and probe diameters will be provided at the time releasing PO.
13.	<p>Instrumentation - Should provide the recorded spindle torque and forces in all three X-</p>	<p>"Force measured using dynamometer,</p>	<p>Is allowed as long as the measured data is validated</p>

	Y-Z directions while welding, processing, and surfacing	Torque data read from digital drive amplifier"	
14.	<p>Optional-</p> <ul style="list-style-type: none"> • Should record the temperatures of the rotating tool probe during welding through wire-less communication • Liquid cooled tool holder should be there for both FSW and FSP, where the tool holder should be able to accommodate the range of shoulder diameters varying from 20 mm to 40 mm. Should be provided with chiller • The machine should have a pneumatic clamping system to hold the substrate or workpiece during processing 	<ul style="list-style-type: none"> • Will be very expensive - can this be a separate line item in BOQ • See note for hollow bore size • This will be expensive. <p>Please provide design/ part drawing to be held in clamp. Please provide separate BOQ Line item in price bid. Let us know the evaluation process, whether this will be taken into account While evaluating L1"</p>	<ul style="list-style-type: none"> • Can be provided in a separate BOQ line item • Only during processing, hollow shoulder should be there to accommodate the feedstock rod. • Can be provided in a separate BOQ line item

The Closing Date and Time of the Tender is 28-03-2024, 15:00 hour.

All other Terms and Conditions of the Tender remain unchanged.

REGISTRAR