

INVITATION FOR TENDER FOR SUPPLY OF EQUIPMENT

Sealed tender offers are invited in two separate sealed covers (Technical and Commercial offers) from eligible manufacturers/suppliers or their direct Indian agents for the supply of the following equipment.

Micro Friction Stir Welding (Robot Assisted) Machine

Please send offers, ALONG WITH DESCRIPTIVE CATALOGUE/ BROCHURE. The validity of the bid should be at least four months (120 days) or more from the date of the opening of this tender. Please ensure that your quotation reaches not later than **28.05.2018 at 17:00 Hrs** at the following address:

**Professor-in-Charge,
DHI Centre of Excellence on Advanced Manufacturing Technology,
(Inside Steel Technology Centre),
Indian Institute of Technology Kharagpur,
721 302, West Bengal, India**

Earnest money of **Rs. 4,00,000/-** is to be deposited in the form of Account Payee Demand Draft in favour of IIT Kharagpur, payable at Kharagpur, India. Any bid which is not accompanied with an EMD shall be summarily rejected. Earnest money deposited will be forfeited if the tenderer withdraws or amends its tender or impairs or derogates from the tender in any respect within the period of validity of its tender. No interest will be paid on the earnest money of the unsuccessful bidders.

Tender Reference	IIT/SRIC/CoE_AMT/DHI/2018/EQ11, dated 07/05/2018
Tender Fee	Rs. 10000/- (Account payee Demand Draft in favour of IIT Kharagpur, payable at Kharagpur, India); Non-refundable
Last Date and Time for submitting the tender document	28.05.2018 (Monday) at 17:00 Hrs (Indian time)
Time and Date of Opening of Technical Bids	29.05.2018 (Tuesday) at 11:00 Hrs (Indian time)
Place of Opening Tender	Office of Professor-in-Charge, DHI Centre of Excellence on Advanced Manufacturing Technology, (Inside Steel Technology Centre), Indian Institute of Technology Kharagpur, 721 302, West Bengal, India
Address of Communication	As stated above
Contact Telephone Numbers	+91- 3222 - 281576
E-mail	coeamt@iitkgp.ac.in

BASIC INFORMATION ABOUT REQUIREMENT

Friction Stir Welding (FSW) is a solid state joining technique which makes use of a non-consumable, rotating, and traversing, and designed tool which joins the workpieces fixed in a special fixture through the generation of frictional heat and mechanical deformation.

Required *Micro friction stir welding (Robot assisted) machine* must be able to join the micro-size jobs in various 3D geometries and in different configurations (lap, T, butt, corner, cylindrical pipe etc.) by using FSW technique. The requirement includes joining of both similar and dissimilar micro-size materials. Some of the applications where the joining of micro-size jobs are being carried out and our requirement are as follows:

- ✓ *Battery tabs (Material: Aluminum and Copper; Thickness around 0.2 mm to 0.4 mm)*
- ✓ *Busbar (Material: Copper to Aluminum; Thickness around 1 mm to 3 mm)*
- ✓ *Tabular Busbar (Material: Aluminum; Outer diameter(OD) 48.3 mm and thickness around 3.7 mm)*
- ✓ *Small Dimension Pipes (Material: Aluminum to Copper; Outer diameter(OD) 19 mm and thickness around 1 mm to 1.5 mm)*
- ✓ *Hermetic sealing in Aerospace and Electronics: (Material: Aluminum; Thickness around 0.5 mm)*

Required *Micro friction stir welding (Robot assisted) machine* should be a state of the art machine fulfilling the needs for achieving the goals of Industry 4.0 (***Industrial Internet of Things***). It should have in-built sensors to *monitor the various welding parameters* as well as eventually *monitor the health of the machine*. In addition to this, the machine should also be capable of displaying and storing the data collected from those in-built sensors in *real time* during the operation and the same should be able to send to the *Cloud in real time*. The system must also possess capability to *control the welding parameters in case of fault occurrence in real time*. Apart from this, the system must also have *provision to collect, display, store, and transfer to Cloud, the data collected from various external sensors* (which may be connected by the user for further diagnostics and control).

DETAILED REQUIRED TECHNICAL SPECIFICATIONS

1. Micro-FSW (Robot assisted) machine requirement	
• Welding configurations	3D
• Material configurations	Similar and dissimilar materials
• Joint configurations	Lap, Butt, Cylindrical pipe, T and Corner joints
• Materials to be welded	<ul style="list-style-type: none"> ✓ Aluminum, Magnesium, Copper etc. (in similar material configurations) ✓ Aluminum to Steel, Magnesium to Steel, Aluminum to Copper etc. (in dissimilar configurations)
• Thickness range of the base materials	<ul style="list-style-type: none"> ✓ Aluminum / Magnesium / Copper sheet: upto 4 mm ✓ Steel sheet: upto 0.5 mm ✓ Aluminum / Copper Pipe: Outer Diameter (OD): upto 50 mm, and Thickness: upto 5 mm
• Spindle rotation speed (ω)	<ul style="list-style-type: none"> ✓ Tool Rotation- 4000 rpm or more ✓ Pipe Rotation- 10 rpm or more
• Spindle torque	40 Nm or more
• Vertical down force (axial load on the spindle)	10 kN or more
• Spindle tilting (α)	$\pm 20^\circ$, preferably with 1° division or better precision
• Maximum traversing speed (v) (For X and Y-axis)	1000 mm/min or more
• Downward movement of the spindle (Z-axis)	<ul style="list-style-type: none"> • From the home position to a rapid position the speed can be upto 100 mm/min. • From the rapid position to job final plunge position, the speed has to be at a maximum rate of 5 mm/min.
• Work table	As per the maximum reach of the Robot arm, mentioned in the Robot requirement.
• Fixtures	<ul style="list-style-type: none"> ✓ Suitable fixture for holding workpieces to carry our 1D, 2D and 3D welding

	<ul style="list-style-type: none"> ✓ Suitable fixture for holding and rotating the pipes having various dimensions as mentioned above. ✓ Magnetic clamping system should be provided for clamping micro-size jobs (job dimension mentioned above). 		
2. Robotic facility requirement			
• Number of degrees of freedom	6		
• Robot reach	2500 mm or more		
• Rated payload	500 kg or more		
• Repeatability (positional)	As per ISO 9283 standard		
• Protection rating	IP 65		
• Motor cooling facility must be there			
• Z-Axis control system	Both Position and force controlled		
• X-Axis and Y-Axis control system	Position controlled		
• Range of Axes movement and speed	<i>Rotating column</i>	<i>Range: $\pm (180^\circ \text{ to } 190^\circ)$ Speed: Minimum 70°/Sec</i>	
	<i>Linking arm</i>	<i>Range: $-130^\circ \text{ to } +15^\circ$ Speed: Minimum 70°/Sec</i>	
	<i>Arm</i>	<i>Range: $-110^\circ \text{ to } +120^\circ$ Speed: Minimum 70°/Sec</i>	
	<i>Wrist</i>	<i>Pitching</i>	<i>Range: $\pm 350^\circ \text{ or more}$ Speed: Minimum 70°/Sec</i>
		<i>Yawing</i>	<i>Range: $\pm 120^\circ \text{ or more}$ Speed: Minimum 70°/Sec</i>
		<i>Rolling</i>	<i>Range: $\pm 350^\circ \text{ or more}$ Speed: Minimum 100°/Sec</i>
3. Sensing devices			
• Force sensing system	<i>Sensor type</i>	<i>Strain gauge</i>	
	<i>Accuracy</i>	<i>$\pm 1\%$ or better</i>	
	<i>Measurement axes</i>	<i>Force in all the three axes; i.e. F_x, F_y and F_z</i>	
• Torque sensing system	<i>Measurement axes</i>	<i>Torque in all the three axes; i.e. M_x, M_y and M_z</i>	
• Spindle sensing system	<i>Sensor type</i>	<i>Magnetic rotary encoder</i>	

(Z-axis)	<i>Spindle rotation (ω)</i>	<i>Variation of rotational speed over the time</i>
	<i>Spindle motor</i>	<i>Power consumption over time</i>
<ul style="list-style-type: none"> Traversing rate sensing system (X and Y-axis) 	<i>Traversing rate (v)</i>	<i>Variation in the welding speed over time</i>
	<i>Feed motor</i>	<i>Power consumption over time</i>
<ul style="list-style-type: none"> Data acquisition system 	<p style="text-align: center;">A. Sensors inbuilt to the machine</p> <p><i>Different channels for acquiring the information (<u>Real time during operation</u>) from various sensors fitted to the machine, by the supplier, such as:</i></p> <ul style="list-style-type: none"> F_x F_y F_z M_x M_y M_z <i>Spindle speed (ω)</i> <i>Spindle motor power consumption</i> <i>Traversing rate (v)</i> <i>Feed motor power consumption</i> <p style="text-align: center;">B. External Sensors</p> <ol style="list-style-type: none"> <i>Machine should have a provision to acquire data in real time (for future investigation by the user) from external sensors (to be connected by the user, such as thermocouple/thermal imager, accelerometer, acoustic etc.),</i> <u>Machine should also have a provision of display of those external sensors' data in real time, in a screen fitted to the machine. Number of external sensor to be 30 or more.</u> 	
4. Display Panel for Data Input, Diagnostics and Control		
<ul style="list-style-type: none"> An interface to communicate with the machine for providing input parameters such as: <ul style="list-style-type: none"> ✓ <i>Robot path (with job start and end position)</i> ✓ <i>Spindle rotation (ω)</i> ✓ <i>Traverse rate (v)</i> ✓ <i>Spindle vertical movement from home position to Rapid position and then to the job position</i> ✓ <i>Tilt angle (α)</i> ✓ <i>Plunge depth (pd) etc.</i> 		

<ul style="list-style-type: none"> • Display panel to view all sensors' (inbuilt and external) data in real time during the ongoing process.
<ul style="list-style-type: none"> • Provision for collecting the displayed data in real time into the local computer (of an operator) for further diagnostics.
<ul style="list-style-type: none"> • Automatic storage of each individual sample files in a systematic manner: <ul style="list-style-type: none"> ✓ <i>The file must be stored in Microsoft excel (.xlsx)/(.csv) format for easy viewing, transfer and processing in the local computer of the user.</i> ✓ <i>The file must contain all sensors' data from the start to the end of a welding process. In addition to this, the file must also contain the external sensor's data connected by the user.</i> ✓ <i>The file must be stored automatically with the file name as specified by the user provided on the interface.</i>
<ul style="list-style-type: none"> • The machine should have facility for internet connection for transfer of data real time to the cloud or external PC <ul style="list-style-type: none"> ✓ <i>Both Ethernet and Wi-Fi adapter should be provided in the system.</i>
<ul style="list-style-type: none"> • There must be provision for real time control of the machine parameters in case of fault detection. <ul style="list-style-type: none"> ✓ <i>For instance, in a situation where the user detects some faults or defects during the process: Control signal can be sent to the robot to modify the input parameters such as:</i> <ul style="list-style-type: none"> ○ <i>Spindle rotational speed (ω)</i> ○ <i>Traverse rate (v)</i> ○ <i>Tilt angle (α)</i> ○ <i>Plunge depth (pd)</i>
<ul style="list-style-type: none"> • A joystick type controller should be attached to the machine which would be helpful for the operator to take the measurements for providing inputs to the Robot for carrying out welding.
<ul style="list-style-type: none"> • A vision based system or equivalent system that will be integrated with the Robot (controller) for path corrections (tracking the relative locations of the tool and the joint line).
<p>5. Robot Software</p>

- Full licensed software for robot path programming.
 - ✓ *It is advisable to install some of the basic part program modules like performing a curvature welding, square profile, rectangular profile, circular profile etc.*
 - ✓ **OPTIONAL:**

Other necessary related licensed software required to integrate the Robotic system with other part drawing software. *For instance, the user should be able to provide various 3D models drawn by using Computer Aided Design (CAD) software, SolidWorks etc. to the Robot and the system could generate the program automatically.*

6. Robot Safety Fence

The entire set-up must be protected by a fence for safety purpose. *(preferably aluminum with fiberglass)*

7. Spares and Consumables

- Sufficient number of welding tools must be provided by the supplier **to demonstrate** joining of various types of materials, and in different configurations as mentioned above **at the time of installation.** *(The workpieces to be joined for the said demonstration purpose will be supplied by IIT Kharagpur)*
- The corresponding size of collets ranging from (3 mm to 20 mm) must be supplied along with the tools for mounting the tool on to the spindle.
- Various mechanical tools required for handling the workpieces in the fixture must be supplied with the unit.

8. Post Installation Requirement at IIT-Kharagpur

- It is the responsibility of supplier to fully integrate, erect and commission the machine at IIT Kharagpur, 721302, WB, INDIA.
- Performance and accuracies are to be demonstrated as per ISO Standards on samples supplied by IIT-Kharagpur and on calibration standards supplied by the supplier.
- The supplier shall bring all necessary calibration standards, calibration equipment's for proving the machine accuracies with valid traceability certificates at IIT- Kharagpur.

9. Training

- Extensive training shall be provided to IIT- Kharagpur engineers by the supplier at IIT Kharagpur. The training should cover complete operation, application software usage in all aspects of measurement and data analysis, part programming, calibration, preventive maintenance and trouble shooting.

10. Warranty

- The machine shall have Comprehensive warranty (parts, labour and visit by the service engineers) for a minimum period of 3 years after commissioning for defect-free operation and specified accuracies at IIT- Kharagpur.

- Any defect observed during the warranty period shall be replaced/repaired free of cost with minimum down time. All the software updates during the warranty period shall be supplied, installed and trained to our personnel on real time basis at free of cost.

11. Documentation

- The following documents (hard copy 2 sets & soft copy in CD/ Flash Drive/ HDD) to be provided to IIT- Kharagpur:
 - ✓ *All the data and results of testing and calibration of the entire system at supplier site as well as at IIT- Kharagpur site shall be properly documented and supplied to IIT- Kharagpur.*
 - ✓ *Calibration Certificates (traceable to National / International Standard) of all the artifacts/ reference standards used for the same shall be provided to IIT- Kharagpur.*
 - ✓ *Operations, calibration, application software manual - This document should explain all the measurement options, calibration, application of the system with sketches and detailed explanation.*
 - ✓ *System administration & maintenance manual - This document should explain the detailed system configuration and administration with the help of sketches. System manual should explain known possible errors and solution for the same. The safety instructions need to be clearly mentioned in this document.*
 - ✓ *User manual and service manual (for both Mechanical and Electronic Hardware/ Circuits) in English language should also be provided.*

12. Annual Maintenance Contract (AMC)

- The supplier shall undertake Non-comprehensive AMC for a period of three years, after the expiry of comprehensive warranty of three years. The quote shall be in Indian Rupees since it is envisaged that Non-comprehensive AMC is to be carried out by the authorized service provider of the manufacturer.
- The scope shall be for two preventive maintenance visits per year.
- The scope shall also include any number of breakdown visits. In case of any major breakdowns which need the intervention of Original Equipment Manufacturer (OEM), the quote shall include per visit cost for the same.
- Preventive maintenance
 - ✓ *The authorized Indian service provider shall perform the half yearly preventive maintenance visits in one year i.e. three days per visit (two service engineers shall be assigned, one from Mechanical and other from Electrical/Electronics background). Total no. of preventive maintenance visits for 3 years shall be 6.*
 - ✓ *The party shall quote for per man-day basis, which shall be all inclusive price, including boarding, lodging & internal travel etc. However, to and fro airfare shall be paid at actual on production of documentary proof as applicable.*

- Breakdown maintenance
 - ✓ *The authorized Indian Service Provider shall attend to any number of breakdown calls per year, immediately within 24 hours of intimation during the contract period.*
 - ✓ *The party shall quote for per man-day basis, which shall be all inclusive price, including boarding, lodging & internal travel etc.*
 - ✓ *In the event of major breakdown of the machine which requires intervention from original manufacturer based outside India, the same shall be quoted by the party in terms of foreign currency for per man-day basis, which shall be all inclusive price, including boarding, lodging & internal travel etc.*

GENERAL TERMS & CONDITIONS

PLEASE SPECIFICALLY INDICATE THE FOLLOWING POINTS IN YOUR QUOTATIONS AND COMPLY THE TERMS AS MENTIONED HEREUNDER: -

1. TENDERS ARE INVITED COMPLYING THE REQUIREMENT FOR TENDER AS DETAILED IN THE TENDER SPECIFICATION TO BE SUBMITTED IN THE COMPANY'S / FIRM'S LETTERHEAD NEATLY PRINTED / TYPED DULY SIGNED BY AUTHORIZED PERSON WITH THE SEAL OF THE BIDDERS. ALL ENVELOPES CONTAINING THE TENDER SHOULD BE PROPERLY SEALED. SEPARATE ENVELOPS SHOULD BE USED FOR TECHNICAL AND PRICE BID AND INDICATION TO THEIR EFFECT MAY PLEASE BE SUPERSCRIBED ON THE ENVELOPE.

THE FOLLOWING DOCUMENTS ARE REQUIRED FROM THE INDIAN AGENTS OF FOREIGN FIRMS:

- 1.1 FOREIGN PRINCIPAL'S PROFORMA INVOICE INDICATING THE COMMISSION PAYABLE TO THE INDIAN AGENT AND NATURE OF AFTER SALES SERVICE TO BE RENDERED BY THE INDIAN AGENT.
- 1.2 COPY OF THE AGENCY AGREEMENT WITH THE FOREIGN PRINCIPAL INDICATING THE NATURE OF AFTER SALES SERVICES, PRECISE RELATIONSHIP BETWEEN THEM AND THEIR MUTUAL INTEREST IN THE BUSINESS.
2. TECHNICAL CATALOGUE/LEAFLET SHOULD BE ENCLOSED WITHOUT FAIL. PROVIDE COMPLIANCE STATEMENT WITH RESPECT TO THE TECHNICAL SPECIFICATIONS MENTIONED ABOVE.
3. PLEASE CONFIRM WHETHER YOU ARE AUTHORISED TO QUOTE ON BEHALF OF YOUR PRINCIPALS AND IF SO, PLEASE ENCLOSE A COPY OF SUCH AUTHORISATION WITH YOUR QUOTATION.
4. **PRICE BIDS FOR FOREIGN FIRMS:** PRICES ARE TO BE QUOTED ON 'EX-WORKS' DULY PACKED OR ON "FCA/FOB" INTERNATIONAL PORT" BASIS AND ALSO INCLUDING AGENCY COMMISSION PAYABLE TO YOUR INDIAN AGENTS, IF ANY, SHOWING CLEARLY THE FOLLOWING BREAK UP:-
 - I) EX-WORKS PRICE
 - II) PACKING & FORWARDING

- III) FREIGHT
- IV) ANY OTHER RELEVANT EXPENSES.
- V) TAXES PAYABLE BY THE INSTITUTE

INSURANCE WILL BE PAID BY OUR INSTITUTE SEPARATELY AND SHOULD NOT FORM PART OF THE QUOTED PRICE.

PRICE BIDS FOR INDIAN FIRMS: PRICES ARE TO BE QUOTED ON F.O.R., IIT KHARAGPUR, ON DOOR DELIVERY BASIS CLEARLY SHOWING THE BREAK UP.

- 5. **PERIOD OF VALIDITY:** BIDS SHALL REMAIN VALID FOR ACCEPTANCE FOR A PERIOD OF 120 DAYS FROM THE DATE OF OPENING.
- 6. INDIAN AGENTS ADDRESS AND PERCENTAGE OF AGENCY COMMISSION INCLUDED IN ABOVE F.O.B./EX-WORKS PRICE. (THIS WILL BE PAID TO THE INDIAN AGENTS IN INDIAN RUPEES ONLY AND NOT IN **FE**). PLEASE ENCLOSE COPY OF AGENCY AGREEMENT ENTERED INTO WITH YOUR PRINCIPALS INDICATING THE NATURE OF AFTER SALES SERVICES OF INDIAN AGENTS, PRECISE RELATIONSHIP & MUTUAL INTEREST IN THE BUSINESS.
- 7. **MEASUREMENTS/WEIGHT:** NETT/GROSS OF THE CONSIGNMENT. IN CASE OF AN ORDER, YOU SHALL USE AIR WORTHY PACKAGE (AS APPLICABLE) DULY CERTIFIED WITH DOCUMENTS – PLYTO – SANITARY CERTIFICATE (AS PER QUARANTINE ORDER 2003).
- 8. **SCOPE OF SUPPLY:** SHOULD INCLUDE FREE INSTALLATION AND COMMISSIONING
- 9. **PAYMENT TERMS FOR FOREIGN FIRMS**

The offer will be made on a single currency and only one PO will be issued for the entire scope of the supply.

- A) 90% PAYMENT THROUGH SIGHTDRAFT/FOREIGN DEMAND DRAFT/LC (EXCEPTIONAL CASES)/SWIFT TELE TRANSFER AFTER RECEIPT OF STORE IN GOOD ORDER AND CONDITION AND 10% AFTER SUCCESSFUL INSTALLATION & COMMISSIONING.
- B) BANK CHARGES ON LC/SD (WITHIN INDIA APPLICANT ACCOUNT AND OUTSIDE INDIA TO BENEFICIARY ACCOUNT).

PAYMENT TERMS FOR INDIAN FIRMS

- A) 100% PAYMENT THROUGH CROSSED ACCOUNT PAYEE CHEQUE / ELECTRONIC TRANSFER AFTER RECEIPT OF STORE IN GOOD ORDER & CONDITION AND SUCCESSFUL INSTALLATION & COMMISSIONING.
 - B) ENSURE MENTIONING
 - i) BANK DETAILS OF THE BENEFICIARY, GST NO. AND PAN NUMBER
 - ii) FULL NAME AND ADDRESS OF THE BENEFICIARY ON WHOM ORDER HAS TO BE PLACED
10. WHETHER ANY EXPORT LICENCE IS REQUIRED FROM YOUR GOVERNMENT, IF SO, PLEASE CONFIRM WITH DETAILS.

11. COUNTRY OF ORIGIN OF THE GOODS IS TO BE MENTIONED.
12. THE INSTITUTE SHALL PROVIDE THE CONCESSIONAL CUSTOMS DUTY AND EXCISE DUTY EXEMPTION CERTIFICATE AS PER GOVT. NOTIFICATION NO. 51/96 CUSTOMS DATED: 23.07.1996 AND CENTRAL EXCISE DUTY EXEMPTION IN TERMS OF GOVT. NOTIFICATION NO. 10/97 – CENTRAL EXCISE DATED: 01.03.1997 AS AMENDED FROM TIME TO TIME.
13. **LIQUIDATED DAMAGES:** THE STORES SHOULD BE DELIVERED/ DISPATCHED TO DESTINATION AND READY FOR OPERATION NOT LATER THAN THE DELIVERY DATE SPECIFIED. IF THE SUPPLIER FAILS TO DELIVER ANY OR ALL THE STORES OR PERFORM THE SERVICE BY THE SPECIFIED DATE, LIQUIDATED DAMAGES AT 1% PER MONTH OR PART THEREOF IN RESPECT OF THE VALUE OF STORES WILL BE DEDUCTED FROM THE CONTRACT PRICE SUBJECT TO A MAXIMUM OF 5%. ALTERNATIVELY, THE ORDER WILL BE CANCELLED AND THE UNDELIVERED STORES PURCHASED FROM ELSEWHERE AT THE RISK AND EXPENSE OF SUPPLIER.
14. **PATENT RIGHTS:** THE SUPPLIER SHALL INDEMNIFY THE PURCHASE AGAINST ALL THIRD PARTY CLAIMS OF INFRINGEMENT OF PATENT, TRADEMARK OR INDUSTRIAL DESIGN RIGHTS ARISING FROM USE OF THE GOODS OR ANY PART THEREOF IN INDIA.
15. ONLY THOSE BIDDERS WHO'S BIDS HAVE BEEN TECHNICALLY FOUND ACCEPTABLE WILL ONLY BE INVITED FOR PARTICIPATION IN THE PRICE BID.
16. THOSE BIDDERS WHO DO NOT RECEIVE ANY COMMUNICATION FOR PARTICIPATION IN PRICE BID OPENING MEETING MAY PRESUME THAT THEIR BID HAS NOT BEEN ACCEPTED BY THE INSTITUTE.
17. CONDITIONAL OFFER WILL NOT BE ACCEPTED.
18. LATE TENDERS I.E. TENDER RECEIVED AFTER THE DUE DATE AND TIME OF SUBMISSION AS MENTIONED ABOVE SHALL NOT BE ACCEPTED.
19. BIDDERS TO ENCLOSE THE FOLLOWING DOCUMENTS:-
 - A) INCOME TAX RETURN (3 YRS) AND LATEST SALES TAX RETURN (GST No.), AND PAN NO.
 - B) BANKER'S SOLVENCY CERTIFICATE
 - C) SUMMARY OF AUDITED STATEMENT OF ACCOUNTS FOR THE LAST THREE YEARS TO BE ENCLOSED AND FINANCIAL HIGHLIGHTS AND THE KEY PERFORMANCE DURING THE LAST THREE QUARTERS TO BE ENCLOSED AS PER FORMAT:-

COMPANY'S KEY PERFORMANCE

DESCRIPTION	JAN. TO MARCH	APRIL TO JUNE	JULY TO SEPT.
GROSS REVENUE			
PROFIT BEFORE TAX			
PROFIT AFTER TAX			
RETURN ON INVESTED			

CAPITAL (ROIC)			
----------------	--	--	--

D) CUSTOMER SATISFACTION CERTIFICATE FROM ONE SUCH ORGANIZATION IS TO BE ATTACHED WITH THE TECHNICAL BID AND PRICE BID.

E) NAME AND ADDRESS OF MINIMUM THREE CLIENTS TO WHOM SUCH EQUIPMENT HAVE BEEN SUPPLIED SHOULD BE MENTIONED.

20. **WARRANTY/ GUARANTEE:** THIS COMPREHENSIVE WARRANTY/ GUARANTEE SHALL REMAIN VALID FOR **36 MONTHS** AFTER THE GOODS (OR ANY PORTION THEREOF AS THE CASE MAY BE) HAVE BEEN DELIVERED AND COMMISSIONED TO THE FINAL DESTINATION.

21. THE INSTITUTE DOES NOT BIND ITSELF TO OFFER ANY EXPLANATION TO THOSE BIDDERS WHO'S TECHNICAL BID HAS NOT BEEN FOUND ACCEPTABLE BY THE EVALUATION COMMITTEE OF THE INSTITUTE.

22. ALL TENDERS (UNLESS OTHERWISE SPECIFIED) ARE TO BE SUBMITTED / HANDED OVER TO
Office of Professor-in-Charge,
DHI Centre of Excellence on Advanced Manufacturing Technology,
(Inside Steel Technology Centre),
Indian Institute of Technology Kharagpur,
721 302, West Bengal, India AND
ACKNOWLEDGEMENT TO BE OBTAINED.

IMPORTANT

1. IIT Kharagpur authority may accept or reject any or all the bids in part or in full without assigning any reason and does not bind itself to accept the lowest bid. The Institute at its discretion may change the quantity/ upgrade the criteria/ drop any item or part thereof at any time before placing the Purchase Order.
2. Promptly make arrangements for repair and/ or replacement of any damaged item (s) irrespective of settlement of claim.
3. In case of any dispute, the decision of the Institute authority shall be final and binding on the bidders.
4. For any query pertaining to this bid document correspondence may be addressed to
Professor-in-Charge,
DHI Centre of Excellence on Advanced Manufacturing Technology,
(Inside Steel Technology Centre),
Indian Institute of Technology Kharagpur 721 302,
West Bengal, India
E-mail: coeamt@iitkgp.ac.in

LAST DATE FOR SUBMISSION OF SEALED BIDS: 28.05.2018 at 17:00 Hrs (Indian time)

- 1) Please Note that the Institute remains closed during Saturdays & Sundays and all specified government holidays.
- 2) Fax, e-mail Tender will not be accepted.

3) The General Terms and Conditions as stated above relate to supply of stores/ equipment/ assets etc. and for specific service other terms and conditions of the Institute will apply.
