

**DHI CENTRE OF EXCELLENCE IN ADVANCED MANUFACTURING TECHNOLOGY
IIT KHARAGPUR**

TENDER INVITATION

for

*Supply, Unloading, Installation & Commissioning, and Training of
A LINEAR TORSION SERVO HYDRAULIC FATIGUE TESTING SYSTEM*

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.

*Supply, Unloading, Installation & Commissioning, and Training of
A LINEAR TORSION SERVO HYDRAULIC FATIGUE TESTING SYSTEM with ALL
necessary software and accessories*

Please send offers, ALONG WITH DESCRIPTIVE CATALOGUE/ BROCHURE. The validity of the bid should be at least five months (150 days) or more from the date of the opening of this tender. Please ensure that your quotation reaches not later than **22.10.2018 (Monday) at 10:00 Hrs (Indian time)** 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 (EMD) of **Rs. 5,00,000/-** 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, and Tender fee 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/OTG2/CoE_AMT/DHI/2018/EQ2, dated 28/09/2018
Tender Fee	Rs 7,000/- (Account payee Demand Draft in favour of IIT Kharagpur, payable at Kharagpur, India); Non-refundable
Last Date and Time for submitting the tender document	22.10.2018 (Monday) at 10:00 Hrs. (IST)
Time and Date of Opening of Technical Bids	22.10.2018 (Monday) at 11:00 Hrs. (IST) (in SRIC Conference Room)

Place of Opening Tender	SRIC Conference Room Indian Institute of Technology Kharagpur 721 302, West Bengal, India
Address of Communication	Professor-in-Charge, DHI Centre of Excellence on Advanced Manufacturing Technology, Indian Institute of Technology Kharagpur, 721 302, West Bengal, India
Contact Telephone Numbers	+91- 3222 - 281576
E-mail	coeamt@iitkgp.ac.in

Detailed technical specifications

<i>A. Load frame requirements</i>
The load frame shall have an axial stiffness of 600 kN/mm or higher at 1000 mm of daylight (or better).
The load frame alignment should be 0.1mm at 1000 mm of daylight (or better).
The load frame shall be of two-column construction.
The system should run at 200 bar or more.
The load frame shall feature a maximum daylight (crosshead to platen) of at least 2000 mm to allow the testing of required specimens.
Distance between columns should be at least 600 mm or higher.
The load frame must feature a frame-mounted, latch able, emergency stop in full compliance with current international regulations.
The load frame must feature a frame-mounted jog control handset with both coarse and fine actuator position adjustment to facilitate simple specimen insertion.
A hydraulically operated system for raising/lowering of the moving crosshead is required, as well as to clamp the crosshead in position.
The lower base of the frame must include at least 2 t-slots in the base.
<i>B. Actuator requirements</i>
The load frame shall feature one linear and one rotary fatigue rated servo-hydraulic actuators; both mounted in the test frames upper, movable crosshead or lower fixed base.
The linear and rotary actuators must have a decoupling mechanism to separate the vertical motion of the linear actuator from the rotary actuator during testing. The rotary actuator assembly must remain stationary during testing, and not be driven vertically with the motion of the linear actuator.

The actuator shall be minimum +/-100 kN fatigue rated for tensile, compressive, and through-zero testing.
The actuator shall be minimum +/-1000 Nm rotational fatigue rated for tensile, compressive, and through-zero testing.
The actuator must feature hydrostatic bearings for high side-load protection and be of seal-free construction to minimize down-time for maintenance.
The Linear actuator shall have a minimum of +/- 75 mm total stroke.
The rotary actuator shall have a minimum of 90° rotation (± 45°).
The axial actuator must be supplied complete with a minimum 40 lpm axial servo valve and minimum 20 lpm rotary servo valve .
Position measurement accuracy ± 0.2% of transducer full travel under normal operating conditions.
<i>C. Load cell requirements</i>
The system must be supplied with a fatigue biaxial load cell with a 100 kN linear capacity and a minimum 1000 Nm torsional capacity.
System Load measurement accuracy must achieve ± 0.002% of load cell capacity or 0.5% of indicated load (or even better) – to meet or surpass ISO7500-1 Class 0.5, ASTM E 4, EN10002-2 Class 0.5, JIS (B7721, B7733) down to 1/250th of full scale.
Auto-transducer recognition ; Signal conditioning of transducers to offer greater stability and low noise levels with transducer filtration system facilitating infinite adjustment in the range of 0 to 1 kHz (0.001 Hz steps).
The load cell must feature accelerometers mounted directly on the loading axes of the machine to measure biaxial inertia loads generated due to fixture mass. The control system must be capable of eliminating inertia-induced loads from the load signal in real time, in both axial and rotational axes, and must feature a fully-automatic set-up routine.
The load cell must have a minimum 300% or higher overload capacity without mechanical damage.
Crosstalk (Interference) between the axial load and torsion axis should be less than +/-2%.
<i>D. Controller requirements</i>
The electronic control system should be designed to offer the following functions for efficient and full proof operation of the testing machine:
<ul style="list-style-type: none"> • Fully digital, closed-loop control system based on double precision floating point 64 Bit architecture.
<ul style="list-style-type: none"> • Digital control system capable of controlling the actuator in position, load, and strain modes.
<ul style="list-style-type: none"> • The system must allow at least two control loops to be run simultaneously without degradation in performance. Thus the control system must be able to control one or two actuators.

<ul style="list-style-type: none"> • The control loop must feature waveform generation of 32 bit resolution, with a minimum loop closure rate of 10 kHz or higher across all control axes regardless of how many axes are being used.
<ul style="list-style-type: none"> • The controller must feature a facility for automatically updating the control loop terms in order to compensate for changes in specimen stiffness during a cycle. This facility must run at a minimum of 1 kHz.
<ul style="list-style-type: none"> • Channels for linear position and axial load must be included and must feature 28 bit resolution with a bandwidth of at least of 1 kHz, and 24 bit resolution with a bandwidth of 1Hz, across the full range of the transducer.
<ul style="list-style-type: none"> • The linear position, axial load, and optional sensor conditioning channels (e.g. strain) should be available for control and data acquisition.
<ul style="list-style-type: none"> • Through the use of optional sensor conditioning channels, minimum eight channels must be available for data acquisition.
<ul style="list-style-type: none"> • Data from all control and acquisition channels should be recorded simultaneously and synchronously and should be capable of being logged at sample rates of minimum 10 kHz across all channels, irrespective of how many channels are used.
<ul style="list-style-type: none"> • The controller must have at least one analogue input for an external analogue waveform drive signal, and at least four assignable analogue outputs for each channel of control.
<ul style="list-style-type: none"> • All supplied transducers shall be automatically recognized and calibrated by the controller.
<ul style="list-style-type: none"> • The controller must prevent any test proceeding with an un-calibrated transducer to prevent incorrect data being gathered.
<ul style="list-style-type: none"> • The controller must have a minimum of two limit detectors per connected transducer and must have a detection time of 1ms or better. The limit detectors must not be reliant in any way on the connection of a personal computer.
<ul style="list-style-type: none"> • The controller must incorporate a watchdog protocol to detect loss of communication with the personal computer. In the event of any communications loss, the controller must stop testing and revert to a safe state.
<ul style="list-style-type: none"> • The control system must include STIFFNESS BASED AUTO-TUNING, meaning the system required to run only simple ramp and able to set PID Values for all the transducer in a single step.
<ul style="list-style-type: none"> • For reasons of safety, should the actuator crosshead clamping mechanism loose pressure (such as for example inadvertent unclamping) then the system shall automatically adopt position control. The control system must have a feature to ensure the load is kept within a predefined range during test set up and specimen loading. The minimum load is to be 0.2% of the maximum load or lower.
<ul style="list-style-type: none"> • Strain transducer measurement accuracy $\pm 0.005\%$ of Transducer Capacity or $\pm 0.25\%$ of Reading \pm Transducer Accuracy. Meets or Surpasses ISO9513 Class 0.5, 1, 2, ASTM E 83 class B1, B2, C, D, EN 10002-4 Class 0.5, 1, 2 and JIS7741 Grade 0.5, 12 Depending on the Extensometer Used.

<ul style="list-style-type: none"> • Shall be able to generate the following waveforms and provide looping capability: 	✓ Sine, haversine
	✓ Square, haversquare
	✓ Triangle, havertriangle
	✓ Ramp
	✓ Hold
	✓ User defined waveforms as either turning points or sampled data.
	✓ Trapezoid waveforms with user defined ramp rates and hold times.
<ul style="list-style-type: none"> • Shall provide flexible data logging parameters which can be changed for each test step of a test: 	✓ Incremental data logging - stores data if it changes by an amount greater than specified.
	✓ Continuous data logging, linear or logarithmic cycle increments data logging.
	✓ Incremental amplitude loop logging - logs data at onset of specimen failure as detected by an amplitude change.
<ul style="list-style-type: none"> • For safety reasons the testing software must not have any overlapping test screens so the machine and test status can be viewed at all times. 	
<ul style="list-style-type: none"> • For accurate data traceability, a read only copy of the test method must always be stored in the results folder for every test set run. 	
<ul style="list-style-type: none"> • For data integrity, the software must store the last 10 cycles of complete feedback data for all signals, regardless of data acquisition settings. 	
<ul style="list-style-type: none"> • During a test the software shall have user customizable graphs of test data capable of real time auto-scaling and manual zoom in/out. 	
<ul style="list-style-type: none"> • Test progress indication is required. It should be available both in graphical and text format. 	
<p><i>E. Software and hardware requirements</i></p>	
<p>The system shall be controlled from a PC, which shall be included in the supplier's offer. The PC shall utilize the Windows 10 Professional operating system and must feature at least 22 inch LED flat panel screen.</p>	
<p>The PC should interface to the controller using a dedicated high speed interface with a data transfer rate between the controller and PC of at least 1 Gbytes/second continuously such as an Ethernet connection.</p>	
<p>The system shall be supplied with PC software to enable full operation of the controller, including loop tuning, limit and event status setting, ramp and waveform generation, and data acquisition to disk.</p>	

The system shall be supplied with application software to allow:	✓ Standard (Sine, Triangular, Square etc) and user-defined (ASCII input) waveforms.
	✓ Ramp, hold, sine, triangle, square, and trapezoidal waveforms may be combined as blocks in a single test sequence.
	✓ Data acquisition and storage to disk in ASCII format.
<i>F. Hydraulic power pack requirements</i>	
Hydraulic power pack of nominal oil flow capacity of 45±5 lpm or higher at 415AC, 50Hz.	
Maximum output pressure	200-300 Bar or better
Tank capacity	200 Litres or higher
PLC Operator interface with digital display for oil pressure and oil temperature.	
High efficiency plate heat exchanger.	
Should include protection device for oil temperature, oil pressure, oil level, oil filter condition and motor temperature.	
Local or Remote start/stop functionality.	
<i>G. Accessories and fixtures</i>	
100kN/1kNm Fatigue rated Tension /Torsion Extended Hydraulic Wedge Grips Hydraulically operated extended wedge grip with water cooled, suitable operation with environment chamber 100kN/1kN (axial- torsional) from -100°C to +300°C.	✓ The system must be supplied with biaxial hydraulic wedge action grips suitable for gripping round and flat specimens for static tensile and compression as well as full reverse stress testing up to the full load capacity of the system.
	✓ The control system must prevent the operation of the grips (opening or closing) either whilst a test is running or whilst in load or strain control.
	✓ Gripping pressure shall be user adjustable.
Strain gauge extensometer for dynamic application	Strain gauge extensometer suitable for specimen G.L. 12.5 mm, 25 mm & 50 mm with travel of +/- 5 mm, operating temperature from about -80°C to +200°C.
One set of dynamic bend fixture	Needed for SENB specimen, ASTM E399/E647, 100 kN dynamic capacity, 50-200 mm adjustable

	span, 50 mm width, 25 mm diameter rollers, anti-rotation device.
H. Environmental chamber and controller	
Temperature range: The minimum temperature range for the Environmental chamber should be - 150 °C to +350 °C.	
External dimension: To accommodate in the existing frame with column space more than 650 mm and vertical space more than 1800 mm, with minimum width of 500 mm, minimum height of 800 mm and minimum depth of 800 mm.	
Internal dimension: The chamber should accommodate the Extended hydraulic Grips, as specified above with minimum separation of 200 mm and maximum separation of 400 mm, so that minimum width 400 mm, minimum height of 600 mm and minimum depth of 400 mm.	
Should also accommodate Existing Three point bend fixture with span of 250mm.	
The chamber should have Left-hand hinged door with optical-quality heated glass window, sufficiently big size min 350 mm height and more than 120 mm width for use with Non-contact video extensometers.	
The glass window should have built in heating arrangement for ‘frost’ free operation at -30°C.	
The chamber should incorporate outer skin cooling to prevent excessive outer skin temperatures.	
The chamber should have Internal light arrangement.	
Removable wedge-ports: The chamber should have Instrumentation cut-out & removable wedge ports, to facilitate to push back chamber without removing with extended grips from the frame.	
The chamber should work with voltage 200-240 V AC single phase, 50/60 Hz and total power consumption should not be more than 6.5 kW.	
The chamber should have built in fan to minimize the temperature gradient; the fan should have Selectable slow speed to improve testing of delicate specimens at low forces by reducing air turbulence.	
The chamber should have an exhaust port to aid the ducting of potentially harmful gases away from the test area /lab.	
Roller Carriage: Suitable frame to push back the chamber, when not in use.	
Self Pressurizing Dewar Flask & Coolant Hose: Automatic self-pressurizing Dewar Flask for LN2 Coolant. 120 litres (or better) capacity. With suitable fitting and Coolant hose to attach with Environmental Chamber item No. 2 above for achieving -150 °C Temperature (or lower temperature).	
Temperature controller: A suitable PID Controller with the following features:	
✓ The temperature stability for the chamber should be ± 2 °C or better.	
✓ The Temperature Gradient for the chamber should be $\pm 1\%$ of set point after 10 minutes stability time, or ± 2 °C (or better accuracy).	

✓ The maximum temperature overshoot for chamber should be 2 °C or lower.
✓ The Heat up time to maximum temperature +350 °C should be 35 minutes or better.
✓ The cooling time to minimum temperature -150 °C should be 40 minutes or better.
✓ The controller should have Programmable 8 segment (or better) ramp/dwell function for use independently from a PC.
✓ For compatibility with Existing software, the controller should have facility, to provide temperature data logging facility through appropriate software. Appropriate cables for interfacing to PC to be offered.
✓ For safety of operator the chamber should have Interlock, which can disconnect the heating/cooling and fan power when the door is opened, for minimizing non-ambient air reaching the operator
✓ The chamber should be provided with an over temperature alarm function for protecting the specimen or for optional connection of an external device such as a water flow switch to switch off chamber if water supply fails for water-cooled grips.

I. Furnace and furnace controller requirements

Furnace type	Three-Zone Split Furnace
Furnace dimension	110 mm or more Bore Diameter, over all Furnace Height 400mm or less.
Heating element & insulation	High efficiency insulation (refractory ceramic fibre free) with embedded heating elements.
Extensometer cut-out and extensometer slot	Extensometer cut-out full width, more than 70 mm high and slot with 40 mm high or more x 15 mm wide or more, should supply with blanking Plug.
Nominal power rating	3 kW (or better)
Power supply	220-230 volts 50/60Hz single phase operation.
Nominal specimen temperature	300 °C to 1000 °C.
Thermocouple type	K / N type Thermocouple, should include 6 or more spare thermocouple
Mounting bracket	Should supply with suitable mounting bracket
Furnace controller type	Must include option of independent zone control, master/slave or specimen temperature control to suit range of testing application requirements. It must be possible to switch between control mode types.

Specimen temperature monitor	Capable of specimen temperature control from 2-nos customer supplied / mounted specimen thermocouples at either end of the gauge-length. Should have provision to monitor temperature from 6 more thermocouple.
Furnace interface	Standalone software interface with live temperature displays, and control setup with independent logging of up to 6 thermocouples.
<i>J. Hydraulic Pull Rod Grips for High Temperature Testing</i>	
Material & temperature	Inconel IN100 (or equivalent high-grade super alloy) for use up to 1000°C.
Cooling water supply	3 litre per minute (minimum) at 20 °C.
LCF specimen sizes	1 set of M12x1, M20x2.5
Control & alignment	Hydraulically operated, capable of repeatable alignment to 5% (or better) in bending when measured with strain gauged alignment cell - critical for reducing errors in LCF tests.
<i>K. Cooling Unit for High Temp Pull rods</i>	
Nominal cooling capacity	2.0 kW or better
Water inlet	45-50 °C
Water outlet	30 °C or better
Ambient temperature	20 °C
Temperature control	None
Tank capacity flow	10 Litres or more
Nominal flow rate	120 l/hour or better
Nominal pressure rate	3.0 bar or better
Supply voltage	230 V AC Single phase 50Hz
Size	485H x 230W x 250L mm or better
Net weight	20 kg or less

Noise level	63 BA @ 1 m or less
<i>L. Supporting Systems</i>	
Branded PC (either Dell / HP / Lenovo, or better model) with minimum following specifications:	
<ul style="list-style-type: none"> • Intel Core i7 Processor 4770 (3.4 GHz, 8 MB) 	
<ul style="list-style-type: none"> • Vertical Chassis Orientation (Mini-tower) 	
<ul style="list-style-type: none"> • 8GB DDR3 RAM 	
<ul style="list-style-type: none"> • 500GB (7200 rpm) SATA Hard Drive 	
<ul style="list-style-type: none"> • 16X DVD+/-RW 	
<ul style="list-style-type: none"> • Internal Graphics, VGA and 2 Display Port 	
<ul style="list-style-type: none"> • Internal speaker 	
<ul style="list-style-type: none"> • 1 x Integrated Ethernet Port and 1 x Ethernet PCI-E Network Card (for use with Ethernet Frame Interface) 	
<ul style="list-style-type: none"> • 1 *PCI (NOT full length) and 2 **PCIe x16 (1 wired x4), 1 PCIe x4 	
<ul style="list-style-type: none"> • 1 x serial port (RS232) 	
<ul style="list-style-type: none"> • 4 External USB 3.0 ports & 6 External USB2.0 	
<ul style="list-style-type: none"> • Mouse 2 Button USB Scroll Optical 	
<ul style="list-style-type: none"> • 22 in Wide Screen Flat Panel Monitor 	
<ul style="list-style-type: none"> • With Microsoft Windows 10 Professional operating system 	
<ul style="list-style-type: none"> • For supply voltage 230VAC, 50Hz 	
Branded On-line UPS of suitable capacity for Electronic Controller and PC.	
Cooling Tower & Pump for Hydraulic Power pack oil cooling.	
<i>M. Installation, Commissioning & Training, Auxiliary items and spares</i>	
The offer should include installation, commissioning of the system at site and training to be provided for operation of the system with all software.	
Calibration of Actuator Stroke	

Calibrations of all Gauges and extensometers.
The power, water, electrical connections, and civil construction requirements to be clearly specified.
OPTIONAL: Suitable rated On Line UPS with 30 minutes backup sufficient for operation of controller and computer.
OPTIONAL: Suitable rated Cooling Tower (could be from the machine manufacturer or local: Prices can be coated with concerned foreign / Indian currency) and pump for Hydraulic Power Pack.
OPTIONAL: List of Spares required for smooth operation of the tests for 3 years like heating elements, thermocouples etc.

Note: Eligibility for participating in the Tender

Participation in the tender will be dependent on fulfilling the following eligibility criteria:
<ul style="list-style-type: none"> • Company should have at least 02 installations in Jamshedpur-Kharagpur-Kolkata region with capable service team and reagents inventory / stock points in the state for immediate service and support. Details with address to be provided.
<ul style="list-style-type: none"> • Company should have at least ten (10) installations of servo-hydraulic test systems in IITs and NITs, Nationwide. Copies of purchase orders and performance certificates should be produced as evidence.
<ul style="list-style-type: none"> • Work order copies along with job completion certificate from the customer duly self-attested are to be submitted. The bidder will have to produce original document for verification, without which the bid will be treated as non responsive and summarily rejected.
<ul style="list-style-type: none"> • Sealed bids are invited from eligible and reputed OEMs and bidders who must be authorized by OEMs / Registered for products quoted for supply for this tender.
<ul style="list-style-type: none"> • Company must have a dedicated support team for Jamshedpur-Kharagpur-Kolkata region.
<ul style="list-style-type: none"> • The bidder must be in operation in business for at least 10 (Ten) years.
<ul style="list-style-type: none"> • Installation is to be carried out by the Consignee at its own cost.
<ul style="list-style-type: none"> • Maintenance & Support during warranty period to be borne by the Consignor.
<ul style="list-style-type: none"> • The OEM / OEM authorized bidder must have Support service Centre / manpower between Kolkata (West Bengal) and Jamshedpur (Jharkhand). So that any support must be attended within three (03) days. List of Technical staff with Qualifications & Experience should be submitted with the bid.
<ul style="list-style-type: none"> • After the date of completion of warranty period, AMC (Annual Maintenance Contract) charges for two (02) additional years to be quoted separately in BOQ (Bill of Quantities) sheet.

GENERAL TERMS & CONDITIONS

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

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 ENVELOPES 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 AUTHORIZED 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 150 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 EXCEMPTION IN TERMS OF GOVT. NOTOFICATION 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. 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.

21. 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: 22.10.2018 (Monday) at 10:00 Hrs. (IST)

- 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.