

TENDER
FOR
SUPPLY & INSTALLATION OF DYNAMIC UTM
SCHOOL OF ENGINEERING,
AT IIT MANDI



Tender No.: IITMANDI/S&P/PUR-56/2015-16/2487-88

Tender date: 30th June, 2015

Last Date of submission: 20th July, 2015

Indian Institute of Technology Mandi

Transit Campus: Mandav Hotel, 2nd Floor (Near Bus Stand), Mandi – 175001 (H.P)

Tel.:01905-237920 & 267039

E- mail: vsc@iitmandi.ac.in & arsp@iitmandi.ac.in

Indian Institute of Technology Mandi, Mandi invites tender for supply, erection, installation, commissioning, testing, demonstration and training of **Dynamic UTM**, as per specifications given in the Annexure attached to the Tender form. All offers should be made in English and should be written in both figures and words. Tender forms can be downloaded from the website (<http://iitmandi.ac.in/administration/tenderseoi.html>) of the Institute.

The bidders are requested to read the tender document carefully and ensure compliance with all specifications/instructions herein. Non-compliance with specifications/instructions in this document may disqualify the bidders from the tender exercise. The Director, IIT Mandi, Kamand reserves the right to select the item (in single or multiple units) or to reject any quotation wholly or partly without assigning any reason. Incomplete tenders, amendments and additions to tender after opening or late tenders are liable to be ignored and rejected.

Terms and Conditions:

1. The technical and financial bids should be quoted separately and put in different sealed envelopes marked "**Technical bid**" or "**Financial bid**" as applicable. These separate bids envelopes are to be put in an outer envelope which should also be sealed.
2. The Vendors who have earlier supplied the equipment to any of the IITs, IISc, IISERs and other Scientific Institute of National Repute may only tender. The details of such institutions and the cost with name of equipment may also be supplied with the bids.
3. The technical and financial bids should be submitted in original. The financial bid should include the cost of main equipment/item and its accessories. If there is any separate cost for installation etc. that should be quoted separately.
4. Each individual sealed envelope as well as the outer envelope should be marked with the following reference on the top left hand corner: "**IITMANDI/S&P/PUR-56/2015-16/2487-88/Item Name. ___ ___ dated 30th June, 2015**"
5. The printed literature and catalogue/brochure giving full technical details should be included with the technical bid to verify the specifications quoted in the tender. The bidders should submit copies of suitable documents in support of their reputation, credentials and past performance.
6. The rates should be quoted in figures (typed or printed) and cutting should be avoided. The final amount should be in figures as well as in words. If there are cuttings, they should be duly initialed, failing which the bids are liable to be rejected.
7. Any bids received after **1:00 P.M. on 20th July, 2015** shall not be considered
8. The Technical Bids will be opened on **20th July, 2015 at 03:30 P.M.** The date & time for opening of Financial Bids will be informed later on to the technically qualified bidders.
9. While sending rates, the firm shall give an undertaking to the effect that "*the terms/conditions mentioned in the enquiry letter/Tender Notice against which the*

rates are being given are acceptable to the firm.” In case the firms do not give this undertaking, their rates will not be considered.

10. If the supplier/firm is original equipment manufacturer (OEM)/authorized dealer/sole distributor of any item, the certificate to this effect should be attached.
11. The quantity shown against the item is approximate and may vary as per demand of the Institute at the time of placing order.
12. All tender documents should have to be sent through courier, speed post or registered post only. All tender documents received after the specified date and time shall not be considered.

The postal address for submitting the tenders is:

**“Assistant Registrar, Stores and Purchase”
Indian Institute of Technology Mandi (IIT Mandi),
Administrative Block (Mandav Hotel,
Near Bus Stand), Mandi – 175001 (H.P), India”**

13. In the event of any dispute or difference(s) between the vendee Institute (IIT Mandi) and the vendor(s) arising out of non-supply of material or supplies not found according to specifications or any other cause whatsoever relating to the supply or purchase order before or after the supply has been executed, shall be referred to “The Director, IIT Mandi”, Kamand who may decide the matter himself or may appoint arbitrator(s) under the arbitration and conciliation Act, 1996. The decision of the arbitrator shall be final and binding on both the parties.
14. The place of arbitration and the language to be used in arbitral proceedings shall be decided by the arbitrator.
15. All disputes shall be subject to Mandi Jurisdiction only.
16. All tenders in which any of the prescribed conditions is not fulfilled or any condition is put forth by the tenderer shall be summarily rejected.
17. IIT Mandi reserves the right to cancel the tender at any point of time without assigning any reason.
18. The bidders or their authorized representatives may also be present during the opening of the Technical Bid, if they desire so, at their own expenses.

Note: Price bids of only those bidders will be opened whose technical bids are found suitable by the committee appointed for the purpose. Date and time of opening of price bids will be decided after technical bids have been evaluated by the committee. Information in this regard will be intimated to the technically qualified bidders. In exceptional situation, an authorized committee may negotiate price with the qualified bidder quoting the lowest price before awarding the contract.

19. **Clarifications:**

In case the bidders requires any clarification regarding the tender documents, they are requested to contact our office (e-mail: vsc@iitmandi.ac.in & arsp@iitmandi.ac.in on or **before 10/07/2015**.

20. **Tender Cost:**

A Demand draft of **Rs. 1,000/- (Rupees One Thousand only)** towards non-refundable **tender fee, drawn in favour of “The Registrar, IIT Mandi”** payable at Mandi should accompany the Technical bid documents. In the absence of tender cost, the tender will not be accepted.

21. **Earnest Money Deposit (EMD):**

A refundable amount of **Rs. 3,00,000/-** as earnest money deposit (EMD) in the shape of DD from a scheduled bank in India (**valid for a minimum period of 3 months from the date of submission of tender**) should accompany the bid documents. The DD drawn in favour of “The Registrar, IIT Mandi” payable at Mandi should accompany the bid documents. The EMD should be kept in a separate sealed envelope, should be marked clearly and put in the outer envelope that contains the technical and financial bid envelopes. The bidders should enclose a pre-receipted bill for the EMD to enable us to return the EMD of unsuccessful bidders. Failure to deposit **Earnest Money** will lead to rejection of tender. The bidders should submit separate EMD. In the event of the awardee bidder backing out, EMD of that bidder will be forfeited.

22. **Pre – Qualification Criteria:**

- a. Bidders should be the manufacturer / authorized dealer. Letter of Authorization from original equipment manufacturer (OEM) on the same and specific to the tender should be enclosed.
- b. The Vendors who have earlier supplied the equipment to any of the IITs, IISc, IISERs and other Scientific Institute of National Repute may only tender. The details of such institutions and the cost with name of equipment may also be supplied with the bids.
- c. An undertaking from the OEM is required stating that they would facilitate the bidder on a regular basis with technology/product updates and extend support for the warranty as well.
- d. OEM should be internationally reputed Branded Company.
- e. Non-compliance of tender terms, non-submission of required documents, lack of clarity of the specifications, contradiction between bidder specification and supporting documents etc. may lead to rejection of the bid.
- f. **Furnishing of wrong/ambiguous information in the compliance statement may lead to rejection of bid and further black listing of the bidder, if prima-facie it appears that the information in the compliance statement was given with a malafide/fraudulent intent.**

23. **Prices:**

- a. The Prices quoted should be inclusive of all taxes or duties, packing, forwarding, freight, insurance, delivery and commissioning etc. at destination site (IIT Mandi, Mandi/Kamand). IIT Mandi is registered with DSIR, Govt. of India and is exempted from Custom / Excise Duty. Exemption Certificate to this effect will be issued by IIT Mandi. **Hence, Customs/Excise Duty exempted price should be quoted.** The rates shall be firm and final. Nothing extra shall be paid on any account. **In the price bid/financial bid, the vendor should clearly mention the final price breakup i.e. ex-work price/FCA price, FOB price, CIP/CIF price & FOR IIT Mandi, Kamand Campus price, as applicable in their bid.**
- b. In case of imported equipment(s)/item(s), the agency commission, if any, payable in Indian rupees should be mentioned separately. For imported equipment, the Letter of Credit will be opened for the amount excluding agency commission in Indian Rupees. The firm should clearly mention the address of foreign bank in the financial bid.

24. **Validity:**

The bid should be valid for acceptance up to a period of 180 Days. The Bidders should be ready to extend the validity, if required without any additional financial implications.

25. **Delivery:**

The Equipment should be delivered and installed within the period as specified in the purchase order and be ready for use within 24 weeks of the issue of purchase order unless otherwise prescribed. If the bidder fails to deliver and place any or all the Equipments or perform the service by the specified date, penalty at the rate of 1% per week of the total order value subject to the maximum of 10% of total order value will be deducted.

26. **Training:**

Bidders need to provide adequate training to the nominated persons of IIT Mandi at their cost. IIT Mandi will not bear any training expenditure.

27. **Warranty Declaration:**

Bidders must give the comprehensive on-site warranty as required from the date of successful installation of Equipment against any manufacturing defects and also give the warranty declaration that *“everything to be supplied by us hereunder shall be free from all defects and faults in material, workmanship and shall be of the highest quality and material of the type ordered, shall be in full conformity with the specification and shall be complete enough to carry out the experiments, as specified in the tender document.*

Any deviation in the material, and the specifications from the accepted terms may liable to be rejected and the bidders need to supply all the goods in the specified

form to the satisfaction / specifications specified in the order / contract and demonstrate at their own cost.

28. **Performance Bank Guarantee:** A performance bank guarantee from a scheduled bank in India for an amount equal to 10% of the price for duration of two months beyond the expiry of warranty period will be taken from the supplier or Indian agent.
29. **Terms of Payment:** Payment will generally be made only after delivery and satisfactory installation, testing, commissioning etc. **This must be specified in the tender/quotation.**
- In case of imported supplies, payment (excluding Indian agency commission, if any) will be made through irrecoverable Letter of Credit in two installments. 80 % of the money will be released on submission of shipping of documents. Remaining 20 % will be released after successful installation of the instrument and submission of a performance bank guarantee for 10% of the order value from a nationalized bank, valid for 2 months beyond the expiry of the warranty.
30. **Tender expenses and documents:** All costs incurred by the bidder in the preparation of the tender shall be at the entire expense of the bidder.
31. **Tender Evaluation Criteria:** The technical bids will be opened and evaluated by a duly constituted committee. After evaluation of the technical bid, the financial bid for only those offers which have qualified in the evaluation of technical bid will be opened.
32. **Return of EMD:**
- The earnest money of unsuccessful bidders will be returned to them without any interest within 15 working days after awarding the contract.
 - The earnest money of the successful bidder will be returned to them without any interest within 15 Days after supply of material.
33. **Manual and documentation:** All the manuals necessary for operating and servicing the equipment (including details of electronic circuits) will have to be provided along with the instrument.
34. The IIT Mandi reserves the right to cancel the tender at any stage (point of time) without assigning any reason.
35. Bidders should go through the tender terms, conditions and specifications carefully and fill in the attached compliance statement accurately and unambiguously. They should ensure that all the required documents are furnished along with the bid.

Sd/-
**Assistant Registrar
Stores & Purchase**

BID PARTICULARS

1. Name of the Supplier :
2. Address of the Supplier :
3. Availability of demonstration of equipment : Yes / No
4. Tender cost enclosed: : Yes/No if yes
D.D. No. _____ Bank _____ Amount _____
5. EMD enclosed : Yes / No if Yes
D.D. No. _____ Bank _____
6. Name and address of the Officer/contact person to whom all references shall be made regarding this tender enquiry.
Name :
Address :
Telephone No. :
Fax No. :
Mobile No :
e-Mail :
Web :

Ref:-ENQUIRYNO:-IITMANDI/S&P/PUR-/2015-16/Dynamic UTM

Technical Specifications for: Servo Hydraulic Test System

1. Basic Load Frame:

- Axial servo hydraulic two column load frame
- Maximum fatigue-rated capacity: +/- 250 kN with minimum frame stiffness of at least 470kN/mm (Higher stiffness is preferred). Fixed lower platen and adjustable upper Crosshead, Hydraulic lift and hydraulic clamp for crosshead.
- Actuator should be integral to and mounted in the upper crosshead.
- Vertical test space : Minimum 1500mm
- Width between the columns: Minimum 600 mm.

2. Actuator:

- Hydrostatic bearing actuator +/- 250kN Force, +/- 75mm Stoke or higher.
- The actuator must be servo valve controlled.

3. Hydraulic Power pack

- Nominal flow of 40-80 lpm at around 20 Mpa.
- Maximum Output pressure of 20Mpa or better.
- HPU should be of a silent type with submersible pump-motor, having the noise level 65 dB or better
- PLC Operator interface with digital display for oil pressure and oil temperature.
- Should include protection device for oil temperature, oil pressure, oil level, oil filter condition and motor temperature.
- Pressure and return line filtration with 3 micron or better filter.
- Local or Remote start/stop functionality.
- Arrangement for appropriate cooling as required to be provided.

4. Load Cell

- Dynamic load cell- minimum +/- 250kN capacity.
- Fatigue life of 10E9 full stress reversed cycles at full capacity.
- At least 150% overload capacity before mechanical failure
- Accuracy should be $\pm 0.002\%$ of Load Cell Capacity or 0.5% of Indicated load, Whichever is greater - Meets or Surpasses ISO7500-1 Class 0.5, ASTM E 4, EN10002- 2 Class 0.5, JIS (B7721, B7733) Down to 1/250th of full scale.

5. Grips and Fixtures

Hydraulic Grips

- Hydraulic wedge grips of at least +/- 250kN fatigue rated capacity. Suitable for tension and compression including reverse-stress dynamic testing capability.
- Suitable jaw faces for flat specimen thickness 1 mm to 17 mm or better.
- Suitable jaw faces for round specimen up to 20 mm diameter.

Compression platen

- 250kN fatigue rated compression platen of 60mm & 100 mm diameter

6. Flexural fixture

- Fatigue rated 3 point bend fixture of at least 250kN capacity with rollers of 25/30 mm diameter having adjustable span of 30 to 250mm for minimum 50mm wide specimen.
- Anti-rotation device for top end.

7. Fracture Mechanics Grip

- Fracture Mechanics Grips for CT specimen minimum thickness of 12.5 mm & 25 mm.
- Grips for bend specimen.

Strain Measurement

- Strain gauge extensometer suitable for specimen G.L. 10-50mm with travel of +/- 10% and +/-40%
- Operating temperature from about -50 °C to 120°C.
- Accuracy should be $\pm 0.005\%$ of Transducer Capacity or $\pm 0.25\%$ of Reading, Whichever is Greater. 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, 1, 2 depending on the extensometer used.

8. Electronic Controller

- The Servo hydraulic test system shall be controlled by a fully digital, closed-loop control system based on 32 or 64 bit architecture. The system must feature a digital control system capable of controlling the actuator in position, load, and strain modes. Analogue control systems, even if digitally supervised, are not acceptable.
- It must be possible to run tests either by means of a manual hardware based control panel, or through application programs running on a PC.
- The controller must provide control of the hydraulic power supply from the load frame. The controller will monitor the hydraulic power supply's (HPS) safety features and must shut down the machine in the event of a HPS fault
- The hydraulic grip should be electronically controlled with appropriate safety precautions.
- A handset should be provided with push buttons for fine actuator positioning.
- The controller should have internal waveform generator.
- The resolution of the internal waveform generator must be at least 32-bit.
- The frequency accuracy must be 0.01% of setting or better.
- The frequency of the waveform generator must be 1 KHz or better.
- A cycle counter must be available. The cycle counter must display elapsed and total cycles

9. Closed Loop Control

- The controller must have a six-term control loop (featuring P, I, D, Lag, Feed forward, and Notch Filter) in addition to an external compensation input (e.g. for acceleration or pressure feedback).
- Three control loop configurations must be available; serial (standard), parallel or cascade.
- The control loop update rate must be 6 kHz or better.
- The controller must allow full closed-loop control from any connected, calibrated transducer available for control i.e. position, load and strain control, as well as derivatives of these such as stress intensity and plastic strain.
- 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 with adaptive control.

10. Signal Conditioning

- The controller must support a minimum of four signal conditioners per axis controller. The capability to add additional signal conditioners up to a maximum of 24 must be provided
- It is desired that signal conditioners will be fully digital using advanced Digital Signal Processing (DSP) techniques, with 40 kHz sampling rate or better.

- It is desired that each signal conditioner should have a data acquisition and logging rate of 5kHz or better, fully synchronous and continuous regardless of the number of signal conditioners or transducers connected.
- The resolution of each signal conditioner must be 19-bit at 100Hz bandwidth over the full range of the transducer.
- It is desired that each signal conditioner should have an accuracy of 0.25% or reading or 0.005% of full scale (whichever is the greater).
- Position (stroke) accuracy must be $\pm 1\%$ of transducer full scale, or better, with the vendor supplied transducer.

11. Data Logging

- The data logging must be fully selectable at up to 5 kHz per connected transducer. This logging rate must be continuous as measured at the computer, regardless of the number of transducers connected. Data acquisition on all channels must be fully synchronous to avoid data skew. Logged data must include a time and cycle stamp for each logged point.
- It is desired that the peak detectors update at 5 kHz or better.
- A memory of ultimate peak must be provided which is user-reset.

12. Safety Limit Detectors

- The controller must have a facility for limiting the load applied during specimen set-up. The load threshold must be user adjustable.
- It is desired that a range of actions be available, allowing the operator to choose the appropriate action.
- It is desired for systems with hydraulic crosshead clamping that the controller detects unclamped state and the system reverts to a safe mode.

13. Computer Interface

- The controller must feature a high-speed, industry standard Ethernet computer interface, capable of handling all control signals and data acquisition.

14. Software

- Software to run static and cyclic tests with Sine, square, triangle, ramp, hold, profile, other necessary waveforms and custom waveform activities. Ability to create test templates, Data export to ASCII and report generation. Pre-defined templates for tensile, compressive, bending and peel testing.
- High-Cyclic Fatigue (HCF) software to meet ASTM E466-07 and D3479-07 stress-controlled high-cycle fatigue test standards.
- Low-Cyclic Fatigue (LCF) software to meet ASTM E606-04, ASTM E 606 and D3479-07 strain-controlled, low-cycle fatigue test standards and Advanced Low-Cyclic Fatigue software to run constant-amplitude, strain-controlled fatigue testing in compliance with ASTM standards. Ability to allow user-defined hold times.
- Fatigue Crack Growth software to meet ASTM E 647-08 test standard. Should also feature online load-displacement, crack length vs. cycles, and da/dN plotting, test shutdown and test parameter changes during the test execution.
- KIC Fracture Toughness software to meet ASTM E 399-08, ASTM E 399-09 test standard, CTOD Fracture Toughness software to meet ASTM E 1290-07, ASTM E 1290-07 test standard and JIC Fracture Toughness software to meet ASTM E 1820-08, ASTM E 1820-09 test standard.
- Fatigue & Fracture Analyser to analyse test run data.
- PC Workstation as per the requirement of the machine.

15. Optional:

- High Temperature furnace up to 1000^o C or better.

- High temperature axial extensometer with maximum temperature of 1000 °C. Gage Length should be 25 mm and Strain Range of +10% to -5%. Necessary mounting brackets to load frame and air regulator to be provided.
- Low temperature Chamber (-129° C or better)
- Min Load Cell compatible to the machine.
- Grips for High/Low Temperature Test.
- COD Gauge

Compliance statement for the tender specifications
INDIAN INSTITUTE OF TECHNOLOGY MANDI
HIMACHAL PRADESH-175001

Ref:-ENQUIRYNO:-IITMANDI/S&P/PUR-56/2015-16/Dynamic UTM

Instructions:

1. You have to fill in all columns and ensure that you furnish all the required information accurately and unambiguously.
2. If our specification contains any values, you have to provide your values against the column in the same unit as we have specified.
3. Deviation in values, materials etc. from our specification may be explained in the remarks column

S. NO	Check list of documents/ Undertakings ?	YES/ NO	Remarks (Give explanation if answer is No)
1	Is Tender fees attached?		
2	Is EMD attached? (if applicable)		
3	Is the bidder original equipment manufacturer (OEM)/authorised dealer?		
4	If authorised dealer, recent dated certificate to this effect from OEM, attached or not?		
5	Undertaking from OEM regarding technical support & extended warranty period		
6	Validity of 180 days or not?		
7	Undertaking from bidder regarding acceptance of tender terms & conditions		
8	Whether list of reputed users (along with telephone numbers of contact persons) for the past three years specific to the instrument attached.		
9	Whether special educational discount for Indian Institute of Technology (IIT) Mandi (H.P) given.		
10	Whether required weeks training of operator and research students without any charges offered.		
11	Does the instrument complies with all the required specifications as per annexure 1 (Sr. No. 1 to 15). Attach a separate sheet showing compliance with the specifications and explanations thereto if the equipments varies from the requested specifications.		
12	Whether free Installation, Commissioning and Application Training offered.		
13	Whether required comprehensive onsite extended warranty offered.		
14	Whether Annual maintenance after expiry of comprehensive onsite warranty quoted separately as optional.		