



**INDIAN INSTITUTE OF TECHNOLOGY MADRAS**  
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**Ref: MET/11-12/126/DSTX/HODX**

**Date: 15.08.2012**

**Tender No.: MET/TSP/014/2012**

**N.E. Nagaraj**  
**Special Officer (Project Purchase)**  
**IC&SR, I.I.T. Madras**

**Due Date: 05.09.2012, 3:30pm**

**Dear Sirs,**

On behalf of the Indian Institute of Technology Madras, offers are invited for the supply of various Scientific Instruments such as “**Thermo-Mechanical Simulator and Accessories**” conforming to the specifications given in Annexure.

**I) Instructions to the Bidder**

- (i) **Preparation of Bids:-** The tenders should be submitted under two-bid system (i.e.) Technical bid and Financial bid.
- (ii) **Delivery of the tender:-** The tender shall be sent to the below-mentioned addresses either by post or by courier so as to reach our office before the due date and time specified in our Schedule. The offer/bid can also be dropped in the tender box on or before the due date and time specified in the schedule. The tender box is kept in the office of the “Special Officer, Project Purchase” IC & SR Building 2<sup>nd</sup> floor, I.I.T. Madras, Chennai – 600 036.
- (iii) **Opening of the tender:-** The offer/Bids will be opened by a committee duly constituted for this purpose. The technical bids will be opened first and it will be examined by a technical committee which will decide the suitability of the bid as per our specifications and requirements. The financial offer/bid will be opened only for the offer/bids which technically meet all our requirements as per the specification.

- (iv) **Prices:-** The price should be quoted in nett per unit (after breakup) and must include all packing and delivery charges. The offer/bid should be exclusive of taxes and duties, which will be paid by the purchaser as applicable. However the percentage of tax & duties should be clearly indicated.

The price should be quoted without custom duty and excise duty, since I.I.T. Madras is exempt from payment of excise duty, and the custom duty will be paid at concessional rate against duty exemption certificate.

In case of import supply, the price should be quoted on FOB and CIF basis indicating the mode of shipment.

- (v) **Agency Commission:-** Agency commission, if any, will be paid to the Indian agents in Rupees on receipt of the equipment and after satisfactory installation. Agency Commission will not be paid in foreign currency under any circumstances. The details should be explicitly shown in Tender even in the case of 'Nil' commission. The tenderer should indicate the percentage of agency commission to be paid to the Indian agent.
- (vi) **Terms of Delivery:-** The item should be supplied to our destination in case of local supply. In case of import supply, the item should be shipped only to Chennai Airport. The Installation/Commissioning should be completed as specified in our important conditions.

Yours faithfully,

**N.E. Nagaraj**  
**Special Officer (Project Purchase)**  
**IC&SR, I.I.T. Madras.**

## SCHEDULE

### II) Important Conditions of the tender

1. The due date for the submission of the tender is **05.09.2012, 3:30pm.**
2. The offer/bids should be submitted in two bid systems (i.e.) Technical bid and Financial bid. The technical bid should consist of all technical details along with commercial terms and conditions. Financial bid should indicate item-wise price for the items mentioned in the technical bid. The Technical bid and the Financial bid should be put in separate covers and sealed. Both the sealed covers should be put into a bigger cover. The limited tender for supply of **“Thermo-Mechanical Simulator and Accessories** should be written on the left side of the outer cover.
3. (i) EMD:- Two percent (2%) of the tender value quoted by the company. The EMD should be included in the Financial bid which will not be opened for Technical evaluation. **Enclosing the EMD in the Technical bid will automatically disqualify the tenderer.** EMD should be in the form of DD in favour of “The Registrar, Indian Institute of Technology Madras” and payable at Chennai. The tender without EMD would be considered as UNRESPONSIVE and REJECTED. Photo/FAX copies of the Demand Draft/Banker’s pay orders will not be accepted. The EMD will not be paid any interest and EMD shall be converted as a security deposit of the successful bidder and the same will be returned after the completion of the warranty period.  
  
(ii) The Successful bidder should submit Performance Security an amount of 5% of the value of the contract. The Performance Security may be furnished in the form of an Account Payee DD, FD Receipt from the commercial bank, Bank Guarantee from commercial bank will be an acceptable.  
  
(iii) The Performance Security should be valid for the period of 12 months from the date of Installation.  
  
(iv) The EMD (Bid Security) will be refunded to the Successful bidder on receipt of Performance Security.

4. If an Indian agent is involved, the following documents must be enclosed:
  - i) 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.
  - ii) Copy of the agency agreement with the foreign principal and the precise relationship between them and their mutual interest in the business.
  - iii) The enlistment of the Indian agent with Director General of Supplies & Disposals under the Compulsory Registration Scheme of Ministry of Finance.
5. The offer/bids should be sent only for a machine that is available in the market and supplied to a number of customers. A list of customers in India and abroad with details must accompany the quotations. Quotations for a prototype machine will not be accepted.
6. Original catalogue (not any photocopy) of the quoted model duly signed by the principals must accompany the quotation in the Technical bid. No prices should ever be included in the Technical bid.
7. Documentary proof for the claimed position and reputation accuracies must be obtained from the principals and submitted along with the relevant pages of the standards.
8. Compliance or Confirmation report with reference to the specifications and other terms & conditions should also be obtained from the principal.
9. **Delivery Schedule:-** The tenderer should indicate clearly the time required for delivery of the item. In case there is any deviation in the delivery schedule, liquidated damages clause will be enforced or penalty for the delayed supply period will be levied.
10. **Risk Purchase Clause:-** In the event of failure of supply of the item/equipment within the stipulated delivery schedule, the purchaser has all the right to purchase the item/equipment from other sources on the total risk of the supplier under risk purchase clause.

11. **Payment:-** No Advance payment will be made for Indigenous purchase. However 90% Payment against Delivery and 10% after installation is agreed to wherever the installation is involved. In case of import supplies the payment will be made only through Letter of Credit and 90% payment will be released against delivery and 10% after installation wherever the installation is being done.
12. **On-site Installation:-** The equipment or machinery has to be installed or commissioned by the successful bidder within 15 to 20 days from the date of receipt of the item at Institution of IIT Madras.
13. **Warranty/Guarantee:-** The offer should clearly specify the warranty or guarantee period for the machinery/equipment. Any extended warranty offered for the same has to be mentioned separately.
14. **Late offer:-** The offers received after the due date and time will not be considered.
15. **Acceptance and Rejection:-** I.I.T. Madras has the right to accept the whole or any part of the Tender or portion of the quantity offered or reject it in full without assigning any reason.
16. **Disputes and Jurisdiction:-** Any legal disputes arising out of any breach of contract pertaining to this tender shall be settled in the court of competent jurisdiction located within the city of Chennai in Tamil Nadu.
17. **Acknowledgement:-** It is hereby acknowledged that the tenderer has gone through all the conditions mentioned above and agrees to abide by them.

**SIGNATURE OF TENDERER  
ALONG WITH SEAL OF THE  
COMPANY WITH DATE.**

## Annexure

### Technical Specifications for Thermo-mechanical Simulator

#### 1. General requirements

The thermo-mechanical simulator should be an integrated single system with the required hardware and software for simulating the following materials processing and testing conditions:

- a) Continuous casting
- b) Nil strength testing
- c) Mushy zone processing
- d) Weld / HAZ studies
- e) Resistance-butt welding
- f) Thermal cycling and heat treatment
- g) Quenching
- h) Forging
- i) Hot rolling
- j) Hot compression (uniaxial and plane-strain) testing
- k) Hot tensile testing
- l) Hot ductility testing
- m) Stress relaxation studies
- n) Dilatometry / phase transformation studies
- o) CCT and TTT diagrams

#### 2. System Configuration

The technical specifications of the thermo mechanical simulator are:

- Digital control and data acquisition system for performing the tests mentioned in section 1 above along with manual override capability
- Mechanical and temperature control systems to perform tests listed in section 1 and programmable with parameters given in sections 4 and 5 below
- Suitable LVDT and strain gauge based extensometers for measuring strain of specimens during hot tensile/compression testing in elastic as well as plastic regimes
- Windows based computer control system with necessary software packages for carrying out the tests mentioned in section 1 and analysis of the data
- All essential accessories and peripherals required for carrying out tests listed in section 1 including various grips for round and flat type of samples\*\*, water chiller, vacuum system for achieving vacuum of  $10^{-4}$  torr or better, air compressor, rapid water quenching, uninterrupted back-up power supply unit for system safety

\*\* Quote grips for different sizes of round and flat sample geometries and we reserve the option to select the most appropriate sizes of grips

### 3. Operating Environment

Power supply:	415 V $\pm$ 10%, 50 $\pm$ 2 Hz, 3 phase
Ambient temperature:	25 $\pm$ 2°C
Humidity:	80% max.

### 4. Mechanical System Specifications

- a) Close-loop servo hydraulic control based system
- b) Load in tension : 100 kN or higher
- c) Load in compression: 200 kN or higher
- d) Maximum stroke/displacement rate: 1500 mm/s or higher in compression and tension
- e) Minimum stroke/displacement rate: 0.01 mm/s or lower
- f) Stroke/displacement distance: 100 mm or higher
- g) Force measurement accuracy:  $\pm$  1% of full scale
- h) Stroke/displacement measurement accuracy:  $\pm$  0.5% of full scale

### 5. Heating / Cooling System Specifications

- a) Heating rate: 8000°C / s or higher
- b) Temperature range: 1650°C or higher
- c) Temperature accuracy:  $\pm$  1°C or better
- d) Temperature resolution: 1°C or better
- e) Temperature measurement system: Thermocouple / pyrometer based system appropriate for all the applications listed in section 1
- f) Accelerated cooling: 8000°C / s or higher

### 6. Accessories and consumables:

- All essential accessories required for two years of continuous operation of the system should be supplied
- Necessary tools and tackles required for installation, commissioning and running of the system should be supplied

### 7. Training

- Training by the manufacturer at their works for a period of 3 weeks for 2 persons on "Operation, Application and Maintenance". The manufacturer shall indicate the training cost separately and also furnish a detailed training schedule and course content. Submit a separate quote for this

### 8. Shipment and Warranty

- The quote should be for CIF Chennai, India
- One year of comprehensive warranty for all the mechanical, electrical and electronic systems of the equipment. Warranty starts from the date of acceptance by the purchaser after successful demonstration of performance guarantee tests outlined in section 10 below.

- Quote should provide cost of comprehensive warranty for every additional year up to 5 years.
- Quote should also include cost of annual maintenance contract after the expiry of warranty period.

## 9. Installation commissioning and performance guarantee tests

- The equipment must be installed, commissioned and demonstrated at our premises by the service engineers of the manufacturer or by the authorised engineers / representatives of the manufacturer. The demonstration must cover all applications listed in section 1.

Terms of acceptance of the equipment will be as per the performance guarantee of the parameters as per specifications listed below:

Parameter	Specification range
Peak temperature	1650°C
Heating rate	Upto 8000°C / s
Temperature (resolution)	1°C
Cooling rate	Upto 300°C /s during normal cooling and upto 8000°C /s during accelerated cooling
Accuracy of temperature control	± 1°C
Force measurement accuracy	± 1 % of full scale
Force measurement resolution	10 N
Stroke measurement accuracy	0.5% of full scale
Stroke measurement resolution	0.002 mm or better

## 10. Other conditions

- The quote should include a compliance statement for all the specifications listed in sections 1 to 9 above
- The quote should include brochure of the system being offered
- The manufacturer should agree to supply 3 sets of manuals for operation, maintenance and application software for the system to be supplied. The maintenance manuals should consist of assembly drawings and detailed circuit diagrams
- The quote should include list of organisations in India (complete address with contact details) where a similar system has been supplied in the last 10 years
- We reserve the option to select the appropriate attachments / accessories among those quoted