



**INDIAN INSTITUTE OF TECHNOLOGY MADRAS**  
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Dr. Anil Meena  
Project Coordinator

Ref: ME/AM/2020/01/HTVTF  
Dated: 05.05.2020

Limited Tender No: ME/AM/2020/01/HTVTF

**Due Date: 22.05.2020, 3:00pm**

**Pre-Bid meeting: - Not required.**

**Technical Bid opening meeting on Due Date: 22.05.2020, 4:00pm (Venue: Meeting room, MES, Ranganathan Building, Department of Mechanical Engineering, IIT Madras)**

Dear Sir/Madam,

On behalf of the Indian Institute of Technology Madras, offers are invited for the supply of “**HIGH TEMPERATURE VACUUM TUBE FURNACE**” conforming to the specifications given in (Annexure-I).

**Terms and Conditions of Limited Tender**

- 1. Preparation of Bids:** - The Limited tenders should be submitted under **Two bid system (i.e.) Technical- and -Financial bid**. The Technical bid should consist of all technical details / specifications only. The Financial bid should indicate item-wise price for each item and it should contain all Commercial Terms and Conditions including Taxes, transportation, packing & forwarding, installation, guarantee, payment terms, pricing terms etc. The Technical bid and financial bid should be put in separate covers and sealed. Both the sealed covers should be put in a bigger cover. The limited tender for supply of “**HIGH TEMPERATURE VACUUM TUBE FURNACE**” should be written on the left side of the Outer bigger cover and sealed
- 2. Delivery of the tender:** - The tender shall be sent to the below-mentioned addresses either by speed post, registered post or courier (duly sealed and super scribed on the envelope with the reference No. and due date) so as to reach the following address before the due date and time specified in our Schedule:

**Dr. Anil Meena,  
MES, Ranganathan Building,  
Department of Mechanical Engineering  
IIT Madras  
Chennai - 600 036.**

3. **Price:** - The price should be quoted in net per unit (after breakup) and must include all packing and delivery charges to **Department of Mechanical Engineering, IIT Madras.**
  - a. The offer/bid should be exclusive of taxes and duties. The percentage of tax & duties should be clearly indicated separately. IIT Madras is eligible for concessional GST and relevant certificate will be issued.
  - b. In case of import supply, the price should be quoted without custom duty. IIT Madras is exempted from levy of IGST on Imports and eligible for concessional custom duty (not exceeding 5%) and the price should be quoted on EX-WORKS and CIP (stating the Cost, Insurance, Freight separately) and indicating the mode of shipment.
4. **Terms of Delivery:** - The item should be supplied to our Departments as per Purchase Order. In case of import supply, the item should be delivered at the cost of the supplier to our Institution. The Installation/Commissioning should be completed as specified in our important conditions.
5. **Catalogue:** Original catalogue (not any photocopy) of the quoted model duly signed must accompany the quotation in the Technical bid
6. **Late offer:** - The offers received after the due date and time will not be considered
7. **Payment:** - No Advance payment will be made for Indigenous purchase. However, 90% Payment against Delivery and 10% after installation are agreed to wherever the installation is involved. In case of import supplies the payment will be made only through 100% Letter of Credit i.e. (90% payment will be released against shipping documents and 10% after successful installation wherever the installation is being done).
8. **Advance Payment:** - No advance payment is generally admissible. In case of specific percentage of advance payment is required, the Vendor has to submit a Bank Guarantee from a Nationalized Bank of India equal to the amount of advance payment.
9. **On-site Installation:** - The equipment or machinery has to be installed or commissioned by the successful bidder within number of days (as prescribed by PI's) from the date of receipt of the item at site of IIT Madras.
10. **Warranty/Guarantee:** - The offer should clearly specify the warranty or guarantee period for the machinery/equipment.
11. **Validity:** Validity of Quotation not less than 60 days from the due date of tender
12. **Technical Bid Opening:** The technical bid will be opened on **22.05.2020 4:00pm at the Department of Mechanical Engineering, IIT Madras** and the **financial bids** of those tenders who are technically qualified will be opened at a **later date under intimation to them.**
13. **Performance Security:** The successful bidder should submit Performance Security for an amount of 5% of the value of the contract/supply within 21 days from the issue of work/purchase order. The Performance Security should be furnished in the form of an Account Payee DD / FD Receipt from the commercial bank (or) Bank Guarantee from any nationalized bank in India.
14. **Accept /Reject:** IIT Madras reserves the full right to accept / reject any tender at any stage without assigning any reason.
15. **Settlement of Disputes:** 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.

- 16. 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.
- 17. Unsolicited offers:** “This notice is being published **for information only** and is not an open invitation to quote in this limited tender. Participation in this tender is by invitation only and is limited to the selected registered suppliers. Unsolicited offers are liable to be ignored. However, suppliers who desire to participate in such tenders in future may apply for registration as per procedure.” The Website for Registration of vendors is <http://web.iitm.ac.in/supplier/> and the mail address for queries is “ [workflow@rt.iitm.ac.in](mailto:workflow@rt.iitm.ac.in) “.

Yours sincerely,

**Dr. Anil Meena,  
MES, Ranganathan Building,  
Department of Mechanical Engineering  
IIT Madras  
Chennai - 600 036.**

**General Specifications High Temperature Vacuum Tube Furnace for 1800 degree Celsius Heat Treatment Vacuum & Gas Tight Operation & Purging**

- It should be GLP & GMP compliant Non-rust Textured Stainless steel casing tube furnace of T-Max. 1800 °C or more & with Continuous Operation temperature: 1750 °C
- PID based Microprocessor temperature controller with LCD display with data input by numeric pad. Should have facility for at-least 50 Programs with 40 Steps each; Temperature & time value entry in steps of 1°C & 1minute respectively; Status messages not as codes but as clear texts. With start time configurable; Operating hour counter; auto tune function; Temperature variable as °C & °F; kWh meter; Real time clock; Skip-button for segment jump.
- The controller should have auto resume/auto start facility after power outage during a running program.
- The controller should have option for retrieving recorded data on an external drive & recording of process data with USB Flash Drive
- The system should have the facility of writing Programs & Generating the reports on PC through external flash drive/pen drive.
- The furnace should have single input power source for better synchronization of furnace in performance with controller features.
- High Quality fibre insulation not classified as carcinogenic according to TRG 905 Class 1 & 2, MoSi<sub>2</sub> heating rods (density (g/cm<sup>3</sup>): 5.6, porosity (%) < 1, Tensile strength at 1500 °C (MPa): 100) installed mounted vertically for easy replacement.
- Type B thermocouple; Thyristor Control system, power unit with low voltage transformer & switching & control system in base of the furnace.
- Over temperature limiter with adjustable cut-out temperature for thermal protection class 2 in accordance with EN 60519-2 as temperature limiter to protect the furnace & load.
- Should meet applied harmonized standards or better EN 61010-1, EN 60519-1, EN 60519-2, EN 61000-6-2, EN 61000-6-4 or equivalents BSEN61010 or equivalent or better.
- Vacuum / Gas System for protective gas applications with Non-flammable gases / Vacuum operation (up to 10<sup>-5</sup> mbar or better) The standard long vacuum tight working tube of ceramic in a gas/vacuum-tight version with stainless steel flanges design. It should have the following:
  1. 2 vacuum-tight, water-cooled stainless steel flanges with O-rings & seals with fittings on the outlet side.

2. Mounting support system with Brackets on furnace for the tube/ flanges.
  3. Gas system for One non-flammable protective gas (Ar/N<sub>2</sub>/O<sub>2</sub>/forming gas (N<sub>2</sub>+H<sub>2</sub>) etc.):  
Each system supplied with shutoff valve and flow meter with control valve for fine dosing (volume 50-500 l/hr), gas outlet valve, piped and ready to connect.
- A suitable closed loop chiller enough to cool the flanges to be provided. Internal Tank Capacity Approx 8 Litres or above Cooling capacity at dT of 5K/20K: 0.8 / 3.2kW, Rated coolant flow m<sup>3</sup>/h: 0.6, Pump pressure: 2.9 bar.
  - Tube Dimensions L 1100 mm with Inner  $\phi$  70 or more & Heated Length 300 mm or more & Length Constant Temp.  $\Delta T$  10K:  $\geq 95$  mm
  - Outer dimensions of furnace should not be more than 1400 mm x 750 mm x 750 mm (wxdxh)
  - Heating capacity less than 10.0 kW with Voltage supply of: 400 V AC / 50 Hz / 3-Phase
  - Weight should not be more than 130 kg
  - Machine should come with 3-year warranty from date of supply & AMC for 3-year post warranty must be quoted for the system and included in the quote.
  - Following should be quoted as optional Accessories
    1. Vacuum Pump System for Vacuum – 2 Stage Pump for vacuum Operation for a Max. Final pressure of approx.  $10^{-2}$  mbar.
    2. All the Necessary fitting & connection Kit must be quoted for the Vacuum Operation.

**NOTE / Pre-Qualification criteria:**

- A) Equipment offered must be a model from the current serial production range of the manufacturer. Customized or One off Manufactured Model will not be accepted. Offer should be supported with printed catalogue & depiction on company website.
- B) The local vendor of OEM must have similar supplied at least 5 similar Furnaces to IITs, IISERs and other Govt. of India organizations. Please attach a reference list of similar supplies in last 3 to 5 years with contact details (Name, phone, email address).
- C) The company should be an Original equipment manufacturer of the furnace, please attach exclusive authorization certificate specific for this tender with quote without which bid will be rejected. This criteria is proof of accountable service support by vendor & OEM.
- D) The complete furnace along with all the accessories must be supplied from single OEM; No configurations will be acceptable instead of Single OEM.
- E) The manufacturer must be an ISO9001 company & equipment Model must be with CE compliance. Please attach certificates.
- F) Machine should come with 3-year warranty from date of installation and commissioning.
- G) AMC for 3-year post warranty must be quoted for the system.

### **ADDITIONAL DETAILS:**

- The supplier of the instrument must confirm in writing that the spares for the entire instrument will be available for a period of at least 10 years after the installation of the instrument.
- Free of charge training in equipment operation and maintenance by the certified company engineers at IIT Madras, Chennai.
- Maximum education discount, if any should be offered.
- Validity of quotation should be at least for 60 days.
- An undertaking that the vendor will supply all the spares and services for the equipment for at least 5 years from the date of commissioning.
- Delivery must be within 6 months.

### **COMPLIANCE STATEMENT**

- The supplier must submit a table indicating the compliance of the features of the model of the equipment being quoted with those given in the indent.
- Features not matching – must be clearly indicated.
- Additional features and features in the quoted equipment which are better than those in the tender – may be clearly explained.
- Compliance statement needs to be provided by vendors clearly specifying COMPLY/DO NOT COMPLY for all items with REMARKS.

### **NOTE TO THE BIDDERS REGARDING TECHNICAL BID:**

- Price related information to be given only in price bid cover, not in the technical bid cover.
- If any feature not mentioned/left over in the technical bid by the bidder, the same will be presumed to be absent without any further references to the bidder/vendor. No further discussion with the bidder can be entertained.
- All the quoted technical features must be demonstrated after installation with quoted precision. Otherwise, the equipment must be returned to factory at suppliers cost and the money paid, if any, for the equipment by IIT Madras should be paid back.
- Mention clearly the service, installation and personnel training. Provide sufficient information about your after-sale service capabilities/man power and a list of customers possessing similar equipment.
- Equipment Model and make to be mentioned; brochures must be provided along with the technical bid.
- All technical features must be equal to the given IIT Madras specification or higher and better than the given specifications. IIT Madras specification committee decision will be final for technical specifications.