

Enquiry Letter for Quotation of High Temperature Microwave Furnace

Enq. No.: IITK/MSE/AU/15-16/01

Enquiry Dated: 07.03.2016

Closing Date: 16.03.2016

Sealed quotations (in two separate envelopes namely “TECHNICAL ONLY” and second ‘FINANCIAL’ bid) are required for **High Temperature Microwave Furnace** with a capacity of going up to 1600°C. The specifications for the equipment are in the addendum.

The prospective suppliers are required to send quotation in two parts in sealed envelopes, as “**Technical Bid**” and “**Financial Bid**”. The two separate and sealed envelopes should be clearly marked appropriately as “Technical Bid” and “Financial Bid”.

(i) The **Technical Bid** should contain detailed technical specification of the product being offered and should not mention any price. This should also mention the guarantee and complete spare parts must be included that are required for functioning of the unit. Please also provide ‘performance report’ from the places where this equipment is provided.

(ii) The **Financial Bid** should include the detailed price quotation clearly including the cost of the equipment, taxes, service charges if any, shipping and handling charges.

Terms and Conditions:

1. Maximum education discount, if any should be offered
2. Validity of quotation should be at least for 60 days
3. Prices should be on CIF and FOB separately (if imported)
4. Prices should include the installation and training cost
5. Warranty should be for at least one year after installation
6. Normal payment terms for the Institute will be applicable (90% on delivery of the items and the remaining 10% after satisfactory installation/ inspection)
7. Quotation should carry proper certifications like agency certificate, proprietary certificate, etc.
8. 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
9. Delivery must be within 6 months

Kindly submit the Technical and Financial bids in sealed envelopes latest by 5 PM on 16.03.2016:

Dr. Anish Upadhyaya,
Department of Materials Science and Engineering
IIT Kanpur (UP) 208016 India.
e-mail: anishu@iitk.ac.in
Ph: (0512) 259-7672

SPECIFICATIONS:

FURNACE STRUCTURE

1. SS inner size : $\approx 300 \times 300 \times 300$ mm
2. Outer dimension : $\approx 600 \times 700 \times 600$ mm
3. Shell Construction : High quality fabrication of M.S.Body and M.S. Angle's structure with proper stiffeners and neat powder coat painting. Main chamber made with well polished Stainless steel (304), Choke door, 'O' ring seal
4. Furnace panel box with stand : Control panel box coupled with furnace and bottom stand to a height of 1 meter will be provided.
5. The furnace design should have the provision for incorporation of MW transparent tube can be inserted with the capability to provide inert/reactive atmosphere to the sample during sintering.
6. Insulation : Zirconia vacuum formed board of Zircar, USA
 1. Inner most lining – SALI Board – 25 mm thickness
 2. Outer most lining – alumina board
7. Susceptor : Modified SiC with high temperature materials suitable to heat the sample till 1600 deg C
8. Number of susceptor : Four set of Susceptor
9. Clear space in the chamber : $\approx 100 \times 100 \times 100$ mm (Free space with susceptor)
10. Space available for loading : $\approx 75 \times 75 \times 75$ mm

HEATING SYSTEM

1. Heating system : Microwave by magnetron (2.45GHz)
2. Operation : Single phase / AC
3. Power out put : Multiple magnetrons with total 4.4 Kw
4. Power rating : 2.45GHz with 1.1KW each x 4 numbers
5. Power out put : two magnetrons with total $\approx 2.2\text{Kw} \times 2$ set (one set will work at time and using timer automatically shifted to another set for continuous operation)
6. Cooling system : Forced air is used to cool the magnetrons
7. Maximum temperature : 1600°C (Max)
8. Operating temperature : 1600°C
9. Rate of heating : 10 to 25°C/ minute (Max) (programmable)
10. Continuous operation : 5 hours
11. Power requirement : Single phase 32A MCB with neutral

CONTROL SYSTEM

1. Temperature control : Eurotherm PID (Model 2416) 16 segments programmer cum Digital Temperature Indicator

2. Temperature sensor : non contact infrared sensor
3. Placement of sensor : It is fixed at the top centre of the furnace and aligned to the hole made in the susceptor insulation
4. Temperature accuracy : $\pm 1^{\circ}\text{C}$ at soaking
5. Power control : Programmer driven current controller through thyristor
6. Control switches : Mains on, out put on
7. Safety : Input, out put fuses