

Enquiry Letter for Quotation of Gas Sensing Setup

Enquiry No: ME/NS/03/2017-2/GSS

Enquiry Dated: December 15, 2017

Closing Date: December 25, 2017

Sealed quotations (in two separate envelopes namely “TECHNICAL ONLY” and second ‘FINANCIAL” bid) are required for **Gas Sensing Setup**. The specifications for the equipment are given at the bottom. The closing date for the above item is December 25, 2017.

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.

(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.

Kindly send the Technical and Financial bids in sealed envelopes latest by December 25, 2017 by 5pm to:

Dr. Niraj Sinha

Department of Mechanical Engineering

IIT Kanpur, U.P. 208016, India.

E-mail: nsinha@iitk.ac.in

Note: Quote must have a compliance report on both technical specification and special features following points

Technical Specification for Gas Sensing Setup:

1. Chamber:

- The chamber should be made out of SS 304, size: 150mm (dia) x 200mm (H)
- All vacuum connection with KF
- The top flange of this chamber should have high vacuum quartz view port and SS blanking flange.

- Pipe line lengths, flange, material, “O” ring grooves, PCB, number of bolts and their sizes etc., should be as per high vacuum ASTM standards.
- Port lengths should be as per standard.
- All “O” rings should be viton and a set of spare “O” rings should be provided
- All vacuum port should be provided with suitable SS with good flexibility. Free bending radius should be indicated.
- The bellows should be of SS with good flexibility. Free bending radius should be indicated.
- Manual gate valve should be provided for isolation.
- All weldings should be internal and as per vacuum standards
- The completed and assembled chambers should be able to withstand a base vacuum of 1×10^{-6} mbar. The chamber should be helium leak tested and leak rate should be less than 1×10^{-8} mbar lit /sec.

2. Heater:

- This chamber should have a 2” (inch) size concealed heater which can reach a maximum temperature of 600°C.
- The constant Temperature zone should be 35-40 mm diameter flat surface on the top and have temperature uniformity of $\pm 1^\circ\text{C}$ over the entire operating range.
- The heater should be mounted at the center of the chamber on 3 to 4 legs with provision to manually raise or lower the heater in the chamber for easy specimen loading and removal.
- The heater should be able to work under vacuum, oxidizing, reducing and inert atmospheres.
- It should have a programmable controller with facility for programming the heating/cooling rates, maximum temperature, dual time etc., complete with suitable power controller and thermocouples.
- In addition to heater controller thermocouple, one more K-Type thermocouple should be provided for specimen temperature measurement. Electrical power and thermocouple connections should be terminated through a high vacuum feed through (on SS KF Flange) mounted on to port.

- A matching socket should be provided for electrical connection outside the chamber.

3 Spring Load Probe:

- The chamber should have four insulated electrical probes to measure specimen current, resistance etc., from any point (area 1mm²) across the sample (30dia) mounted on to the heater constant temperature zone.
- These probes should be placed 90 degree apart and should have provision to move forward and backward, 90 degree radial sweep and also provision to make reproducible electrical contact with sample.
- The probes should have a sharp bent tip at the free end and other end connected with electrical leads. The electrical leads should be terminated with a high vacuum electrical feed-through (on SS KF flange) mounted on to port.
- A matching socket should be provided for Electrical connection outside the chamber.
- The electrical probe should be made of chemically inert and high temperature compatible material which should not lose its stiffness with thermal cycling.

4 Vacuum Pump

Double Stage Direct Drive Rotary High Vacuum Pump

- Model : IVP 100
- Capacity : 100 LPM (6m³/hr)
- Motor Capacity : 0.33 HP Single Phase Motor.
- Rational Speed : 1400 RPM
- Ultimate Partial Pressure
- Ultimate Vacuum : 2x10⁻³ m bar at pump mouth with GB open
- Weight : 24 kg
- Oil Capacity : 0.8 liter

5 Mass Flow Controllers Qty 02 No.

Gas Service H₂. CO₂

6 Gas Mixing Chamber

- MS Powder coating Panel, 04 Gases Inlet 01 Outlet,
- It should contain SS Chamber, 4 Ballvalve

NOTE / Terms and Conditions:

- The equipment should be provided with all necessary accessories and spare
- Maximum education discount, if any should be offered.
- Validity of quotation should be at least for 60 days.
- Please attach Principal Authorization letter Specific for this tender.
- Machine must have a warranty of at least 1 year. Please also quote the price for extended warranty of 3 years.
- An undertaking that the vendor should supply all the spares and services for the equipment for at least 5 years from the date of commissioning.
- If it is an imported item, please quote FOB charges and CIF charges separately.
- If the product is manufactured outside India, please attach NMIC certificate.
- Prices should include the installation and training cost.
- Normal payment terms for the Institute should be applicable (90% on delivery of the items and the remaining 10% after satisfactory installation/inspection).
- Delivery must be within 2 months.