

Government of India  
Bhabha Atomic Research Centre  
Control Instrumentation Division(CnID)

Ref: CnID/E&IG/18/171243

Date: 05/09/2018

Sub: Fabrication and Supply of Rotary Vacuum Pump, Four way with KF-16 Flange, Vacuum Gauges and Needle Valves as per Annexure - 1

Dear Sir/Madam,

Quotations are invited for the "Fabrication and Supply of Rotary Vacuum Pump, Four way with KF-16 Flange, Vacuum Gauges and Needle Valves as per Annexure – 1."

1. Bidder shall quote for fabrication and supply of parts along with material.
2. Taxes and GST shall be quoted separately. Form AF / H whichever is applicable shall be provided, if required.
3. The quotation must reach by speed post to The Head, Control Instrumentation Division by **17/09/2018** and must be sent in a sealed envelope super scribed with the reference number & the due date given above.

The address on the envelop should read: Head, CnID, E&I Group,

RCnD, Bldg., North Site

BARC, Trombay,

Mumbai - 400 085.

(Attn: Mr. Anant Ram, Ph.: 022 25596962/42)

4. The testing shall be witnessed by our engineer. The tested components shall not be dispatched prior to approval by our engineer at bidder's premises. Necessary inspection facilities shall be provided to our engineer during fabrication at bidder's premises.
5. The bidder shall deliver the finished components after approval by our engineer within 3 Months from the date of firm work order issued to the bidder. The finished components shall be delivered by the bidder at CnID, E&I Group BARC, Trombay, Mumbai - 400 085.
6. Head, CnID, E&I Group reserves the rights to accept / reject any or all quotations without assigning any reason.
7. Delivery charges if any must be clearly mentioned in the offer. Quotation must also indicate the validity of offer. Quotation must also indicate the GST no and PAN no of the party.
8. Drawings / Sketches must be returned along with the offer.
9. The quotation has to be signed by authorized person with company seal.
10. Payment will be made by cheque only after satisfactory completion of work on production of bill, delivery challan and advance stamped receipt. It may be noted that IT @ 2% and surcharge on tax at 15% shall be deducted from your bills.
11. Part supply is not acceptable.
12. Job should be guaranteed against material and manufacturing defects for 1year from the date of supply.

Encl.: Annexure - 1

(P.P Marathe)  
Head, CnID, E&I Group

Annexure 1  
(Scope of work)

Fabrication and Supply of Rotary Vacuum Pump, Four way with KF-16 Flange, Vacuum gauges and needle valves as per below details:

1. Rotary Vacuum Pump: ----- 1 No

Technical Specification:

- a. Pumping Speed: 6.5 m<sup>3</sup>/hr (100 lit/min).
- b. Vacuum pressure: 1 bar to 10<sup>-3</sup> mbar
- c. Pump rotational speed: 1440rpm
- d. Power Rating: 0.4HP
- e. Weight: 25kg
- f. Inlet Connection: KF 25 Flange
- g. Outlet Connection: KF 25 Flange
- h. Oil Capacity: 0.7Lts
- i. Voltage: 230 Volt

FEATURES:

- a. Robust and compact
- b. Improved vapour handling performance Forced oil lubrication system with built-in oil vane pump
- c. enabling high-performance down to 10<sup>-3</sup> mbar
- d. Lower noise level at 52 dBA
- e. Minimal vibration
- f. Increased inlet port path to give maximum flow
- g. Lower oil consumption
- h. All fluoroelastomer (FKM/Viton) seals

2. Pirani Gauge Head with digital display unit and cables (230-volt operation) ---2 Sets.

SALIENT FEATURES:

- a. Engineered for total reliability.
- b. Compact solid state electronics.
- c. Two-gauge head drive capability.
- d. Minimum controls.
- e. No user calibration.
- f. Modular hardware.
- g. Ideal for roughing, for line pressure monitoring.
- h. Compatible output for process set point controller.

OPERATING PRINCIPLE:

Within limits, decreasing pressure causes decrease in particle density, increase in their mean free path and lowering of the thermal conductivity of the medium. Pirani gauge heads and gauge use this principle for system pressure measurement. The change in resistance due to temperature build up a coil filament supply with constant voltage placed in Wheatstone bridge configuration, consequent to the pressure and thermal conductivity decrease is directly ready by the gauge.

The gauge consists of the stabilized power supply and the indicating meter with the arrangement to select any of two-gauge head consist of the bridge and calibration elements. Their heads are factory calibrated with full interchangeability in field.

DISCRIPTION OF DIGITAL PIRANI GAUGE CONTROL UNIT:

- a. Digital High Pressure Pirani Gauge control unit with standard 2 Mtrs Power.
- b. Pirani Gauge Head with KF Coupling.

- c. Pressure range 999mbar to 0.001mbar.
- d. Power input 230volt AC 50Hz. Front (ON/OFF).
- e. Analog output 0-10volt.
- f. Power cord -2meter long cable with 3 pin 5amp plug as standard.
- g. Gauge Head cable 2 meter long as standard.
- h. Physical dimension in mm 98mm (W)\*98mm (H)\*195mm (D).
- i. Cutout size in mm 91mm\*91mm.
- j. End connection Gauge Head KF-10.
- k. Operating temperature 10 to 45<sup>0</sup>c.
- l. No. of Gauge Head two numbers
- m. Display digital 2 digit mantissa. 1-digit exp.

3. Penning Gauge Head with display unit and cables (230-volt operation) ---2 Sets.

SALIENT FEATURES:

- a. Engineered for reliability and repeatability
- b. No user calibration
- c. Compact solid state electronics
- d. Minimum controls
- e. Unaffected by temperature fluctuations
- f. Compatible output for process set point controller
- g. Modular hardware design
- h. Wide angle meter direct readout in 'mbar'

DISCRIPTION OF DIGITAL PENNING GAUGE CONTROL UNIT:

- a. Penning Gauge control unit with standard 2 Mtrs Power.
- b. Penning Gauge Head with KF Coupling.
- c. Pressure range 10<sup>-3</sup>mbar to 10<sup>-7</sup>mbar.
- d. Power input 230volt AC 50Hz. Front (ON/OFF).
- e. Analog output 0-10volt.
- f. Power cord -2meter long cable with 3 pin 5amp plug as standard.
- g. Gauge Head cable 2 meter long as standard.
- h. Physical dimension in mm 98mm (W)\*98mm (H)\*150mm (D).
- i. Cutout size in mm 92mm\*92mm.
- j. End connection Gauge Head KF-25.
- k. Operating temperature 15 to 45<sup>0</sup>c.
- l. No. of Gauge Head two numbers
- m. Display digital 2 digit mantissa. 1-digit exp.

4. Four Way KF-16 Flange (with all 4 side welded with KF-16 Flange) ---2Nos

5. Precision Needle Valve ---4Nos.

Precision Needle Valve is compactly designed with reliable single seal and replaceable needle seating. Nickel plated assembly valve is fitted with a finely ground stainless steel needle. A measuring dial with clear marking of 100 equal divisions denoting 0-3000cc (6 to 7 turns of the needle), are mounted on the valve. The flow rate is maintainable at 10<sup>-6</sup>torr against the atmosphere. Specially grounded Stainless Steel needle and the high precision bore of the body ensure repeatable and constant flow rates. A=96mm (Horizontal length of Needle Valve), B= 42mm (Horizontal length between horizontal pipe to end of vertical pipe), C=50mm (Vertical length between end of vertical pipe to center of needle valve) and D=entry for OD pipe of Quarter inch.

Note: 1. Please refer the Annexure 2 for general instructions to raise the quotation.

2. All the components will be checked for the leak rate and its operation as per above description at supplier site before despatch.

## General Instructions

### Mandatory requirements

1. Quotation should contain item wise price for all items of our enquiry.
2. Quotation to be submitted considering completion of the work within **3months** from the date of release of work order.
3. For installation & commissioning, I&C charges and service tax to be quoted separately.
4. All the vacuum components, hardware, cables & other items shall be brand new from reputed manufacturers procured from their authorized agents.

### General requirements

5. Bidder can suggest equivalent or better make and model number against each suggested Instruments and same to be approved by the customer.
  6. Total time to execute the job given above is from the date of work order placed which includes procurements of items, drawings making, fabrication, installation & commissioning. No Free Issue Material will be provided to the supplier. Materials, tools, manpower etc required for the above work will not be supplied by the user. Supplier has to arrange the above on his own.
  7. The supplier must incorporate minor changes in the design as required at the time of execution of work at no extra cost.
  8. Supplier will submit prepare General Assembly drawing and send to the customer for approval. After approval from the customer only installation will be started.
  9. The Supplier shall workout a detailed design to meet fabrication requirements and work description, quantity. Supplier will submit the final drawings, system manual and operation manual in hard copy and in a CD as part of supply.
  10. Supplier shall submit the list of their clients, and catalogues or literature to support their quotation with the list of similar jobs carried out.
  11. During work execution, the supplier shall follow standard practices & procedures for quality assurance.
  12. Supplier should have similar work experience and along with the offer, shall submit the details of past experience with documentary proof.
  13. Supplier shall appoint engineer with high integrity and he will be responsible for his workers.
  14. **Sub contract:** The supplier shall not sub-contract any or all the work without written consent from the indenter. The supplier shall be responsible to the indenter for all work, the sub-contractor of the supplier, if allowed by the indenter.
  15. **Quality surveillance, Inspection:** The supplier will use standard quality items for fabrication of vacuum components. Used or recycled MS/SS Material will not be accepted.
  16. **Acceptance Criterion:** Items meeting the Technical specifications only will be accepted. Any Item not meeting the Technical Specifications are liable for rejection.
  17. For the items with detailed specification as given in Sr 1 to 5 of Annexure 1 shall be subject to surveillance/ inspection by the indenter or his authorized representative.
- The Supplier shall quote make of all these items in his quotation.**
18. **Without above detailed information offer will be considered incomplete and may be rejected.**

