



CSIR-Indian Institute of Petroleum

(Council of Scientific & Industrial Research)

P.O.I.I.P., MOHKAMPUR, DEHRADUN – 248005 (UA) INDIA

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TENDER NOTICE NO 03/2017-18

Sealed tenders under two bids system (Part-I Technical bid along with EMD and Part II Price bid) are invited from the Indian / Foreign manufacturers/ Authorized Distributors or Indian Agents for the supply, installation and commissioning of the following equipment:-

SI No.	Tender No.	Description of items	Qty	EMD (in Indian Rupees)
1.	PUR/1/16-17/311/RRB/CCPD/PO:	High Temperature Programmable Furnace	One	Rs 80,000.00 (Rs Eighty Thousand Only)
2.	PUR/1/17-18/19/JK/ASD/PO:	Gas Chromatograph-Sulfur Chemiluminescence Detector (GC-SCD)	One	Rs 1,00,000.00 (Rs One Lakh Only)

The bids must reach this office on or before **02.06.2017** upto **14:30 hours (IST)** and shall be opened on **same day at 15:00 hours (IST)**.

Please visit our website www.iip.res.in for further details for standard bid documents.


(Stores & Purchase Officer)



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ISO-9001 Regd. Institute


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INVITATION FOR BID / NIT (Two Bid System)

1. Sealed tenders under two bids system (part-I Technical bid along with EMD and part II Price bid) are invited from the Indian / Foreign manufacturers/ Authorized Distributors or Indian Agents for the supply, installation and commissioning of the following equipments:-

Sl No.	Tender No.	Description of items	Qty	EMD (in Indian Rupees)
1.	PUR/1/16-17/311/RRB/CCPD/PO:	High Temperature Programmable Furnace (Detailed specification as per Annexure)	One	Rs 80,000.00 (Rs Eighty Thousand Only)
2.	PUR/1/17-18/19/JK/ASD/PO:	Gas Chromatograph-Sulfur Chemiluminescence Detector (GC-SCD) (Detailed specification as per Annexure)	One	Rs 1,00,000.00 (Rs One Lakh Only)

2. The complete set of "Standard Bid Document" is available in our website www.iip.res.in at free of cost. The same may be downloaded and used while preparing your bid. A copy of the same may be attached along with the bid, duly signed and stamped.
3. The bids must reach this office on or before 02.06.2017 upto **14:30 hours (IST)** and shall be opened on **same day at 15:00 hours (IST)**.
4. EMD should be in favor of Director, I.I.P, Dehradun in form of Demand Draft or Bank Guarantee.
5. The Director, Indian Institute of Petroleum, Dehradun reserves the right to accept any or all tenders either in part or in full or to split the order without assigning any reasons there for.
6. **The Indian agent of the foreign suppliers should be registered with DGS&D.**


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High temperature programmable furnace

Furnace design

The furnace should be designed for universal laboratory or production furnace for various applications. The furnace housing should accommodate internally the switchgear including transformers, thyristors, Controller etc. Loading furnace and operation of the switchgear on the front side with process gases and cooling water gauges to be operated from the side. The furnace should be equipped with ball valves for process gases, to be operated manually in accordance with the process or in case of failure.

Housing

- Frame should be made of steel profiles with Stainless steel cover sheets, easy to remove for maintenance.
- It should be designed as floor model with rollers / wheels for relocation of the furnace

Heating and insulation

- All required paths should be properly heated and insulated and made of graphite with supporting structure made of high-temperature resistant steel

Process chamber

- Stainless steel chamber made of SS.
- Double walled chamber construction for optimal all side water cooling. Over temperature control.
- The leakage rate of the chamber to be lower than 5×10^{-3} mbar x l/s (determined by pressure rise method).
- The chamber to be equipped with an overpressure valve and a burst disc. In case of a very sudden pressure rise, such as a water leakage, the burst disc is automatically release the pressure to protect the chamber.

Door

- Hinged swinging door with vertical grip and manual locking screws.
- Double walled door construction for optimal water cooling and Temperature control.
- Sealing between process chamber and door via silicon tube or similar material.

Outer Dimension (maximum): Width: 1.5 meter, Depth: 1.5 meter, Height: 2.2 meter

Gas management system

- Manual ball valves for process gas path and bypass
- Mutual adjustment of gas flow rate by needle valve.
- Pipelines and connections made of stainless steel

Vacuum system

- For heat treatment in vacuum or for pre-evacuation before heat treatment with protective gas atmosphere
- Rotary vane vacuum pump for evacuation of the furnace chamber with manually operated ball valve between vacuum pump and furnace chamber. The pump to be switched on/off by a switch. Pressure evacuator mounted on the front wall of the furnace.
- Vacuum pump should be suitable for processes with non-corrosive exhaust gases.

Water cooling of the chamber

- Connections for cooling water supply and return with manual ball valve at cooling water inlet.



- Water cooling with individual supplies for vacuum chamber and power supply for optimal cooling and minimized water consumption. All cooling water circuits to be equipped with flow and temperature indicators.
- Monitoring should be possible for over-temperature.
- Flow rate monitoring in the cooling water runback with automatic shutdown of the furnace should be there if the flow rate falls below allowable minimum is required.

Safety devices and features the furnace should be equipped with the following safety devices:

- Burst disc to release pressure if inside pressure exceeds the ambient pressure
- Overpressure protection valve (100 mbar)
- Over temperature limiter
- Bimetallic temperature switches at the water cooled chamber walls

Controls, switchgear and process documentation

Controller

- Easy and individual programming with Bright, high-contrast, black-white LC display ; Minimum 10 programs storable with minimum 10 adjustable segments each , Start time adjustable via real time clock. Input of set points in increments of 1 °C resp. 1 min, Start time adjustable, °C/°F selection , Alarm Temperature alarm functions: min, max
- Minimum 5 segmental switchable functions
- Operating hours counter, kWh counter , Error message history , Output of control values.
- Measurement accuracy $\pm 1\text{ }^{\circ}\text{C}$
- Software for USB interfaces for recording of process data, visualization.

Switchgear

- Protection class IP 20
- Temperature limiter for thermal protection
- Acoustic signal in case of an alarm, Door contact switch
- Color of conductor, Electrical function test of furnace and control panel
- Electronic power switching of the heating
- Cabinet ventilation by fan und thermostatic control, EMC-compliant design

Process documentation by means of data Recording, Graph.

- Data should be stored in such a way that it should be retrieved easily
- Recorded data: time difference, segment number, temperature set points, actual temperatures, power outputs, control functions
- Easily accessible USB port.

Technical specifications

Workspace volume	2 liters or more
Max. Charge weight	2 kg
Type of process gases	1 non-flammable gas (Ar or N ₂)
Gas flow rate	10 – 100 l/h by process gas path or better
Heating zones	1
Thermocouples	temperature control each zone by pyrometer; over-temperature thermocouple:
T-Max (Process gas & Vacuum)	2200°C or higher
Heating speed	minimum 500 K/h between room temperature and 2200°C in empty furnace
Permissible door opening temperature	<300°C
Vacuum equipment	Suitable vacuum pump
Nominal pumping capacity	1.9 m ³ /h

Final vacuum	<10 mbar
Leakage rate	< 5 x 10 ⁻³ mbar x l/s
Voltage	Standard Indian system (200 – 260 V, 50 Hz), fuse protection
without earth-leakage breaker	Process gas 1 supply pressure 6-8 bar, cutting ring connection
Cooling water	approx. 1,5 m ³ /h, supply pressure 3 bar, connection: 1"
female thread	
Exhaust	Has to be provided

Installation & Commissioning & Training

Must be provided with service Engineer

NOTE / Pre-Qualification criteria:

- *Local Vendor must have supplied at least similar High Temperature furnaces to IITs, IISERs, CSIR labs, or any other research Institutes in India.. End user certificates is necessary*
- *OEM Manufacturer must be an ISO-9001 company & equipment must be with CE compliance.*
- *Machine must have a warranty of at least 1 year from the date of installation.*
- *Should have service center in India*
- *User list should be provided where similar material has been provided.*


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