



Indian Institute of Technology Bhilai
District-Durg, Chhattisgarh, India – 491002
www.iitbhilai.ac.in

Enquiry No. IITBh/Goods/MSME/2024-25/608

Dated: **03-03-2025**

Notice Inviting Quotation (NIQ)

Sub: Inviting Quotation for Supply and Installation of Vacuum System for Tubular Furnace at IIT Bhilai.

Department of MSME, Indian Institute of Technology Bhilai, would like to procure the following item. Bidders are advised to submit duly filled bids in the following format:

S. No.	Quotation Required For	No. of Units	Total Price in Rupees
1.	Supply and Installation of Vacuum System for Tubular Furnace (Specifications as per Annexure-1)	01	
2.	Packing & Transportation Charges, if any		
3.	Any other charges, if any (Mention clearly)		
4.	GST in Rs.		
	Total of 1 to 4		

Note: GST should be quoted as per the Government norms, In case due to any error/ oversight, the GST quoted by the bidder is less than the actual rate as per tariff, the bidder will not be permitted to rectify the error/oversight. The orders/ contract will be placed for the total amount including the (lower) rate/s quoted by the bidder, with reduced basic amount to the extent of difference in tax amount, so that the total amount (basic + actual rate as per tariff), remains same(quoted basic + quoted rate). The difference amount payable, if any, between the quoted rate and actual rate as per tariff shall be borne by the bidder.

We are inviting the detailed quotations for the above items in sealed envelopes to be submitted on or before 10-03-2025 by 3.00 PM at Department of MSME, IIT-Bhilai.

Terms and Conditions:

1. The bidder who is meeting the above specifications and quoting the lowest rate for supply of required items will be awarded the contract.
2. Total value wise evaluation will be applicable to decide the lowest bid.
3. Prices should be in Indian Rupees and should be inclusive of all Taxes, Duties & FOR IIT Bhilai.
4. The items shall be required to be delivered to the office of Dr. Nithin B, Department of MSME through Stores & Purchase Section of IIT Bhilai at the risk and cost of the bidder, if applicable.
5. Your Quotation must be valid for minimum of 90 days from the date of opening of tender.
6. The items should be as per the standard quality of material as mentioned in technical specifications.
7. The required items should be shared with the indenter before supplying the same to IIT Bhilai. Any request for a change should be acceptable to the supplier.
8. Warranty should be of 01 year from the date of supply/installation.

9. Delivery & Installation should be completed within 15 days from the date of purchase order.
10. GST Number should be clearly mentioned in your offer, failing which your offer may not be considered.
11. Advance payment is not admissible. Payment shall normally be made within 30 days subject to receipt and acceptance (as per Work Order Terms) of the ordered materials/items.
12. Any other information that you may like to obtain, you are free to contact IIT Bhilai through mail at sp@iitbhilai.ac.in before submission of quote.
13. IIT Bhilai reserves the right to accept and/or to reject the bid without assigning any reason.
14. If the Seller/Service Provider fails to deliver any or all of the Goods/Services within the original/re-fixed delivery period(s) specified in the contract, the Buyer will be entitled to deduct/recover the Liquidated Damages for the delay, unless covered under Force Majeure conditions aforesaid, @ 0.5% of the contract value of delayed quantity per week or part of the week of delayed period as pre-estimated damages not exceeding 10% of the contract value of delayed quantity without any controversy/dispute of any sort whatsoever.
15. Tender may please be submitted in (closed and sealed Envelope) addressing as below, on or before 10-03-2025 by 03:00 PM in sealed cover only, super scribed with Enquiry No. & last date of receiving & subject as mentioned in NIQ.

Stores and Purchase Section
Indian Institute of Technology, Bhilai
Village-Kutelabhata, District-Durg,
Chhattisgarh, India 491002

Vacuum System for Tubular Furnace should have all these parts	<ul style="list-style-type: none"> ❖ Diffusion Pump with controller ❖ Rotary Vacuum Pump ❖ Vacuum Valves ❖ Vacuum Measuring Gauges ❖ SS Plumbing Line ❖ SS Collar with Water cooled flanges ❖ Water Chiller ❖ Mounting Stand ❖ Control Panel with safety interlocks
SS 304 Hollow Flanges	The hollow SS 304 flanges (OD 80 mm) with a suitable rubber seal to hold the vacuum at high temperature.
High vacuum pumping system	<p>The chamber is evacuated to a vacuum level of 10⁻⁵-10⁻⁶ mbar with a combination of Diffusion pump and rotary pump with necessary valves & vacuum measuring gauges in clean & empty chamber.</p> <p>The High vacuum pumping system should consist of following</p> <ul style="list-style-type: none"> • Diffusion pump • Rotary Vacuum pump. • High Vacuum valve, roughing & backing valves, Vent valve, Pipelines, Liquid nitrogen trap, etc. • Vacuum Measuring gauges
Diffusion Pump	<p>The diffusion pump acts as a high vacuum pump suitable for pumping out gases from the chamber. The pump should be made of SS 304 material and have the following specifications.</p> <ul style="list-style-type: none"> • Size: 4" (inch) diameter (connection from the chamber to diffusion pump) • Material: Should be SS304 • Pumping speed: 500 liters/sec or better • Inlet connection: Flange ID 114 • Backing connection: KF-25 • Fluid charge capacity: 100 ml or better (DC-704 oil) • Water requirements: 2 LPM • Warm-up time: 30 minutes or better • Heater power: 500 W • Ultimate vacuum: 10⁻⁵ to 10⁻⁶ mbar
Rotary Pump	<p>The rotary pump should act as a backing and roughing pump and should have the following specifications:</p> <ul style="list-style-type: none"> • Capacity: 250 LPM (15M3/hr) • Ultimate vacuum: 1 x 10⁻³ mbar • Inlet connection: KF-25 • Motor: 0.5 HP • Cooling: air cooling • Pump rotation speed: 1440 rpm • No. of stages: 2 • Oil capacity: 1.1 Liter

Vacuum valves	<ul style="list-style-type: none"> Manually operated Butterfly Valve acts as High Vacuum Valve. The high vacuum valve is made out of S.S.304 materials. SS 304 Manually operated Quarter Swing 1inch Size Butterfly valves with KF-25 end flanges acts as Roughing & Backing Valves. SS304 Manually operated Vent valve is provided to vent the chamber.
Chiller	<p>Compact Recirculating water chiller is provided with thermal cut off switch to meet the cooling requirements of the unit. PID controller will be provided to set the required cooling temperature. The Outlet water of the unit is feed back to the chiller unit and thus recirculation action takes place.</p> <ul style="list-style-type: none">
Liquid Nitrogen Trap	<p>A suitable Liquid Nitrogen Trap shall be mounted above the Diffusion Pump.</p>
Digital Vacuum gauges	<p>Digital Pirani combined with a Penning gauge should be provided to measure the vacuum level. Pirani gauge is used to measure the vacuum of roughing line and backing line. Penning gauge used to measure the high vacuum level (10^{-3} to 10^{-6} mbar). Pirani and penning gauges should have the following specifications:</p> <p>Pirani Gauge:</p> <ul style="list-style-type: none"> Measuring range (vacuum level): 10^{-3} to 999 mbar Display: digital No. of gauge heads: Two Gauge head end connection: KF-10 Main supply: 230 V. 5 Amps, 50 Hz <p>Penning Gauge:</p> <ul style="list-style-type: none"> Measuring range (vacuum level): 10^{-3} to 10^{-6} mbar Display: Digital No. of gauge heads: one Gauge head end connection: KF-25 Input voltage: 230 V, AC 50 Hz Cable length: Two meters for each gauge heads
Collar	<p>A collar should be provided and mounted above the high vacuum valve. It houses the penning gauge and should be made up of SS 304.</p>
SS Plumbing line	<p>Collar is made of S.S 304 material and is mounted above the High Vacuum Valve. It is a Cylindrical Chamber houses Penning Gauge for vacuum measurement, Roughing Vacuum line etc.</p>

	The Collar top flange will be provided with Butterfly type 1inch Valve to isolate the tubular furnace from vacuum system. Vent Valve to vent the tubular furnace, Needle Valve to purge the Gas in tubular furnace & Dial Gauge to monitor the pressure will be provided. SS flexible Bellow with water cooled flanges will be provided to Connect to the furnace.
Mounting stand	<ul style="list-style-type: none"> • The vacuum pumping system should mounted on a compact mounting stand. • The mounting stand should be made out of • MS and neatly painted • The mounting stand should be provided with heavy-duty castor wheel for easy movement
Safety Interlocks	All components should be wired internally with an interlock, and only a mains power cable with a plug is taken out. A complete electrical circuit should designed with good protection, such as a tripping circuit breaker. In addition, the diffusion pump should interlocked with the Rotary pump.
Isolation valves	Isolation valves with needle valves should be provided to release the vacuum in the furnace.
Main supply	230V AC 50 Hz 15 Amps.
Accessories	<p>The below-mentioned spares should be provided with the system:</p> <ol style="list-style-type: none"> 1) Diffusion pump Oil : 100 ML 2) Rotary vacuum pump Oil : 5 Liters. 3) Set of O rings : 1 Set 4) Vacuum Grease: 100 Grams 5) Tools Kit : 01 Set. 6) KF-25 Dummy : 01 No. 7) Pulling rods 1 No.s to quench the sample from high temperature 8) 2 No.s Al₂O₃ Boats to place the samples in the furnace
Warranty and delivery	<p>The Unit is warranted for a period of 12 Months from the date of Installation</p> <p>Delivery and installation are completed within two weeks from the date of purchase order release</p>