



Date:	16/07/2024
Quotation due date:	06/08/2024

Global Tender for a 3-stack horizontal tube furnace system

This is a Request for Quotation for procurement of a 3-stack Horizontal tube furnace system at IISc, Bangalore.

CeNSE is a multidisciplinary research department at IISc that houses a 14,000 sq. ft. cleanroom and characterization facility used by 50 faculty members from various disciplines at IISc. CeNSE also runs a program called Indian Nanoelectronics Users Program (INUP) which has allowed 4200 participants from more than 700 universities and institutes all over India to use the facilities at CeNSE. Consequently, any tool in CeNSE receives significant exposure to scientific community at IISc and beyond. The vendors are requested to factor in the value of this exposure in to their quotes. Details of existing facilities and INUP program can be gleaned from:

<http://nnfc.cense.iisc.ac.in/>

<http://www.mncf.cense.iisc.ac.in/>

<https://www.inup.cense.iisc.ac.in/>

Procedure

1. Vendors will be required to submit a technical proposal and a commercial proposal in **two separate sealed envelopes**. Only vendors who meet the technical requirement will be considered for the commercial negotiation.
2. **The deadline for submission of proposals is the 6th August 2024, 5.30pm.** Proposals should arrive at the office of Prof. Sushobhan Avasthi, TF-06, Centre for Nano Science and Engineering, Indian Institute of Science, Bangalore 560012, India, by the above deadline.
3. The decision of the purchase committee will be final.
4. The technical proposal should contain a compliance table with 5 columns. The first column must list the technical requirements in the order they are given in the technical configuration below. The second column should describe your compliance in a “Yes” or “No” response. If “No” the third

column should provide the extent of the deviation (please provide quantitative responses). The fourth column should state the reasons for the deviation, if any. The fourth column can be used to compare your tool with that of your competitors or provide details as requested in the technical requirements table below.

5. Any additional capabilities or technical details, that you would like to bring to the attention of the purchase committee, can be listed at the end of the technical table.
6. Vendors are encouraged to highlight the advantages of their tools over comparable tools from the competitors.
7. If multiple systems can fulfill the requirements, vendors can submit multiple bids.
8. In the commercial bid, please provide itemized cost of the system and required accessories, such as software, power supply, etc.
9. As an option, please provide itemized cost for any suggested accessories/add-ons that may enhance the usability, capability, accuracy or reliability of the tool. Vendors are encouraged to quote for as many add-ons as their tool portfolio permits.
10. The quotes should include all charges for door delivery.
11. Please indicate the warranty provided with the tool.
12. Provide itemized cost for required spares for 2 years of operation. For sake of this calculation, the vendor may assume active tool usage of 40 hours/ week. This number will be used to estimate the life cycle cost of the tool.
13. If maintenance requires, as an additional option, provide cost of an annual maintenance contract (AMC) for 3 years, post warranty. The **AMC must cover 2 scheduled and 2 emergency visits per year**. The AMC cost must also include an itemized list of spares that are essential for the scheduled visits.
14. The **vendor must submit a list of references of minimum 5 previous installations**. Please provide the names and contact addresses of the referees, so that the committee can contact them independently.
15. Any questions can be directed to Saleem Ahmed B, Centre for Nano Science and Engineering, Indian Institute of Science, Bangalore 560012, India. (saleemb@iisc.ac.in)

Technical Requirement		
For 3-Stack horizontal tube furnace system		
1.	Process capabilities	<ul style="list-style-type: none"> • Semiconductor wafer processing • Oxidation and Annealing process • 100 μm to 1000 μm thick 4inch diameter Silicon wafer. • Batch size ≤ 25 wafers.
2.	Temperature	<ul style="list-style-type: none"> • Maximum continuous operation temperature: 1100⁰C
3.	Working Pressure	<ul style="list-style-type: none"> • Atmospheric pressure.
4.	Furnace construction /design	<ul style="list-style-type: none"> • Horizontal furnace with three tubes stacked vertically OR three separate furnaces which can be stacked vertically in a rack. • Minimized heat load around the system. • Low Thermal mass ceramic fiber insulation with advanced graduated density composition for fast heat-up and resistance to thermal shock.
5.	Heating zones	<ul style="list-style-type: none"> • Three-heating zones with individual temperature control for each zone. • Uniform and Flat zone profile across the heating zones. • The heater module should be ideal for a variety of process tubes, including Quartz, Alumina and Mullite • Heater should be able to accommodate process tubes of Outer-Diameter ranging from 3inch to 6inch • Length of the 3-Heated zones should be as: 9inch(Zone 1), 18inch(Zone 2) and 9inch(Zone 3). • Temperature stability of $\pm 1^{\circ}\text{C}$ • Fast Heat-up and cool-down (Heat-up from RT to 1100⁰C in 45minutes and cool-down time as 5hours from 1100⁰C to 100⁰C) • Average temperature on the outer housing should be less than 45⁰C, at furnace temperature of 1100⁰C.
6.	Configuration	<ul style="list-style-type: none"> • Horizontal mode
7.	Thermocouple	<ul style="list-style-type: none"> • Type K thermocouple.

8.	Over Temperature Protection Control	<ul style="list-style-type: none"> Over Temperature Protection Control to protect load or furnace during unattended operation. Adjustable high-limit over-temperature protection.
9.	Programmable controller	<ul style="list-style-type: none"> Microprocessor based self-tuning PID Control. Simultaneous LED display of Temperature and setpoint in °C or °F Safety Switch to disconnect power when furnace is opened. Integrated display and controller unit. Digital single-program and multiple-segment programmable control. Single program with 8 segments for ramp (up and down) and dwell (timed hold) temperature control. Fuzzy Logic based control to suppress overshooting of temperature. Customer initiated Auto-tune function to adjust and update PID parameters.
10.	Equipment and footprint	<ul style="list-style-type: none"> Tool to be compatible with Class 1000 cleanroom. Foot-print of the system: L x W (inch): $22 \pm 1 \times 54 \pm 1$.
11.	Power supply	<ul style="list-style-type: none"> Single phase, 208-240VAC, 50/60Hz Energy consumption should be 800W or less
12.	Periodic Maintenance	<ul style="list-style-type: none"> The system should require minimal maintenance. The system should be supported by a service team, located in Bangalore.
13.	Installation and Training	<ul style="list-style-type: none"> The installation and training at the customer site by trained engineers/experts should be part of the package.
14.	Warranty	<ul style="list-style-type: none"> 12 months from the date of commissioning and acceptance of equipment.
15.	Eligibility Criteria	<ul style="list-style-type: none"> The bidder must have completed 5 successful previous installations of the similar system. Please provide the names and contact addresses of the referees, so that the committee can contact them independently. Equipment offered must be a model from the current serial production range of the manufacturer. Customized or One-off Manufactured Model



		<p>will not be accepted. Offer should be supported with printed catalogue & depiction on company website. System Catalogue/brochure, Technical Data-sheet should be produced with the Technical Bid.</p> <ul style="list-style-type: none">• Supplier should support the user with all the spares for a minimum period of 10 years.
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Thanking you,

Sushobhan Avasthi, Ph.D,
Associate Professor
Centre for Nano Science and Engineering
Indian Institute of Science, Bangalore, India 560012.
Cell : +91-99-0233-3360
Office : +91-80-2293-2949
E-mail: savasthi@iisc.ac.in