

**Request for Quote for the procurement of
glove box workstations. (Last date: 3rd November 2022)**

This is a Request for Quote (RFQ) for the procurement of a glove box workstations comprising two glove box units for the Centre for Nano Science and Engineering (CeNSE) at the Indian Institute of Science (IISc), Bangalore. IISc is India's best institution on higher learning and the Center for Nano Science and Engineering (CeNSE) is home to one of the best academic fabs in the world.

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 is also a user- facility which has hosted over 6000 participants from more than 700 universities and institutes all over the world. Consequently, any tool in CeNSE receives significant exposure to scientific community in India and beyond. The vendors are requested to factor in the value of this exposure in their quotes.

Being a user-facility puts additional technical burden on the tool. We need a tool that can tolerate heavy usage (40 hours/week), has a high uptime, can be serviced, and maintained for the foreseeable future (at least 5 years), and has a track record of reliability at comparable facilities in India and abroad. Details of existing facilities and the user program can be gleaned from:

<http://nmfc.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**. The technical bid should contain all commercial terms and conditions, except the price. **Only vendors who will be adjudged by the committee to meet the technical requirements will be considered for the commercial negotiation.**
2. **The deadline for submission of proposals is November 3rd, 2022, 5:00 pm Indian Standard Time.** Proposals should arrive at the Main office, GF-15, Centre for Nano Science and Engineering, Indian Institute of Science, Bangalore 560012, India, on or before the above deadline.
3. C.I.P. Bangalore basis (by Air Freight only). The quotation should mention the delivery terms, schedule, estimated delivery date, and payment terms.
4. Foreign currency quotes are allowed.
5. The decision made by the purchase committee is final.
6. **The technical bid** must contain a point-by-point technical compliance document.
 - a. The technical proposal should contain a compliance table with 5 columns.
 - First column must list the technical requirements, in the order that they are given in the technical requirements below.

- The second column must provide a specification of the instrument against the requirement (please provide quantitative responses wherever possible)
 - The third column should describe the compliance with a “YES” or “NO” only. Ensure that the entries in column 2 and column 3 are consistent.
 - The fourth column should clearly state the **reasons/explanations/context** for deviations, if any. Without a clear explanation, just stating YES” or “NO” will not be considered.
 - The fifth column may contain additional remarks. It can be used to highlight the technical features, qualify responses of previous columns, or provide additional details.
- b. Glove box, purification system and sensors should be from a single manufacturer.
 - c. Vendors are required to provide brochures/ literature to establish the compliance to specifications
 - d. Technical capabilities of 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.
 - e. Vendors are encouraged to highlight the advantages of their tools over comparable tools from the competitors
 - f. Items in addition to that listed in the technical table that the vendor would like to bring to the attention, such as data sheets, technical plots etc. can be listed at the end of the compliance table. Vendors are also encouraged to highlight the advantage of their tools over comparable tools from the competitors.
 - g. If multiple systems can fulfil the requirements, vendors can submit multiple bids.
7. The technical proposal will be evaluated against the technical requirement. Deviations from the technical specifications requested are allowed. Such deviations must be highlighted and justified. Their acceptance or rejection will be left to the discretion of the technical committee. Only the vendors, adjudged by the committee to be suitable to meet the technical requirements, will be considered for the commercial negotiation.
8. The commercial bid must contain:
- a. Itemized cost of the system and *required* accessories, such as software, power supply, etc.
 - b. All accessories needed for the instrument to function as per the technical specification must be listed.
 - c. itemized cost, as an option, 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.
 - d. The shipping cost plus insurance up to IISc has to be included. IISc will help the shipping company to take care of the customs clearance at Bangalore Airport.
 - e. Please indicate the warranty provided with the tool. A warrant of 3 years or more is preferred.
 - f. Provide itemized cost for *required/expected* spares for 3 years of operation. For the

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.

- g. The cost of annual maintenance contract (AMC). The details of AMC are given below. This number will be used to estimate the life cycle cost of the tool.
 - h. Length of time that the tools will be supported with service and spares from the installation date. Our requirement is that the tools be supported for at least 5 years from the date of installation. To quote the lowest price, vendors often quote for obsolete or soon-to-be obsolete equipment. This is NOT acceptable. For a user facility like CeNSE, it is vital that the equipment be serviceable and supported for the foreseeable future. The length of guaranteed support will be used to estimate the life cycle cost of the tool.
 - i. The commercial bid should indicate the following separately: (a) equipment price (b) optional items (c) Freight and insurance cost (d) Shipping cost and (e) the Total cost.
9. As an additional option, provide cost of an annual maintenance contract (AMC) for 3 years, post warranty. The AMC must
- a. cover 1 scheduled and 1 emergency visit per year.
 - b. The emergency visit should be supported with a 48-hour response window.
 - c. clarify if maintenance will be done by a trained onsite engineer (CeNSE employee) or a specialist from the OEM.
 - d. in case the OEM is foreign, clarify if maintenance will be done by a trained engineer from India (local representative or Indian subsidiary) or by a trained engineer from abroad.
 - e. include an itemized list of spares (e.g., maintenance kits) that are essential for scheduled visits.
10. The commercial bids will be evaluated based on life-cycle cost of the tool. This includes the cost of purchase, maintenance, spares, etc. The final decision will be made by the committee.
11. Manufacturers must have experience supplying more than 15 glove boxes with purifiers and sensors preferable for nano-fab unit in the last 5 years.
12. The RFQ must include references of 5 previous installations, preferably in India. Please provide the names and contact addresses of the referees, so that the committee can contact them independently. Details of such systems with model numbers and users should be provided.

All the proposals should be addressed to:

The Chairperson,
Attn: Dr. Sreetosh Goswami
Centre for Nano Science and Engineering
Indian Institute of Science
Bangalore – 560012, India

The Proposals should arrive at the Main office, GF-15, Centre for Nano Science and Engineering,

Indian Institute of Science, Bangalore 560012, India, on or before the deadline of November 3rd, 2022, 5:00 pm Indian Standard Time. The parcels should be delivered between 9 am to 5 pm.

Questions regarding this tender should be addressed to Dr. Sreetosh Goswami at the email address sreetosh@iisc.ac.in with the subject line “Query _Tool name_Bidder’s name”.

Post such submission all vendors should send an email to sreetosh@iisc.ac.in with the subject line: “Submitted bid_Bidder’s name_Tool Name” to intimate him of the submission within one day.

II. General terms and conditions:

1. The institute reserves the right to accept or reject any bid, or to annul the bidding process and reject all bids, at any time prior to the award of the contract without thereby incurring any liability of the affected bidder or bidders.
2. Previous installations can be used by the committee to disqualify vendors with a poor track record of service, build quality, system performance or poor availability of spares.
3. The bidder must not be blacklisted/banned/suspended or have a record of any service-related dispute with any organization in India or elsewhere. A declaration to this effect should be provided.
4. The vendor should be able to repair and maintain the equipment once it is installed. Clarify if periodic (preventive) maintenance can be done by a trained on-site engineer (i.e. IISc employee) or requires a specialist from the OEM. The bidder should have qualified technical service personnel for the equipment based in India and must assure a response time if <24 hours after receiving a service request.
5. All quotations must be valid for at least 120 days at the time of submission.
6. The quotations should clearly indicate the delivery terms, delivery schedule, tax, and payment terms.
7. In case of the award of the purchase order, the vendor must provide an Order Acknowledgement within 30 days from the receipt of the Purchase Order.
8. The lead-time for the delivery of the equipment should not be more than 3 months from the date of receipt of our purchase order.
9. 100% payments will be released after the completion of delivery and satisfactory installation subject to TDS as per rules. As per GFR no advance payment can be made to domestic vendors, unless an equal amount of bank guarantee is provided.
10. The bidder is responsible for the installation of the equipment in the IISc campus.
11. Necessary training to operate the procured setup and required literature support (in English language) should be provided without additional cost.
12. Bidders should undertake to support the system with spares and software bugfixes, if any, at least for the next 5 years.

13. Data must be supplied along with the technical compliance documents. Technical bids without supporting data can be deemed as technically non-compliant.
14. Printed literature and published papers in support of all compliance to the prescribed specifications are encouraged.
15. All guaranteed specifications will have to be demonstrated, upon request, in an active installation. Failure to demonstrate any promised specifications will be deemed as technical non-compliance.
16. Technical evaluation by the institute must include demonstration to verify functionalities and capabilities of the system quoted. Any discrepancy between the promised specifications and demonstrated specifications will be deemed as technical non-compliance. If need arises, the vendor must be ready to physically visit IISc for a techno commercial discussion.
17. The intender reserves the right to withhold the placement of the final order. The right to reject all or any of the quotations and to split up the requirements or relax any or all the above conditions without assigning any reason.

III. Technical specifications of glove box workstation:

A set up of *two* gloveboxes with the following technical specs is required. The committee will decide on the suitability of the proposals to meet our requirements.

Glove Box Workstation

Stand having castors and machine feet and following specifications

Approximate inner Box Dimensions [H x L x D] : (>900 mm) x (>1150 mm) x (>770 mm) [> : greater than]

Glove box should have side panels.

Two Aluminum glove ports (diameter 220mm), butyl gloves

Leak rate < 0.05 Vol %/h or lower

Inside surface should have brush-finished, Ra 1.2 μm

Outside surface should be coated white (RAL 9003)

Front Window should have safety glass with interior anti-corrosion film.

Dust filter of 0.3-micron, class H13 should be included

Stainless Steel sliding shelves (3 or more) should be included.

Automatic Box pressure range $\pm 15\text{mbar}$ with oil-free pressure relief valve should be there.

Should include waterproof foot pedal for box pressure manipulation

Glove box should have two DN 40 feedthroughs one of which should be electrical

There should be one extra flange back side of the box for future use as liquid / gas feedthrough

Fluorescent lamp should be front mounted

Should be integrated with Exchanger

Large Antechamber:

The cylindrical type made of 2.5mm SS, steel and brush-finished interior

Dimensions, Inner diameter $\geq 350\text{mm}$ and Length $\geq 600\text{mm}$

Sliding tray stainless steel should be included with antechamber

Doors should be Aluminum, anodized, with thickness 10mm or more with spindle lock

Pressure gauge, analog display to be included in the antechamber

Vacuum/ Refill process Handling: Manual operation

Mini Antechamber:

Mini- Antechamber – Inner dimensions: diameter $\geq 150\text{mm}$ and Length $\geq 400\text{mm}$

Hinged doors and Stainless sliding tray and a three-way valve

Should be readily upgradeable with heated version ($\geq 150^\circ\text{C}$)

Gas purification

Should be customized to be located underneath the Glove box

PLC controlled purifier column to maintain purity $< 1\text{ppm H}_2\text{O}$ and O_2 (at complete pressure range).

On proper maintenance, less than 0.1 ppm oxygen and moisture level should be achievable.

Circulation unit speed up to $90\text{ m}^3/\text{hour}$.

PLC controlled regeneration sequence:

Vacuum pump Rotary vane pump with Oil mist filter, Oil re-circulation and automatic gas ballast control, $\geq 17\text{m}^3/\text{h}$ pumping capacity, dual stage required to connect the pump to the system.

Solvent adsorption unit with suitable adsorbent $\geq 5\text{kg}$, should be integrated with Glove Box Should include inline and bypass valves. Upgrade provision should be available to PLC controlled re-generable solvent trap and PLC controlled in-lined positioned solvent sensor range 0 to 500ppm. The Cu-catalyst and the adsorption unit can adsorb 20L of Oxygen and 900g of moisture to maintain the oxygen and moisture level at 0.1 ppm. However, the adsorption efficiency also depends on the use/operation procedure and changes of consumables from time to time and the right working gas.

Oxygen Sensor:

Should be PLC controlled and operated by the system touch panel

Should be inline positioned in circulation line before the purifier

Should have solid state sensor

Measuring range: 0-1000 ppm

Maintenance and calibration free

Moisture Sensor:

Should be PLC controlled and operated by the system touch panel

Should be inline positioned in circulation line before the purifier

Should have solid state sensor

Measuring range: 0-500 ppm

Should be maintenance and calibration free

Refrigerator

One of the *two* glove box units must have a refrigerator while for the other unit it is not mandatory.

Refrigerator should go $\leq -35^{\circ}\text{C}$

Should be integrated to side panel

Should meet the following specs:

18L, 3 shelves with five variable positions, PLC controlled

Control Unit

Siemens PLC Controlled with Color Touch panel for operation of all purification and regeneration system functions including box pressure, oxygen and moisture levels.

Optional:

Recirculating Chiller

Temperature Range 5 to 25° C

Temperature Controller Microprocessor

Digital PID controller cum Indicator,

Accuracy +/-1 °C

Temp. Stability +/-0.1 °C, Sensor PT100 Sensor

Cooling Capacity at 0°C 1000 watts

Bath Volume 10 - 12 L, Flow rate 10 to 15 L per minute

Pump Type should be Chemical resistant magnetic pump

Pump Pressure 2 bar

Purging Mechanism

Purging to be automatically activated, when the Oxygen in the glove box exceeds the set limit. It should be able to set between (10-999ppm) and should be continuously purging till the set point is reached and automatically start the circulation of the gas purifier.

Automatic and adjustable mechanism is needed for regular gas purge with time, duration and the day. Glove box purging to be operated by the operational panel of the purifier up to 200l/min with PLC control as well as manual regulation valve

Option for 24/7 and remote monitoring of glove box parameters and provision for sending alerts and notifications about upcoming service schedule and software package to enable user to do the chemical calculations on the touch screen.

Thanking you,

Sreetosh Goswami

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