

Date: 17 July 2023

Global Tender Enquiry for Cryogen free He3 cryostat with at least 8 T magnetic field.

(As per the OM no.F.No.51-03/2023-TS.VII dt.28 June, 2023- Government of India relaxation on global tender enquiry)

To Whom It May Concern

This order is being processed using Government of India funds. As such these funds are governed by GFR 2017 rules. The Government recently amended the GFR rules of global tender enquiry (GTE), and vendors must submit bids that are compliant with the latest rules.

This is a Request for Quote (RFQ) from the Indian Institute of Science (IISc), Bangalore, for the supply of RIE (Reactive Ion Etcher) to National Nanofabrication centre, CeNSE, IISc Bangalore.

A. 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 **7th Aug 2023, 5:30 pm** Indian Standard Time. Bids should arrive at the office of
The chairman,
kind attention: Prof. Akshay Naik,
FF-13,
Centre for Nano Science and Engineering,
Indian Institute of Science,
Bangalore 560012, India, by the above deadline.
1. The commercial bid and technical bids must be submitted in two separate envelopes. A technical bid must contain a point-by-point technical compliance document. The technical bid must not contain any price information.
2. The technical proposal should contain a compliance table with 5 columns. The first column must list the technical requirements in the order that 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.
3. 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 under the optional items.

4. Clarify if periodic (preventive) maintenance be done by a trained on-site engineer or requires a specialist from the OEM.
5. If maintenance requires OEM, as an additional option, provide the cost of an annual maintenance contract (AMC) for 3 years, post-warranty. The AMC must cover 1 scheduled and 1 emergency visit per year. It must also indicate who will service the AMC, an Indian agent, or the OEM. The AMC cost must also include an itemized list of spares that are essential for the scheduled visits.
6. The bid must include references of 3 previous installations, preferable in India. Please provide the names and contact addresses of the referees so that the committee can contact them independently.
7. A pre-tender meeting for any technical clarifications can be scheduled with the undersigned by sending an email.
8. Payment terms should be mentioned in the technical bid. The payment terms have to be CIF or CIP.
9. If multiple systems can fulfill the requirements, vendors can submit multiple bids.
10. After the award of the Purchase Order (PO), the vendor must provide an Order Acknowledgement within 15 days from the receipt of the PO.
11. Training for at least 2 users from IISc should be provided to make them well familiar with the operation of various components and successful day-to-day operation.
12. The purchase of optional items is subject to budgetary constraints.
13. The bidder must confirm that the system manufacturer runs their own clean room with at least 2 systems of the quoted type installed there for ten years.
14. Spare parts of the system must be available for min 7 years.
15. Supplier must confirm that he runs a free of charge service hotline. Include the telephone number and email and persons on the hotline. Telephone response time max 30 min.
16. Service visit response time by OEM engineer not agent max 5 working days.
17. Provide audited financial statements of last three financial years.
(F.Y2020-21,2021-22,2022-23)
18. The purchaser reserves the right to accept or reject any bid and to annul the bidding process and reject all bids at any time before the award of contract without thereby incurring any liability of the affected bidder or bidders. The tender opening date is tentatively set for **15 August, 2023**.
19. Any questions or clarifications can be directed to:
The chairman,
kind attention: Prof. Akshay Naik,
FF-13, Centre for Nano Science and Engineering,
Indian Institute of Science, Bangalore 560012
anaik@iisc.ac.in
20. The **validity of commercial quotation should be at least 60 days** from the last date for the submission of tender documents
21. The decision of purchase committee will be final.

Technical Requirements:

A. Technical Specifications of the Cryogen free He3 cryostat with at least 8 T magnetic field
He3 cryostat should have the following essential specifications:

1. Base unit: Cryogen free He3 cryostat with at least 8 T magnetic field.
2. Magnet: 8 T superconducting magnet having field homogeneity better than 0.1 % over 10 mm diameter sphere & integrated switch heater so that magnet can also run-in persistent mode. Please provide drivers for the magnet.
3. Magnet power supply: Four quadrants magnet power supply. Appropriate interfaces, mechanism of quench protection in case of power failure or problem with the pulse tube.
4. He3 probe: Guaranteed base temperature of at least 300 mK or less at the sample position with factory installed wiring and magnet fully energized. It should be demonstrated at the time of installation. a. Temperature stability: The temperature range for the He3 probe should be < 300mK to 300K or more. The typical temperature stability should be better than +/- 3 mK till 1.2 K and +/- 0.1 K above 1.2 K. Please provide supporting data. b. Hold time: The hold time at base temperature should be at least 40 hours or more with no heat load. The He3 probe provides a cooling power at 300 mK for 6 hrs with 50 μ W applied. c. He3: Please specify the volume of He3 and its purity. d. He3 Sample space diameter: at least 1.5 inches or more e. Sample space and close loop He should be separated such that system can be maintained at low temperature for longer time without the need to warm up.
5. VTI probe: a. Temperature range for the variable temperature insert (VTI): 1.5 K to 300 K; with a temperature stability of +/- 0.05 K (measured in the default sample probe). b. Usable sample space diameter of the VTI: 50 mm.
6. Temperature sensor and heater: Appropriate heaters and calibrated sensors should be provided at first and stage of the VTI. Calibrated cernox sensor should be installed on the magnet. The calibrated ruthenium and cernox sensors should be installed in He3 probe and 1.5 K probes, respectively. The data sheet should be provided with the calibration curve of each temperature sensor and the type of heater.
7. Compressor and cryocooler: Pulse tube with two stages of cooling should have vibrational isolation from rest of the cryostat. Pulse tube and compressor should be electrically isolated from the Cryostat. Cooling power of the pulse tube should be at least 1 W at 4.2 K. Specify the pulse tube model. Appropriate water cooled helium compressor with full charge of high purity Helium gas, with at least 15 m flexible SS lines. Electrical and cooling water requirements for the compressor must be specified. Maintenance interval for the compressor must be atleast 30,000 hours and for the cold head must be atleast 20,000 hours.
8. Electrical Isolation: The Cryostat should be electrically isolated from Frame, Controller unit, and compressor.

9. Wiring: All the wirings need to be thermally anchored at different stages of the cryostat. All the wiring should be terminated with suitable connectors (preferably Fischer connector) at the room temperature. # VTI probe (a) At least 40 (20 twisted pair) Constantan wire from room temperature to cold head. (b) At least 16 flexible coaxial cables with suitable termination down to sample holder. The wires should have suitable connectors terminating at top (preferably SMA connector) and/or (c) 4 semi rigid high frequency/RF coax lines (UT85 SS-SS frequency up to 20 GHz) with SMA connector on one end and left loose at sample end. # For He3 probe (a) At least 20 (10 twisted pair) Constantan wire from room temperature to cold head. (b) At least 16 flexible coaxial cables with suitable termination down to sample holder. The wires should have suitable connectors terminating at top (preferably SMA connector) and/or (c) 2 semi rigid high frequency/RF coax lines (UT85 SS-SS frequency up to 20 GHz) with SMA connector on one end and left loose at sample end.

10. Insulation ($1 > G$ Ohm) between twisted pair, between wire and chassis and between inner and outer coax

11. Appropriate Water Chiller

12. Appropriate dry scroll pump for the VTI space including hoses, valves.

13. Software for the control of temperature, magnet, and the system. The software must allow manual, semi-automatic and fully automatic control of the equipment. Additionally, it should be possible to control the cryostat along with magnet using the standard worldwide used software (e.g., MATLAB, LabVIEW) based on GPIB/RS232. The software should be based on Windows 10 or higher versions. Free upgrade of software.

14. Testing and training should be done during onsite installation.

15. Manual and supporting documents; Soft Copy as well as hard copy.

16. Factory trained service people should be available in India and most preferably in Bangalore.

17. Please provide compliance statement. Optional Items: 1. Magnet: 12 T superconducting magnet having field homogeneity better than 0.1 % over 10 mm diameter sphere & integrated switch heater so that magnet can also run-in persistent mode. Please provide drivers for the magnet. 2. Air compressor for the pneumatic valve 3. Turbo pumping station from reputed companies. 4. Vibration isolation support mount. 5. Additional two-year warranty B. Spares and accessories NA