



REF: PH/AB/175/2018

Dear Sir/Madam,

Kindly send your best quotation for the following item on CIP Bangalore basis. Your quotation should clearly indicate the terms of delivery, delivery schedule, E.D., payment terms etc. The tender should be submitted in two separate sealed envelopes - one containing the technical bid and the other containing the commercial bid, both of which should reach us, duly signed on or before 1700 hours 31 January 2019.

**Please enclose a compliance certificate along with the technical bid.**

Yours Sincerely,

Chairman  
Department of Physics

**Specifications of the product:**

Cryogen-free magnet system with the following minimum specifications:

1. Pulse-tube based cryogen-free refrigerator system with two stages of cooling and a cooling power of at least 1W at 4.2 K.
2. Variable temperature cryogen-free insert with base temperature of less than 2 K in continuous mode of operation with sample in vacuum. Appropriate gas handling system for operation of the variable temperature cryogen-free insert.
3. Minimum temperature range of continuous operation 2-300K.
4. 16 numbers twisted pair constantan wires down to sample holder. The wires should have suitable connectors terminating at the top (preferably Fischer connector).
5. 4 numbers flexible co-axial cables with suitable termination down to sample holder. The wires should have suitable connectors terminating at the top (preferably SMA connector).
6. Calibrated thermometer for the sample space.
7. Thermometers for monitoring temperature of different parts of the fridge (especially 1K-pot or equivalent region, cryocooler 1st and 2nd stages).
8. Heaters at the variable temperature insert and sample position.
9. 20 pin LCC sample holder (preferably with ESD protection). All the twisted pair constantan wires and flexible co-axial cables must be wired from the top of the fridge till the 20 pin LCC sample holder.
10. Mechanical rotator for continuous rotation of the sample holder from  $0^{\circ}$  to  $\pm 180^{\circ}$  inside the bore of the magnet.
11. The entire system must be modular with an option to field upgrade to a He-3 refrigerator in future.
12. Cryogen-free 12 Tesla superconducting magnet with a homogeneity of approximately 1% over  $1 \text{ cm}^3$  volume. The magnet should be equipped with a persistent switch and quench protection circuitry. The magnet should be fitted with thermometer to monitor its temperature.
13. The bore of the magnet should be at least 50 mm (2 inches) in diameter.
14. Appropriate four-quadrant magnet power supply for the 12 Tesla magnet with ability to continuously sweep the magnetic field to positive and negative values through zero.
15. Gas handling system for the 2K system with appropriate high-purity gas.



16. Temperature controller for monitoring and PID control the temperature of various components of the 2K system and magnet system over the entire temperature range of operation.
17. Appropriate water-cooled mechanical pulse tube helium compressor with full charge of high purity helium gas and at least 10 m of flexible SS hose. Maintenance interval for the compressor must be at least 30,000 hours and for the cold head must be at least 20,000 hours.
18. Appropriate control panel for local and remote operation of the system.

**Terms and conditions:**

1. The vendor should have a track record of having previously supplied at least three similar equipments in India (details must be furnished with the technical bid).
2. The vendor should have qualified technical service personnel for the equipment based in India (preferably in Bangalore).
3. The payment will be through confirmed irrevocable Letter of Credit.
4. The lead time for the delivery of the equipment should not be more than 6-8 months from the date of receipt of our purchase order.
5. The instrument must carry a comprehensive warranty of one year from the date of installation.