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From: Director, CSIR-NPL
No. 14-VI/RPA(1101)22PB/T-101

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CORRIGENDUM

With reference to NPL's Global Tender No. 14-VI/RPA(1101)22PB/T-101 Pre-Bid Conference (PBC) was concluded on 16/02/2023 for "2K Cryostat (Cryogen Free) with superconducting magnet and variable temperature insert with RF/MW and optical coupling". Consequent upon the outcome of PBC, **it is found that there is change in the technical specification of captioned tender. Revised specifications are as follows:**

1. Temperature range: 2 K to 300 K
2. Temperature Control Stability at the Sample Stage: $\leq \pm 0.05$ K
3. Top loading Variable Temperature Insert (VTI) with sample in exchange Gas/Vacuum and with an independent closed loop cooling circuit
4. Temperature Controller with two independent heaters (closed loop temperature control) for control of Sample temperature and heat exchanger of the VTI
5. Sample Exchange time ≤ 2 hrs. (assuming that the system is 2K)
6. Temperature Sensors: Calibrated temperature sensors should be available at the first stage of the cold head, second stage of the cold head, Superconducting magnet and sample stage. The calibration data of all the sensors should be provided. Four Nos. of spare sensors for sample temperature measurements should be supplied separately for fabrication/modification of the sample mount of user's choice.
7. Sample Probe with a Sample Space diameter of ~ 50 mm: Two Nos of sample insert are required (**Price of the sample inserts should be mentioned separately**)
Sample probe should be configured for DC, RF/MW wiring termination and optical fibre coupling till the sample stage/sample mount. The following are the details regarding the wiring requirements of the sample inserts
 - i. 24 Nos. of DC wires (12 pairs in twisted pair combination)
 - ii. 2 Nos. of MW/RF wires with suitable feedthrough for handling signal up to 18 GHz signal
 - iii. sample holder (sample mount) with 24 DC terminals, all the terminal should be electrically isolated from the cryostat and any other wiring and also should be ESD protected.
 - iv. Two single mode optical fibres should be coupled to the sample stage till the sample mount with suitable connectors and adaptors (the experimental wavelength is 1550 nm)
 - v. All the necessary connectors and adaptors to extent the wiring connections till sample for DC, RF/MW and single mode optical fibres should be supplied to the extent to make connections to sample for experimental purpose.

- vi. Sample mount/holder should be supplied with wiring terminations for measurements. The sample mount configuration has to account for 24 Nos. of DC terminals, two nos. RF wiring and two nos. of single mode optical fibres. Sample holder/mount fabricated out of gold (Au) coated OFHC copper should be supplied for measurements. One sample mount fabricated on bare Copper (gold coated OFHC copper) and one sample mount with provision of attaching sample mounted on LCC.
- vii. The sample holder/mount should be capable of having measurement modes both in parallel to and perpendicular to magnetic field with respect to the sample surface.

The second sample probe is to be configured with two MW/RF wires capable of handling signals upto 40 GHz; all the other features of this insert remain same as mentioned above.

8. A 12 Tesla superconducting magnet with automatic quench detection and protection circuits should be integrated to the cryostat. The following are the specifications for the magnet system
 - i. The magnet should be capable of operation in the four-quadrant configuration with smooth crossover at Zero Tesla
 - ii. Persistent mode operation should be available
 - iii. Magnetic field Homogeneity: $\pm 0.1\%$ over a 10 mm DSV space
 - iv. The maximum ramp rate as claimed by the company should be demonstrated in the four-quadrant mode (positive max. to negative max. and then from negative max. to positive max.) for multiple cycles (at least 05 Nos) without considerable elevation on the sample temperature or the magnet temperature
 - v. Ramping speed of the magnet should be independent of the sample temperature and magnet temperature, the sample stage temperature or magnet temperature should not exceed the limits to halt the ongoing measurements.
9. The system should be supplied with all necessary pumps and gas lines required for its routine operation. A turbo pump with pumping speed greater than 200 litre per second with isolation valve at the rotary stage should be supplied for evacuating the OVC.
10. A compatible water chiller of capacity 5TR or more for the He-compressor should be supplied.
11. Two-year warranty for the whole system and assurance for the supply of spares and consumables for its operation of upto 10 year from the date of installation. Installation, demonstration of all the specifications and complete training at site should be done by the company.

All other terms & conditions of said tender will remain the same.


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