

## Bidders are requested to submit their bid as per below specifications-

*Four-chambered water bath for existing experimental setup along with data acquisition system and associated software for pressure and temperature data acquisition*

### **Specification:**

1. Four-chambered water bath integrated in single body with scope to maintain different temperature in different chambers.
2. Temperature range ambient to 99.9°C with precision of 0.5°C or better.
3. The bath is operated 220 v, AC, 50 Hz, single phase AC supply.
4. Length of the existing experimental setup/panel is 7'4" should match with the length of water bath. Size of each chamber is 12"(D) x 12"(L) x 12"(B) approx.
5. Width of the existing experimental setup/panel is 8" and height from the floor is 1' 11" that should rest on the rear part of the bath.
6. Double walled chambers - the inner wall of 2 mm thick stainless steel SS 316 grade and outer walls of 2 mm thick stainless steel SS 304
7. Chambers are insulated from all sides by glass insulation of 2 inch thick layer or as suitable with ceramic blanket coated between the two walls to minimize heat loss are to be provided.
8. PID based digital temperature controllers of reputed brand are to be attached with high quality sensors and solid state relays for each set of bath for temperature control.
9. Mechanical stirrers / or better will also to be provided for each set of bath to agitate the bath liquid to maintain uniformity of temperature throughout the chamber.
10. Heaters of black heat type made from best quality Kanthol super A-1 wire fitted with sunvic control for precision of temperature completed with neon indicating lamps, plug cord etc. are to be provided for each set.
11. Four twin type Pt 100 sensors having arrangement to connect with the Digital controller and the data acquisition system.
12. The data acquisition system should be programmable, modular and expandable in nature with universal inputs having at least 4 channels for pressure read out with sensitivity of 0.1 psi or better and 4 channels for temperature read out with sensitivity of 0.5°C or better.
13. Memory: minimum 100K readings in non-volatile memory with time stamp.
14. Scan conditions: Programmable scan interval and conditions
15. The data acquisition system should be compatible and connected to the existing Swagelok make Pressure transducers PTI-S-MG40-22AQ-BCDF PTI Pressure Transducer, Range – 0-40 MPa, O/P Signal 0-5 V(DC), Direct Wire 4 Ft.

16. The data acquisition system should be connected in parallel to the existing Swagelok make digital display/ readout unit as mentioned above.
17. The data acquisition system should have rotatable display and should have provision to connect with computer for digital display in a path of computer screen and printing facility.
18. The data acquisition system should be able to work as a standalone unit (if required) without the PC.
19. The data acquisition software should be Microsoft Window based and capable of transferring data to other user packages like EXCEL. Graphical web interface for monitoring through PC.
20. Compatible All-in-one/Desktop PC of reputed brands (Dell/Hp/Lenovo) intel i5, 1 TB SSD, RAM 8 GB, monitor 23" or better
21. 5 KVA online UPS of reputed brands (Microtek/Vertib/APC/Numeric) with 30 min back up
22. Installation and connections with the existing experimental setup to be done by the supplier onsite
23. Warranty: 5 years warranty on the entire system from the date of installation
24. Caution: Vendor is required to inspect the existing experimental set up to which the water bath has to be mounted to match the dimensions and fixtures and the components should be compatible to the entire system
25. Deliver Period – 90 days

### **User Details-**

Dr. Debadutta Mohanty, Scientist-F;

CSIR-Central Institute of Mining and Fuel Research, Barwa Road Campus,  
Dhanbad, Jharkhand, India – 826001.