

Dated: 14/08/2015

Enquiry number: IITK/ME/AK/2015/02  
Enquiry open date: 14/08/2015  
28/08/2015

Tender Due date:

## **Refrigerated/Heating Circulating Bath**

A **Refrigerated/Heating Circulating Bath** for conducting controlled melting/ solidification experiments on salt-water solution is needed. The application of refrigerated/ heating circulating bath is to circulate the coolant through a pre-designed heat exchanger mounted on the top of rectangular cavity, having a typical size of **10 cm × 10 cm × 1cm** filled with salt-water solution. The top of the rectangular cavity needs to be maintained at constant temperature in the range of **-35 °C to +150 °C**.

### **The technical specifications of the Refrigerated/ Heating circulating bath:**

1. Temperature range: **-35 °C to +150 °C**. The experiments shall be planned at **-35 °C** and hence system must be capable of working at minimum temperature limit. Minimum temperature range lower than **-35 °C** are welcome. Maximum temperature range ~ **+150 °C**.
2. **Absolute Temperature Calibration (ATC) at least 3-point calibration.**
3. A Proportional-Integral-Derivative (PID) temperature control, temperature stability should be at least **±0.1 °C**.
4. Heat Capacity: at least **2 kW**.
5. Cooling capacity (bath fluid Ethanol) should be at least **0.4 kW** at **20°C**, at least **0.35 kW** at **0°C** and at least **0.15 kW** at **-20 °C**.
6. Capable of working with flammable coolant such as Ethanol.
7. Coolant Filling Volume: ~ **8 litre** or more.
8. Pump Capacity: Flow rate ~ **15 litre/min**, Pressure ~**0.35 bar**.
9. Pump capacity electronically adjustable.
10. Low noise level.
11. Electronic countdown time.
12. Having early warning system for low liquid level and high/low temperature.
13. Cables and power supply should conform the Indian standard.

### **Installation, Commissioning and Training**

- The delivery of the equipment should be considered complete only after successful commissioning of the instrument.
- The pre-installation requirements should be communicated to IIT Kanpur well in advance of the installation.
- The supplier should provide training to at least two users at the installation site to make them familiar with smooth operation of the instrument.

### **Terms and Conditions**

1. Prices should be on FOB and CIF (IIT Kanpur).

2. Prices should include installation and training cost, and all additional charges including freight, insurance etc.
3. Discount: **maximum educational-discount** to be provided.
4. Normal payment terms for the Institute will be applicable (**90%** on delivery of the items and the remaining **10%** after satisfactory installation/ inspection).
5. Warranty: no less than two (02) years after installation.
6. Quotation validity: no less than **90** days from the date of quotation submission.
7. Quotations should carry proper certifications such as, agency certificates, proprietary certificates, printed company profile, detail technical specification, detailed user-list for similar equipment with phone numbers.
8. Demonstration is required, if asked by the user.
9. An undertaking that the vendor will supply all the spares and services for the equipment for at least 5 years from the date of commissioning.
10. Delivery must be within 6 weeks. Earlier would be better.
11. Availability of after sales service and support in India. Supplier has to compulsorily indicate details of facilities/expertise/qualification/cost (after guarantee period) of support in India. Factory trained engineers should be available in India for complete product support.

The prospective suppliers are required to send quotation in two parts in sealed envelopes, as “**Technical Bid**” and “**Financial Bid**”. The **Technical Bid** should contain detailed technical specification of the product being offered and should not mention any price. The **Financial Bid** should include the detailed price quotation clearly including the cost of the equipment, taxes, service charges if any, shipping and handling charges. The two envelopes should reach the following address **on or before 28th August, 2015**. Kindly mention "**Refrigerated/Heating Circulating Bath: IITK/ME/AK/2015/02**" on the sealed envelope.

Any questions, technical or otherwise should be directed to the undersigned via e-mail.

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