

Specification for Thermal Cycling Furnace

Purpose:

To subject samples / coatings under test to automated heating and cooling cycles to study failure of coatings.

Specification:

- ☐ The test rig should have a furnace with a down ward facing opening through which samples can be loaded.
- ☐ Samples under test can be raised up to a temperature of 1200 Deg C with an accuracy of $\pm 1\%$ FSD
- ☐ Should be provided with Silicon carbide heating elements.
- ☐ Should be provided with a suitable PID controller to regulate the temperature.
- ☐ Furnace should be capable of programmable test cycle.
- ☐ It should have three furnace chambers (two cooling and one heating)
Duration of heating and sequence of operation should be controlled by a programmable controller.
- ☐ Furnace dwell time : 0 -99 min
- ☐ Heating platform size : 250 mm x 250 mm
- ☐ Temperature regulator : pre-settable
- ☐ Should be provided with non volatile cycle counter to indicate cycles of operation.
Cycle counter : 1 to 9999 pre-settable
- ☐ Recorder output : 5V
- ☐ Cooling by forced air
- ☐ Pneumatic supply : 10 bar max, 20 lpm max.
- ☐ Power : 415V / 3 phase / 50Hz/10kW
- ☐ Smooth vibration free movements to eliminate mechanical shock on heated elements.
- ☐ Manual or auto-restart with initialization on restoration of power after outage.
- ☐ Minimum spares required for trouble free operation of 5 years should be quoted.

Other details:

- Supplier must be ISO 9001: 2001 certified.
- Supplier must have supplied similar equipment to any PSU or other labs and details to be furnished.
- Should have agents in India to provide after sales service, support and maintenance
- The machine should be guaranteed for a period of 2 years from the date of commissioning. During warranty period, if there is any repair to be carried out at the suppliers works, transportation cost of equipment/component besides repair / replacement charges, if any, should be borne by the supplier.
- AMC charges for 3 years beyond the warranty period of 2 years should be quoted
- Photographs and catalogues related to every item of AFM should be enclosed
- **Inspection:** Pre-dispatch inspection of equipment will be carried out at supplier's works
- Dimensions of equipment, weight and space requirements should be provided
- Installation & Commissioning should be carried out at BHEL R&D. Pre-installation requirements should be furnished. Training on equipment usage should be provided at BHEL R&D
- Commissioning charges, if any, to be indicated
- Compliance statement of specification to be submitted along with the offer. Failure to give compliance statement, the offer is liable to be rejected. All tender specifications to be compared with machine offered line by line and documentary evidence must be enclosed by the supplier along with quotation

After the delivery of thermal cycling furnace to BHEL R & D, if the furnace is installed in existing R & D building and later if it has to be shifted to the new building (Center for Nanotechnology Applications), this has to be done by the supplier and related expenses should be specified. The shifting will be within 9 months of initial installation.

For any Technical Clarification, please contact :

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