

1. EMISSIVITY MEASUREMENT APPARATUS

Technical Specifications

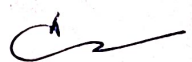
- Test plate Diameter: 160 mm
- Black Plate Dia.: 160 mm
- Heater (2Nos.): Nichrome Wire Heater. (One each for test plate & black plate)
- Control panel comprising of:
 - Digital Temperature Controller : PID Controller, 0-199.9° C.
 - Energy meter: Digital Type for power measurement.
 - Digital Temp. Indicator: 0-199.9°C, with multi-channel Switch
 - Temperature Sensors: RTD PT100 type - 3 Nos.
 - With standard make On/Off switch, Mains Indicator etc.
- Cabinet to accommodate the slab assembly with front window of acrylic.
- An ENGLISH instruction manual consisting of experimental procedures, block diagram etc. will be provided along with the Apparatus.
- The whole set-up is well designed and arranged on a rigid structure painted with industrial PU Paint.


Experimentation/Learning Objectives

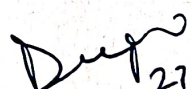
- Determination of the Emissivity of a test plate.
- Study the variation of emissivity of test plate with absolute temperature.

Utilities Required

- Electricity Supply: 1 Phase, 220 V AC, 50 Hz, 5-15 amp combined socket with earth connection (Earth voltage should be less than 5 volts)
- Table for set-up support.


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2. DROPWISE/FILMWISE CONDENSATION APPARATUS

Technical Specifications

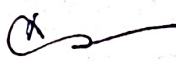
- Copper tubes (2 Nos.): one with natural finish and other nickel polished. ID 16 mm, OD: 19 mm
Length : 175 mm
- Water Flow measurement: Rotameter.
- Condensate Measurement: Measuring Cylinder & Stopwatch
- Steam Generator: 8 Ltrs. (Approx.) made of Stainless steel with 1.5 kW heater. Insulated with ceramic wool and clad by aluminum foil.
- Control valves: One each for Steam, Cooling water & Drain.
- Pressure Gauge: Bourdon type.
- Control panel comprising of:
Digital Temp. Controller: PID Controller, 0-199.9° C (For Steam Generator)
Digital Temp. Indicator: 0-199.9°C, with multi channel switch.
- Temperature Sensors: RTD PT-100 type - 6 Nos.
With standard make On/Off switch, Mains Indicator etc.
- Cabinet to accommodate the slab assembly with front window of acrylic.
- An ENGLISH instruction manual consisting of experimental procedures, block diagram etc. will be provided along with the Apparatus.
- The whole set-up is well designed and arranged on a rigid structure painted with industrial PU Paint.


Experimentation/Learning Objectives


- To determine overall heat transfer co-efficient for Drop wise & Film wise condensation of steam on a vertical surface.
- Visualization of condensation process in drop wise as well as film wise condition.

Utilities Required

- Electricity Supply: 1 Phase, 220 V AC, 50 Hz, 5-15 Amp combined socket with earth connection (Earth voltage should be less than 5 volts)
- Water supply : 2 LPM at 1 Bar.
- Floor Drain.
- Table for set-up support.


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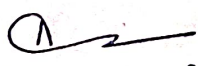

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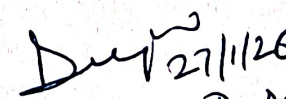
3. DEAD WEIGHT GAUGE TESTER

Technical Specifications

- Range 0 to 1000 kg/cm²
- Accuracy $\pm 0.02\%$ of reading or better . If the claimed accuracy is better than 0.01% of reading . Then method of calculation of accuracy and necessary classification certificate from national standardization agencies like NPL, UKAS etc. shall be supplied with system.
- No. of pistons one or two.
- The necessary weight should be of non-magnetic steel.
- Resolution : Minimum resolution of 0.01kg/cm² is required.
- Operating medium: Non – Corrosive mineral based hydraulic oil.
- Oil reservoir capacity : Minimum 150 cc.
- Oil separator seal : An oil separator seal designed for use where no oil must enter gauges under test(For example Oxygen, LPG or hygienic gauges) shall be supplied with system. The difference in pressure while using oil seal should not exceed 0.005kg/cm²
- Levelling screws at base along with spirit level for levelling of base w.r.t horizontal.
- A set of BSP adaptors of 3/8, 1/2, 1/4, 1/8 inches with male thread of 1/2 inches should be supplied with set.
- Any system which has the ability of calibrating differential pressure gauges either within built system or with suitable attachments in addition to calibration of normal pressure gauges shall be preferred.
- Rugged carrying case for easy transportation of DWGT along with weights shall be supplied with set.
- The DWGT is to be commissioned at our works and necessary training shall be provided by manufacturer free of cost.
- Recommended periodicity of calibration shall be informed.
- Necessary accessories and tools along with operation and maintenance manual be supplied with set.


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