

HEAT TRANSFER IN NATURAL CONVECTION (EE-1566)

The setup consists of a brass tube fitted in a rectangular duct in a vertical fashion. The duct is open at the top and bottom, and forms an enclosure and serves the purpose of undisturbed surrounding. One side of the duct is fitted with a transparent good quality Acrylic window for visualization. An electric heating element is kept in the vertical tube that in turns heats the tube surface. The heat is lost from the tube to the surrounding air by natural convection. The temperature of the vertical tube is measure by Temperature Sensors and displayed by a Digital Temperature Indicator with multi-channel switch. The heat input to the heater is measured by a Digital Ammeter and a Digital Voltmeter and is varied by a variac. The tube surface is polished to minimize the radiation losses.

EXPERIMENTS

- To determine average heat transfer coefficient

UTILITIES REQUIRED

- Electricity Supply: I Phase, 220 V AC, 2 Amp.
- Table for set-up support

TECHNICAL DETAILS

- Test Section
Dia : 38 mm (approx).
Length : 500 mm(approx)
- Heater : Nichrome Wire.
- Temperature Sensors : RTD PT-100 type (7 Nos.)
- Control panel : Digital Voltmeter : 0-300 Volt.,
Digital Ammeter : 0-2 Amp.,
Variac : 0-230 V, 2 A,
Digital Temperature Indicator: 0-300°C
(with multichannel switch)
On/Off switch, Mains Indicator etc
- Duct of MS to accommodate the assembly with front window of Acrylic.
- The whole set-up is well designed and arranged on a good quality painted structure.

