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Product Name : Radiation and Convection Apparatus	**Product Code :** LBNY-0005-10200025

Description :

The heating element contained within the test vessel is an electrical resistance element whose input power is controlled by a potentiometer. The self-contained vacuum pump fitted to the equipment caters for vacuum conditions down to less than 0.1 mbar, and there is provision for an external pressure source input to be used to allow investigations up to 2 bar absolute. A Bourdon tube gauge mounted on the unit measures pressure from +1 bar to -1 bar and to cater for the high vacuum conditions a McLeod gauge, also panel mounted, covers the range 0 to 200 mbar absolute. A temperature indicator monitors the temperature at each thermocouple, one measuring ambient and one on the heating element.

Experimental Capability:
A determination of the natural convection heat transfer coefficient at different pressures.
An investigation of the effects of orientation of the heat source on the convection heat transfer coefficient.
Demonstration of the Stefan Boltzman law of radiation and determination of the constant for differing ambient conditions.
An investigation of natural convection for different gases, introducing the Prandtl, Grashof and Nusselt dimensionless groups.
A study of the concept and parameters of emissivity.

Technical Specification :

A heating element (which can be varied) is housed in a chamber designed to withstand vacuum pressures down to less than 0.1 mbar or, with an alternative cover, pressures up to 2 bar absolute. The apparatus consists of a self-contained bench mounted unit complete with vacuum pump. Element heating controls, pressure and temperature indications and suitable ambient medium controls for the chamber are included to enable a series of

investigations to be performed on heat transfer by radiation and natural convection.

Laboratory Instrument India