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**Product Name :**  
Laminar And Viscous Flow Heat Transfer Unit

**Product Code :**  
LBNY-0005-1020004



#### **Description :**

Laminar And Viscous Flow Heat Transfer Unit is allowed to take place between oil and water in a concentric tube. The oil is raised to a maximum temperature of 90°C in a tank fitted with an electric heating element. Control is by a panel mounted digital PID controller and the maximum temperature is limited by a separate thermostat for operator safety. Oil flowing in the inner tube is supplied by an international oil company and has a kinematic viscosity at 70°C, of  $8 \times 10^{-6} \text{ m}^2 \text{ s}^{-1}$ . As it flows downwards, the oil is cooled as heat is transferred to the flow of cooling water which surrounds the core tube. The heated oil is pumped from the tank into the core tube of the diagonally mounted concentric tube heat exchanger.

#### **Experimental Capabilities:**

Determination of surface heat transfer coefficients on both the oil and water sides and of the overall heat transfer coefficient.

Demonstration of a simple concentric tube heat exchanger with con-current and counter-current flow.

Simple energy balance for a heat exchanger.

#### **Technical Specification :**

The unit includes oil heating and pumping equipment, temperature control, flow and temperature measurement and provides for con-current and counter-current flow in the heat exchanger.

A bench top unit incorporating a concentric tube heat exchanger for the investigation of Laminar And Viscous Flow Heat Transfer Unit between oil and water at velocities when the flow is Laminar And Viscous Flow Heat Transfer Unit.

Heat Exchanger: Concentric tube type with 2 inlet, 2 outlet and two pipe surface type T thermocouples . Area 0.0305m<sup>2</sup>.

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Heater Tank: Capacity approximately 2.5 litre with 500W heater controlled by digital PID controller.  
Panel: High quality glass reinforced plastic having an attractive appearance on which the following are mounted.  
Measuring Tank: Pyrex glass, effective capacity 0.5 litre, fitted with contents gauge and a combined drain and internal overflow control  
Digital Thermometer: 0.1°C resolution, with multi-way selector switch.  
Cold water flow reversal valves: To establish concurrent and counter-current flow.  
Pump: Continuous rated to circulate hot oil.  
Flow Meter:- For cold water.



**Laboratory Instrument India**