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**Product Name :**  
Convective Heat Transfer In Air Flow

**Product Code :**  
LBNY-0005-1250003



#### **Description :**

The Convective heat transfer In Air Flow and its accessories allow studying the convective heat transfer with different geometries of the transfer surface. Typical models such as the tube bundle, the heated tube from the outside and the heated cylinder from the inside are observed. Convective heat transfer is the transfer of heat between a surface and a fluid. The processes of convective heat transfer are associated with the movements of the fluid that is to say with convection. In the case of forced convection, the fluid is fed by a pump or fan onto the transfer surfaces, whereas in the case of free convection, the flow occurs only under the effect of the density differential of the heated fluid. The air passes in front of the model, warms itself up and leaves by a ventilation shaft. In the air duct, a flow-friendly inlet member provides a homogeneous flow for conducting the tests. The volumetric flow rate is adjusted by a butterfly valve located at the fan outlet. An immersion heater, which can be placed anywhere in the tube bundle, simulates a heated tube. The convective heat transfer can thus be determined according to the position of the tube. Other models are available as accessories. It is also possible to show the chimney effect inside a ventilation shaft during free convection. The measuring section is an air duct with fan, in which the model of heat exchanger can be fixed easily and quickly using quick couplers. To make it possible to observe the tests, the air duct is equipped with two windows. The model included in the bundle heat exchanger delivery list includes two exchangeable tubular bundles of different geometries. The heating power and the volumetric flow can be adjusted. The heating power and the temperatures of the air and the heater are displayed numerically. A pitot tube and a pressure measuring device make it possible to determine the speed distribution in front of and behind the models.

#### **Technical Specification :**

A ventilation shaft allows free convection tests and the demonstration of the chimney effect  
Display of air temperature, heating temperature and heating power

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~ 10mm immersion heater insertable into the ventilation shaft  
Immersion heaters protected against overheating  
Convective heat transfer in case of forced convection  
Exchangeable tubular bundles with two different diameters included in the delivery list  
Mobile pitot tube with pressure measuring device for determining a speed profile in the case of forced convection  
Immersion heater ~ 10mm or ~ 13mm insertable at the desired position in the tube bundle  
Adjustable air volume flow  
Air duct with flow-friendly inlet and windows for observation of tests.

**Technical Characteristics:**

**Air duct:**

Flow cross-section: 150x150mm  
Length: 1540mm

**Tubular bundle:**

23x tube (~10mm)  
23x tube (~13mm)

**Fan:**

Power: 1,5kW  
Volume flow rate: 2160 m<sup>3</sup> / h

**Measuring ranges:**

Pressure: ±200mbar  
Temperature: 2x max. 80 °C  
Power: 0 ... 400W

**2 Immersion heaters:**

Length: 130mm  
Power: 220W (~10mm)  
Power: 250W (~13mm)  
Protection against overheating at 80 °C.



**Laboratory Instrument India**