



Features

Tesca Fluidized Bed Heat Transfer Apparatus is designed to provide visual and quantitative results related to the flow of air through both a packed and a fluidized bed of granular material.

The Unit also provides quantitative results related to heat transfer in a fluidized bed.

The Fluidization and Fluid Bed Heat Transfer Unit is almost silent in operation, is safe and easy to use and responds quickly to changes in operating conditions.

The interesting and stimulating range of investigations which are possible with this apparatus make it of interest to those involved with mechanics of fluids, Heat Transfer and Thermodynamics in courses for 'Chemical Engineers', 'Energy Managers', 'Plant & Process Engineers', 'Mechanical Engineers', and 'Mining Engineers'.

Application of fluidized beds is more widespread in

Note: Specifications are subject to change.

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industry than is usually appreciated, covering such diverse fields as power generation to food processing. The objective of the unit is to investigate the gas flow through a fixed and fluidized bed and to measure the heat transfer rate and coefficients for comparison with convective heat transfer rates in air.

Fluidization takes place within a transparent chamber and the range of bed material supplied can be rapidly changed. Alternative locally sourced bed materials and air distributors can be easily utilized for student project work.

Technical Specifications

- Panel: High quality acrylic on which following components are mounted:
 - Variable Transformer to vary the 200W heater power unit
 - Voltmeter & Ammeter to indicate the heater power input. Ranges: 0-250V & 0-3A
 - Flow Meters to measure air flow through bed. Range: 0.15 – 3.5 Litres/sec
 - Digital Thermometer to indicate the temperatures of heater surface, air inlet and probe. Resolution 10C
 - Manometer to measure pressure drop through bed
- Glass Chamber: Made of borosilicate glass having distribution chamber, air distributor, electric heater, air filter and temperature sensors.
- Safety Features: Fusing and Earthing of all components and Heater temperature controller.

Experimental Capabilities

- Observation of the behavior in a fluidized bed of a wide range of granular materials, from onset of fluidization to entrainment.
- Measurement of air flow and pressure drop through a variety of granular materials, as packed and as fluidized beds.
- Investigations of the effect of distributor design on bed behavior.
- Investigation of the effect of
 - a) Superficial velocity
 - b) Depth of immersion
 - c) Particle size
- On the surface heat transfer coefficient for a hot surface in a fluidized bed.
- Demonstration of separation by particle size and density

Services Required

- Mains Power Supply 220/240V, 50Hz, Single phase
- 200l/min, Air Compressed (if not included with offers)