

**Specification:**

- Thermal Conductivity in Fluids trainer allows students to study heat conduction in fluids and also the fundamental differences between thermal conductivity of gases and liquids..Thermal Conductivity in Fluids trainer main operation is to investigate the thermal conductivity of common fluids, e.g., water, oil, air or carbon dioxide.
- Two cylinders form the main component of the experimental unit: an electrically heated inner cylinder situated in a water-cooled outer cylinder, there is a concentric annular gap between the two cylinders.
- This annular gap between the two cylinder is filled with the fluid being studied.
- The heat conduction occurs from the inner cylinder, through the fluid to the outer cylinder and the narrow annular gap prevents the formation of a convective heat flux and allows a relatively large pass-through area while at the same time providing a homogeneous temperature distribution.
- The trainer is equipped with temperature sensors inside and outside of the annular gap.
- Display of temperatures and heating power is available in the software.
- The trainer is connected to the PC via USB.

**Experiments:-****Determine the steady heat conduction in gases and liquids:**

- Determine the thermal resistance of fluids.
- Determination of thermal conductivities  $k$  for different fluids at different temperatures.

**Determine the transient heat conduction in fluids:**

- Interpret transient states during heating and cooling.
- Introduction to transient heat conduction with the block capacity model.

**Technical Data:-****Heater**

- Heating power: 350W
- Temperature limitation: 95°C

**Heat transfer area: 74,39cm<sup>2</sup>****Annular gap**

- Height: 0,4mm
- Average diameter: 29,6mm

**Inner cylinder**

- Mass: 0,11kg
- Specific heat capacity: 890J/kg\*K

*Note: Specifications are subject to change, Photos shown above are Indicative, Actual Product can Vary.*



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**Measuring ranges**

- Temperature: 2x 0...325°C
- Heating power: 0...450W

**Supply voltage**

- 1 phase, 220V, 50Hz

**Scope of Delivery:-**

- Thermal Conductivity in Fluids trainer (HT-002).
- Hard copy of the user manual.
- Photon software + USB cable.

**Required for Operation:-**

- Laboratory PC.

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