



### Features

- Visualisation of boiling and evaporation
- Software for data acquisition

Heating a liquid over a heating surface produces different modes of boiling dependent on the heat flux density. They can accelerate the evaporation process (nucleate boiling) or impair it (film boiling). In practice, a limitation of the heat flux density must be assured in order to prevent damage to the heating surface. This knowledge is applied in practice e.g. when designing steam boilers for steam-powered drives.

Tesca Boiling Process experimental unit can be used to demonstrate boiling and evaporation processes in a straightforward manner. The processes take place in a transparent tank. A condenser in the form of a water-cooled tube coil ensures a closed circuit within the tank. Compared with water, this liquid has the advantage that its boiling point is at 36,7°C (1013hPa), whereby the evaporation process takes place at much lower temperatures and a lower heating power.

Sensors record the flow rate of the cooling water, the heating power, pressure and temperatures at all relevant points. The measured values can be read on digital displays. At the same time, the measured values can also be transmitted directly to a PC via USB. The data acquisition software is included.

The well-structured instructional material sets out the fundamentals and provides a step-by-step guide through the experiments.

Note: Specifications are subject to change.

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### Specifications

- Visualization of boiling and evaporation in a transparent pressure vessel
- Evaporation with heating element
- Condensation with tube coil
- Safety valve protects against overpressure in the system
- Pressure switch for additional protection of the heating circuit, adjustable
- Sensors for pressure, flow rate and temperature with digital display
- Software for data acquisition via USB under Windows Vista or Windows 7
- CFC-free evaporating liquid

### Technical Specifications

- Heater: power: 250W, continuously adjustable
- Safety valve: 2bar rel.
- Pressure vessel: 2850mL
- Condenser: coiled tube made of copper
- Measuring ranges
  - Tank pressure: 0...4bar abs.
  - Power of heater: 0...300W
  - Flow rate (cooling water): 0,05...1,8L/min
  - Temperature: 4x 0...100°C

### Experiments

- Visualization of different forms of evaporation
- Heat transfer
- Effect of temperature and pressure on the evaporation process

### Requirement in Laboratory

- 230V, 50/60Hz, 1 phase or 120V, 60Hz/CSA, 1 phase
- Water connection, drain