Marcet Boiler for Vapour Pressure of Water (SMT-HT-06)

ESOLS Marcet Boiler is a simple experiment to show the relationship between pressure and temperature for saturated (wet) steam for comparison with ESOLS DAQ Software as optional accessory. When a fluid is heated in a closed tank, the pressure increases as the temperature rises. Theoretically, the pressure increase is possible up to the critical point at which the densities of the fluid and gaseous phases are equal. Fluid and vapour are then no longer distinguishable from each other. This knowledge is applied in practice in process technology for freeze drying or pressure cooking. The SMT-HT-06 experimental unit can be used to demonstrate the relationship between the pressure and temperature of water in a straightforward manner. Temperatures of up to 200°C are possible for recording the vapour pressure curve. The temperature and pressure can be continuously monitored via a digital temperature Touch LCD display and a Bourdon tube pressure gauge.

The unit has Touch LCD display for visualization of process and the measurements. The Unit is also connected to Software for computer connectivity and data analysis. The Touch screen and computer software is included in the package.

Web: http:// www.esolsengineering.com, Email: esolsengineering@gmail.com

TECHNICAL SPECIFICATIONS

Specifications:

- Touch LCD with GUI Interface for better monitoring and accurate measurement of Plant variables.
- Measuring a vapour pressure curve for saturated vapour.
- Stainless steel Pressure boiler with insulating jacket.
- Temperature limiter and safety valve protect against overpressure in the system.
- Bourdon tube pressure gauge to indicate pressure.
- ESOLS DAQ Software for monitoring and control.

Technical Data:

- Bourdon tube pressure gauge: -1 to 12bar.
- Temperature limiter: 200°C.
- Safety valve: 10bar.
- Heater: 2kW.
- Boiler, stainless steel: 5L.
- Measuring ranges:
  - Temperature: 0 to 500°C.
  - Pressure: 0 to 15 bar.
- 230V, 50Hz, 1 phase
  230V, 60Hz, 1 phase
  120V, 60Hz, 1 phase
- Touch LCD with GUI Interface for better monitoring and accurate measurement of Plant variables.
- ESOLS DAQ Software for monitoring and control.
  - Graphical visualization.
  - Security mechanism for login.
  - USB Connected
  - Compatible with Windows 7,8.1,10.
- Digital Instrumentation
- Capability to modify according to end user.
- Can be used in Research Purposes.

Experiments:

- Recording the vapour pressure curve of water.
- Presentation of the relationship between pressure and temperature in a closed system.
- Temperature and pressure measurement.
- Confirmation of the Antoine Equation

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