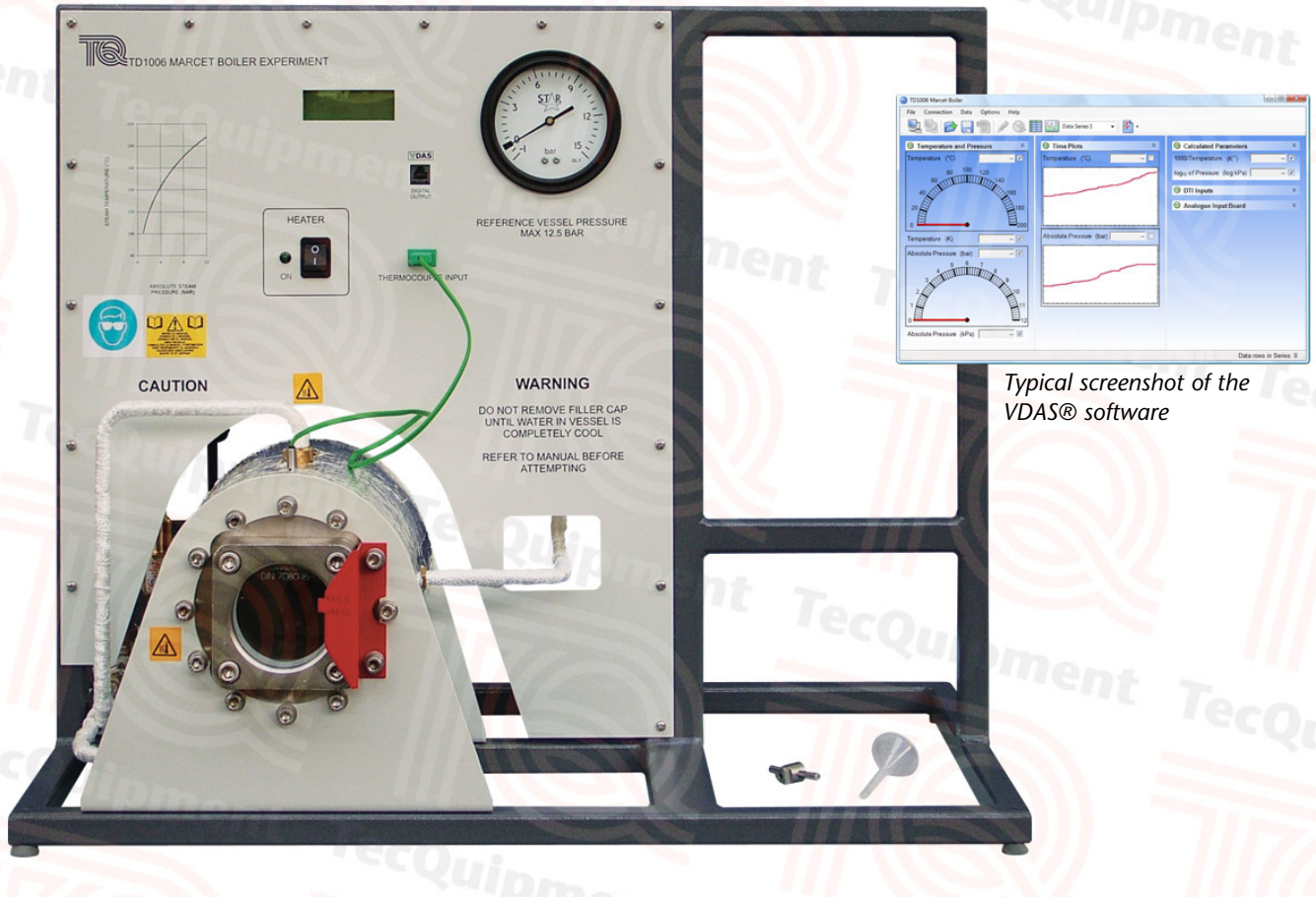


**TD1006**

**Marcet Boiler**

**Shows the pressure and temperature relationship for saturated steam**

Works with  
**VDAS®**



Typical screenshot of the VDAS® software

- Compact, bench-top unit
- Based on the classic Marcet Boiler Experiment
- Stainless Steel vessel (boiler) for long life and ease of maintenance
- Proves the Antoine Equation for saturated steam
- Vessel (boiler) has viewing window to see the boiling process and the water level
- Simple and safe to use - includes temperature cut-out switches and a pressure relief valve
- Electronic sensors measure boiler temperature and pressure - shown on a digital display in both SI and traditional units (including absolute values)
- Can connect to TecEquipment's Versatile Data Acquisition System (VDAS®)

- TecEquipment Ltd, Bonsall Street, Long Eaton, Nottingham NG10 2AN, UK
- **T** +44 115 972 2611 • **F** +44 115 973 1520 • **E** info@tecquipment.com • **W** www.tecquipment.com
- An ISO 9001 certified company
- VDAS is a registered trademark of TecEquipment Ltd



# TD1006

# Marcet Boiler

## Description

The TD1006 Marcet Boiler is a simple experiment to show the relationship between pressure and temperature for saturated (wet) steam for comparison with published results.

The apparatus consists of a rigid frame containing an insulated pressure vessel (boiler) and an instrumentation and control unit. The frame also has extra space for the optional VDAS interface.

The electrically-heated boiler holds water. As the water temperature increases, so does the pressure in the boiler. A transducer and a thermocouple measure the boiler pressure and temperature. A digital display shows the values in both SI and traditional units (including absolute values).

The boiler includes a special-purpose glass window. It allows students to see the internal construction of the vessel, to see the boiling process and to check the water level.

For sound engineering practice a mechanical Bourdon type gauge also displays the pressure. It works independent of the electrical supply so the user can always see the pressure in the vessel.

The electrical heater has a thermostat to limit the maximum heater temperature. A pressure relief valve limits the maximum boiler pressure. For safety, the equipment includes high temperature pipe to direct any vented steam away from the working area to a suitable drain.

The design includes all possible safety and low-maintenance features, specially for educational use. TecQuipment has checked the corrosion-resistant high-grade stainless steel boiler against the latest European safety standards.

You can do tests with or without a computer connected. However, for quicker tests with easier recording of results, TecQuipment can supply the optional Versatile Data Acquisition System (VDAS). This gives accurate real-time data capture, monitoring and display, calculation and charting of all the important readings on a computer (computer not included).

## Standard Features

- Supplied with comprehensive user guide
- Two-year warranty
- Made in accordance with the latest European Union directives

## Experiments

- Variation of saturated steam pressure with temperature
- Confirmation of the Antoine Equation

## Recommended Ancillaries

- VDAS-F (frame-mounting version of the Versatile Data Acquisition System)

## Operating Conditions

*Operating environment:*  
Laboratory environment

*Storage temperature range:*  
-25°C to +55°C (when packed for transport)

*Operating temperature range:*  
+5°C to +40°C

*Operating relative humidity range:*  
80% at temperatures < 31°C decreasing linearly to 50% at 40°C

## Sound Levels

Less than 70 dB(A)

## Essential Services

*Bench Space Needed:*  
Approximately 800 mm x 410 mm, plus space for a suitable computer if you need to use the optional VDAS

*Electrical Supply (determined by order):*  
220 to 240 VAC 50 Hz to 60 Hz at 5 A

**or**

110 to 120 VAC 50 Hz to 60 Hz at 10 A

## Technical Details

*Nett Dimensions and Weight*  
800 mm wide x 410 mm front to back x 640 mm high  
40 kg

*Approximate Packed Volume and Weight*  
0.5 m<sup>3</sup> and 50 kg

*Digital Display*  
Shows temperature in Kelvin (absolute) and Celsius  
Shows pressure in Pascals (absolute) and bar (absolute)

*Mechanical Pressure gauge*  
Pressure in bar (for reference only)

*Nominal Maximum Experiment Pressure*  
10 bar (absolute)

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