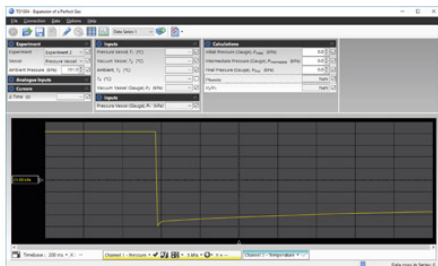


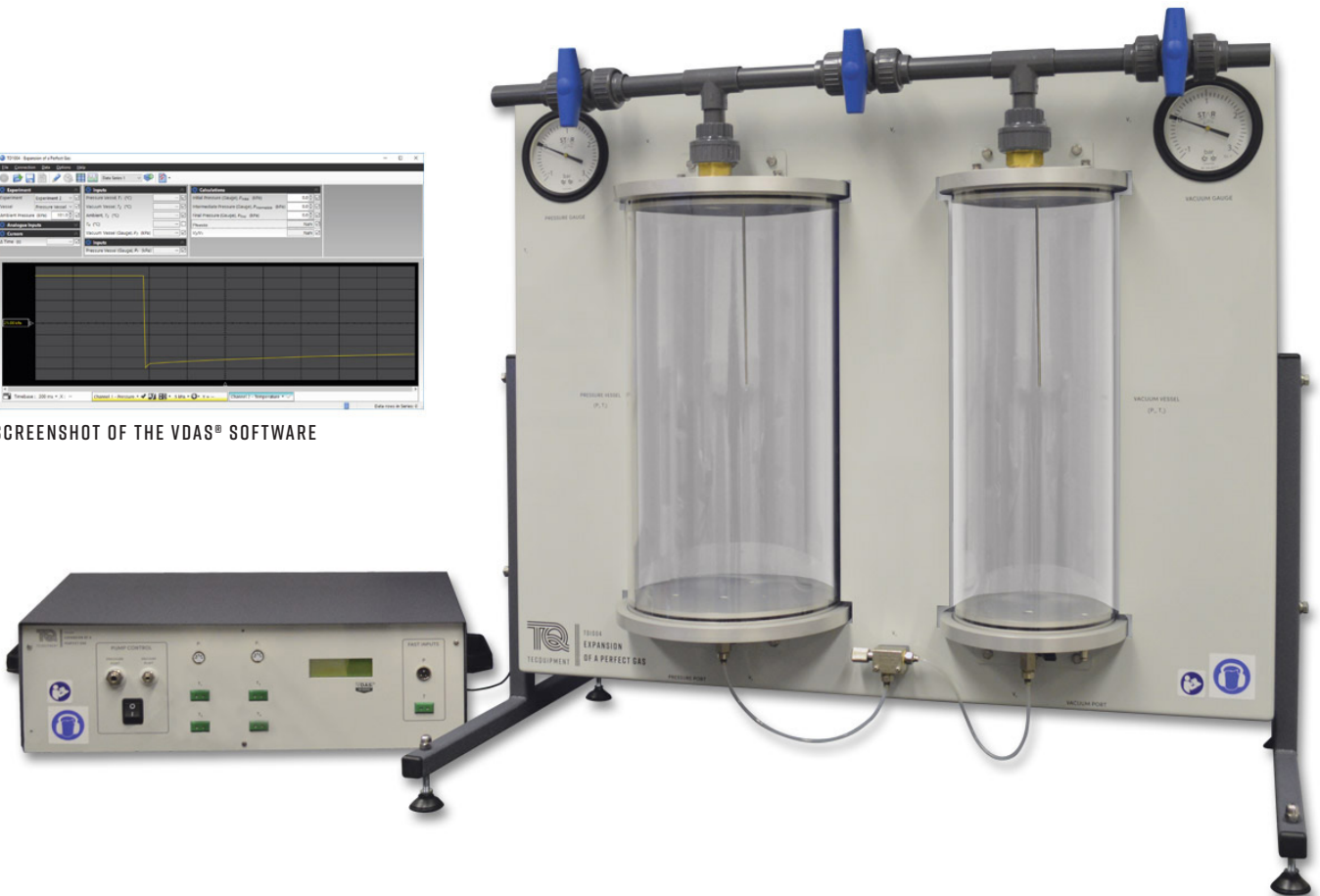

**VDAS<sup>®</sup> ON BOARD TD1004V**

## EXPANSION OF A PERFECT GAS

Bench-top apparatus to demonstrate the behaviour and expansion processes of a perfect gas.



SCREENSHOT OF THE VDAS<sup>®</sup> SOFTWARE



### KEY FEATURES

- TD1004V comes with VDAS<sup>®</sup> Onboard featuring data acquisition via USB
- Bench-top experiment for convenient use in a laboratory
- Highly visual experiment with accurate and repeatable results
- Simple and safe to use – needs no tools
- Supplied with an electric pump for easy compression and decompression of the gas (air)

**TD1004V**

# EXPANSION OF A PERFECT GAS

## DESCRIPTION

The apparatus consists of two frame-mounted interconnected transparent and rigid vessels, with one vessel equipped for operation under pressure and the second vessel under vacuum.

The vessel is pressurised and vacuumed using an electrical air pump together with valves and tappings.

The vessels are independent and can also be used together to enable the study of various thermodynamic processes.

TD1004V comes with VDAS® Onboard, a USB cable (supplied) connects from the unit to a suitable PC (not supplied) running TecQuipment's VDAS® software that captures, records and displays data.

The software is intuitive and easy to use, with clear and convenient data display options. It looks similar and works in a similar way for each TecQuipment VDAS® compliant product. This saves time as students do not have to learn to use new software when changing experiments.

VDAS® gives accurate real-time data capture, monitoring and displaying of all key readings, calculation and charts on a computer (not included).

## STANDARD FEATURES

- Supplied with a comprehensive user guide
- Five-year warranty
- Made in accordance with the latest European Union directives
- An ISO 9001 certified company

## LEARNING OUTCOMES

- The non-flow energy equation and the first law of thermodynamics
- Clement and Desormes experiment
- The behaviour of a perfect gas and its describing equations
- Reversible adiabatic process (isentropic expansion)
- Irreversible adiabatic process and the second law of thermodynamics
- Constant volume process and Gay Lussac's law
- Constant internal energy process
- Polytrophic process

## OPERATING CONDITIONS

### OPERATING ENVIRONMENT:

Laboratory

### 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

### VDAS®:

- VDAS® Software
- PC running Windows 7 or newer (the PC is required in order to conduct all experiments)

### BENCH SPACE NEEDED:

- 1500 mm x 520 mm plus space for a suitable PC

### ELECTRICAL SUPPLY: (SPECIFY ON ORDER)

- Single Phase, 220 - 240 VAC, 50 Hz, 0.5 A
- or
- Single Phase, 110 - 120 VAC, 60 Hz, 1.0A



# EXPANSION OF A PERFECT GAS

## SPECIFICATIONS

TecQuipment is committed to a programme of continuous improvement; hence we reserve the right to alter the design and product specification without prior notice.

### WEIGHT:

Main unit: approximately 40 kg

Control box: approximately 10 kg

