VDAS® ON BOARD TD1009V

UNSTEADY STATE HEAT TRANSFER

Bench-top apparatus that measures unsteady state heat transfer to bodies of different shape and thermal conductivity.

FIVE YEAR QUALITY TECQUIPMENT SINCE 1958 WARRANTY

SCREENSHOT OF THE VDAS® SOFTWARE

KEY FEATURES

- TD1009 comes with VDAS® OnBoard featuring data acquisition via USB
- VDAS® software includes Heisler charts
- A bench-top module – designed for education
- Includes a set of different solid shapes of different materials - for multiple experiments
- Simple to use – needs no tools
- Water temperature controller for consistent results
- Clear digital displays of all readings – a computer is not essential to operate it or take readings

LEARNING OUTCOMES

- Transient temperature changes with sudden immersion (unsteady state)
- How shape and surface area affects heat transfer
- How materials of different thermal conductivity affect heat transfer

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VDAS® TD1009V

UNSTEADY STATE HEAT TRANSFER

DESCRIPTION

A sturdy, bench-mounting frame contains a hot water vessel and instrumentation.

A controller switches the power to an electric heater to keep a constant 'bulk' water temperature inside the vessel. A temperature controller maintains a constant water temperature for the test shape. Precision instruments measure the temperatures at key points, shown on clear multiline displays.

The test shapes are of different dimensions and materials to give different heat transfer areas and thermal conductivities. This gives multiple experiments in heat transfer.

The student immerses a test shape and measures the transient temperature changes caused by the sudden immersion. They then immerse the other test shapes in turn and compares the results to find how their different surface area, shape and thermal properties affect the heat transfer.

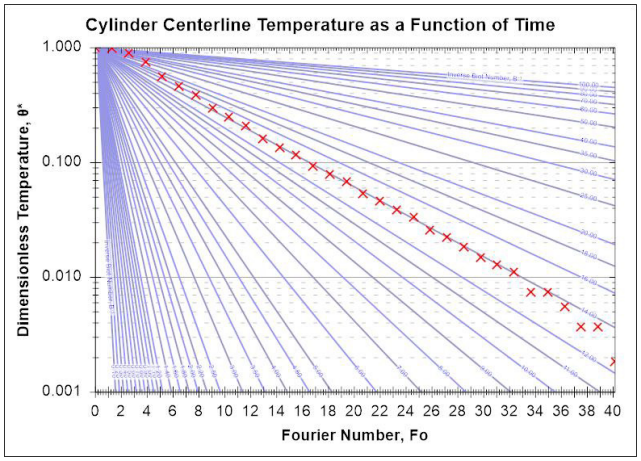
The vessel has a large volume of water compared to the test shapes, so their immersion has a negligible affect on the bulk temperature.

Students can do tests with or without a computer connected. However, for quicker tests with easier recording of results, TD1009V 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® SOFTWARE FEATURES INCLUDE:

- Recording data manually or automatically
- Data capture set by time or intervals
- Display of real-time data, in digital form or as an analogue meter
- Real-time traces of analogue signals
- Logging data for printing and later analysis
- Exporting data for use by other software
- Performing real-time calculations to generate user-defined data
- Creating and printing charts and data tables



HEISLER CHART PRODUCED USING VDAS®

- Customisable layouts

VERSATILE DATA ACQUISITION SYSTEM (VDAS®)

For both individual student use or for lecturers demonstrating experiments to a whole class, VDAS® gives real-time calculation, recording and charting with fast data export. This makes for efficient, productive and effective use of time for both students and lecturers.

TD1009V is supplied with VDAS® Onboard. The software is free to download.

The output from the apparatus connects to a computer (not supplied) running the VDAS® software. The software has extra features that allow the generation of Heisler Charts for each of the shapes tested.

STANDARD FEATURES

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

TEST SHAPES

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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

BENCH SPACE NEEDED:

1000 mm x 600 mm

ELECTRICAL SUPPLY (SPECIFY ON ORDER):

Single Phase, 220 - 240 VAC, 50 / 60 Hz, 11 Amp

OR

Two Phase, 208 - 240 VAC, 50 / 60 Hz, 9 Amp

WATER SUPPLY (TO FILL THE VESSEL):

Clean, low mineral content water

VDAS® SOFTWARE

PC running Windows 7 or newer, required for optional VDAS® software

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.

NETT DIMENSIONS AND WEIGHT:

755 mm wide x 480 mm front to back x 640 mm high and 40 kg

APPROXIMATE PACKED DIMENSIONS AND WEIGHT:

0.4 m^3 and 55 kg

TEST SHAPES:

- 2 x solid spheres (1 brass, 1 stainless steel)
- 3 x solid cylinders (2 brass, 1 stainless steel)
- 2 x solid rectangular slabs (1 brass, 1 stainless steel

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