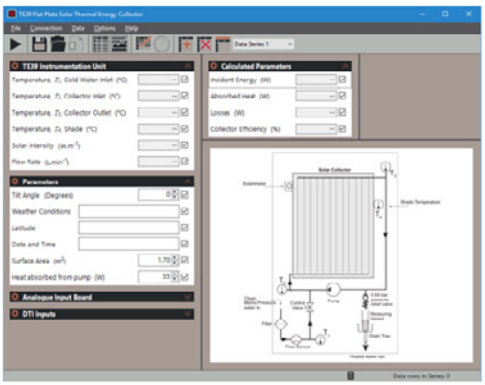
VDAS® TE39

FLAT PLATE SOLAR THERMAL ENERGY COLLECTOR

Illustrates the workings of a flat plate solar thermal energy collector and allows students to study its performance.



SCREENSHOT OF THE OPTIONAL VDAS® SOFTWARE

TABLE NOT INCLUDED

KEY FEATURES

- Educational flat plate solar thermal energy collector with full instrumentation
- Allows students to investigate the effective use of a renewable, environment friendly energy source
- Purpose designed and built solar panel for high quality
- One of several TecQuipment products that show the use of renewable, environment-friendly solar energy
- Can connect to TecQuipment's Versatile Data Acquisition System (VDAS®)
- Includes digital display of flow, radiation intensity and temperatures at different points throughout the apparatus

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TECQUIPMENT

VDAS® TE39

FLAT PLATE SOLAR ENERGY COLLECTOR

DESCRIPTION

This equipment shows how a flat plate solar thermal energy collector works. It allows students to measure and find the efficiency and heat losses of a flat plate solar thermal energy collector.

The collector has a purpose designed and built panel for quality and reliability. The panel has a thin sheet metal absorber backed by riser tubes and insulating material to reduce heat loss to the rear. A box with a clear cover encloses the panel, forming the collector. A sturdy mobile frame supports the collector. To allow users to adjust its angle, the frame has a hinge.

Cold mains water enters the collector. Sunlight energy heats the water in the collector. The heated water returns to a pump that mixes the heated water with the incoming cold water. A pressure sensitive valve allows the heated water to leave the equipment at the same rate as cold water enters it. A flow transducer measures the water flow rate and a solarimeter (or pyranometer) measures incident radiation. Thermocouples measure the water temperature at all the important points, and the shade temperature.

The separate Instrumentation Unit displays the temperatures from the thermocouples, the flow rate and the radiation intensity. It includes a switch to control the pump and a socket for connection to TecQuipment's optional VDAS®.

For quick and reliable tests, TecQuipment can supply the optional VDAS® (Versatile Data Acquisition System). VDAS® gives accurate real-time data capture, monitoring and display, calculation and charting of all the important readings on a computer. Computer not supplied.

To compare efficiencies, the Flat Plate Solar Thermal Energy Collector is an ideal companion to TecQuipment's Focusing Solar Energy Collector (TE38).

STANDARD FEATURES

- Supplied with a comprehensive user guide
- Five-year warranty
- Manufactured in accordance with the latest European Union directives
- ISO9001 certified manufacturer

RECOMMENDED ANCILLARIES

- Versatile Data Acquisition System (VDAS-B) – a bench-mounted version of TecQuipment's Versatile Data Acquisition System

LEARNING OUTCOMES

- Efficiency of the collector
- Efficiency and heat losses
- Effect of collector angle

ESSENTIAL SERVICES

ELECTRICAL SUPPLY:

110 VAC 60 Hz and 230 VAC 50 Hz (specify on order)

WATER SUPPLY:

- Cool, clean mains water supply. Maximum pressure 3 bar, minimum pressure 1.5 bar
- Water drain or soak-away

OPERATING CONDITIONS

OPERATING ENVIRONMENT:

Dry, outdoor conditions

STORAGE TEMPERATURE RANGE:

–25°C to +55°C (when packed for transport)

OPERATING TEMPERATURE RANGE:

+5°C to +40°C

OPERATING RELATIVE HUMIDITY RANGE:

30% to 95% (non-condensing)

SOUND LEVELS

Less than 70 dB(A)

SPECIFICATIONS (FRAME)

NETT DIMENSIONS:

2400 mm x 1100 mm x 1500 mm and 90 kg

PACKED DIMENSIONS:

197 kg and 3.3 m^3

THERMOCOUPLES:

K-type, measuring the temperature at the mains water inlet, the collector inlet and outlet, and the ambient (shade) air temperature.

SPECIFICATIONS (INSTRUMENTATION UNIT)

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:

360 mm x 180 mm x 330 mm and 8 kg (230 VAC unit) or 13 kg (110 VAC unit).

PACKED DIMENSIONS:

14 kg (230 VAC unit) or 19 kg (110 VAC unit) and 0.06 m^3

INSTRUMENTS AND CONTROLS:

Multiline display of flow, temperatures and radiation intensity

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