

# FLAT PLATE SOLAR THERMAL ENERGY COLLECTOR

**VDAS®** TE39

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



SCREENSHOT OF THE OPTIONAL VDAS® SOFTWARE

SOLAR THERMAL

SOLAR ENERGY

- Educational flat plate solar energy collector with full instrumentation
- Allows students to investigate the effective use of a renewable, environmentally friendly energy source
- Purpose designed and built solar panel for high quality
- Includes digital display of flow, radiation intensity and temperatures at different points throughout the apparatus

**LEARNING OUTCOMES:**

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

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. 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 it 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.

**RECOMMENDED ANCILLARIES:**

- Versatile Data Acquisition System – Bench-mounted version (VDAS-B) 299

**ALTERNATIVE PRODUCTS:**

- Photovoltaic Cells (TE4) 295
- Focusing Solar Energy Collector (TE38) 296