

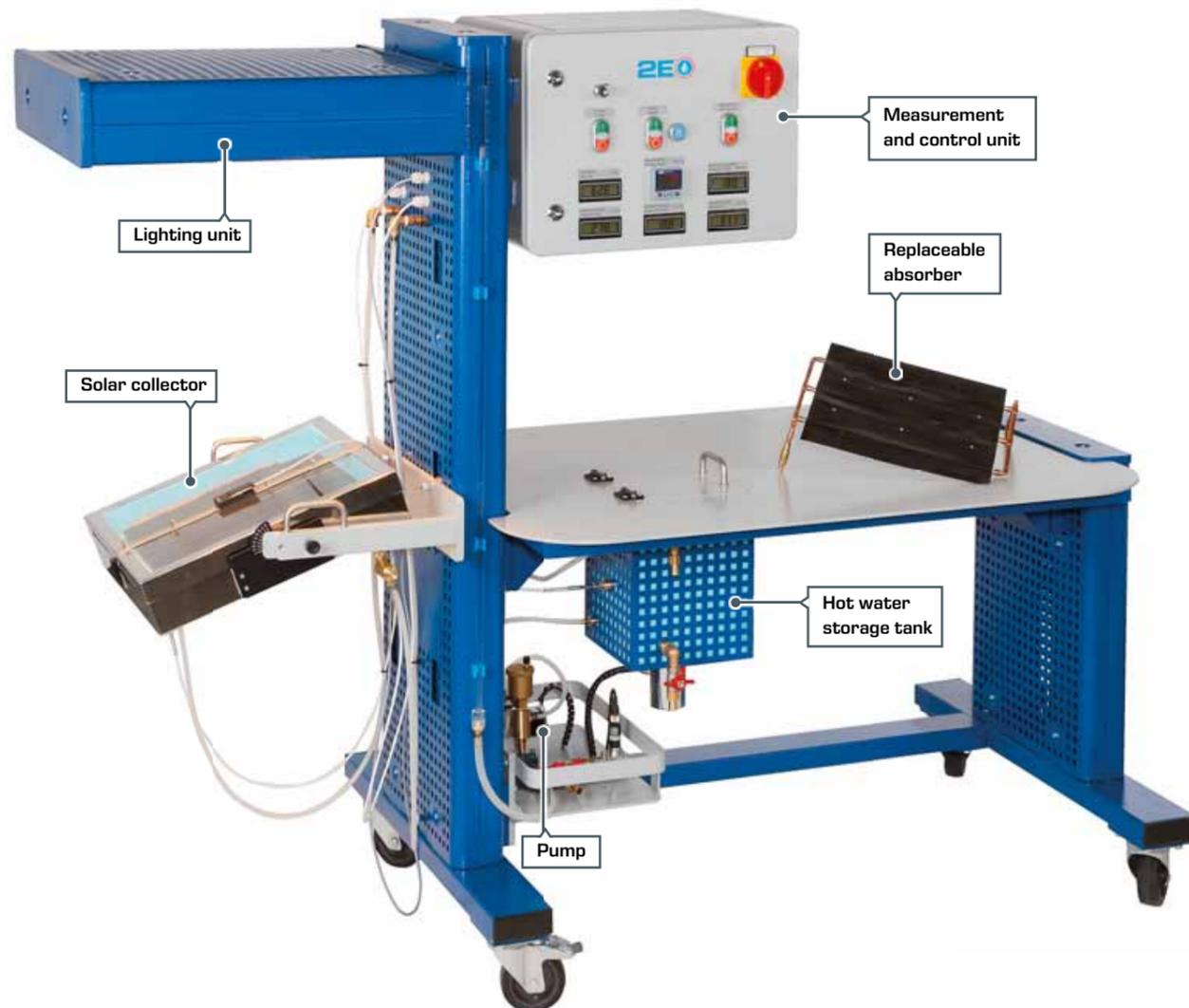
ET 202 Principles of solar thermal energy

ET 202 is a device from the solar thermal energy training area and enables systematic experiments to be carried out on a solar thermal system with a flat collector.

This trainer may be used to study the key factors that affect solar thermal domestic water heating. As such, ET 202 includes a fully functional model of a solar thermal system. In order to facilitate laboratory experiments that do not rely on weather conditions, the trainer is fitted with its own lighting unit. This

lighting unit simulates natural solar radiation. The light is converted into heat in an absorber and transferred to a heat transfer fluid. A pump conveys the heat transfer fluid through a hot water storage tank. There the heat is released to the contents of the tank by an integrated heat exchanger.

The flat collector offers a removable glass cover and a removable absorber for studying losses in the system.



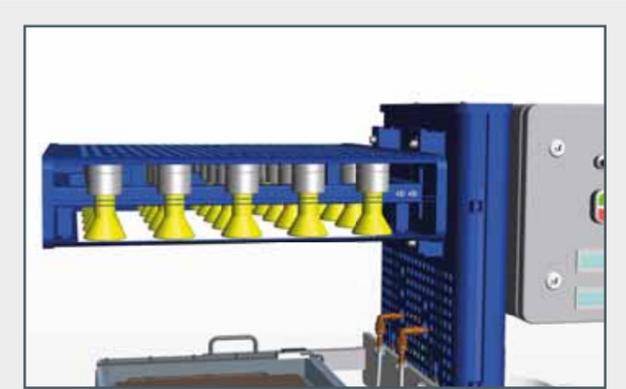
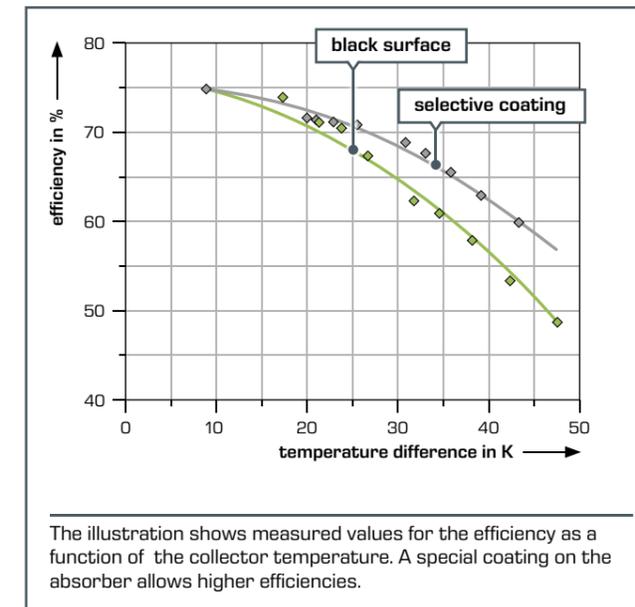
GUNT software for data acquisition

The ET 202 software displays the current values in a system diagram, and facilitates the recording of individual data points or plotting a graph of progression over time.

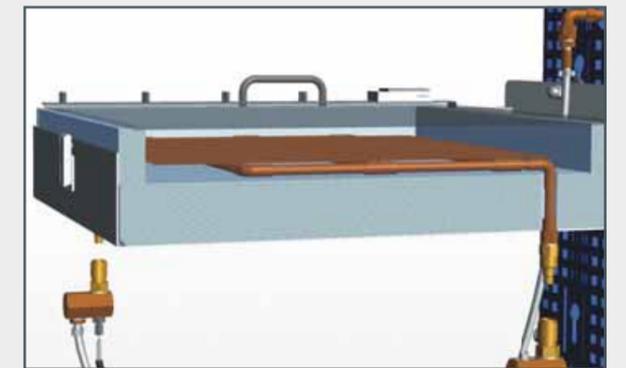
Digital readouts on the device also allow the device to be used without a PC.



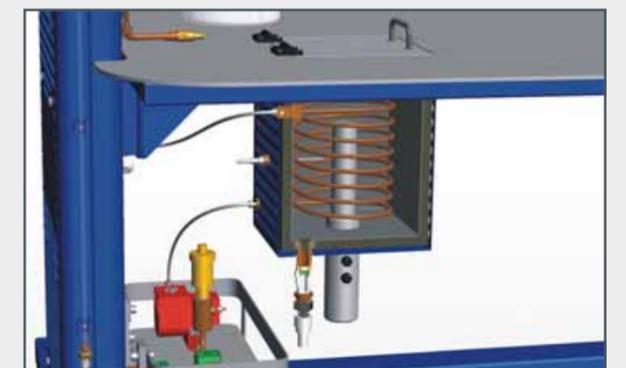
- design and operation of a simple solar thermal system
- determining the net power
- energy balance on the solar collector
- influence of illuminance, angle of incidence and flow rate
- efficiency as a function of the temperature difference
- influence of various absorbing surfaces



The lighting unit ensures uniform illumination. The spectral composition of the light is similar to that of natural solar radiation.



The solar collector converts the absorbed radiation into usable heat. Parts of the insulation and the absorber can easily be removed.



The heat exchanger is built into the hot water storage tank. An electrical heater which makes it possible to achieve different collector operating states in just a short time is additionally available.