Solar Thermal Learning System





Electrical Panel (120 V and 230 V)



Back of the system

Expertise in building systems that convert solar power into heat

This didactic solar hot-water heating system teaches students the basic principles of thermal energy, and how it can be collected, stored, and supplied.

This learning system enables students to set up various realistic heating systems, such as radiant floor heaters, passive and active solar water heaters, space heaters, and hot water heat exchangers. They learn how to install the system components, operate the system, and measure different parameters, such as pressure, temperature, and flow rate.

The use of a small-scale hot water supply, a radiator, and a hydronic floor heating system, teaches students how solar radiant energy can be harnessed from the sun and converted to solar thermal energy in order to increase air, water, and surface temperatures in residential, commercial, and industrial buildings. It can be configured to exchange and store thermal energy. The system permits experimenting with open- and closed-loop heating systems. The main (primary) loop collects thermal energy while the secondary loop distributes and applies heat to a gas, liquid, or solid in order to dissipate the thermal energy.

Topic coverage
- Thermal Energy Fundamentals
- Trainer Familiarization and Safety
- Site Analysis
- System Sizing
- Solar Heating and Cooling Systems
- Collecting Thermal Energy
- Storing/Exchanging Thermal Energy
- Supplying/Controlling Thermal Energy
- Familiarization and Safety
- Closed-Loop Surface and Air Heating, Drain-Back Systems, and Combination Systems

Advantages
- Includes everything required to operate as a stand-alone, hands-on learning system
- Made with high-quality components currently used in residential, commercial, and industrial applications
- Easy and safe to use, durable, and manufactured to the highest quality standards
- A fixed-plate electrical panel allows all electrical devices to be securely fixed to the workstation side with a power
- Two control strategies: manual or digital thermostats
- Comprehensive curriculum consisting of fully illustrated student manuals and instructor guides

Solar Thermal Learning System, 120 V, 60 Hz	**8046647**
Solar Thermal Learning System, 230 V, 50 Hz	**8046646**

Main components, at a glance:
1x Solar Thermal Workstation with Electrical Panel
2x Analog Thermometer
2x Pressure Relief Valves
1x Plate Heat Exchanger
1x Check Valve Assembly with Two Drain Valves
2x Circulator Pump
1x Temperature Sensor
2x Expansion Tanks
1x Automatic Air Vent
1x Radiant Floor
2x Fill Bowl
1x Hoses and Accessories
1x Halogen Work Light
1x Multimeter
2x Hand-Operated Two-Way Valves
1x Radiator
2x Rotameter

Necessary accessories, also order:

IEC power cable (Page 28)	

Other accessories:

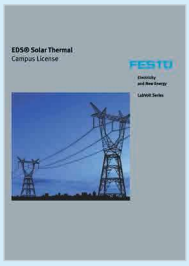
Evacuated Tube Solar Collector	8046648

Evacuated Tube Solar Collector
The Evacuated Tube Solar Collector is an add-on for the Solar Thermal Learning System that permits the heating of water through the tubes and the observation of the effects on the water temperatures. Its function is to replace the standard flat panel solar collector of the Solar Thermal Learning System.



Recommended Learning Material

Workbooks (→ page 162)



Campus license:

en (Imperial units)	8060788
en (SI units)	8060789
fr	8060790
es	8060791
de	8060792

Note: The campus license includes the student and instructor PDF versions of the following workbooks: “Introduction to Solar Thermal Energy”, “Solar Thermal Energy Systems”, and “Multi-Loop Systems”. Printed workbooks available upon request.

Courses on Festo LX
- → Introduction to Solar Thermal Energy
- → Solar Thermal Energy Systems
- → Multi-Loop Systems