

SOLAR CONCEPTS LEARNING SYSTEM

950-SC1

Introduction to Solar Thermal Systems
Objective 13: Explain the Principles of Passive Solar Thermal Space Heating and Cooling

Reflective Roofs

Buildings built with reflective roofing material will prevent the sun's heat from absorbing into the building. Radiant barriers placed between the roof and the attic floor can have a similar effect.

Introduction to Photovoltaic Systems
Objective 1: Define Solar Energy and Explain Its Importance

Solar Energy Abundance

Solar energy is the most abundant source of energy on Earth. The amount of solar energy striking the Earth's atmosphere is approximately 1,366 watts per square meter. However, only a portion of this energy reaches the Earth's surface because it is diffused, or scattered, as it passes through the atmosphere. The result is that 70%, or approximately 1,000 watts per square meter, of solar energy actually reaches the Earth's surface.

Even at this reduced level, the total amount of solar energy that reaches the Earth's surface is enormous. In fact, the total amount of solar energy striking the Earth in one hour is more energy than the world uses in an entire year.

Introduction to Solar Thermal Systems
Objective 1: Describe the Basic Operation of a Domestic Hot Water System.

Water Supply

A water heater receives cold water from the utility company's underground piping system. The utility company's water treatment plant removes impurities from water making it potable, or drinkable. A pumping station pumps the potable water from the treatment plant up to a water tower. The effect of gravity on the water in the tower provides enough water pressure to push the water through the connected pipes to each customer's home, filling the water heater and pipes inside.

SOLAR TECHNOLOGY™

CURRICULUM IS THE KEY TO LEARNING

Learning Topics:

- Solar Energy Systems
- AC & DC Photovoltaic Systems
- Solar Industry
- Passive & Active Water Heating
- Space Heating & Cooling
- Solar Irradiance
- Peak Sun
- Global Positioning
- Solar Time
- Sun Path
- Array Orientation
- Insulation Data

Solar energy is being used in a broad range of applications across industry and residences alike. From heating water for home use to creating utility scale electricity – solar energy application is growing. Understanding the basics of how we can harness solar energy is essential for technicians, engineers, installers, designers, builders, and others who want to apply solar technology either professionally or personally.

Amatrol's 950-SC1 Solar Concepts Learning System introduces students to a broad range of basic concepts in solar energy and technology. Photovoltaic and thermal solar systems are introduced to students. They learn how to translate location, sun, and technology into practical applications. The 950-SC1 acts as a foundation for students in solar technology. Solar Concepts includes student curriculum in PC-based, interactive multimedia format as well as an instructor's assessment guide.



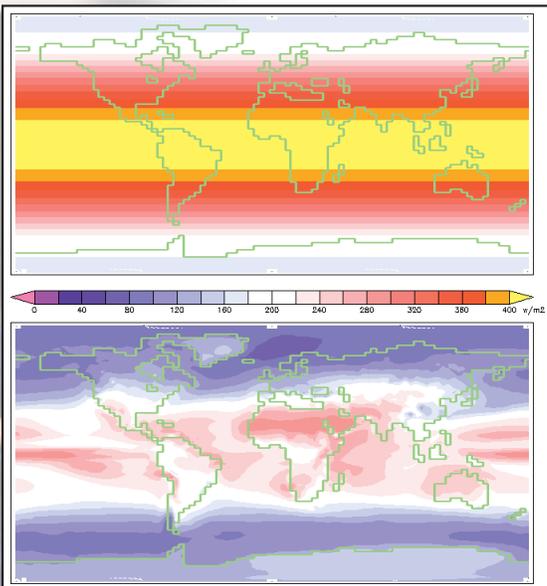
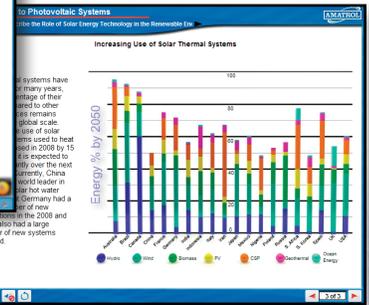
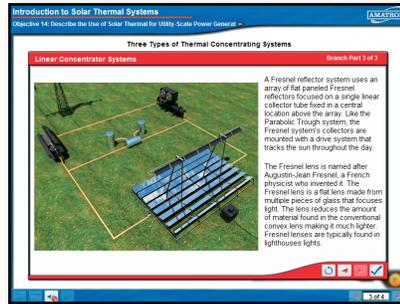
AMATROL®

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DESIGNED FOR LEARNING

Interactive, Engaging Multimedia

Amatrol's interactive multimedia provides an engaging, stimulating experience for students. The Solar Concepts Learning System includes interactive computer-based instruction with both theory and hands-on tutorials consisting of text, digital video, voice, online self-review tests, interactive simulations, color diagrams and color photos. Amatrol's strong interactive multimedia includes visual, auditory, and text based learning styles to reinforce each other in well organized learning segments.



Insolation Variance

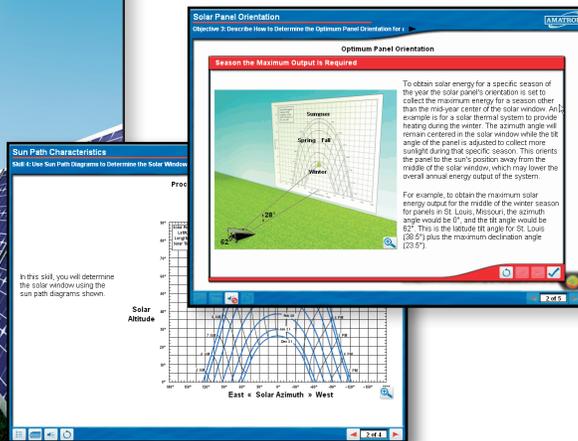
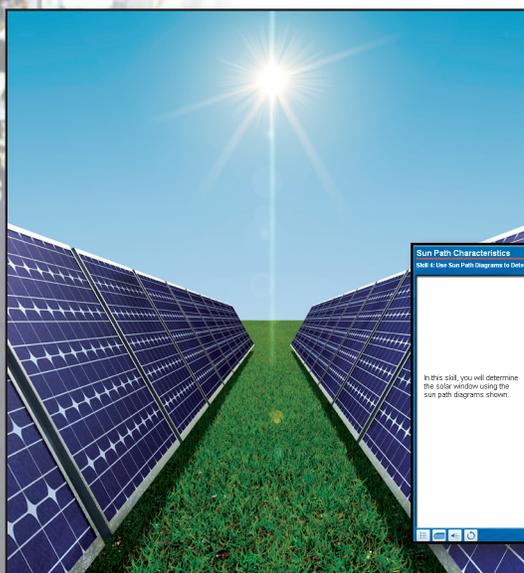
Using Solar Technology to Capture Solar Energy – Location Makes a Difference!

Siting a solar array or understanding how much energy you can capture from an array in a specific location requires background provided by Amatrol's Solar Concepts. The type of application also plays a strong role. With the 950-SC1, students learn how to site an array with optimum orientation as well as determine the insolation, which varies significantly from place to place.

Optional 95-SIP1 Solar Instruments Package

The 950-SC1 Solar Concepts Learning System teaches students to use a variety of instruments required to apply solar technology. These virtually developed skills can be reinforced with hands-on application through the optional 95-SIP1 Solar Instruments Package. The package contains a pyranometer, global positioning system (GPS), inclinometer and compass. Students will learn how to translate their virtual skills to the actual instruments and apply them to solar technology systems. All of these are required to properly orient arrays.

Sun path diagrams can be used to determine the solar window as shown below



TECHNICAL DATA

Student Curriculum

PC-Based Multimedia, 1 Seat, M20016. Includes (5) interactive multimedia curriculum modules covering Solar Industry Basics, Types of Solar Technology Systems, PV and Thermal Component Introduction, Solar Energy Terminology, Environmental Issues, Use of Pyranometers, GPS, Inclinometers and Compasses, Array Orientation, and Solar Intensity Calculations.

Instructor's Assessment Guide, C20016

Additional Multimedia Seats Available