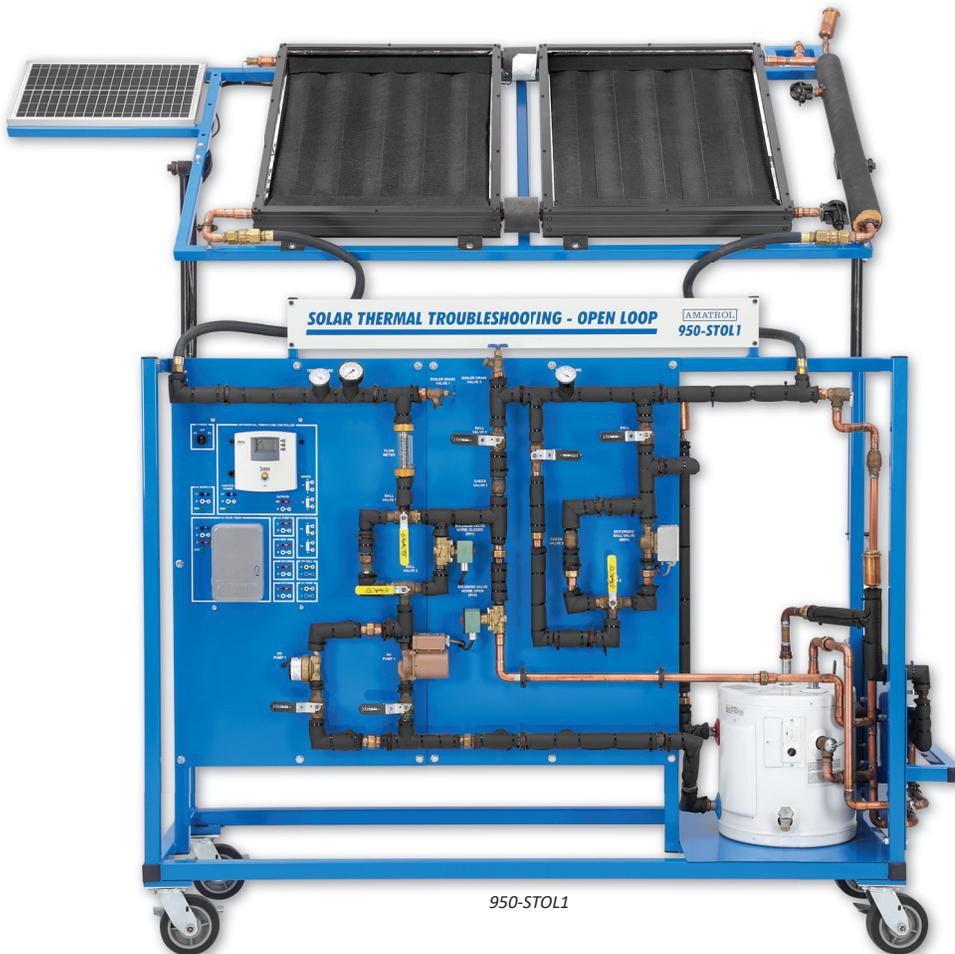


# Solar Thermal Troubleshooting – Open-Loop Learning System

950-STOL1

GT

GREEN  
TECHNOLOGY



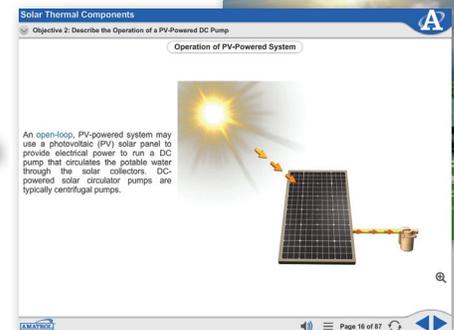
950-STOL1

Student Reference Guide

Solar Thermal  
Troubleshooting  
Open-Loop

GT  
GREEN  
TECHNOLOGY

Student Reference



Interactive Multimedia Curriculum

## Learning Topics:

- Solar Collectors
- Pumps
- Solar Storage Tanks
- Air Vent and Vacuum Valves
- Check and Ball Valves
- PV-Powered Solar Thermal Systems
- Freeze Protection
- Digital Controllers
- Draindown System Operation
- System Troubleshooting

Amatrol's Solar Thermal Troubleshooting — Open-Loop Learning System (950-STOL1) teaches learners how to connect, operate, program, and troubleshoot open-loop solar thermal systems. The combination of in-depth, multimedia curriculum with real-world equipment gives learners hands-on experience with both drainback and pressurized open-loop solar thermal systems.

When paired with two required sun simulator systems, the 950-STOL1 provides convenient solar thermal troubleshooting training indoors. In addition to building hands-on, job-ready solar thermal troubleshooting skills, the system also supports the North American Board of Certified Energy Practitioners (NABCEP) test for Certified Solar Thermal System Installer.

AMATROL®

## Technical Data

Complete technical specifications available upon request.

**Mobile Workstation**  
**Component Circuit Panel**  
**AC & DC Centrifugal Pumps**  
**Differential Controller**  
**Temperature Probes (2)**  
**Solar Storage Tank**  
**Valves Package**

Tempering  
Ball & Motorized Ball  
Boiler Drain  
Temperature & Pressure Relief  
Check  
Dole  
Vacuum Breaker  
Air Vent  
Three-Way  
Solenoid-Operated

**Instrumentation Set**  
Flow Meter  
Pressure Gauge  
Temperature Gauges

**Solar Collectors**  
**PV Panel**

**Fault Insertion System**  
Standard Circuit Fault Plug  
Short Circuit Fault Plug  
Open Circuit Fault Plug

**Lead Set**  
**RTD-Thermistor Patch Cord**  
**Canvas Drop Cloth**  
**Digital Multimeter**  
**Garden Hose Union**  
**Lockout/Tagout Kit**

**Multimedia Curriculum (M20101)**  
**Instructor's Guide (C20101)**  
**Installation Guide (D20101)**  
**Student Reference Guide (H20101)**

### Additional Requirements:

Solar Thermal Sun Simulator (95-ST51)  
Solar PV-Thermal Sun Simulator (95-ST52)  
Solar Thermal Charging Station (95-STCS1)  
Computer (Visit [www.amatrol.com/support/computer-requirements](http://www.amatrol.com/support/computer-requirements) for details.)

### Utilities Required:

Electric (120 VAC/60 Hz/1 phase)

### Options:

Thermal Cold Water Supply Station (95-STW1)  
Solar Concepts Learning System (95-SC1)  
Solar Instruments Package (95-SIP)

## Study Open-Loop Solar Thermal Components and Practice on Real-World Equipment

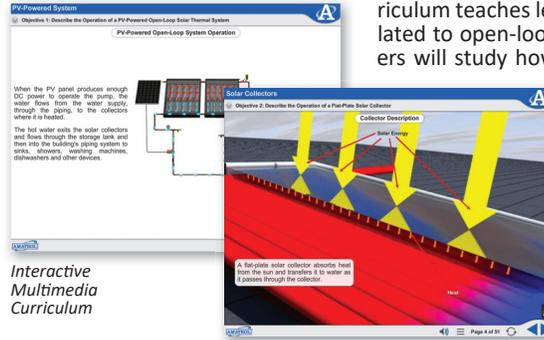
Amatrol's 950-STOL1 features a wide variety of industry-standard components that provide learners with hands-on practice with real-world equipment. Components such as check valves, flow meters, relief valves, a vacuum bypass, and tempering valves create a realistic learning environment that allows learners to troubleshoot both electrical and fluid faults as they study the installation and operation of open-loop solar thermal systems. The 950-STOL1 also includes a digital differential controller, so that learners can learn how to program the modern solar thermal systems they're likely to encounter on the job.



Industry-Standard Components

## Engaging, Highly-Interactive Multimedia

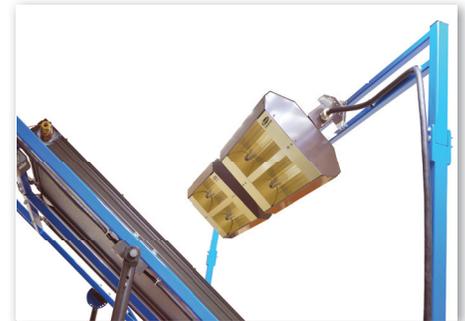
Amatrol's curriculum features a highly-interactive, multimedia format that includes stunning 3D graphics and videos, voiceovers of all text, and interactive quizzes and exercises designed to appeal to learners with different learning styles. The 950-STOL1 curriculum teaches learners both basic and advanced concepts related to open-loop solar thermal systems. For example, learners will study how to connect, operate, and troubleshoot an open-loop solar thermal system, including common components like pumps, storage tanks, and different types of valves. The combination of theoretical knowledge and hands-on skills solidifies understanding and creates a strong basis for pursuing more advanced skills.



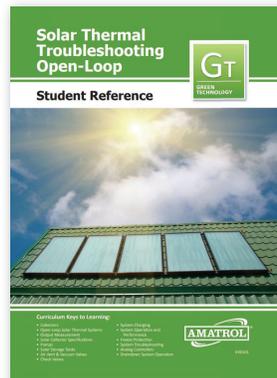
Interactive Multimedia Curriculum

## Learn Solar Thermal Troubleshooting Skills Indoors

Learning with the 950-STOL1 doesn't need to wait for good weather or a sunny day. To enable learners to study solar thermal troubleshooting concepts indoors, the system requires two related systems: a Solar Thermal Sun Simulator (95-ST51) and a Solar PV-Thermal Sun Simulator (95-ST52). With these systems shining on the 950-STOL1's solar collectors and PV panel, learners can use the system regardless of the weather outside!



95-ST51



## Student Reference Guide

A sample copy of the Solar Thermal Troubleshooting — Open-Loop Student Reference Guide is also included with the system for your evaluation. Sourced from the system's curriculum, the Student Reference Guide takes the entire series' technical content contained in the learning objectives and combines them into one perfectly-bound book. Student Reference Guides supplement this course by providing a condensed, inexpensive reference tool that learners will find invaluable once they finish their training, making it the perfect course takeaway.



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