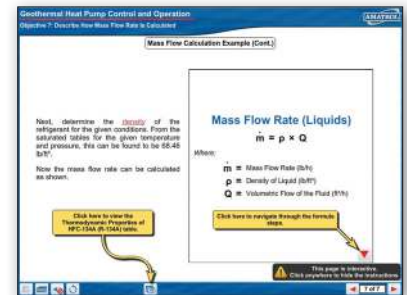


Geothermal Learning System

950-GEO1



Geothermal Learning System



Interactive Multimedia Curriculum

Learning Topics:

- Introduction to Geothermal Heat Pump Systems
- Geothermal Source and Load Circuits
- Geothermal Safety
- Geothermal Closed-Loop Piping and Start-Up
- Geothermal Closed-Loop Source Circuit Operation
- Compressor Theory and Operation
- Heat Transfer
- Phase Change Effects
- Refrigerants
- Geothermal Heat Pump Control and Operation
- Geothermal Heat Pump Start-Up
- Geothermal Heat Pump System Performance

Amatrol's 950-GEO1 Geothermal Learning System enables learners to understand and apply skills in the ever-growing area of geothermal energy. This system builds knowledge as well as skills across a broad spectrum, ranging from system startup and operation to shut down and maintenance, in a readily accessible, compact vertical trainer. Harnessing geothermal energy is rapidly increasing in importance as a tool in broadening the energy supply. Designed as a teaching system, this learning system showcases components, often not visible in actual installations, on a vertical panel that permits easy access for hands-on skills and observation. Amatrol includes a ground simulator so that learners gain realistic experience using a continuously operational system like they will experience on an installed system.

Amatrol's Geothermal Learning System packs a residential-sized system into a 6-ft. (1.83 M) long mobile system that easily fits through a standard door. Major components include a 2-stage compressor with a 2-ton heat pump, ground simulator, air duct with ECM blower, ground source loop, and industrial grade geothermal controller. These components and many more are standard on the 950-GEO1.



Technical Data

Complete technical specifications available upon request.

Mobile Workstation

30" W x 72" H x 72" L
Casters (4)

Heat Pump

Water-to-Air
R410A Refrigerant
2-stage Compressor (20,000 BtuH)
Air-Duct System
Flow Meter
Pressure and Temperature Gauges
Condensate Sensor
Pressure Switches
Receiver
Manual Valves
Filter/Dryer
Suction Accumulator
Thermostatic Expansion Valve
Reversing Valve
Moisture Indicator
Load Side Heat Exchanger
Water Coil
Tubing
Air Flow Control

Ground Source Loop

Flow Center
Header Loop Circuit
Expansion Tank
Header Tank
Pressure Gauges
Flow Center Manual Control

Ground Simulator

Geothermal Control Section

Main Power Control
Geothermal Controller
Thermostat
Fault Power Control

Handheld Instrumentation

Multimedia Curriculum (M12305)

Instructor's Guide (C12305)

Install Guide (D12305)

Student Reference Guide (H12305)

Additional Requirements:

95-GEO3 Geothermal Flush Cart Learning System
Computer: See <http://www.amatrol.com/support/computer-requirements>

Required Utilities:

240 VAC/60 Hz Split Phase
Water Supply

Industry Standard System Components and Features

From its 2-stage compressor and 2-ton heat pump to the ground source loop that includes a flow center and a header loop, Amatrol's 950-GEO1 delivers features commonly found in installed geothermal systems but often excluded from training systems. These include a variable speed ECM air blower, water coil heat exchanger, sight-glasses at many points in the system for observing the refrigerant cycle, ample temperature and pressure monitoring, electrical test points, ground simulation, and even the high-density polyethylene pipe specified for geothermal.



Industry Standard Components

Ground Simulator Allows Continuous Training



Simulates Ground Source/Sink

Amatrol's 950-GEO2's ground simulator is a temperature-controlled system that creates a constant temperature which allows the system to operate continuously. A digital, programmable temperature control unit is used to set and maintain the ground simulator at the desired temperature, resulting in both accurate data collection and continuous operation.

Integrated Multimedia Curriculum – A Jump Start Towards an IGSHPA Certification

Amatrol's 950-GEO1 Geothermal Learning System includes feature-rich interactive multimedia curriculum that enables learners to move from an introduction about geothermal energy to overall system performance evaluation. Learners begin with an introduction to geothermal heat pump systems and move rapidly into the concepts and components that make a geothermal system operate; these include closed-loop circuits, compressors, condensers, evaporators, metering devices, refrigerants, suction line accumulators, receivers, dryers, moisture indicators, thermostats, controllers, blowers, heat-pump system start-up and operation, and overall system performance. Through partnerships with key industry leaders and leading edge educators in the area of geothermal energy, Amatrol has developed a system that puts learners on a solid path to obtaining the International Ground Source Heat Pump Association (IGSHPA) certification.



950-GEO1 Multimedia Curriculum

Pressurized Operation for Realistic Field Conditions

While the 950-GEO1 can operate in an unpressurized state, technicians often encounter pressurized systems. Amatrol requires the 95-GEO3 Geothermal Flush Cart Learning System to ensure job-ready skills.

Enhance Your Training with the Optional Desuperheater Learning System

The 950-GEO1's learning can be further expanded by adding the optional 95-GEO4 Geothermal Desuperheater Learning System. The 95-GEO4 easily attaches to the 950-GEO1 and covers the operation, startup, shutdown, troubleshooting, and maintenance of a desuperheater system.

Need To Teach Troubleshooting? Consider Amatrol's 950-GEO2 Geothermal Troubleshooting Learning System

Powered by FaultPro, Amatrol's premier electronic fault insertion software for teaching hands-on troubleshooting skills, the 950-GEO2 Geothermal Troubleshooting Learning System comes equipped with all of the material in the 950-GEO1 plus 28 electronic troubleshooting faults. These faults include electrical, mechanical, and fluid-based faults designed to help the learners practice applicable industry skills and troubleshooting any problems that may occur in a geothermal system. Hands-on troubleshooting is essential for job-ready application.

