ITEM : GEOTHERMAL HEAT PUMP TRAINER
MODEL : RHS-GTT-A

Knowledge Engineering
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ISO 9001

The Geothermal Heat Pump Trainer is designed to maximize learning capabilities by regrouping every subsystem in real geothermal home energy installations. It teaches the fundamentals of heat transfer, refrigeration and air conditioning applied to geothermal energy HVAC projects. It is suitable for varied educational requirements: future system designers and builders, maintenance technicians, and students learning the concept of energy efficiency. With its courseware containing detailed theory and practical exercises, the Geothermal Training System is the most efficient and effective way to acquire the knowledge and skills that are put into practice every day in the geothermal industry. The trainer is easily moved around the lab or classroom and the swivel casters can be locked into a stationary position. Refrigerant type: R-410a.

FEATURES:

The trainer is built around a special mobile work bench that incorporates a demonstration board onto which the components are mounted. The components are neatly laid out in a manner similar to a real geothermal HVAC project so as to be easy to understood. The refrigeration circuit is displayed on a colorful printed diagram. Refrigeration lines are color coded to indicate the state of the refrigerant. Control panel with instrumentation including line voltage, ampere (total current) and temperature meter with digital display are provided as a standard to control the trainer and to facilitate measurements. Geothermal heat pump capacity: 4.5 kW (15000 BTU/h) approximately. The unit comes with experiment manual containing theory, standard operating procedures, experiment procedures and references.

COMPONENTS AND SYSTEMS INCLUDED:

The Geothermal Training System consists of a geothermal heat pump, ground-loop heat exchanger, pumping station, circulation pump, domestic hot water system, control panel and the instrumentation required to measure the operating parameters of the system.

LEARNING OBJECTIVES:

- Geothermal heat pump trainer familiarization
- Geothermal energy
- The ground loop system
- The refrigeration cycle in geothermal heat pump
- Plotting geothermal refrigeration cycle into Pressure-Enthalpy (P-H) diagram
- System performances analysis
- Heat exchanger operation and characteristics
- Effect of varying flow in the ground system
- Effect of varying blower fan speed on system performance
- Desuperheater for domestic hot water (DHW) system
- Electric Heater for domestic hot water (DHW) system
- Psychrometrics
- Maintenance and troubleshooting exercises on system electrical circuit and components, required optional item RHS-GTT-2

ACCESSORIES:

Experiment manual.

OPTIONAL ITEMS:

RHS-GTT-1: Refrigerant flow meter.
Additional objectives: Calculation of refrigerating capacity in kW or Ton refrigeration as well as calculate the energy balance in refrigeration cycle in terms of Power and Heat.

RHS-GTT-2: 10 Electrical faults simulation and test points
Additional objectives: To do troubleshooting exercise of common geothermal heat pump electrical faults.

LAB REQUIREMENTS :

Electrical Outlet : Three Phase, 208 – 210VAC, 60Hz, 25A
Other voltages such as three phase 380AC, 50Hz are available upon request
Working space area (W x L) : (eg : 150 cm x 250 cm).
Waste water disposal drain.