

Training Program for Drillers

Geothermal Vertical Loop Installer

Convened by
American Ground Water Trust



Training by
ClimateMaster



LOCATION AND DATE:

Minneapolis Minnesota - April 13 and 14 (8:00 am to 5:15 pm each day)
Holiday Inn St. Paul East, 2201 Burns Avenue St. Paul MN 55119-6667; Tel: (651) 731-2220

Program Focus - What Will The Course Cover?

Ground loop fields for geothermal energy exchange are the backbone of ground source heating and cooling HVAC systems. This two-day course will provide experienced drillers with the opportunity to learn how to install drilled vertical loop systems using the most appropriate and efficient industry-accepted methods in terms of design, effort, materials and protecting the environmental quality of our ground water resources.

Drillers Who Successfully Complete the Two-day Training May Obtain the Following Certifications / Recognition:

- **Minnesota Drilling Contractors** – 4 Continuing Education Hours Approved by the Environmental Health Division, Minnesota Department of Health
- **Wisconsin Drilling Contractors** – Continuing Education Hours - Approval pending
- ClimateMaster Certificate of Participation (Test Required)
- Membership in ClimateMaster's Preferred Vertical Loop Installer & Dealership Network
- Inclusion on ClimateMaster's Find-a-Preferred Driller Website Listing
- Socket Fusion Certification
- Access to ClimateMaster's GSHP Loop Installation Experts

Course Schedule and Topics

Day One

7:30 am **REGISTRATION and SIGN-IN (coffee and donuts provided)**

8:00 am **INTRODUCTION TO THE GEOTHERMAL INDUSTRY**

- History
- Types of Installations
- The Loop
- The Heat Pump

Course Schedule and Topics

Day One (continued)

- 8:30 am** **Module 1: GEOTHERMAL HEAT PUMP SYSTEM**
- System Components
 - Basic Refrigeration Operation
 - Water Flow Rate Calculation
 - Heat of Extraction and Rejection Calculation
- 10:00 am** **Break**
- 10:15 am** **Module 1: GEOTHERMAL HEAT PUMP SYSTEM (continued)**
- History
 - Types of Installations
 - The Loop
 - The Heat Pump
- 11:30 am** **Module 2: COMPUTER DRIVEN SYSTEM DESIGN**
- GeoDesigner Software Overview
- 12:00 am** **LUNCH (Provided On-site)**
- 12:45 pm** **Module 3: GEOTHERMAL CLOSED LOOP DESIGN**
- Flow Controller
 - Closed Loop Basics
 - Parallel vs. Series Configurations
 - Header Design
 - Inside Piping
 - Vertical Loop Piping Installation & Testing
 - Closed Loop Pressure Drop Calculations
- 2:45 pm** **Break**

Course Schedule and Topics

Day One (continued)

- 3:00 pm** **Module 3: GEOTHERMAL CLOSED LOOP DESIGN (continued)**
- Flow Controller
 - Closed Loop Basics
 - Parallel vs. Series Configurations
 - Header Design
 - Inside Piping
 - Vertical Loop Piping Installation & Testing
 - Closed Loop Pressure Drop Calculations
- 4:00 pm** **Module 4: GROUTING**
- Grouting requirements
 - Grouting procedures
- 5:00 pm** **WRAP-UP SUMMARY**
- Further Questions and CEU sign-out
- 5:15 pm** **ADJOURN**

Course Schedule and Topics

Day Two

- 7:30 am** **REGISTRATION and SIGN-IN (coffee and donuts provided)**
- 8:00 am** **Module 5: SITE SURVEY**
- Survey Requirements
 - Regulations, Documentation and Record Keeping
- 8:30 am** **Module 6: FLUSHING THE EARTH LOOP**
- Typical Flush Carts
 - Valve Positioning and Flushing
 - Antifreeze Selection & Charging
 - Pump Replacement Procedure

Course Schedule and Topics

Day Two (continued)

- 10:00 am** **Break**
- 10:15 am** **LOOP DESIGN -- HANDS-ON ASSIGNMENT**
- 11:00 am** **VERTICAL LOOP INSTALLER TEST**
- 12:15 pm** **LUNCH (Provided On-site)**
- 1:00 pm** **Module 7: SOCKET FUSION**
 ➤ Socket Fusion Certification
- 3:00 pm** **Break**
- 3:15 pm** **SOCKET FUSION TESTING**
- 4:45 pm** **WRAP-UP SUMMARY**
 ➤ Further Questions and CEU sign-out
- 5:00 pm** **ADJOURN**

Instructor: The course is taught by Dave Pergel, a ClimateMaster Lead Trainer and Senior Field Systems Engineer. Dave has drilled and installed Ground Source Heat Pump HVAC systems for over twenty years.

Cost: \$300 per person (includes lunches, all break foods and study materials and ClimateMaster's Drillers Installation Kit™). All proceeds go to the 501(c)(3) non-profit American Ground Water Trust to offset costs for its national ground water educational programs.

Attendance: Limited to 25 participants by pre-registration only - NO Walk-ins accepted

Questions: Call the American Ground Water Trust toll-free at 800-423-7748 or email your question to TrustInfo@agwt.org