

# GEOHERMAL HEATING AND COOLING INNOVATIONS: DESIGN, FINANCING AND REGULATION

↓ Scroll down for program details and registration information ↓

Register on line <http://www.agwt.org/events>

## WORKSHOP



**Location:** Holiday Inn – Carmel  
251 E Pennsylvania Parkway, Indianapolis, IN 46280  
**Date:** Wednesday, June 18, 2014  
**Time:** 8:00am to 4:45pm



Convened by the: **American Ground Water Trust**  
501(c)(3) Education Organization

## SPONSORS



**In cooperation with:**

International Ground Source Heat Pump Association  
WaterFurnace International

### Continuing Education Credit

Architect Credits – 7.25 LUS (For HSW) Approved Through The American Inst. of Architects (Provider #G521)  
Well Drillers and Pump Installers: 7.0 Hours Approved by Indiana DNR– Approval Code 14015  
IGSHPA Accredited Installers – 0.75 CEU's  
Call for details about other professions - 800-423-7748

### WHO SHOULD ATTEND?

This program is geared to potential end-users and to professionals who design, install, inspect, maintain, approve, recommend or regulate geothermal systems. Geothermal is the technology of choice among those considering “green energy” options for commercial or residential installations.

Energy company engineers, architects, planners & conservation commissioners, building code inspectors, environmental health professionals, home inspectors, water well contractors, HVAC professionals, real estate agents, home builders and developers, town officials (Conservation, Zoning, Planning), water testing specialists etc. should not miss this opportunity to get up to speed with this technology.

## WHAT IT IS ALL ABOUT

Geothermal heating and cooling technology is advancing rapidly as implementation becomes more wide-spread and accepted in the HVAC market. These systems are appropriate to virtually all types of space-conditioning applications, including, office buildings, schools, historic structures, low income housing, hospitals, and ice rinks to name a few examples. This workshop covers new innovations in system design, financing options and regulation that are lowering initial costs and increasing savings during operation.

### Workshop Objectives:

- Define the “state of the art” in terms of design options and economic payback
- Explain financing-entity ownership, tax-breaks, incentives and subsidies available for installing geothermal
- Demonstrate the environmental and strategic benefits of the technology
- Explain the importance of proper ground loop installation and groundwater protection
- Illustrate the environmental scalability of GHP HVAC systems to continuously reduce carbon footprint.
- Demonstrate the essential connection between subsurface conditions and system design and operation and how to get the right information
- Describe the special steps and importance of geothermal system commissioning
- Provide an update on state, local and federal regulatory issues

The program draws on the experience & expertise of industry and agency professionals and will provide a unique opportunity for exchange of information among policy makers involved in energy issues and specialists involved with the design, construction and permitting of ground source geothermal systems for cooling and heating. Geothermal has the potential to become the technology of choice among those considering “green energy” options for commercial or residential installations. This one-day program is an incredible opportunity to learn from experienced professionals who are on the forefront of geothermal innovation. Geothermal will be coming to buildings near you!

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## Program

**7:30am – 8:00 Registration (Coffee and Donuts)**

**8:00am – 8:35 Resource Sustainability and Geothermal Heating and Cooling Concepts**

**Jay Egg, CMC**, President, Egg Geothermal, Tampa, FL

- Water and Energy – The Sustainability Nexus
- Geothermal Heating and Cooling Fundamentals
- Installations to ensure Groundwater Protection

**8:35am – 9:15 Status of the Geothermal Industry**

**Doug Dougherty**, Executive Director, Geothermal Exchange Organization, Washington DC (invited)

- What is GEO? The Geothermal Exchange Organization
- Geothermal Heat Pump Market Perspectives
- National Overview • Residential / Commercial • Potential Drivers
- Market Barriers and Incentives for Geothermal Heat Pumps
- Legislative Efforts to Grow the Industry - GEO's Work at the Federal and State Levels

**9:15am – 9:55 IGSHPA'S Education, Training and Research Role in the Geothermal Industry**

**Erin Portman**, Communications Specialist, International Ground Source Heat Pump Association, Stillwater, OK

- Origins of IGSHPA and the growth of membership
- Training and accreditation requirements for IGSHPA drillers, installers and designers
- Training materials published by the Association
- The IGSHPA Building Load Analysis and Pumping (BLA) course
- IGSHPA Research and research partner reports
- IGSHPA 2.0 – The road ahead for the Association
- Information exchange opportunities at IGSHPA workshops, webinars and conferences

**9:55am – 10:05 Networking Break**

**10:05am – 10:45 Case study of Geothermal Installation: Saints Peter & Paul Church, Elrosa, Minnesota**

**Travis Toennies**, Territory Manager, Energetech Mfg, LLC, Indianapolis, IN

- Property and site background (90 year old church using 4,550 gal of fuel oil)
- Design considerations (Four 10 ton water to water units)
- Sub-surface installation (horizontal loop)
- Overview of project costs and payback (Church fuel-oil use reduced by over 80%)

**10:45am – 11:25 More than a “hole in the ground”- Drilling techniques - Logistics and Grout**

**Chad Yordy**, Account Representative, Baroid IDP, Cassopolis, MI

- Criteria for selecting a drilling contractor for geothermal projects
- Matching the drilling equipment and drilling methods to the geological and site conditions
- Geothermal Design – What geologic data is needed – what is not?
- Installing the vertical loop into the drilled bore – Do's and Don'ts that cost money
- Grouting material properties and options for geothermal projects
- Techniques of grout placement to meet geothermal design specifications

**11:25am – 12:05 GHP HVAC Design with Variable Frequency Drive Compressor Geothermal Heat Pumps – Special Considerations**

**Mike Springer**, Texas Territory Sales Manager, WaterFurnace International, Southlake, TX

- How does a VFD compressor GHP work?
- Loop design- Turbulent Flow- Is it still necessary?
- Can VFD GHPs reduce the size of a loop field?
- Duct Sizing and Layout Considerations- The old rules apply, but with new options
- How does the VFD GHP help to balance air flow?
- VFD GHP Application

**12:05am – 1:00**      **Lunch** (provided on site)

**1:00pm – 1:40**      **Computer-based Design of GHEX loops and GHP Capacity Matching**

**Ryan Carda, President, GeoConnections, Elkton, SD**

- Overview of critical energy relationships and assumptions
- How to interpret a load calculation and energy analysis report correctly for a GSHP-based HVAC system
- What site-specific variables have the greatest affect on a GHEX design
- How can computer-based design minimize system problems and increase efficiency?
- Ground-truthing system-designs – The process of collecting the right information

**1:40am – 2:20**      **Remediation of a Closed Loop Geothermal Field Using Open Loop Methods**

**Jay Egg, CMC, President, Egg Geothermal, Tampa, FL**

- Why geothermal loops fail? It is not what you think
  - Closed Loops and Open Loops
- Failed System Assessment
  - What data is needed
- Redesign Process – Making it work
- Blending the new loop with the old - What is required?
- Case Study: Sussex County, Delaware - Emergency Operations Center (EOC)

**2:20pm – 3:00**      **Designing Geothermal HVAC Systems -  
Pump Energy Optimization Using Variable Frequency Drives**

**Steve Hamstra, PE, ASHRAE HBDP, LEED AP, CGD, President, Greensleeves, LLC, Zeeland, MI**

- System Piping Arrangements – Do's and Don'ts
- System Balancing and Important Decisions
- Equipment Selection – HVAC System Type and Integration
- Calculating energy savings using VFD pumps
- Energy Management System Controls - Interface and Operational Considerations

**3:00pm – 3:15**      **Networking Break**

**3:15pm – 3:55**      **Monitoring Geothermal Systems**

**Steve Hamstra, PE, ASHRAE HBDP, LEED AP, CGD, President, Greensleeves, LLC, Zeeland, MI**

- The Geothermal HVAC system – The Value of System Assessment
- What's important, and to whom?
- What is the difference between Monitoring and Metering?
- Performance Metrics – What should be measured?
- Actual operating cost vs. projected
- Value for trending of key performance values – End User
- Value for trending of key performance values – GSHP Industry

**3:55 – 4:35 pm**      **Case Studies of Geothermal Installations**

**Richard Hiles, District Manager, ClimateMaster, Anderson, IA**

- The myths of loop design
- Horizontal verses vertical loop installations
- Sizing geothermal heat pumps to meet space conditioning loads
- Garrett Office Building Case Study

**4:35pm – 4:45**      **Wrap-up and Adjourn**

**"Best one-day program on GEOTHERMAL"**

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Wednesday, June 18, 2014 ~~ Holiday Inn – Carmel, 251 E Pennsylvania Parkway, Indianapolis, IN 46280

<b>Registration</b> (General)	<b>\$195</b>	<input type="checkbox"/>
<b>Registration</b> (AGWT Members)	<b>\$165</b>	<input type="checkbox"/>
<b>Registration</b> (Government- federal, state, local)	<b>\$165</b>	<input type="checkbox"/>
<b>Registration</b> (Official Representatives of 501(c)(3) Organizations)	<b>\$165</b>	<input type="checkbox"/>
<b>Registration</b> (Full-time Student; ID required)	<b>\$ 90</b>	<input type="checkbox"/>
<b>CD of Presentations</b> (\$75 for non-Registrants)	<b>\$ 30</b>	<input type="checkbox"/>
<b>Exhibit Table</b> (does not include registration)	<b>\$ 200</b>	<input type="checkbox"/>

[Walk-in registration (on day of event) \$225]

**TOTAL \$** \_\_\_\_\_

**PAYMENT:**    **Check**   *[payable to: American Ground Water Trust]*

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**CANCELLATION POLICY**

- Cancellations received in the AGWT office by 5 pm EST 5 days prior to event will receive a full refund less \$25.
- For cancellation 4-2 days prior to the there is a 50 % refund.
- Cancellations one day prior to the start of the event or on the day of the event are considered "No Shows" and no refund will be made - (substitutions gladly accepted).
- The Trust will not cancel a program because of bad weather conditions. Except that, as the result of an event cancellation resulting from, (but not limited to) circumstances such as a state mandatory evacuation or a fire at the program facility, the Trust will reschedule the event and honor registrations as payment for the new event.

**SPONSORSHIP & EXHIBITS**

*Showcase company achievements, expertise, projects, products & services  
Call 800 423-7748 or visit web-site*

The **Holiday Inn – Carmel** is holding a limited number of rooms at a **special room rate of \$99** for attendees through June 4 under the "American Ground Water Trust Group Block" event. Call: 317-574-4600.

**Return by mail: American Ground Water Trust, 50 Pleasant Street, Concord, NH 03301**

**Return by fax: (603) 228-6557    Call to register (800) 423-7748    Register on line <http://www.agwt.org/events>**