

# PROGRAM

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

### WORKSHOP

Location: Holiday Inn – I-275  
3855 Hauck Road, Cincinnati, OH 45241  
Date: Tuesday, July 16, 2013  
Time: 8:00am to 4:45pm



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

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### In cooperation with:

International Ground Source Heat Pump Association  
Ohio Water Well Association



### CONTINUING EDUCATION



**Certificate of Attendance:** (Contact Hours: 7.25) will be provided to those attendees who sign-in and sign-out. These certificates may be used by attendees to obtain continuing education credit from professional organizations or licensing agencies. Attendance Certificates will be mailed after the event. (Sign-in, sign-out required)

### Continuing Education Credit

Architect Credits – 7.25 LUs (for HSW), American Institute of Architects (Provider G521)(Course # GS1306)  
Ohio Architects – 7.25 Contact Hours, Reciprocity approval through the AIA  
Ohio Engineers and Geologists – (Pre-Approval not required)  
Indiana Architects and Geologists – (Pre-Approval not required)  
Indiana Engineers – 7.5 CE hours through the IPLA; Board of Registration and Professional Engineers  
Indiana Water Well Driller – 7.0 CE hours through the IN-DNR; Division of Water  
Kentucky Certified Water Well Drillers- 7.25 CE Hrs through the KY Div. of Water; Watershed Management Program  
Kentucky Architects, Engineers and Geologists – (Pre-Approval not required)  
IGSHPA Accredited Installers – 0.75 CEU's

# Program

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

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

**Garret Graaskamp, PG, AI**, Hydrogeologist, American Ground Water Trust, Concord, NH

- 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

- 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 Financing Innovations for Geothermal Installations**

**David Neale**, VP of Marketing and Business Development, EnergyWise Partners LLC. Rochester, NY

- What is a GHP HVAC system financing-entity ownership model?
- System Leasing versus Thermal Purchase Agreements – What's the difference?
- How does the financing-entity method work to increase GHP HVAC system sales?
- How does monitoring enhance system support and warranty?
- Can this model be retrofitted to existing installations?

**9:55am – 10:10 Networking Break**

**10:10am – 10:50 Designing with Variable Frequency Drive Compressor Geothermal Heat Pumps – Special Considerations**

**Bob Peck**, Regional Sales Manager (KY, TN, WV), WaterFurnace International, Versailles, KY

- How does a VFD compressor GHP work?
- VFD GHP Applications
- Loop design- Turbulent Flow- Is it still necessary?
- Can VFD GHPs reduce the size of a loop field
- Conditioned Space Zoning Options
- System Control Requirements

**10:50am – 11:30 More than a “hole in the ground”- Drilling techniques - Logistics and Grout**

**Jeff Quinn**, Account/ Field Representative, Baroid IDP, Nottingham, NH

- 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

**11:30am – 12:10 Formation Thermal Conductivity Tests – How they Reduce Initial and Operational Costs**

**Greg Wells, CGD**, Geothermal Sales Engineer, Jackson Geothermal, Bellville, OH

- What is a Formation Thermal Conductivity test?
- How do they work?
- Why should a FTC test be included in the Scope of Work?
- When should a FTC be completed?
- Who should conduct the FTC to avoid conflicts?
- Where should the FTC boring(s) be located?

**12:10pm – 1:00 Lunch** (Provided on-site)

**At the end of the program please leave your badge holders and evaluation forms on the table. – Thanks!**

# Program

(Continued)

## 1:00pm – 2:00 Hybrid systems - Innovative GHP/GHEX System Design

**Gene Slavens**, Geothermal Development Manager, ClimateMaster, Oklahoma City, OK

- Advantages of hybrid for summer and winter demands
- Costs and life-cycle benefits
- Tax incentives and cost benefits of hybrid systems
- Case study example of a 750 ton installation
- Design Comparison of GHPs v. Variable Speed compressor Air-to-Air HPs

## 2:00pm – 2:50 LEED Platinum Design: A Path to Net Zero Energy Buildings- Considerations in Going the Distance to Net Zero

**John Isch, AIA, LEED AP BC**, Principal, RWA, Architects Inc., Cincinnati, OH

- Net zero energy definitions and overview
- What design decisions and operating outcomes control attainment of both LEED and NZEB?
- Contributing systems and factors in achieving Net Zero
- The role of Geothermal Heat Pumps in optimizing building efficiency.
- Methods of achieving LEED Platinum and NZEB for a single family residence

## 2:50pm – 3:05 Networking Break

## 3:05pm – 3:55 Designing A Commercial Vertical Geothermal Field

**Greg Wells, CGD**, Geothermal Sales Engineer, Jackson Geothermal, Bellville, OH

- Design considerations for geothermal wells in bedrock vs. shallow sand & gravel wells
- What makes one well more efficient than another for thermal transfer?
- Common misconceptions about the geothermal earth coupling

## 3:55pm – 4:35 Commissioning GHP Systems – Achieving Anticipated Performance

**Lynn Cleveland**, Principal, Commissioning Project Manager, Heapy Engineering, Dayton, OH

- How is a GHP HVAC system “Commissioned?”
- Design and Installation Mistakes – Where do they hide?
- What observations and measurements cannot be overlooked?
- Retro-commissioning of existing systems

## 4:35pm – 4:45 Wrap-up and Adjourn

- Further Questions and CEU sign-out

## AMERICAN GROUND WATER TRUST

The *American Ground Water Trust* is a non-profit organization that promotes awareness, cooperation and action among individuals, groups and organizations. It has the core mission of promoting “science as the basis for water policy.” Specifically, the AGWT’s conference and workshop programs and educational materials:

- ◆ Promoting efficient and effective ground water management
- ◆ Communicating the environmental and economic value of ground water
- ◆ Showcasing ground water science and technology solutions
- ◆ Increasing citizen, community and decision-maker awareness
- ◆ Facilitating stakeholder participation in water resource decisions



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