

GEOHERMAL HEATING AND COOLING INNOVATIONS: DESIGN, FINANCING AND REGULATION

WORKSHOP

Location: DoubleTree Inn, 5485 Twin Knolls Road, Columbia, MD 21045

Date: Wednesday, April 2, 2014

Time: 8:00am to 4:45pm

Convened by the:

American Ground Water Trust

Concord, NH

501(c)(3) Education Organization



SPONSORS



Preferred Pump



In cooperation with:

Allied Well Drilling
b2E Consulting Engineers
GeoSolar Energy

International Ground Source Heat Pump Association
Mid Atlantic Geothermal Industry Coalition
WaterFurnace International

Continuing Education Credit

Architect Credits – 7.25 LUs (FOR HSW), AMERICAN INSTITUTE OF ARCHITECTS (PROVIDER G521)
Maryland Architects – 7.25 CEUs, MARYLAND BOARD OF ARCHITECTS
Maryland Engineers – 7.25 CEUs MARYLAND DLLR (BOARD OF PROFESSIONAL ENGINEERS)
Maryland Water Well Contractors – 7.25 CE Hrs, MD DEPT OF ENVIRONMENT; BROAD OF WELL DRILLERS
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, 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 industry-accepted installation, operation and maintenance practices.
- Explain the importance of proper ground loop installation and groundwater protection
- Explain Net-Zero design and system integration principles
- 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 oversight

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!

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

Scott Emery PE, Director, Maevolve Energy, Reston, VA

- Geographic distribution of geothermal installations
- Trends in the growth of geothermal applications
- Market potential and market predictions for the geothermal industry
- How the Geothermal industry is organized nationally, regionally and locally
- What appear to be the barriers to greater acceptance of geothermal installations?

9:15am – 9:30 Legislative update- New Thermal REC Requirements for Geothermal Heat Pump Systems

Adam Santry, President, Mid Atlantic Geothermal Industry Coalition, Annapolis MD

- What is the status for implementation of Senate Bill 530 and Thermal Renewable Energy Credits
- How will the proposed new Tier 1 classification for Thermal energy affect the GHP HVAC market?
- What requirements will Senate Bill 530 make on Electric Utilities to purchase Thermal RECs?

9:30am – 9:45 Networking Break

9:45am – 10:30 Utility and Alternative Financing of Geothermal Installations

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

- Financing and Ownership models
- Exploiting GHP features within Financing Models
- Can these Models be used for Existing Installations?
- Conventional Utilities verses Grid Edge Renewable Electricity Sources
- GHP: Distributed Generation and Demand Management
- Metering Geothermal Systems at the Utility Grid Edge
- Best Practices for creating Third-party Geothermal Utilities

10:30am – 11:15 More than a “hole in the ground”- Drilling techniques - Logistics and Grout

Dennis Duty, Senior Field Services Technical Representative, Baroid IDP, Buckingham, VA

- 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

11:15am – 12:00 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

12:00pm – 12:50 Lunch (Provided on Site)

12:50pm – 1:35 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

1:35pm – 2:20 Optimizing the Role of GHPs in Net-Zero Energy Buildings

Bruce Beddow, PE, CEM, GBD, Principal, b2E Consulting Engineers, Leesburg, VA

- How is a Net-Zero Energy Building defined: cost, emissions, site, and/ or source?
 - Why are the differences relevant to your project?
- Applications for both New and Renovation projects
- Advantages gained from including GSHPs in net zero energy buildings
- Design concepts that optimize Geothermal Heat Pumps with Solar Thermal and PV.
- Campus and district geothermal concepts for net zero energy buildings

2:20pm – 3:00 Standing Column Well Case Study – Kentlands Community Center, Gaithersburg MD

Mike Heavener, PE, President, GeoSolar Energy, Gaithersburg, MD

- How does a Standing Column Well differ from an open loop geexchange circuit?
- Kentlands field conditions: Geology and groundwater characteristics
 - What conditions are needed for an efficient robust system?
- Well water yield testing and loop circuit design rational
- Explanation of well construction and operation details
- Monitoring of system performance – Measurement parameters and results
- When and why should a SCW geexchange loop be chosen over closed or open loop options?

3:00pm – 3:15 Networking Break

3:15pm – 4:00 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
 - 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 Emergency Operations Center (EOC), Delaware

4:00pm – 4:40 Third Party Loop Ownership – Case Study Chesapeake Golf Club Community, North East, Maryland

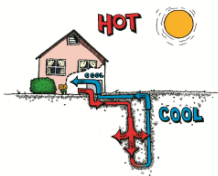
Adam Santry, President, Allied Geothermal Well Drilling, Laurel, MD

- Development project overview
- Preplanning steps- Geology and installation conditions
 - Community vs. site specific loop fields
- Loop Ownership- Contractual requirements
 - Loop owner obligations
 - Home owner obligations
- The Accounting Process - Thermal energy delivery and measurement
- Implementation Do's and Don'ts

4:45 pm Wrap-up and Adjourn

- Further Questions and CEU sign-out

"Best one-day program on GEOTHERMAL"



Another Education Program from:
American Ground Water Trust
 50 Pleasant Street (Suite 2)
 Concord, NH 03301



GEO THERMAL

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Innovations: Design, Financing and Regulation

Wednesday, April 2nd, 2014, DoubleTree Inn
 5485 Twin Knolls Road, Columbia, MD

- ☞ HYBRID GEO THERMAL DESIGNS AND PARTIAL LOAD OPTIONS
- ☞ HOW TO SUCCESSFULLY REMEDIATE A FAILING CLOSED LOOP
- ☞ THERMAL RENEWABLE ENERGY CREDITS CARVE-OUT FOR GHPS
- ☞ THIRD PARTY LOOP OWNERSHIP OPTIONS TO REDUCE INITIAL COSTS
- ☞ MAZIMIZING THE BENEFITS OF GHPS IN NET-ZERO ENERGY BUILDINGS
- ☞ VFD COMPRESSOR GHP DESIGN OPTIONS TO INCREASE SYSTEM EFFICIENCIES

GEO THERMAL PROGRAM -- REGISTRATION FORM

Wednesday, April 2, 2014 -- DoubleTree Inn, 5485 Twin Knolls Road, Columbia, MD

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

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

TOTAL \$ _____

PAYMENT: Check [payable to: American Ground Water Trust]
 AMEX Visa MasterCard PO

Credit Card or PO No. _____ Expiration _____

Cardholder Name _____

Registration Name _____

Title/Position _____

Company/ Organization _____

Address _____

City _____ State _____ Zip _____

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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.

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 Call 800 423-7748 or visit web-site

The DoubleTree Inn is holding a limited number of rooms at a special room rate of \$104 for attendees through March 16 under the "American Ground Water Trust" event. Call: 410-997-1060.

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>