

GEOHERMAL HEATING AND COOLING INNOVATIONS: DESIGN, FINANCING AND REGULATION

WORKSHOP

Location: Holiday Inn & Suites – Overland Park West
8787 Reeder Road, Overland Park, KS 66214

Date: Wednesday, March 26, 2014

Time: 8:00am to 4:45pm

Convened by the:

American Ground Water Trust

Concord, NH

501(c)(3) Education Organization



SPONSORS



In cooperation with:

International Ground Source Heat Pump Association

Continuing Education Credit

ARCHITECT CREDITS – 7.25 LUs (FOR HSW) APPROVED THROUGH THE **AMERICAN INST. OF ARCHITECTS** (PROVIDER #G521)

KANSAS ARCHITECTS, ENGINEERS, GEOLOGISTS – 7.25 CEUs (SELF CERTIFICATION PER THE

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KANSAS - JOHNSON COUNTY CONTRACTORS – 6 CE HRS (2 HRS DM CODE CREDIT AND 4 HRS NON-CODE CREDIT

THROUGH THE JOHNSON COUNTY CONTRACTOR'S LICENSING PROGRAM)

KANSAS WATER WELL DRILLERS – 7.0 CE HRS CREDIT PENDING THROUGH THE KANSAS GROUND WATER ASSOCIATION

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MISSOURI PUMP INSTALLERS – 5.0 CE HRS CREDIT THROUGH THE MISSOURI WATER WELL ASSOCIATION

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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!

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 – 9:20 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

9:20 – 9:50 Kansas Energy Initiatives – Can ground-sourced energy play a role?

Ryan Freed, Director, Kansas Energy Division, Kansas Corporation Commission, Topeka, KS

- Overview of Kansas' Energy Initiatives
- Kansas' economic perspective for reducing electrical energy demands and the role for infrastructure investment
- Potential impact of geothermal technology on Kansas' energy-use profile

9:50am – 10:05 Networking Break

10:05am – 10:50 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 versus 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

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

Lyndon Pence, Senior Sales and Service Representative, Baroid IDP, Hydro, OK

- 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 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

12:10am – 1:00 Lunch (provided on site)

1:00pm – 1:40 Chapel at Fort Sill, Oklahoma- Evaporative Cooling Tower Hybrid Application

Eric Taylor, PE, LEED AP BD+C, Mechanical Engineer, Black and Veatch, Overland Park, KS

Kirk Heer, PE, PMP, LEED AP, Senior Mechanical Engineer, Black and Veatch, Overland Park, KS

- Project Overview
- Climate zone conditions and design influences
- Extreme building load variance considerations
- Outdoor air ventilation challenges
- Methodology for sizing the cooling tower
- Energy performance analysis

1:40am – 2:20 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

2:20pm – 3:00 Successful Integration of Geothermal Heat Pump HVAC Systems into Commercial Design-Build Projects

John Sommers, PE, LEED AP, Senior Engineer, Henderson Engineers Inc, Lenexa KS

- How to assemble the D-B team – why is the mix important with GHP HVAC systems?
 - Credentialing and Experience – what does each bring to the process
 - Who should lead the team and why to avoid problems
 - What to look for in the sub-contractor members
- Field Testing prior to designing the internal and external geothermal systems
 - Why the perspective of the testing contractor is important
 - How to turn the cost of testing into Design/Build value.
 - Should the testing contractor be the installation contractor – Do's and Don'ts
- Case Studies – Lessons learned in the field

3:00pm – 3:15 Networking Break

3:15pm – 3:55 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)

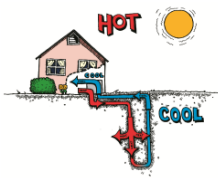
3:55 – 4:35 pm GEOEXCHANGE INSTALLATIONS: STATE and LOCAL RULES and REGULATIONS

Richard Harper, L.G., Chief, Water Well Unit, KS Dept of Health and Environment, Topeka, KS

- Health concerns from installation and/ or operation of geothermal systems
- Environmental & water resources concerns from drilling, heat exchange or well failure
- Current regulatory requirements in Kansas
- "Paperwork" burden for installation of a geothermal system
- Perception of "risks" to the integrity of ground water or aquatic environments
- In what instances do drinking water regulations apply to geothermal wells?
- Licensing requirements for geothermal well and heat-exchange equipment installers

4:35pm – 4:45 Wrap-up and Adjourn

"Best one-day program on GEOTHERMAL"



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



GEO THERMAL

Get CEUs

Innovations: Design, Financing and Regulation

Wednesday, March 26th, 2014, Holiday Inn – Overland Park West
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- ☞ HYBRID GEO THERMAL DESIGNS AND PARTIAL LOAD OPTIONS
- ☞ HOW TO SUCCESSFULLY REMEDIATE A FAILING CLOSED LOOP
- ☞ THIRD PARTY LOOP OWNERSHIP OPTIONS TO REDUCE INITIAL COSTS
- ☞ SUCCESSFUL GHP HVAC SYSTEM DESIGN AND DESIGN-BUILD PROJECTS
- ☞ VFD COMPRESSOR GHP DESIGN OPTIONS TO INCREASE SYSTEM EFFICIENCIES

GEO THERMAL PROGRAM -- REGISTRATION FORM

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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

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Title/Position _____

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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 **Holiday Inn** is holding a limited number of rooms at a **special room rate of \$89** for attendees through March 10 under the "American Ground Water Trust" event. Call: 913-888-8440.

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>