

GEOHERMAL HEATING AND COOLING : DESIGN, FINANCING AND REGULATION

WORKSHOP



~ September 17th, 2014 ~
Holiday Inn – St Paul East
2201 Burns Avenue, St Paul, MN 55119
Convened by the: **American Ground Water Trust**
501(c)(3) Education Organization



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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: 4 Contact Hours from MN Department of Health

IGSHPA Accredited Installers – 0.75 CEU's

The Minnesota Board of Architecture, Engineering, Land Surveying, Landscape Architecture, Geoscience and Interior Design does not pre-approve courses, however to the best of our knowledge this course meets the continuing education requirements outlined in MN Statute 326.107 for Architecture, Engineering and Geoscience.

Final discretion is up to the Board.

Call for details about other professions - 800-423-7748

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 Describe the special steps and importance of geothermal system commissioning
- Provide an update on state, local and federal regulatory issues

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

8:00 – 8:45 Resource Sustainability and Geothermal Heating and Cooling Concepts

Jay Egg, President, Egg Geothermal, Tampa, FL

- Water and Energy – The Sustainability Nexus
- Geothermal Heating and Cooling Fundamentals
- Installations to ensure Groundwater Protection
- Status of the Geothermal Industry**
- 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

8:45 – 9:30 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

9:30 – 10:15 IGSHPA’S Education, Training and Research Role in the Geothermal Industry

Jack Henrich, International Ground Source Heat Pump Association Advisory Council Chairman, Minneapolis, MN

- 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

10:15 – 10:30 BREAK

10:30 – 11:15 GHP HVAC Design with Variable Frequency Drive Compressor Geothermal Heat Pumps

Scott Niesen, Territory Manager, WaterFurnace International, Lino Lakes, MN

- 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

11:15 – 12:00 Case study of Geothermal Installation: Saints Peter & Paul Church, Elrosa, MN

Brian Urlaub, Commercial Sales Manager at Enertech Global, LLC, Minneapolis, MN

- 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%)

12:00 – 1:00 Lunch (provided on site)

1:00 - 1:30 Commercial Ground Source heat Pump Installations

Jim Ingle, FourMation Sales (Bosch), Rogers, MN

- Local installations in the Twin-Cities Area
- Advantages of the technology for the Minnesota market
- Calculations or real-world cost savings

1:30 – 2:15 Remediation of a Closed Loop Geothermal Field Using Open Loop Methods

Jay Egg, 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)

2:15 - 3:00 Geothermal as the Basis for a Net Zero Multi-Family Affordable Housing

Anne Fowler, Business Director, Advanced Energy Group, Ann Arbor, MI

- Importance of taking a holistic approach in community re-development
- How energy savings can be used to finance badly needed energy retrofits
- “Net zero” re-development of an outdated multi-family affordable housing complex in Meriden CT
- Design criteria for use of G1.4 heat exchanger
- Layering in of other renewable technologies (solar roof and a future fuel cell)

3:00 – 3:10 BREAK

3:10 – 3:55 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

3:55 – 4:40 Energy Feasibility Studies for Geothermal Installations

Andy LaFerriere, Energy Engineer, MEP Associates, Eau Claire, WI (invited)

- Site space and geological considerations for geothermal
- Client benefits (Reducing site energy consumption, O&M costs, and carbon footprint)
- Basis for calculating ROI, payback and overall life-cycle costs

4:40 – 4:45 Wrap-up

END OF EVENT

- ➔ At the end of the program please leave your badge holder and evaluation form on the table
- ➔ For a download of the presentations complete a yellow order form available at the registration desk
- ➔ If you need a certificate of attendance please remember to sign out.