

# PROGRAM

## GEOHERMAL

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

## WORKSHOP

**Location:** Holiday Inn South Plainfield  
4701 Stelton Road, South Plainfield, NJ 07080  
**Date:** Wednesday, August 14, 2013  
**Time:** 8:00am to 4:45pm



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

## SPONSORS - THANK YOU !



### In cooperation with:

Association of New Jersey Environmental Commissions  
International Ground Source Heat Pump 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) THRU THE AMERICAN INST. OF ARCHITECTS (PROVIDER #G521)(COURSE #1307)  
NJ ARCHITECTS – 7.25 CEUs (HSW) APPROVED ACCORDING TO NJAC TITLE 13, CHAPTER 27 (SECTION 13:27-4A.3)  
PA AND NJ - ENGINEER CREDITS – 7.25 CONTACT HOURS - SELF CERTIFICATION BY ATTENDEE  
PA AND NJ - GEOLOGIST CREDITS – 7.25 CONTACT HOURS - SELF CERTIFICATION BY ATTENDEE  
IGSHPA ACCREDITED INSTALLERS – 0.75 CEU's  
Call for details about other professions - 800-423-7748

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

# Program

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

**8:00am – 8:40 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

**8:40am – 9:25 Status of the Geothermal Industry**

**Jack DiEnna**, Executive Director, Geothermal Heat Pump National & International Initiative, Washington DC

- 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
- Legislative Efforts to Grow the Industry

**9:25am – 10:05 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?

**10:05am – 10:20 Networking Break**

**10:20am – 11:05 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

**11:05am – 11:50 Formation Thermal Conductivity Tests – How they Reduce Initial and Operational Costs**

**Scott Emery**, Director, Bowman Geothermal, Manassas, VA

- What is a Formation Thermal Conductivity test?
- 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?

**11:50pm – 12:50 Lunch** (Provided on-site)

**12:50pm – 1:30 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

**1:30pm – 2:15 Net-Zero Design Principles**

**Howard Alderson, PE**, Principal, Alderson Engineering, Inc., Southampton, PA

- How is a Net-Zero Energy Building defined: cost, emissions, site, source?
- Applications and advantages for 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.
- Case Study: Vertical Screen Corporate Headquarters, Warminster, PA.

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

**2:15pm – 3:05      Designing Geothermal HVAC Systems -  
Pump Energy Optimization Using Variable Frequency Drives**

**John Manning, PE, CGD**, Principal, Earth Sensitive Solutions LLC, Auburn, NY

- 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

**3:05pm – 3:20      Networking Break**

**3:20pm – 4:00      Commissioning GHP Systems – Achieving Anticipated Performance**

**John Marchiafava, PE, CEM, CGD**, Project/ Application Engineer, Concord Engineering Group, Voorhees, NJ

- 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

**4:00pm – 4:45      Monitoring Geothermal Systems**

**Matt Davis, PhD**, Vice President, Ground Energy Support, Dover, NH

- 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?
- Tracking Cost Savings & Carbon Offsets
- Value for trending of key performance values – End User
- Value for trending of key performance values – GSHP Industry

**4:45pm – 4:50      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



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

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