

Credit Information

Geothermal Heating and Cooling: Technology, Applications, and Economics

This webinar offers 6.5 PDHs to professional engineers and 6.5 HSW continuing education hours to architects licensed in all states.

HalfMoon Education is an approved continuing education sponsor for engineers in Florida (Provider No. 0004647), Indiana (License No. CE21700059), Maryland, New Jersey (Approval No. 24GP00000700), and North Carolina (S-0130). HalfMoon Education is deemed an approved continuing education sponsor for New York architects via its registration with the American Institute of Architects Continuing Education System (Regulations of the Commissioner §69.6(i)(2)). Other states do not preapprove continuing education providers or courses.

The American Institute of Architects Continuing Education System has approved this course for 6.5 LU | HSW (Sponsor No. J885). Only full participation is reportable to the AIA/CES.

The International Code Council has approved this event for .65 CEUs in the specialty area of Building (Preferred Provider No. 1232).

Completion certificates will be awarded to participants who complete this event, respond to all prompts, and earn a passing score (80%) on the quiz that follows the presentation (multiple attempts allowed).

Structural Design Loads under the ASCE 7 Standard

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Can't Attend? Order the Webinar as a Self-Study Package!

Recordings of each webinar are available for purchase. See course listing online for more information and please refer to specific state licensing rules or certification requirements to determine if this learning method is eligible for continuing education credit. Self-study packages do not qualify for AIA credit.

Live, Interactive Webinars

- Geothermal Heating and Cooling
- Structural Design Loads under the ASCE 7 Standard

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Live, Interactive Webinars

Geothermal Heating and Cooling: Technology, Applications, and Economics

- Wednesday, September 15, 2021 | 8:00 am - 3:30 pm CDT

Structural Design Loads under the ASCE 7 Standard

- Friday, September 17, 2021 | 8:30 am - 5:00 pm CDT

To register, view detailed presenter biographies, and see other learning opportunities, please visit:

www.halfmoonseminars.org

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AIA
Continuing
Education
Provider



Geothermal Heating and Cooling: Technology, Applications, and Economics

Wednesday, September 15, 2021 | 8:00 am - 3:30 pm CDT
(incl. a 30-min break)

Tuition: \$289 per registrant, \$239 per registrant for three or more

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Agenda

Applying the Laws of Thermodynamics to Geothermal Heat Pumps and Indoor Thermal Comfort

- Applying the laws of thermodynamics to HVAC systems
- Understanding the refrigeration cycle
- The effect of air flow and insulation
- Understanding efficiency
- Calculating heating and cooling loads
- How comfort is measured

Understanding Earth Loop Systems

- The hidden assets of geothermal technologies
- Solar energy in the earth
- Architecture of closed loop systems
 - Horizontal ground loops
 - Direct exchange systems
 - Mini-grids
- Applications for open loop (Class V Thermal Exchange)systems
 - Single well
- Evaluating topography
- Environments for ground-loop systems: beneath yards, fields, parking lots, and buildings
- Vertical ground loops
- Thermal load sharing
- Two-well systems
- Measuring soil conductivity

Designing Geothermal Systems

- Determining loop type
- Sizing the unit and sizing the loop
- Writing a driller specification
- Making heat loss calculations
- Writing a request for proposal (RFP)
- HS2 hydronic design software

Choosing System Type

- Distributed GHPs or chiller plants
- Basic components of geothermal heat pump (GHP) systems: pumps, condenser, water piping, heat pump, heat exchanger
- Forced air systems
- Domestic hot water options
- Hydronic systems
- Geothermal swimming pool heaters

Evaluating the Benefits of Geothermal Systems

- Incentives to use geothermal
- Measuring performance
- Environmental benefits
- Property Assessed Clean Energy (PACE)
- Geothermal utilities
- Calculating savings and cost
- Tax credits, incentives and rebates
- State-based legislation

Maintaining Geothermal Systems

- Performing routine maintenance on GHPs
- Loop maintenance (automatic or periodic)
- Pump maintenance/monitoring

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Structural Design Loads under the ASCE 7 Standard

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Agenda

Understanding Structural Loads

- Types of structural loads
- Classifying buildings and structures
- General structural integrity

Earthquake Loads

- Scope and applicability
- Calculating seismic loads
- Seismic ground motion values
- Seismic design category

Dead Loads

- Weight of materials and structure

Live Loads

- Uniformly-distributed loads
- Required live loads
- Impact loads
- Concentrated loads
- Live load reduction

Soil Loads

- Geotechnical investigation
- Overturning, sliding, bearing
- Retaining wall calculations

Wind Loads

- Allowed procedures
- Basic definitions and requirements
- Wind speed, importance factor, exposure, enclosure
- Main wind force resisting system calculations
- Wind on other structures

Snow and Ice Loads

- Calculating snow drift and ice loads
- Flat roof, sloped roof, unbalanced, sliding snow

Load Combinations

Design Shortcuts

- Rules of thumb
- Modifying and expanding existing structures

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Faculty

Geothermal Heating and Cooling: Technology, Applications, and Economics

Jay Egg, CMC *Founder and Consultant with Egg Geothermal*

After serving in the US Navy nuclear power field, Jay Egg began a career in mechanical design engineering & contracting in 1990, and founded EggGeothermal in Florida to provide HVAC solutions to the public. As a result of the American Recovery and Reinvestment Act of 2009, Mr. Egg wrote two books for McGraw-Hill Education, and Sustainable HVAC entered into a new age of acceptance. Mr. Egg currently focuses his professional efforts as a renewable energy expert on renewable and sustainable energy, solar and geothermal exchange implementation. Among his clients are international, federal, state and local governments; developers; associations; and private entities. Mr. Egg is a voting member on the IGHSPA Advocacy Committee, the Uniform Solar Energy and Hydronics Technical and the Uniform Mechanical Code Committee (UMC) for the International Association of Plumbing and Mechanical Professionals (IAPMO); training and curriculum writer/facilitator for IGSHA and for the U.S. Department of Energy (DOE); and technical adviser to the New York State Energy Research and Development Authority (NYSERDA) and the Province of Ontario, Canada on renewable heating and cooling.

Structural Design Loads under the ASCE 7 Standard

Robin M. Closs, SE PE has 15 years of experience as a structural engineer in designing and analyzing anything from pipes to multistory buildings in fields such as commercial, power, government, institutional, nuclear, industrial, and residential. She traveled to Long Island in the aftermath of Hurricane Sandy as part of a Code Enforcement Disaster Assistance Response Team. Her engineering knowledge in timber, concrete, steel, masonry, aluminum, and light gauge metal has helped her design new buildings, complete renovations and additions, demolish existing structures, produce mechanical platforms, and design appropriate repairs to roofs, walls, floors, and spillways. Ms. Closs is the president of The Engineering Society of Buffalo and currently creates, writes, and edits their monthly newsletter. She also regularly spends time tutoring and greatly enjoys assisting young minds to see the benefits of engineering. She has also acted as the principal coordinator for 80 person volunteer teams, judged inventions, and mentored winners of engineering city competitions. Ms. Closs graduated from the Milwaukee School of Engineering with a BS degree in Architectural Engineering with a Structural Specialty. She is a licensed professional engineer in multiple states, is a licensed structural engineer in Illinois, and is certified as a NCEES Model Law Structural Engineer. Her goal is to meet client needs in a positive and timely fashion!

Additional Learning

2021 International

Wildland-Urban Interface Code

- Thurs, Aug 19, 2021 | 8:30 am - 4:30 pm CDT

Designing for

Accessible Pedestrian Facilities

- Fri, Aug 20, 2021 | 9:00 am - 4:30 pm CDT

The Tree Course:

Science, Design, and Sustainability

- Fri, Aug 20, 2021 | 9:00 am - 4:30 pm CDT

How To Handle Ethical Issues

Associated with Defects and Failures

- Tues, Aug 24, 2021 | 9:00 - 11:00 am CDT

Highways, Byways and Private Roads

- Wed, Aug 25, 2021 | 11:00 am - 3:30 pm CDT

Pavement Design

- Wed, Aug 25, 2021 | 8:30 am - 4:30 pm CDT

Construction Cost Estimating

- Thurs, Aug 26, 2021 | 8:30 am - 3:50 pm CDT

International Building Code 2021

- Thurs, Aug 26, 2021 | 10:00 am - 2:30 pm CDT

- Fri, Aug 27, 2021 | 10:00 am - 1:30 pm CDT

Stormwater Basins and Underground Systems

- Fri, Aug 27, 2021 | 9:00 am - 4:30 pm CDT

For more information and other online learning opportunities visit: www.halfmoonseminars.org