

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 engineers and architects via its registration with the American Institute of Architects Continuing Education System (Regulations of the Commissioner §68.14(i)(2) and §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 prompts and earn a passing score (80%) on the quiz that follows the presentation (multiple attempts allowed).

International Existing Building Code 2021

This webinar offers 7.0 PDHs to professional engineers and 7.0 HSW continuing education hours to architects licensed in all states.

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The American Institute of Architects Continuing Education System has approved this course for 7.0 LU | HSW (Sponsor No. J885). Only full participation is reportable to the AIA/CES.

The International Code Council has approved this event for .7 CEUs in the specialty area of Building (Preferred Provider No. 1232).

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

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: Technology, Applications, and Economics
- International Existing Building Code 2021

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Live, Interactive Webinars

Geothermal Heating and Cooling: Technology, Applications, and Economics

- Tuesday, December 7, 2021 | 9:30 am - 5:00 pm CST

International Existing Building Code 2021

- Tuesday, December 14, 2021 | 8:30 am - 5:00 pm CST

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

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AIA: 6.5 LU | HSW International Code Council: .65 CEUs (Building)



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**AIA
Continuing
Education
Provider**



Geothermal Heating and Cooling: Technology, Applications, and Economics

Tuesday, December 7, 2021 | 9:30 am - 5:00 pm CST (incl. a 30-min break)

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

Credits: Professional Engineers: 6.5 PDHs Architects: 6.5 HSW CE Hours
AIA: 6.5 LU|HSW International Code Council: .65 CEUs (Building)

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
- Calculating heating and cooling loads
- The effect of airflow and insulation
- How comfort is measured
- Understanding efficiency

Understanding Earth Loop Systems

- Architecture of closed loop systems
 - Horizontal ground loops
 - Vertical ground loops
- Applications for open loop systems
 - Single well
 - Two-well systems
- Evaluating topography
- Measuring soil conductivity
- Environments for ground-loop systems: beneath yards, fields, parking lots and buildings

Designing Geothermal Systems

- Determining loop type
- Making heat loss calculations
- Sizing the unit
- Sizing the loop

Choosing System Components

- Basic components of geothermal heat pump systems: pump, compressor, heat exchanger
- Forced air systems
- Hydronic systems
- Domestic hot water options

The Economics of Geothermal Systems

- Tax and utility incentives to use geothermal
- Measuring performance
- Calculating savings and life-cycle costs
- Environmental benefits
 - Integrating geothermal with other renewable/energy efficiency systems

Maintaining Geothermal Systems

- Performing routine maintenance

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AIA: 7.0 LU|HSW International Code Council: .7 CEUs (Building)

Agenda

Working with the International Existing Building Code 2021

- International Existing Building Code adoption by state and local governments
- Existing building stock: challenges and opportunities
- Highlights of the 2021 Code

Chapters 1-3

- Chapter 1: scope and administration
- Chapter 2: definitions
- Chapter 3: Ch. 3 administration, general compliance, storm shelters, accessibility, and carbon monoxide protections

Chapter 4: Repairs, Ch. 5, International Residential Code Appendix J, and Ch. 6

- Ch. 5:
 - Prescriptive compliance method
 - Additions
 - Alterations
 - Fire escapes
 - Windows and emergency escape openings
 - Change of occupancy
 - Historic buildings
- International Residential Code Appendix J
 - Before we meet: preliminary meeting, investigation and evaluation
 - Definitions
 - Compliance
 - Repair
 - Renovation
 - Alterations
 - Reconstruction
- Referenced standards

Chapters 7-9: Alterations

- Alterations levels 1, 2 and 3
- Ch. 5 international energy efficiency codes residential and commercial

Chapter 10: Change of Occupancy

- Special use and occupancy
- Structural
- Plumbing
- Change of occupancy classification

Chapter 11: Additions

- Heights and areas
- Structural requirements

Chapters 12, 13, 14, 15 and 16

- Construction safeguards
- Referenced standards
- Historic buildings
- Moved or relocated buildings
- Performance compliance methods
- Appendix A1
- Appendix A2
- Appendix A3
- Appendix A4
- Ch. A5 Referenced Standards
- Resource A
- Evaluation
- Hermathy's 10 rules
- Guidelines of archaic construction

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Faculty

Geothermal Heating and Cooling: Technology, Applications, and Economics

Duane Crawford *Dakota Geo Consultant, LLC*

Mr. Crawford is a consultant and contractor specializing in drilling, geothermal batteries, geothermal design and geothermal development. He has 40 years of experience in drilling, and over 23 years of experience in geothermal design and construction. He has designed and constructed horizontal and vertical ground heat exchangers, and his alternative designs include pond loop, single well pump-and-dump, thermal battery, and solar-assisted ground source heat pump configurations. He has designed and constructed geothermal systems in South Dakota, Nebraska, Iowa, Kansas, Missouri, Canada, and Grand Cayman in the Cayman Islands. Mr. Crawford has worked in the water development industry since 1976.

International Existing Building Code 2021

Christopher McWhite *Municipal Code Consulting, LLC*

Mr. McWhite is from Indiana and a graduate of Vincennes University. He is an accomplished building inspector and plans examiner, with 20 years of experience in public and non-profit code enforcement and inspections. Mr. McWhite has served as an inspector and plans examiner in Massachusetts, Georgia, Virginia, and Indiana. He has served on the Massachusetts Construction Supervisor Licensing exam rewriting committee to help transition the exam from the 2009 to the 2015 International Codes, as a member of the International Code Council's IPMC / IZC Code Development Committee, and as member of the ICC Building Membership Council and most recently its Nominating Committee. Mr. McWhite also currently serves as an ICC Governmental voting member representing Region 6. He has earned a combined 21 certifications from SBCCI (Legacy Code) and ICC including Housing Code Official, Building Code Specialist, Plumbing Code Specialist, Certified Building Official, and is currently two certifications away from Master Code Professional.

Additional Learning

National Electrical Code 2020: Grounding and Bonding

- Wed, Nov 10, 2021 | 8:30 am - 5:00 pm CST

Deep Foundations and Excavations

- Fri, Nov 12, 2021 | 8:30 am - 5:00 pm CST

HVAC Primer for Design Professionals

- Fri, Nov 12, 2021 | 8:30 am - 4:30 pm CST

IRC Significant Changes

- Chapters 11-44

- Fri, Nov 12, 2021 | 11:00 am - 3:30 pm CSTT

Construction Cost Estimating

- Tues, Nov 16, 2021 | 7:30 am - 3:30 pm CST

Best (and Worst) Practices for Retaining Wall Success and Interactive Workshop

- Wed, Nov 17, 2021 | 10:00 am - 1:15 pm CST

Focusing on the Legal Ramifications of Drone Use for Utilities

- Fri, Nov 19, 2021 | 10:00 am - 12:00 pm CST

Industrial Stormwater Management

- Fri, Nov 19, 2021 | 9:00 am - 4:00 pm CST

Septic System Design, Construction and Maintenance

- Fri, Nov 19, 2021 | 8:30 am - 4:30 pm CST

Designing and Constructing a Net-Zero Energy Home in the Midwest

- Mon, Nov 22, 2021 | 8:30 am - 1:00 pm CST

- Tues, Nov 23, 2021 | 8:30 am - 1:30 pm CST

Special Inspections under the International Building Code Chapter 17

- Mon, Nov 29, 2021 | 10:00 am - 2:30 pm CST

- Tues, Nov 30, 2021 | 10:00 am - 1:15 pm CST

The Value and Practice of Biophilic Design

- Tues, Nov 30, 2021 | 10:30 am - 12:30 pm CST

- Tues, Dec 7, 2021 | 10:30 am - 12:30 pm CST

- Tues, Dec 21, 2021 | 10:30 am - 12:30 pm CST

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