

## Credit Information

### Designing and Constructing All-Electric Buildings

This webinar offers 6.0 PDHs to professional engineers and 6.0 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 6.0 LU | HSW (Sponsor No. J885). Only full participation is reportable to the AIA/CES.

The International Code Council has approved this event for .6 CEUs in the specialty area of Electrical (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).

### 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.

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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).

### **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.

## Live, Interactive Webinars

- Designing and Constructing All-Electric Buildings
- Geothermal Heating and Cooling: Technology, Applications, and Economics

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PO Box 278  
Altoona, WI 54720-0278



## Live, Interactive Webinars

### **Designing and Constructing All-Electric Buildings**

- Wednesday, March 9, 2022 | 11:00 am - 2:15 pm CST
- Thursday, March 10, 2022 | 11:00 am - 2:15 pm CST

### **Geothermal Heating and Cooling: Technology, Applications, and Economics**

- Wednesday, March 9, 2022 | 8:30 am - 4:00 pm CST

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

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# Designing and Constructing All-Electric Buildings

Wednesday, March 9, 2022 | 11:00 am - 2:15 pm CST (incl. a 15-min break)

Thursday, March 10, 2022 | 11:00 am - 2:15 pm CST (incl. a 15-min break)

Tuition: \$319 per registrant, \$289 per registrant for two or more

Credits: Professional Engineers: 6.0 PDHs      Architects: 6.0 HSW CE Hours  
AIA: 6.0 LU|HSW      International Code Council: .6 CEUs (Electrical)

## Agenda Day One

### Building Electrification: Purpose and Principles

- Climate impact of construction
- Measuring the carbon footprint of a new building:
  - Materials, construction and operation
- Decarbonizing new and existing buildings
- Electrification basics

### Sample Codes and Standards That Promote Electrification

- Treatment of electrification in standardized building codes
- Local codes and incentives that promote electrification
- Electrifying construction with and without codes and incentives

### Electrifying Buildings, Part 1

- Avoiding panel and electric service upgrades
- Heating, ventilation and air conditioning
- Domestic hot water
- Energy management systems and electric vehicle charging

## Agenda Day Two

### Electrifying Buildings, Part 2

- Electric kitchens
- Electric clothes dryers
- Electric fireplaces and grills
- Electric pools and hot tubs
- Electric landscape features

### Case Studies of Electrified Buildings

- Single-family residences
- Multifamily housing

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# Geothermal Heating and Cooling: Technology, Applications, and Economics

Wednesday, March 9, 2022 | 8:30 am - 4:00 pm CST (incl. a 30-min break)

Tuition: \$319 per registrant, \$289 per registrant for two 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 air flow and insulation      How comfort is measured
- Understanding efficiency

### Understanding Earth Loop Systems

- The hidden assets of geothermal technologies
- Solar energy in the earth
- Architecture of closed loop systems
  - Horizontal ground loops      • Vertical ground loops
  - Direct exchange systems      Thermal load sharing
  - Mini-grids
- Applications for open loop (Class V Thermal Exchange)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 and sizing the loop      Writing a request for proposal (RFP)
- Writing a driller specification      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      Hydronic systems
- Domestic hot water options      Geothermal swimming pool heaters

### Evaluating the Benefits of Geothermal Systems

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

### Maintaining Geothermal Systems

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

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# Faculty

## Designing and Constructing All-Electric Buildings

**Sean Armstrong** is the managing principal of Redwood Energy and has worked for 25 years in building electrification. Mr. Armstrong has designed the retrofit and new construction of more than 10,000 of all-electric residences for disadvantaged populations. He has co-authored five practical guides to building electrification, provided legal and technical support to dozens of gas bans nation-wide, and helped develop the 2016/2019/2022 and 2025 Title 24 California Energy Codes. Mr. Armstrong has received sustainable design awards from the United Nations, the U.S. Department of Energy and the SoCal Building Industry Association.

## Geothermal Heating and Cooling: Technology, Applications, and Economics

**Jay Egg, CMC** *Founder and President of EggGeothermal in Florida*

After serving in the US Navy nuclear power field, Jay Egg began a career in mechanical design engineering and 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 energy 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 International Ground Source Heat Pump Association (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). He is a training and curriculum writer/facilitator for IGSHPA and for the U.S. Department of Energy (DOE) and a technical adviser to the New York State Energy Research and Development Authority (NYSERDA) and the Province of Ontario, Canada on renewable heating and cooling.

# Additional Learning

## Passive House: Planning, Design and Construction

- Mon, Feb 7, 2022|8:30 am - 4:30 pm CST

## Practical Fluid Mechanics

- Tues, Feb 8, 2022|8:30 am - 3:30 pm CST

## Estimating the Cost of Sitework

- Wed, Feb 9, 2022|7:30 am - 3:30 pm CST

## Pumping and Piping Systems

- Thurs, Feb 10, 2022|11:00 am - 2:15 pm CST  
- Fri, Feb 11, 2022|11:00 am - 2:15 pm CST

## Construction Contract Workshop

- Thurs, Feb 10, 2022|9:00 am - 5:00 pm CST

## Project Management for Engineers

- Fri, Feb 11, 2022|8:30 am - 5:00 pm CST

## Drones in Construction

- Wed, Feb 16, 2022|8:30 am - 4:30 pm CST

## Deep Dive into Foam Insulation

- Wed, Feb 16, 2022|8:30 - 10:30 am CST

## Deep Dive into AIA Standard Forms of Agreement Between Owner and Contractor

- Thurs, Feb 17, 2022|9:00 - 11:00 am CST

## Deep Dive into Concrete and Rigid Pavements for Streets, Roads & Parking Areas

- Tues, Feb 22, 2022|2:00 - 4:00 pm CST

## Slope Stabilization and Landslide Prevention

- Wed, Feb 23, 2022|8:30 am - 5:00 pm CST

## How to Use Berms and Swales for Stormwater Infiltration

- Thurs, Feb 24, 2022|9:00 - 11:00 am CST

## Soils in Construction

- Thurs, Feb 24, 2022|12:00 - 4:00 pm CST  
- Fri, Feb 25, 2022|12:00 - 4:00 pm CST

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