

Agenda

Presented by Bart Bales, PE MSME

Overview of Systems to be Covered

Air-source heat pumps, mini-splits, and ducted units for space heating
Heat pump water heaters and air-source heat pumps for domestic hot water

Understanding How Heat Pumps Work

Heat pump process cycle, terminology, and measures of performance
COP (coefficient of performance)
Performance in cold climates
Air-to-air and air-to-water systems

Utilizing Air-Source Heat Pumps for Space Heating

Cold-climate air-source heat pumps
Products and manufacturers
Examples and case studies
Air-source heat pumps in commercial and residential use
Proposed improvements to rating metrics for air-source heat pumps
New construction and retrofit case studies
Lessons learned

Examining Heat Pump Water Heater Performance & Air-Source Heat Pumps for Domestic Hot Water

High-performance equipment options and recent developments
Heat pump water heaters
Products and manufacturers
Examples and case studies
Heat pump water heaters in residential use
New construction and retrofit case studies
Lessons learned

Examining Air-to-Water Heat Pumps for Domestic Hot Water

Products and manufacturers
Examples and case studies
Air-to-water heaters in residential use in new construction and retrofit case studies
Lessons learned

Pairing Heat Pumps with Solar Electric Systems in Net Zero Energy Residences

Roundup and Review

Air-Source Heat Pumps, Mini-Splits, and Heat Pump Water Heaters
Tarrytown, NY - Friday, September 13, 2019

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Learning Objectives

You'll be able to:

Discuss how heat pumps work and identify key measures of performance.

Explore air-source heat pumps for commercial and residential uses.

Review high-performance equipment options and learn about recent developments.

Evaluate air-to-water heaters for domestic hot water in residential new construction and retrofits.

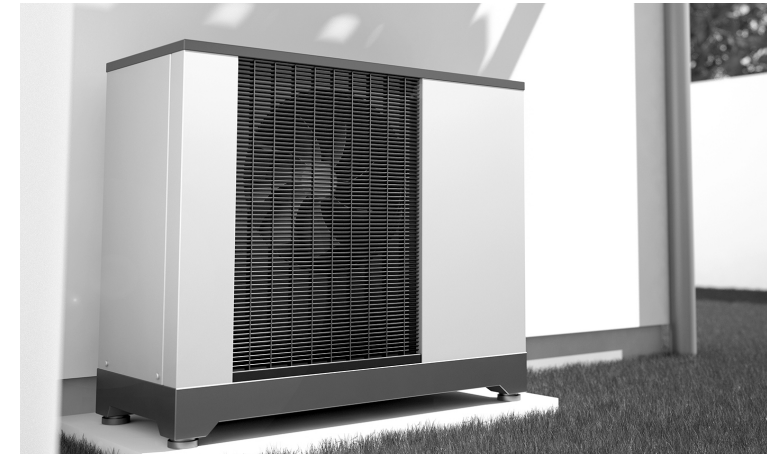
Consider heat pumps paired with solar electric systems in net zero energy residences.



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Air-Source Heat Pumps, Mini-Splits, and Heat Pump Water Heaters

Tarrytown, NY - Friday, September 13, 2019



Receive a thorough introduction to heat pumps: terminology, mechanics, and measures of performance

Evaluate air-source heat pumps for space heating

Explore heat pump water heater performance

Examine air-to-water heat pumps for domestic hot water

Discuss heat pumps paired with solar electric systems in net zero energy residences

Continuing Education Credits

Architects

6.5 HSW Continuing Ed. Hours
6.5 AIA LU|HSW

Professional Engineers

6.5 Continuing Ed. Hours

Contractors

Non-Credit Continuing Ed.



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Faculty

Bart Bales, PE MSME *Principal, Professional Consulting Engineer at Bales Energy Associates in Massachusetts*

Bales Energy Associates provides energy analysis, design, and implementation of high- performance, energy-efficient and renewable energy systems for buildings and facilities with an emphasis on a “whole-systems,” building science-based approach. Mr. Bales’ studies include detailed investigations and recommendations for temperature controls and building automation system optimization and improvement.

Bales Energy Associates provides study services for whole building energy analysis, high-performance mechanical design, and solar energy and wind energy systems analysis and design services. Mr. Bales is the principal of Bales Energy Associates, and he has effectively delivered energy engineering and HVAC design services for 30 years.

In recognition of the critical importance of heating systems in high-performance, energy-efficient, green buildings, Mr. Bales developed the following workshops:

High-Performance, Energy-Efficient ‘Green Heating’ Systems
Cold-Climate Heat Pumps, Pellet Boilers, & Other Renewable Thermal Heating Systems
Air-Source Heat Pumps, Mini-Splits and Heat Pump Water Heaters

Mr. Bales is a registered professional mechanical engineer in Massachusetts, Connecticut, New York, Rhode Island, and Vermont. His energy analysis experience and expertise includes comprehensive facility energy audits and feasibility studies for energy efficiency measures, and for combined heat and power (cogeneration), solar electric, solar thermal, and windpower systems.

Seminar Information

Doubletree Hotel Tarrytown
455 South Broadway
Tarrytown, NY 10591
(914) 631-5700

Tuition
\$289 for individual registration
\$269 for three or more registrations.
Each registration includes a complimentary continental breakfast and printed seminar manual.

How to Register

- Visit us online at www.halfmoonseminars.org
- Mail-in or fax the attached form to 715-835-6066
- Call customer service at 715-835-5900

Cancellations: Cancel at least 48 hours before the start of the seminar, and receive a full tuition refund, minus a \$39 service charge for each registrant. Cancellations within 48 hours will receive a credit toward another seminar. You may also send another person to take your place.

Continuing Education Credit Information

This seminar is open to the public and offers up to 6.5 HSW continuing education hours to architects and 6.5 continuing education hours to professional engineers in all states.

HalfMoon Education is deemed a New York-approved continuing education provider for architects via its affiliation with the American Institute of Architects.

This event is approved by the American Institute of Architects for 6.5 LU|HSW (Sponsor No. J885). Only full attendance can be reported to the AIA/CES. Visit www.halfmoonseminars.org to view complete AIA information under this course listing.

Courses for New York engineers offered by sponsors recognized, and courses approved by, the American Institute of Architects are considered approved if they contribute to the development and maintenance of professional knowledge in approved subject areas.

This event offers a non-credit continuing education opportunity to construction contractors. It has not been approved by any state with a continuing education requirement for contractors.

Attendance will be monitored, and attendance certificates will be available after the seminar for most individuals who complete the entire event. Attendance certificates not available at the seminar will be mailed to participants within fifteen business days.

Additional Learning

Webinar Series

Off-grid Master Class

- **Off-grid Master Class, Part I**
Thurs., August 1, 2019, 11:00 AM - 2:15 PM CDT
- **Off-grid Master Class, Part II**
Fri., August 2, 2019, 11:00 AM - 2:15 PM CDT

Stormwater Infiltration

- **Infiltration and Soil: Water Science**
Thurs., August 8, 2019, 11:00 AM - 12:30 PM CDT
- **Infiltrating Stormwater and Maximizing Infiltration**
Thurs., August 8, 2019, 1:00 - 2:30 PM CDT
- **Improving Infiltration with Low Impact Development Techniques**
Fri., August 9, 2019, 11:00 AM - 12:30 PM CDT

Structural Design and Ethics

- **Structural Design: Ethical Issues**
Thurs., August 15, 2019, 11:00 AM - 12:00 PM CDT
- **Structural Design: Gravity Forces**
Thurs., August 15, 2019, 12:30 - 2:30 PM CDT
- **Structural Design: Lateral Forces**
Fri., August 16, 2019, 11:00 AM - 12:30 PM CDT
- **Structural Design: Wind, Seismic and Connections**
Fri., August 16, 2019, 1:00 - 2:30 PM CDT

Proposal Writing
Wed., August 7, 2019, 11:00 AM - 3:30 PM CDT

Technical Writing

- **Planning Documents**
Wed., August 14, 2019, 11:00 AM - 1:00 PM CDT
- **Writing Documents**
Wednesday, August 14, 2019, 1:30 - 3:30 PM CDT
- **Revising and Editing Documents**
Thurs., August 15, 2019, 11:00 AM - 1:00 PM CDT
- **Technical Writing Best Practices**
Thurs., August 15, 2019, 1:30 - 3:30 PM CDT

Introduction to Hydro Energy Logic Modeling Software (HELP-FL)

- **Introduction to Hydro Energy Logic Program Modeling Software (HELP-FL), Part I**
Tues., August 20, 2019, 11:00 AM - 2:00 PM CDT
- **Introduction to Hydro Energy Logic Program Modeling Software (HELP-FL), Part II**
Wed., August 21, 2019, 11:00 AM - 2:30 PM CDT

For more information visit:
www.halfmoonseminars.org/webinars/

Registration

Air-Source Heat Pumps, Mini-Splits, and Heat Pump Water Heaters
Tarrytown, NY - Friday, September 13, 2019

How to Register		Registrant Information
Online: www.halfmoonseminars.org		Name: _____
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		City: _____ State: _____ Zip _____
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		Email: _____
		Phone: _____
		Additional Registrants:
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		Occupation: _____
		Email: _____
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		Name: _____
		Occupation: _____
		Email: _____
		Phone: _____
		Email address is required for credit card receipt, program changes, and notification of upcoming seminars and products. Your email will not be sold or transferred.
		() I need special accommodations. Please contact me.

Tuition	
() I will be attending the live seminar. Single Registrant - \$289.00 . Three or more registrants from the same company registering at the same time - \$269.00 each.	
Checks: Make payable to HalfMoon Education Inc.	
Credit Card: <i>Mastercard, Visa, American Express, or Discover</i>	
Credit Card Number: _____	
Expiration Date: _____	CVV2 Code: _____
Cardholder Name: _____	
Billing Address: _____	
City: _____	State: _____ Zip: _____
Signature: _____	
Email: _____	