

Agenda

Presented by Allison A. Bailes III, PhD

HVAC Design for Healthy Homes

- Healthy homes principles
- Residential HVAC design protocols: ACCA Manuals J, S, D, and T
- Manual J overview
- What is heat?
- Principles of heat transfer
- Sensible and latent heat
- Heat transfer equations

Calculating Room-by-Room Heating & Cooling Loads

- Indoor and outdoor design conditions
- The health impacts of relative humidity
- Unconditioned and conditioned spaces
- Dividing the house into zones
- Building enclosure details
- Internal loads

Understanding Heating and Cooling Load Calculation Results

- Residential heating and cooling equipment choices
- Manual S overview for forced air heating and cooling equipment
- Selecting cooling equipment – air conditioner or heat pump
- Sizing systems and using variable capacity systems
- Getting the right air flow
- Using manufacturers’ expanded performance data

Selecting a Furnace

- Balance point and supplemental heat for heat pumps

Review of Manual J and Manual S Procedures

- Manual D overview
- Single and multiple zone systems
- Laying out the duct system for healthy air flow
- Static pressure and velocity pressure
- Total external static pressure
- Available static pressure

Air Resistance in Ducts and Fittings

- Equivalent length of fittings
- Total effective length of the critical path
- Friction rate
- The effect of air velocity

Manual T Overview

- Sizing registers and grilles
- Cleaning the air with high-MERV filters
- Mechanical ventilation for a healthy home

Healthy HVAC Design Primer for Residential Building Professionals

Live, Interactive Webinar - Wednesday, September 9, 2020



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Learning Objectives

You’ll be able to:

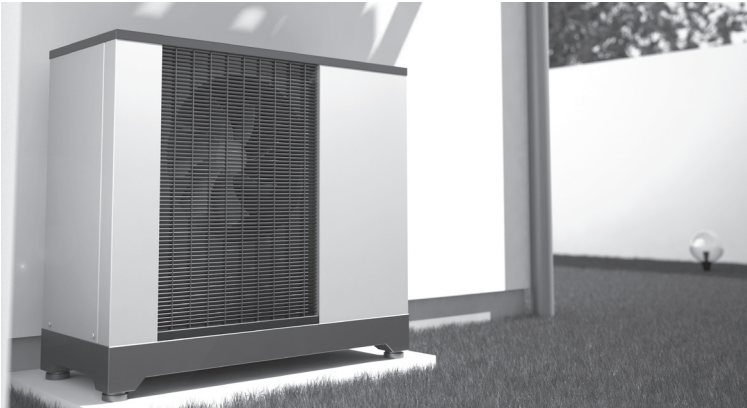
- Explain** healthy home principles and how they are achieved through HVAC recommendations found in ACCA Manuals J, S, D and T.
- Calculate** room-by-room heating and cooling loads for homes and describe how homes can be divided into zones to efficiently meet heating and cooling needs.
- Use** heating and cooling load calculations to make residential heating and cooling equipment choices and sizing decisions.
- Reference** and comply with ACCA Manuals J and S procedures for single and multiple zone systems.
- Consider** air resistance in ducts and fittings, and get tips on sizing registers and grilles.



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HalfMoon Education Online Learning Healthy HVAC Design Primer for Residential Building Professionals

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- Explore** HVAC design for healthy homes
- Understand** the principles of heat transfer
- Calculate** room-by-room heating and cooling loads
- Understand** heating and cooling load calculation results
- Select** cooling equipment such as air conditioners or heat pumps
- Select** furnaces
- Examine** the effect of air velocity

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Allison A. Bailes III, PhD

Allison Bailes founded and runs Energy Vanguard, a small firm that does residential HVAC design, building science consulting, training and quality assurance. He also writes the Energy Vanguard Blog, which gets millions of views each year. Mr. Bailes has built a high-performance home out of structural insulated panels, run a home performance company and worked as regional manager for the EarthCraft House green building program. Having earned a PhD in Physics from the University of Florida, he has a strong background in the growing field of building science. He is on the board of directors for the Passive House Institute US (PHIUS), and he is a member of ASHRAE. Mr. Bailes is a juggler and a skier as well as having the honor of being the only man included in *Who's Who of American Women*.

Webinar Information

Log into Webinar 8:00 - 8:30 am CDT	Break 11:40 am - 12:10 pm CDT
Morning Session 8:30 - 11:40 am CDT	Afternoon Session 12:10 - 4:20 pm CDT

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Retaining Wall Design and Global Stability Analysis

- Wed. August 19, 2020, 10:00 am – 2:15 pm CDT
- Thurs., August 20, 2020, 10:00 am – 2:15 pm CDT

Special Inspections under the International Building Code Chapter 17 (IBC 2015)

- Wed. August 19, 2020, 9:00 am – 1:30 pm CDT
- Thurs., August 20, 2020, 9:00 am – 12:15 pm CDT

Introduction to GNSS Surveying

- Thurs., August 20, 2020, 10:30 am - 1:45 pm CDT
- Fri., August 21, 2020, 10:30 am - 2:15 pm CDT

Introduction to HEC-HMS Modeling

- Thurs., August 20, 2020, 8:30 am – 5:00 pm CDT

Air-Source Heat Pumps for Energy Efficiency

- Thurs., August 20, 2020, 11:00 am – 2:15 pm CDT
- Fri., August 21, 2020, 11:00 am – 3:15 pm CDT

Introduction to HEC-RAS Modeling

- Mon., August 24, 2020, 11:00 am – 3:00 pm CDT
- Tues., August 25, 2020, 11:00 am – 3:30 pm CDT

Practical Use of the FMEA as a Design Tool

- Tues., August 25, 2020, 11:00 am – 3:15 pm CDT
- Wed., August 26, 2020, 11:00 am – 3:15 pm CDT

Drones in Construction

- Thurs., August 27, 2020 , 10:00 am – 4:50 pm CDT

Energy-Efficient, Sustainable Roofs

- Thurs., August 27, 2020, 11:00 am – 2:30 pm CDT
- Fri., August 28, 2020, 11:00 am – 2:30 pm CDT

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