



## **Course: High Performance Mechanical Systems for Houses That Work**

Course Provider: EEBA (The Energy & Environmental Building Alliance)

Course Developer: Construction Instruction, Inc.

### Course Description

*High Performance Mechanical Systems for Houses That Work* is a mid-level, full day seminar geared towards Builders, Designers, Code Officials, and Trade Allies that focuses on HVAC, Ventilation, Hot Water, Indoor Air Quality and Electronic Home Controls in high performance housing. In the past several years, residential mechanical systems have grown in complexity and scope as energy codes have mandated higher insulation levels, better windows and tighter construction. There is now a great opportunity to rethink and redesign HVAC, hot water heating and electronic home control systems as they are major contributors to energy efficiency goals. This course will first review the key building science concepts that have changed the way houses are built and identify the relevant changes to mechanical systems. The remainder of the course will focus on the proper sizing and selection of appropriate mechanical equipment for high performance ever lower load homes. Compelling opportunities to simultaneously optimize comfort, durability, safety and health, efficiency and cost will be identified. Instructor will use lectures, case studies and group exercises to convey the information to attendees.

### Learning Objectives

- Gain an understanding of the basic building science concepts relevant to mechanical systems in high performance housing;
- Knowledge of the sizing adjustments, calculations and commissioning process for low load residential HVAC systems and how to choose the proper system for a specific climate zone;
- Understand the main causes of Indoor Air Quality (IAQ) concerns and their mitigation, including the effect of the building envelope on the need for ventilation and strategies and types of ventilation systems, including new technologies;
- Recognize opportunities for a wide range of equipment for at least space heating, space cooling, water heating, indoor air quality and occupant control;
- Comprehend the role of electronic controls systems with relation to mechanical equipment and achievable energy savings; learn how to choose the right system and maximize integration with other equipment in the home.