

Ventilation Workshop Description and Outline

HTW II Ventilation Strategies Workshop "Ventilation for High Performance Homes"

Brief highlights of the proposed workshop:

This workshop will build on the basic concepts of indoor air quality and ventilation presented in the Houses That Work full day workshop. The workshop will start with a brief review of the relevance of proper ventilation in high performance homes. Participants will be shown how to properly size ventilation systems in accordance with the applicable ASHRAE 62.2 Ventilation Standard. The various types of ventilation systems and equipment options will be outlined. Participants will be encouraged to discuss ways builders and HVAC contractors can evaluate ventilation options that are appropriate for their climate zone. Builders and their contractors will take away key ventilation system design parameters and installation methods. Participants will gain a thorough understanding of the cost of ventilation – both installation and operation. Builders will also learn the key benefits of proper ventilation to both they and their homebuyers when they are applied in high performance homes.

Relevance to Attendees:

The workshop will be of most interest to:

- New home builders and their estimators, designers, site supervisors
- HVAC contractors
- Designers and architects
- Building Officials and Energy Raters

Learning Objectives:

- Learn why ventilation is an important part of all high performance homes and how ventilation fits into the systems approach of building science
- Learn to properly size ventilation and identify cost effective ventilation system options
- Understand the key design and installation requirements of cost effective ventilation systems
- HVAC contractors will learn the specifics of ventilation needs for high performance homes
- Energy raters and building officials will better be able to recognize the elements of good ventilation systems
- Identify the benefits of ventilation to the builder and homebuyers and demonstrate the cost effectiveness of ventilation options.

Note:

- The workshop will in all cases be adapted to the climate zone and HVAC practices of the local area where it is being presented to ensure it is relevant to participants.

Houses that Work II – Ventilation Workshop Curriculum Outline

3.25 Hours of teaching time

Segment	Timing
<p><u>Introduction to EEBA and its Sponsors</u></p> <ul style="list-style-type: none"> • What EEBA does • Relevance of the Houses that Work Program • EEBA publications and education • The EEBA Conference • Introduction of speaker and sponsors 	10 min.
<p><u>The Relevance of Ventilation in High Performance Homes</u></p> <p>This segment will review the basics of high performance homes outlined in the HTW I Workshop such as air, heat and moisture flow control. A discussion of how proper ventilation is an important part of the total HVAC system to control moisture and indoor air quality.</p> <ol style="list-style-type: none"> 1. The changes in the way we build and use houses that increases the need for ventilation <ul style="list-style-type: none"> • Tighter buildings, more moisture issues, different building materials and higher expectations of homebuyers 2. Code requirements, applicable standards and how ventilation fits into energy efficiency and green building programs. <ul style="list-style-type: none"> • Outline of the ASHRAE 62.2 Ventilation Standard. • The role of ventilation in various housing programs such as ENERGY STAR and LEED for Homes. • How local climate and building practices may affect ventilation system options 	30 min.
<p><u>Proper Sizing of Ventilation for Homes</u></p> <p>In this segment participants will be given exercises to learn how to properly size ventilation systems using the ASHRAE 62.2 Ventilation Standard for various types and sizes of homes. The differences between the need for continuous whole house ventilation and intermittent spot ventilation for specific rooms will be highlighted.</p> <ol style="list-style-type: none"> 1. Sizing for whole house continuous ventilation <ul style="list-style-type: none"> • Minimum ventilation requirements and best practice ventilation rates to optimize energy efficiency and indoor air quality • Control options for continuous ventilation 2. Requirements for intermittent specific room purpose ventilation 	20 min
<p><u>Ventilation System Options – Whole House Ventilation</u></p> <p>In this segment participants will learn about the various ventilation system options. Advantages of each system will be outlined. The key design and installation parameters to ensure successful application of each option will also be highlighted using a series of group exercises and case studies. Each system option will be discussed in relation to the building practices and climate specifics relevant to where the workshop is being held.</p> <ol style="list-style-type: none"> 1. Exhaust-only ventilation systems <ul style="list-style-type: none"> • Design parameters, equipment and control options • Installation and commissioning requirements • Cost implications 2. Supply-only ventilation systems <ul style="list-style-type: none"> • Design parameters, equipment and control options 	50 min

<ul style="list-style-type: none"> • Installation and commissioning requirements • Cost implications and integration with heating and cooling systems <p>3. Balanced ventilation systems</p> <ul style="list-style-type: none"> • Design parameters, equipment and control options • Installation and commissioning requirements • Heat and energy recovery cost implications for specific climate zones 	
<p><u>Intermittent and Spot Ventilation Systems</u></p> <p>This segment will cover ventilation requirements for specific purpose needs such as kitchens, bathrooms, laundry areas and attached garages. In each case sizing parameters and equipment options will be outlined.</p> <p>1. Kitchen ventilation requirements</p> <ul style="list-style-type: none"> • Sizing to control cooking pollutants and moisture • Equipment and control options <p>2. Bathroom ventilation</p> <ul style="list-style-type: none"> • Sizing to control moisture and odors • Equipment and control options <p>3. Special ventilation needs</p> <ul style="list-style-type: none"> • Laundry rooms, attached garages and shop areas 	20 min.
<p><u>Integrating Ventilation into High Performance Homes</u></p> <p>This segment provides participants with important information about how ventilation systems could affect or interact with other elements of high performance homes. Participants will learn how ventilation impacts heating and cooling loads and how ventilation systems can be integrated with typical HVAC systems. The issue of building pressures and combustion safety will also be outlined and participants will be shown how to evaluate and test for the impact of ventilation on systems on building pressures.</p> <p>1. The impact of ventilation on heating and cooling loads</p> <ul style="list-style-type: none"> • Calculating load changes for different ventilation system options • Control and ducting options for integrating ventilation into HVAC systems <p>2. The impact of ventilation on building pressures and combustion safety</p> <ul style="list-style-type: none"> • Combustion and make-up air requirements • Testing houses for depressurization and backdrafting • Strategies for managing house pressures 	30 min.
<p><u>Commissioning and Maintaining Ventilation Systems</u></p> <p>This segment will show participants the requirements for proper measuring and balancing of ventilation flows in accordance with program requirements for ENERGY STAR and LEED for Homes. Participants will also discuss maintenance requirements of various system options and how they can empower homebuyers to undertake proper maintenance</p> <p>1. Measuring and balancing ventilation system</p> <ul style="list-style-type: none"> • Tools needed and cost effective techniques <p>2. Cleaning and maintaining ventilation systems</p> <ul style="list-style-type: none"> • Designing systems to facilitate cleaning • Providing homeowner education 	20 min.
<p><u>Promoting the Benefits of Proper Ventilation</u></p> <p>This final segment will help participants learn how to promote the benefits of proper ventilation to homebuyers</p> <p>1. Educating sales staff and educating homebuyers</p>	

<ul style="list-style-type: none">• Recognizing the growing interest in healthier indoor air• Using programs such as the ENERGY STAR IAQ Label and LEED for homes to highlight the benefits of proper ventilation	15 min.
End of Workshop	