

# Thermal Performance of the Exterior Envelopes of Whole Buildings XIII

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## Practices Track Program

### Plenary Session

Monday, December 5, 2016 – Grand Ballroom

8:00 a.m. – 10:00 a.m.

**8:00 a.m.**      **A building science to-do list**  
*William Rose – University of Illinois*

**9:00 a.m.**      **Trends and challenges in building physics during the last 30 years: A Swedish perspective**  
*Carl-Eric Hagertoft – Chalmers University of Technology*

### Practices Session 1: Attics

Monday, December 5, 2016 – Beach/Gulf Room

10:30 a.m. – 12:00 p.m.

#### Session Chair:

*David Roodvoets – DLR Consulting*

[1dlrconsul@charter.net](mailto:1dlrconsul@charter.net)

**10:30 a.m.**      **Field measurements of moisture in cold ventilated attics with different types of insulation and vapor barriers**  
*Thor Hansen – Danish Building Research Institute*

**11:00 a.m.**      **Monitoring of two unvented roofs with air-permeable insulation in Climate Zone 2A**  
*Kohta Ueno – Building Science Corporation*

**11:30 a.m.**      **Cost-effective, high-performance unvented attics**  
*Francis Babineau – Johns Manville*

## Practices Session 2: Heritage & Retrofit Considerations for Buildings

Monday, December 5, 2016 – Beach/Gulf Room  
1:30 p.m. – 3:00 p.m.

### Session Chair:

*Kim Pressnell – University of Toronto*  
[pressna@ecf.utoronto.ca](mailto:pressna@ecf.utoronto.ca)

- 1:30 p.m.**            **Refurbishing heritage and historic buildings: Key motivations, benefits and challenges**  
*Torben Valdbjørn Rasmussen – Danish Building Research Institute*
- 2:00 p.m.**            **Treatment of rising damp in historic buildings using a wall based hygro-regulated ventilation system: Case studies**  
*Vasco Peixoto de Freitas – University of Porto*
- 2:30 p.m.**            **The impact of window-to-wall ratio on energy intensity of existing commercial buildings in Ontario and Quebec**  
*Viktoriya Mykytyak – Ryerson University*

## Practices Session 3: Taking Stock

Monday, December 5, 2016 – Beach/Gulf Room  
3:30 p.m. – 5:00 p.m.

### Session Chair:

*Wahid Maref – National Research Council of Canada*  
[wahid.maref@nrc-cnrc.gc.ca](mailto:wahid.maref@nrc-cnrc.gc.ca)

- 3:30 p.m.**            **Field demonstration of an attic retrofit strategy using cellulose insulation and phase change material**  
*Kaushik Biswas – Oak Ridge National Laboratory*
- 4:00 p.m.**            **Evaluating summertime overheating in multi-unit residential buildings using surveys and in-suite monitoring**  
*Marianne Touchie – University of Toronto*
- 4:30 p.m.**            **Online airtightness savings calculator for commercial buildings in the US, Canada and China**  
*Diana Hun – Oak Ridge National Laboratory*

## Special Presentation

Tuesday, December 6, 2016 – Grand Ballroom

8:30 a.m. – 10:00 a.m.

- 8:30 a.m.**            **Innovation required for the next generation of building envelopes**  
*Karma Sawyer – Acting Program Manager for the Department of Energy’s Emerging Technologies Program*

## Practices Session 4: Air Tightness in Buildings

Tuesday, December 6, 2016 – Beach/Gulf Room

10:30 a.m. – 12:00 p.m.

### Session Chair:

*Laverne Dalgleish – Building Professionals*

[ldalgleish@buildingprofessionals.com](mailto:ldalgleish@buildingprofessionals.com)

- 10:30 a.m.**            **Commercial building airtightness testing: Lessons learned from the Red River College airtightness testing program**  
*Gary Proskiw – Proskiw Engineering Ltd*
- 11:00 a.m.**            **Impact of large building airtightness requirements**  
*Lorne Ricketts – RDH Building Engineering Ltd.*
- 11:30 a.m.**            **Air sealing tight commercial and institutional buildings**  
*Dave Bohac – Center for Energy and Environment*

## Practices Session 5: Ventilation and Air Movement

Tuesday, December 6, 2016 – Beach/Gulf Room  
1:30 p.m. – 3:00 p.m.

### Session Chair:

Alex McGowan – Levelton Consultants Ltd.  
[amcgowan@levelton.com](mailto:amcgowan@levelton.com)

- 1:30 p.m.**            **Practical applications and case study of temperature smart ventilation controls**  
*Michael Lubliner – Washington State University Energy Program*
- 2:00 p.m.**            **Smart ventilation control of indoor humidity in high performance homes in humid U.S. climates**  
*Brennan Less – Lawrence Berkeley National Laboratory*
- 2:30 p.m.**            **Measured commercial and institutional building pressures**  
*Dave Bohac – Center for Energy and Environment*

## Practices Session 6: Horizontal Envelope Assemblies

Tuesday, December 6, 2016 – Beach/Gulf Room  
3:30 p.m. – 5:00 p.m.

### Session Chair:

Mike Ennis – Ennis Associates  
[m.ennis@mac.com](mailto:m.ennis@mac.com)

- 3:30 p.m.**            **Innovative roof design for passive low income housing in western India**  
*Leon Glicksman – Massachusetts Institute of Technology*
- 4:00 p.m.**            **Vegetative roof performance during summer- critical analysis of the irrigation effect**  
*S. de Freitas – University of Porto*
- 4:30 p.m.**            **Effective floor cavity and knee wall construction techniques in two-story homes in hot climates**  
*Chuck Withers – Florida Solar Energy Center*

## Practices Session 7: High-Performance Insulation Systems

Wednesday, December 7, 2016 – Beach/Gulf Room  
8:30 a.m. – 10:00 a.m.

### Session Chair:

*Diana Fisler – Johns Manville*  
[diana.fisler@jm.com](mailto:diana.fisler@jm.com)

- 8:30 a.m.**            **Method to evaluate and develop next generation vacuum insulation panels for implementation in the retrofit of existing building envelopes**  
*Kyle Vansice – Iowa State University*
- 9:00 a.m.**            **Development of high performance composite foam insulation with vacuum insulation cores**  
*Kaushik Biswas – Oak Ridge National Laboratory*
- 9:30 a.m.**            **Field demonstration of superior performance of advanced building technologies**  
*Nitin Shukla – Fraunhofer USA CSE*

## Practices Session 8: Insulated Assemblies

Wednesday, December 7, 2016 – Beach/Gulf Room  
10:30 a.m. – 12:00 p.m.

### Session Chair:

*Patrick Roppel – Morrison Hershfield*  
[proppel@morrisonhershfield.com](mailto:proppel@morrisonhershfield.com)

- 10:30 a.m.**            **Thermal and moisture performance of buried ducts**  
*Mikael Salonvaara – Owens Corning*
- 11:00 a.m.**            **Field test on two interior insulation systems with large thickness: Influence of orientation and airtightness**  
*Mario Stelzmann – University of Applied Sciences in Leipzig*
- 11:30 a.m.**            **Determining the performance of an exterior continuous insulation wall assembly**  
*Jonathan Smegal – RDH Building Science Laboratories*

## Practices Session 9: Hygrothermal Performance and Durability

Wednesday, December 7, 2016 – Beach/Gulf Room

1:30 p.m. – 3:00 p.m.

### Session Chair:

David Yarbrough - R&D Services

[dave@rdservices.com](mailto:dave@rdservices.com)

- 1:30 p.m.**                    **Comparison of measured hygrothermal performance of wood frame walls built with continuous exterior insulation versus walls built with housewrap and oriented strand board sheathing in single family homes in a cold climate**  
*Gary Parsons – Dow Building Solutions*
- 2:00 p.m.**                    **Measured and predicted moisture durability performance of high-R wall assemblies in cold climates**  
*Trevor Trainor – RDH Building Science Laboratories*
- 2:30 p.m.**                    **Field evaluation of thermal and moisture response of highly insulated wood-frame walls**  
*Michael Lacasse – National Research Council of Canada*

## Practices Session 10: Performance of Wall and Glazing Systems

Wednesday, December 7, 2016 – Beach/Gulf Room

3:30 p.m. – 5:00 p.m.

### Session Chair:

David Kayll – Morrison Hershfield

[dkayll@morrisonhershfield.com](mailto:dkayll@morrisonhershfield.com)

- 3:30 p.m.**                    **Window condensation: Theory into practice**  
*Alex McGowan – Levelton Consultants Ltd.*
- 4:00 p.m.**                    **Thermal performance evaluation of walls with gas-filled panel insulation**  
*André Desjarlais – Oak Ridge National Laboratory*
- 4:30 p.m.**                    **Demonstration and evaluation of low-e storm windows and advanced window coverings in the PNNL lab homes**  
*Joseph Petersen – Pacific Northwest National Laboratory*

## Practices Session 11: Assessment of Heat and Moisture Flow

Thursday, December 8, 2016 – Beach/Gulf Room  
8:30 a.m. – 10:00 a.m.

### Session Chair:

Brian Stroik – Tremco Inc.  
[bstroik@tremcoinc.com](mailto:bstroik@tremcoinc.com)

- 8:30 a.m.**                    **Evaluation of a modified co-heating test for in-situ measurements of thermal transmittance of single family houses**  
*Angela Sasic Kalagasidis – Chalmers University*
- 9:00 a.m.**                    **A simplified energy savings calculation aid in tool for the lifetime energy and environmental impact assessment of insulation materials**  
*Mahabir Bhandari – Oak Ridge National Laboratory*
- 9:30 a.m.**                    **Moisture-related durability of in-service high-R wall assemblies in Pacific Northwest climates**  
*Jonathan Smegal – RDH Building Science Laboratories*

## Practices Session 12: Low-Energy Buildings

Thursday, December 8, 2016 – Beach/Gulf Room  
10:30 a.m. – 12:00 p.m.

### Session Chair:

Chris Mathis – Mathis Consulting Inc.  
[chris@mathisconsulting.com](mailto:chris@mathisconsulting.com)

- 10:30 a.m.**                    **Evaluation of energy efficiency of U.S. Army hard shelters**  
*Som Shrestha – Oak Ridge National Laboratory*
- 11:15 a.m.**                    **Building energy and envelope performance of a near net-zero energy building**  
*Stanley Gatland – CertainTeed Corporation*

## Practices Session 13: Building Envelope Performance Studies

Thursday, December 8, 2016 – Palm/Bay Room

10:30 a.m. – 12:00 p.m.

### Session Chair:

*Benjamin Meyer – DuPont Innovations*

[benjamin.meyer@dupont.com](mailto:benjamin.meyer@dupont.com)

- 10:30 a.m.**      **High-Rise Wood Building Enclosures**  
*Graham Finch – Building Engineering Ltd.*
- 11:00 a.m.**      **Guiding design teams by hygrothermal, energy and thermal comfort analysis while managing uncertainty**  
*Ivan Lee – Morrison Hershfield*
- 11:30 a.m.**      **Case study: Over-cladding for thermal performance and building resiliency**  
*Dan McKelvey – Ayers Saint Gross Architects*