

**AMERICAN SOCIETY OF HEATING, REFRIGERATING AND
AIR-CONDITIONING ENGINEERS, INC.
1791 Tullie Circle, NE, Atlanta, GA
404-636-8400**

**Technical Committee 4.4
Building Materials and Building Envelope Performance**

**Minutes
July 27, 2011**

These minutes were approved by this Committee on January 23, 2012.

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TC/TG/TRG MINUTES COVER SHEET

(Minutes of all TC/TG/TRG Meetings are to be distributed to the individuals listed below within 60 days following the meeting.)

TC/TG/SSPC: TC 4.4

TC Title: Building Materials and Building Envelope Performance

Date of Meeting: Monday, June 27, 2011. Meeting convened at 2:15 pm.

Location: Fontaine Salon F, Hilton Bonaventure, Montreal, QC, Canada.

DISTRIBUTION

All members of TC 4.4 plus the following:

TAC Chair

Committee Liaisons

ADDITIONAL DISTRIBUTION

Manager of Standards

Manager of Technical Services and Research

ASHRAE TC 4.4 MINUTES

Montreal, QC, Canada

June 27, 2011

Technical Committee 4.4

Building Materials and Building Envelope Performance

1. Introduction and Attendance

The Chair, Paul Shipp, called the meeting to order at 2:15 pm with 27 members and guests present. A quorum was present.

Voting Members and Officers Present:

<u>Name</u>	<u>Affiliation</u>	<u>Role</u>	<u>Notes</u>
Paul Shipp	USG	Chair	
Garth Hall	Raths, Raths & Johnson, Inc.	Vice-Chair	Via webinar
Marcus Bianchi	NREL	Secretary	Via webinar
William B. Rose	University of Illinois at Urbana-Champaign	Handbook	
Anton TenWolde		Research	
Steve Cornick	NRC/IRC	Website	
Peter Adams	Morrison Hershfield Ltd.		
Hugo Hens	K.U. Leuven		
Hartwig Kunzel	Fraunhofer Institut Bauphysik		
Wahid Maref	National Research Council Canada		
Alex McGowan	Levelton Consultants Ltd		

Number of voting members present: 11

Voting Members and Officers Absent

<u>Name</u>	<u>Affiliation</u>	<u>Role</u>	<u>Notes</u>
Theresa Weston	DuPont	Standards	Attended RP1365 vote only
Holly Bailey	Bailey Engineering Corporation		
Larry Elkin	Applied Building Sciences	ALI/Honors & Awards	
Sam Glass	USDA		
Achilles Karagiozis	Owens-Corning		
Shirley Muns	Texas A&M University		
Sean O'Brien	Simpson Gumpertz & Heger, Inc.	Program	

Corresponding Members Present

<u>Name</u>	<u>Affiliation</u>
Charles Cottrell	NAIMA
Chris Crall	CCrall Consulting
Diana Fisler	Johns Manville
Ted Kerwood-Winslow	Benjamin Obdyke
Pat Noonan	Knauf Insulation
Raoul Webb	Environ International

Visitors Present

<u>Name</u>	<u>Affiliation</u>
Elena Enache-Pommer	Dow Chemical
Dan Fisher	Oklahoma State University
Kate Goldstein	MIT
Mark Hallman	RWDI Inc.
Gordon Hart	Artek Engineering, Inc.
Alan Neely	Pittsburgh Corning Foamglass
Charlie Petty	Lamtec Corp.
Tom Ponder	CertainTeed Corporation
Kurt Roth	Fraunhofer CSE
Dick Kelso	U. of Tennessee

2. Voting on 1365-RP

Approval of the final report of 1365-RP. The Research Subcommittee recommends approval of 1365-RP.

Motion 1: Anton Tenwolde put forth a motion to approve the final report on 1365-RP.

2nd: Theresa Weston

Vote: Approved: 9 in favor – 0 opposed – 1 abstentions. Chair not voting.

Motion carries.

Anton Tenwolde commended the contractors and the PMS on the way this project was conducted.

3. Track Chair for Track 9 for the 2012 ASHRAE Annual Conference

Julia Keen is Track Chair for Track 9 “HVAC&R Fundamentals and Applications” for the 2012 ASHRAE Annual Conference - Chicago. There are 10 technical sessions being planned for this track and she was in need of session chairs for two sessions that are dedicated to building envelope performance. She also needed volunteers to serve as paper reviewers for technical content and quality. Approximately 8 pages each.

4. Approval of Las Vegas minutes

The minutes from the January 31, 2011 meeting in Las Vegas were available on the website for review by the committee.

Motion 2: Stan Gatland put forth a motion to approve the minutes from the Las Vegas meeting.

2nd: William Rose

Discussion:

Holly Bailey is listed twice and so is Hartwig Kuenzel. Peter Adams is a voting member.

Vote: Approved: 11 in favor – 0 opposed – 0 abstentions. Chair not voting.

Motion carries – minutes approved with corrections.

5. Report from the Chair

Paul Shipp reported the following:

- New 2011-2012 rosters
 - Check to make sure your personal information is correct
 - www.ashrae.org <Update your bio>
 - Access roster, check your membership classification
 - www.ashrae.org <Update your bio> <My Committees>
 - Incoming officers for 2011 – 2012:
 - Garth Hall, Chair
 - Marcus Bianchi, Vice Chair
 - Peter Adams, Secretary
 - Theresa Stovall, Handbook Subcommittee Chair
 - Sam Glass, Research Subcommittee Chair
 - Sean O'Brien, Program Subcommittee Chair
 - Theresa Weston, Standards Subcommittee Chair
 - Steve Cornick, Webmaster
- New Multidisciplinary Task Groups (MTGs)
 - MTG.EEC – Energy Efficient Classification of General Ventilation Air-Cleaning Devices
 - MTG.ET – Energy Targets
 - Formerly, the Technical Council Steering Committees on Building Information Modeling (BIM) and Building Performance Metrics
- TC 4.4 Google Groups and Sites website up and running. Please begin to use them to post information and to follow progress on activities. Steve Cornick has posted an excellent presentation describing their use & utility.
- Upcoming workshops and conferences:
 - CLIMA Conference, 11th REHVA World Congress, June 16-19, 2013, Prague
 - 1st call for papers, June 2011
 - www.clima2013.org
 - clima2013@guarant.cz

Building Simulation 2011, 12th International Conference of the International Building Performance Simulation Association (BS2011), Nov 14-16, 2011, www.bs2011.org

Acknowledgement

The TC expressed its gratitude and thanks to Mr. Paul Shipp for his dedicated service as Chair of TC 4.4.

6. Research Subcommittee

Research Subcommittee chair: Anton TenWolde.

General:

Anton attended the Research chair meeting this morning. Highlights:

- Research Liaison: Agami Reddy is rolling off. New liaison not yet named
- New funding opportunity: GPIC-HUB. (Greater Philadelphia Innovation hub for energy efficient buildings. Focus on existing small commercial buildings. \$25 million/yr for 5 years. ASHRAE just approved an MOU.
- Innovative Research Grant for research that does not “fit” within one TC. Grants for \$50k/yr for two years, with possibility of extra \$25k. Not yet in place.
- Backlog of projects is almost gone.

Current Research

1365-RP - Thermal Performance of Building Envelope Details for Mid- and High-Rise Buildings

- Contractor Morrison Hershfield, Mark Lawton, Patrick Roppel, PI's
- PMS: Marcus Bianchi, Alex McGowan, Anton TenWolde, Rick Peters.
- To facilitate review and TC approval a 6-months extension was approved till June 30, 2011.
- Had PMS meeting and session with many 90.1 members present
- Draft final report approved by PMC
- Circulated to TC. Ready for vote.
- Approved final report at the present meeting (See section 2).

Future Research

RTAR's

RTAR (TC 1.8) Testing the water vapor transfer of materials and systems used in chilled water mechanical insulation systems.

- Introduced by Gordon Hart. Looking for co-sponsorship
- Looking for comments
- RTAR was circulated by email
- Is now being rewritten by TC 1.8. Stay tuned. Likely will be ready for next meeting.

RTAR “Evaluating the Accuracy of Whole Building Energy Simulations by Comparison with Field Measurement Data”

- Author Sean O'Brien
- New IEA Annex 53 is relevant to this project
- Sean is working with TC4.7 and others to further define the scope of this project.
- Results from the forum at Albuquerque will be used to develop the RTAR
- Las Vegas: No progress

1561 WS "Procedures to Adjust Observed Climatic Data for Regional or Microclimatic Variations"

- Original title/author: Characterization of Climate Conditions in Near Ocean Environments/Larry Elkin
- Decided that TC4.2 should take the lead
- Rewritten by Steve Cornick. Steve is TC 4.4's liaison with 4.2
- Submitted by TC 4.2 and approved by RAC
- WS in progress, needs comment; circulated 6/8/09
- WS is submitted to RAC
- Las Vegas: RAC sent back with comments
- Will be resubmitted – TC4.4 needs representative on PMS (Kuenzel volunteered)
- TC 4.4 voted to cosponsor at Montreal meeting.

Motion 3: Anton TenWolde put forth a motion that TC4.4 would co-sponsor WS 1561 "Procedures to Adjust Observed Climatic Data for Regional or Microclimatic Variations" with TC4.2.

2nd: Steve Cornick

Discussion:

Hugo was concerned the scope was very broad. Steve suggested to get the Contractor to help define scope

Vote: Approved: 9 in favor – 0 opposed – 0 abstentions. Chair not voting.

Motion carries.

RTAR: Updating Thermal Property Values in the Handbook of Fundamentals

- Author: Alex McGowan
- Recommendation to focus on the effects of density, RH and temperature on R-value
- Long discussion at Research meeting about the (mis)use of design data in the Handbook, including the data on R-value of air spaces and radiant barriers (Chris Mathis)
- TC consensus was that there is a need for more measured data. Alex will proceed with the RTAR and is soliciting data from the committee.
- Las Vegas: still in progress
- Montreal: roll details into the next RTAR (Update RP 1018) from Steve Cornick

New RTAR: A thermal and moisture transport property data base for common building and insulating materials

- Is an update of RP 1018 submitted by Steve Cornick and posted on Google site
- Should be combined with previous RTAR

New RTAR: Hygrothermal properties of aged (in situ) construction materials

- Posted on Google site
- Discussion questions:
 - How do you know the materials changed?
 - What accelerated aging procedure do you use?
 - Take materials from older buildings and test?
 - How do we maintain the properties tables in the Handbook?
 - Scope of work needs to be sharpened
 - Need a draft to be prepared for TC comments
- Steve offered to assist in its preparation.

New RTAR: Moisture design reference years for hygrothermal analysis and design of buildings – Update of RP 1325

- Update 1325 to see if works for other climates beyond what was in original study.
- Generate more design years for other locations.
- Hartwig reported that unrealistic results could be generated.
- Steve questions what we expected from this in terms of solving durability questions.
- The original idea was to run one year, not one year over and over. One year may not be enough though.
- Hugo asked about implications of wind driven rain.
- It was agreed that further discussion on this RTAR is required.

RTAR: Attic Thermal and Moisture Performance

- Submitted by David Roodvoets (discuss)
- Decision at June 06 meeting was to develop this into a family of RTAR's
- David submitted revised draft
- Andre Desjarlais will work with David Roodvoets.
- No update (1/2010) and (6/2010)
- Las Vegas: draft RTAR will be submitted after Las Vegas meeting, but was not.
- No progress

RTAR: Investigation of the Long-Term Performance of Sheathing Membranes due to the Effects of Surfactants, Chemicals, and Aging.

- Author: Garth Hall
- Draft has been circulated. Received comments from Liaison
- Co-sponsored by TC 1.12

- RTAR needs to be revised to include more information on existing methodologies and other references.
- Will be revised by Garth and Theresa Weston
- No update (1/2010) and 6/2010
- Las Vegas: no progress, Montreal: no progress

Other items

- Possible new RTAR: Issues with unvented and cathedralized attics. Stan Gatland offered to write this.
- Possible new RTAR. Thermal performance of walls with radiant barriers. Wahid Maref reported that much research work has been done recently. Marcus offered assistance.

List of projects from Brainstorm: chair sent out reminders

1. Measurement of High Temperature / high humidity material properties - Glass
2. Building foundations: heat & moisture transfer - Karagiozis / Rose
3. Interactions between the envelope and HVAC systems with improved air barrier effectiveness - O'Brien
4. Effect of airflow on moisture/thermal behavior of frame walls - Dalgleish
5. Determine thresholds for the risk of moisture damage/mold growth of various cellulose based sheathings. How much wetting and drying is acceptable. TenWolde/Glass
6. Impact of air tightness of 2 wall systems of a function of 5 pathways in all IECC zones - Dalgleish / Karagiozis
7. Improving thermal and moisture performance of existing residential above grade walls - Christian / Bianchi
8. Energy performance of unvented and cathedralized attics - Gatland

Acknowledgement

The TC expressed its gratitude and thanks to Mr. Anton TenWolde for his many years of excellent and dedicated service as TC 4.4 Research Chair.

7. Handbook Subcommittee

Handbook Subcommittee Chair: William (Bill) Rose

Chapters Currently Under Revision

Fundamentals chapters 25 and 26 are 95% complete. Expected that vote version will be available one month prior to January Chicago meeting. In general, comments go through the Google Groups page or by email to the chair, Therese Stovall with copy to Bill (wrose@illinois.edu).

- Chapter 25
 - Is available for download on Google Groups.
 - Approximately 95% complete.

- Hartwig received comments that the location of phase change materials (PCM) should be discussed in the Chapter. Hartwig asked for TC's comments on this.
- Chapter 26
 - Approximately 95% complete.
 - Alex has been handling table. It was discussed that a more robust method of maintaining the table would be helpful. Submit comments and suggestions to Alex regarding formatting, content, or maintenance. Alex will wait until end of August and then issue draft.
- Chapter 27
 - Needs considerable work before vote version will be ready. Likely will not be ready for January 2012 meeting.
 - One-day meeting will be scheduled between Montreal and August to focus on Chapter 27, after which, an online version will then be posted for comment.
 - What info from RP 1365 should be included in examples? Research work raised questions about defining U-values (e.g. does it include thermal bridging). TC needs to reach consensus.
 - TC job is to provide clear language to allow for judgment.

Acknowledgement

The TC expressed its gratitude and thanks to Mr. William Rose for his many years of excellent and dedicated service as TC 4.4 Handbook Chair.

8. Program Subcommittee

Program Subcommittee Chair: Sean O'Brien. Sean could not attend. Paul provided the report.

Current Conference Program Items

- Technical Paper Session 6 (Mon 11:00am-noon) *"Radiant Floor Heating Design and Control: Key Factors for Low Energy Buildings in Cold Climates"*, Co-sponsor: TC 6.05
- Forum #10 (Wed 9:45-10:45am) *"Should ASHRAE Have a Standard on Building Envelopes?"*, Co-sponsor: TC 1.12

TC 4.4 experienced a lower than usual turnout on program items for this conference. We are seeking ideas on how to increase our participation.

Chicago January 2012

The website for seminar/forum proposals for Chicago 2012 is open. The conference theme is: *High Performance Buildings, Integrated Design, Energy Modeling and Specialized Applications*. The deadline for submission of forum and seminar proposals is **August 12th**. <http://www.ashrae.org/chicago>

Program tracks

- Track 1 Energy Efficiency - New Technologies and Applications
- Track 2 Integrated Design

- Track 3 Specialized Applications – Healthcare, Laboratories & Data Centers
- Track 4 Energy Modeling Applications
- Track 5 Installation, Operation & Maintenance of HVAC Systems
- Track 6 High Performance Buildings
- Track 7 HVAC & R Systems and Equipment
- Track 8 Professional Skills
- Track 9 HVAC & R Fundamentals and Applications
- Track 10 Refrigeration

Potential programs for Chicago:

1. Conference Paper Session: Energy Retrofits Causing Moisture Problems (proposed, Alex McGowan, w/ TC 1.12) *move to San Antonio*
2. Seminar: What's New in the Handbooks, Ch 44 in Applications *Presented in Las Vegas*
3. NEED OTHER IDEAS – Please talk to Sean with any thoughts
4. Seminar w/expanded discussion: Should thermal bridge effects be included in U factor calculations? Could entail two presentations defining & explaining the issue & giving some examples. The 3rd presentation frames the issues & leads open discussion (Bill Rose, Mark Lawton, ...). Possible 90.1 co-sponsor (Chris Mathis, Jonathan Humble)
5. Wahid will provide recommendation
6. Seminar or forum: Cool roofs – a recent survey of related issues with roofs & attics; unvented roofs, etc. (Stan Gatland) (1.12 cosponsor)
7. Seminar to introduce topic for Hugo's one day Professional Development Seminar "What Mechanical Engineers Must Know About Building Envelopes for High Performance Buildings" (1.12 cosponsor)

Longer Term

1. June 23-27, 2012 – San Antonio TX; Conference/full paper ideas?
2. Seminar: *What's New in the Handbooks, Chs 26-27 in Fundamentals*
3. Alex suggested a presentation on U-value conflict in fenestration. Alex said possibly could put something together for Chicago.
4. Full Day Seminar (San Antonio)
 - Hugo Hens sent out outline to several people in April. Sean returned comments. Anyone else return comments?
 - Interested parties include Hugo Hens, Peter Adams, Holly Bailey, Bill Rose, Anton TenWolde and Alex McGowan.
 - Anyone else interested talk to Sean O'Brien or one of the above.

9. Standards Subcommittee

Standards Subcommittee Chair, Theresa Weston (presented by Paul Shipp on TW's behalf)

- SSPC 90.1: Rewritten addenda bb was out for 45 day public review drafts from March 25, 2011 to May 9, 2011. Results discussed at this meeting.
- SSPC 90.2: Just finished Advisory Public Review on new draft. Received significant number of comments questioning the current scope and efficiency targets of the draft. Committee is

meeting Monday and Tuesday to review the results. Additional guidance from the ASHRAE BOD and Tech Council is also likely.

- SSPC 160 is meeting tomorrow. First addendum (on mold minimization criteria) published and they are looking at their second addendum (on interior conditions)
- Proposal to a new guideline on retrofit of existing buildings. Peter Adams will be drafting a title, purpose and scope for this proposed guideline.
- We will now also follow Std 100 Retrofit Energy Efficiency.
- GPC15 – still dead

10. Honors / ALI Subcommittee

Seeking nominations for the Hightower Technical Achievements Awards to reward exceptional contributions. Procedure to submit a nomination can be found here:

<http://www.ashrae.org/File%20Library/docLib/Committees/TAC/HightowerAwardNominationForm.doc>

Nominations for 2011/2012 are required by September 1.

11. Old Business

Nothing to report.

12. New Business

- There was a discussion on standard on building envelope. We invite anyone interested in pursuing this to contact Bill Rose.
- Mike Gubberbeck is new Section 4 Head
- New Research Liaison – Dr. Pradeep Kunar

Motion 4: Motion to adjourn by Alex McGowan

2nd: Peter Adams

Vote: Approved by Committee.

Meeting adjourned.

Marcus V A Bianchi

Secretary, TC 4.4
