

**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
January 31, 2011**

These minutes were approved on June 27, 2011.

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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, January 31, 2011. Meeting convened at 2:15 pm.

Location: N262, Las Vegas Convention Center, Las Vegas, NV.

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
Las Vegas, NV
January 31, 2011
Technical Committee 4.4
Building Materials and Building Envelope Performance

1.0 Introduction and Attendance

The Chair, Paul Shipp, called the meeting to order at 2:15 pm with 42 members and guests present. A quorum was present.

Voting Members Present:

Paul Shipp (Chair)	USG
Marcus Bianchi (Secretary)	NREL
William B. Rose (Handbook)	University of Illinois at Urbana-Champaign
Sean O'Brien (Program)	Simpson Gumpertz & Heger, Inc
Anton TenWolde (Research)	
Theresa Weston (Standards)	DuPont
Hugo Hens	K.U. Leuven
Hartwig Kunzel	Fraunhofer Institut Bauphysik
Peter Adams	Morrison Hershfield Ltd.
Holly Bailey	Bailey Engineering Corporation
Steve Cornick	NRC/IRC
Sam Glass	USDA Forest Products Laboratory
Achilles Karagiozis	Owens-Corning
Wahid Maref	National Research Council Canada
Alex McGowan	Levelton Consultants Ltd
Rick Peters	TBS Engineering

Number of voting members present: 15

Voting Members Absent:

Larry Elkin (ALI/Honors & Awards)	Applied Building Sciences
Garth Hall (Vice-Chair)	Raths, Raths & Johnson, Inc
Shirley Muns	Texas A&M University

Corresponding Members Present:

Ken Collier	Pittsburgh Corning
Charles Cottrell	NAIMA
Chris Crall	CCrall Consulting
Andre Desjarlais	Oak Ridge National Laboratory
Andreas Holm	Fraunhofer-Institut Bauphysik
Wahid Maref	National Research Council Canada
David Roodvoets	DLR Consultants
Raoul Webb	Environ International

Visitors Present

Fiona Aldous	WJE
Laverne Dalgleish	Building Professionals
Elena Enache-Pommer	The Dow Chemical Company
Diana Fisler	Johns Manville
William Goss	University of Massachusetts Amherst
Guiguen Han	Penn State University
Bret Houck	Stego Industries
Edward Koop	Ruskin Company
Myron Maurer	The Dow Chemical Company
Thomas E Ponder	CertainTeed
El Hassan Ridouane	NREL
Kurt Roth	Fraunhofer Ctr for Sustainable Energy Systems
Klaus Sedlbauer	Fraunhofer-Institut Bauphysik
Gary Sturgeon	Canadian Concrete Masonry Producers Assoc.
Andrew Wieszczyft	PG&E
Ke Xu	Penn State University
Mingjie Zhao	Penn State University

2.0 Approval of Albuquerque minutes

The minutes from the June 28, 2010 meeting in Albuquerque were available on the website for review by the committee.

Motion 1: Marcus Bianchi put forth a motion to approve the minutes from the Orlando meeting.
2nd: Anton Tenwolde
Vote: Approved: 14 in favor – 0 opposed – 0 abstentions. Chair not voting.

3.0 Report from the Chair

TC 4.4 Chair, Paul Shipp presented the following report.

Report from the Chair :

- Awards
 - 2010-2011 Hightower Award Recipient – Gary Phetteplace, TCs 6.2 & 6.8 - Dr. Phetteplace is being honored by TC 6.8 for recently chairing an ad hoc committee to help resolve a difference of opinion in content to the geothermal chapter of the Applications Handbook for 2011. Gary supported TC 6.2 by completing a major restructure and edit of chapter 11 of the 2008 Systems & Equipment handbook. He was also named as a significant contributor to the 1996-2008 editions of the HVAC Systems Handbook. He is a great example of a TC member going the extra mile by attending numerous district energy conferences in order to stay current and brief the TC and by attending all TC 6.2 subcommittee meetings.
 - We need to recognize the contribution of our members of TC 4.4. Please contact the chair Paul Shipp in case you would like to nominate someone for an ASHRAE award.
- Roster update

- 10-11 Rosters update process and process for adding provisional corresponding members - Remember, the 2010-2011 Roster is in effect until after the June meeting this year. The new rosters for 2011-2012 will go into effect on July 1, 2011 based upon the update information that each TC or TG turns into their section head at this meeting by midnight, Tuesday, 2/1/11. Please see your section head for the 2011-2012 Roster Update form if you still need a copy.
- By now, each TC chair should have received a PDF & MS-Excel file of their 2010-2011 roster from their Section Head for distribution to the TC. In addition, each member can view all of the rosters of their committees on the ASHRAE Website. Go to www.ashrae.org <<http://www.ashrae.org>> , click on the "Membership" tab in the header, click on "Manage Your Membership" text in the left sidebar, and log in (if you have not logged in lately, you might need to set up a new username and password). Click on the "Biographical Record System" link. Now, you should see your current "bio info". Click on "My Committees" on the left sidebar; all of the committees you are a member of will appear. Click on the "blue" roster text at the left hand side of a committee to reveal the roster with linked contact information.
- The Provisional Corresponding Member position was created for TC/TG/TRG rosters last year. This position allows potential new members to be added by staff to the committee roster any time a request for membership is made by an individual. The position has a 2-year term on the committee. Staff will notify the chair and reissue a new roster to the committee any time a provisional member is added. The TC/TG/TRG chair has the option each year during the regular roster update process to convert provisional CMs that have been active participants on the committee the past year into regular CMs or voting members or drop them.
- February 1, 2011 is the deadline to submit an update of the roster. Please provide name and member # to the chair if you would like to become a corresponding member of TC 4.4. Officers of TC 4.4 starting in July 2011:
 - Garth Hall, Chair
 - Marcus Bianchi, Vice-Chair
 - Peter Adams, Secretary
 - Therese Stovall, Handbook Subcommittee Chair
 - Sean O'Brien, Program Subcommittee Chair
 - Sam Glass, Research Subcommittee Chair
 - Theresa Weston, Standards Subcommittee Chair
 - Steve Cornick, Webmaster
- Rotating five voting members.
- Upcoming Advanced Energy Design Guide (AEDG) Broad Peer Reviews
 - February 14 through Feb 25 - Energy Efficiency Guide for Existing Commercial Buildings: Technical Implementation – 60% Draft
 - February 21 through March 4 - 50% Advanced Energy Design Guide for K-12 School Buildings – 60% Draft
 - April 18 through April 29 - Performance Measurement Protocols: Best Practices Guide – 60% Draft
 - April 25 through May 6 - 50% Advanced Energy Design Guide for K-12 School Buildings – 90% Draft

- Option for TC Subcommittee Meetings via Conference Calls and Web Meetings: More and more TCs are taking advantage of a new Society service that allows TCs to hold subcommittee meetings by phone and/or web. Many TCs are finding this to be a more efficient way for them to conduct subcommittee business and it also allows TC members that can't travel to meetings on a regular basis a way to still contribute to the TC. Such a change can also eliminate potential conflicts with the TC's program sessions at Society meetings. Please pass your conference call/web meeting/webinar requests on to the Manager of Research and Technical Services, Mike Vaughn, at mvaughn@ashrae.org or MORTS@ashrae.net
- Upcoming Forums, Workshops and Conferences
 - Next –Generation, Low Global Warming Potential (GWP) Refrigerants Forum, this Tuesday, February 1, 2011, 8:00-9:30 am, Las Vegas Convention Center, Room N256 – This forum is not listed in the ASHRAE meeting program.
 - Energy Modeling: Tools for Designing High Performance Buildings, April 4-6 2011, Atlanta, GA: <http://www.ashrae.org/energymodeling>
 - 10th IEA Heat Pump Conference 2011, May 16-19 2011, Tokyo, Japan, www.hpc2011.org
 - XIV European Conference, Part 2: Latest Technologies in Renewable Energy and Applications in Heating & Cooling, June 10-11, 2011, Milan, Italy - <http://www.EUenergycentre.org>
 - ECOS 2011 (24th Intl Conference on Efficiency, Cost, Organization, Simulation & Environmental Impact of Energy Systems), July 4-7, 2011, Novi Sad, Serbia - <http://www.ecos2011.com>
- Border Entry/Exit Requirements for 2011 Annual Meeting in Montreal, Canada - Entry/Exit requirements for Canada have changed since the 2006 Annual meeting in Quebec City, Canada. Please check now the latest entry/exit requirements for Canada using the following link and to make sure their passport or other entry paperwork is up-to-date with these new requirements: http://www.travel.state.gov/travel/cis_pa_tw/cis/cis_1082.html#entry_requirements

4.0 Research Subcommittee

Research Subcommittee chair: Anton TenWolde.

General:

Anton attended the Research chair meeting this morning. Highlights:

- New Research Liaison: Agami Reddy.
- Steve Taylor received the Service to ASHRAE Research Award
- 2011-12 budget for new projects: \$1.3 million (no TC 4.4 projects are ready for funding)
- Task Groups are being established for developing multi-disciplinary projects. Details are pending.
- Awards: Grant-in aid awards - \$10 K student scholarship
- New investigator award (\$50 K for new researchers within 5 years of PhD)
- Homer Adams Award: \$5K to former graduate student who worked on ASHRAE project. Must have made a substantial contribution. Based on letter from advisor.

Current Research

1235-RP - The Nature, significance, and control of solar-driven moisture diffusion in wall systems

- Contractor: Dominique Derome, now with EMPA Switzerland,
- PMS: Theresa Weston (chair), Lixing Gu, Joe Lstiburek, Andreas Holm, Doug Bibee, Anton TenWolde
- Had 4 extensions voted by TC 4.4
- TC approved final report by letter ballot (71% return of ballots, unanimous)

1325-RP - Environmental Weather Loads for Hygrothermal Analysis and Design of Buildings

- PMS: Desjarlais (chair), TenWolde, Van Geem, Andreas Holm, Dru Crawly (4.2), Bob Morris (4.2)
- Contractor originally at Syracuse University, Jensen Zhang, Syracuse Univ is PI
- Work is executed by Mika Salonvaara, now with Owens Corning.
- A number of extensions were granted to the project.
- Final report has been approved by PMS, Research Committee recommends approval.
- TC approval 14-0-0 chair not voting

Motion 2: Anton Tenwolde put forth a motion for approval of the project

2nd: Bill Rose

Vote: Approved. 14 in favor, 0 opposed, 0 abstention - Chair not voting.

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.
- Contractor slightly behind schedule, but expects to deliver the draft final report by February 28, 2011.
- Had PMS meeting and session with many 90.1 members present.
- Plan is to vote final approval by TC in June 2011.

Future Research:

RTAR

- Comparative Field Evaluation of Building Pressure Control Methods
 - Submitted to a host of other TC's by Len Damiano, Barry Bridges, Sobesta-Bloomberg
 - Unable to interest TC 1.4 and 4.3
 - Fits better within TC1.12 (TC 1.12 took no action)
 - Research Committee recommended not to sponsor
- Testing the water vapor transfer of materials and systems used in chilled water mechanical insulation systems.
 - Looking for cosponsorship (TC 1.8)
 - Looking for comments
 - Chair will circulate RTAR

- RTAR 1621: Driving rain: impact on durability, indoor humidity and energy efficiency
 - Submitted by Hugo Hens; author Staf Roels
 - Circulated to committee by email on November 28, 2009
 - Voted to approve 14-0-1 at Jan 2010 meeting
 - RAC reviewed in Albuquerque and rejected it.
 - No further action expected
- 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
- 1461 RTAR (co-sponsorship with TC5.5) Moisture storage in typical office buildings
 - Approached by TC5.5
 - Second submission, RAC demanded co-sponsorship with TC4.4
 - Deemed within TC 4.4 scope, but needs additional work – Carsten Rode and Hugo Hens agreed to work with TC5.5.
 - Hugo Hens and Carsten Rode sent in comments which chair shared with Carey Simonson of TC 5.5
 - No communications with authors has taken place. (chair contact authors)
 - Project has been dropped by TC5.5. TC4.4 has been asked if we want to adopt it.
 - The TC decided that the project better fits better in TC1.12
 - The RTAR has been passed on to Larry Elkin, Research Chair of 1.12
 - No action in TC 1.12 (Las Vegas)
- 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
- 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

- 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
- 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

Other items:

- List of projects from Brainstorm: chair will send out reminders
- Aggamy Reddy visited the committee.

5.0 Handbook Subcommittee

Handbook Subcommittee Chair: Bill Rose

Chapter 25

- Hartwig Kuenzel described progress on chapter 25.
- Karagiozis offered to summarize material from the solar vapor drive research to integrate into the Solar Radiation section. Karagiozis proposed alternate diagrams to describe rain loading as a function of distance from the façade.
- Rose proposed incorporating a shortened version of the submittal by Jan Kosny regarding phase change materials into the section Transient Thermal Response.
- Karagiozis questioned the new airflow material, specifically 1) ensuring inclusion of buoyancy and 2) introducing the new material on p. 25.19 after including references and vetting. Definitions and use of the terms “emissivity” and Emittance” should be reviewed for consistency.
- Kuenzel offered to prepare these changes and submit the chapter for final vote in June 2011.

Chapter 26

- Alex McGowan described progress on chapter 26. He offered to prepare a section on phase change materials, including a table of enthalpy values for common phase change materials.
- Laverne Dalglish called for a review of the air leakage discussion, and will assist the reviser.

- Charles Cotrell asked to verify the inclusion of material submitted by NAIMA. After considerable discussion it was decided to retain the conductance and conductivity values—some having ranges, some as single values—in Table 1.
- Following discussion of variable conductance with mean temperature, it was proposed to include a table of dk/dt values from a source to be provided by D. Yarbrough. After discussion it was decided that the new material shown on pp. 25.19 to 25.23 would not be included.
- McGowan offered to have the chapter ready for final vote in January 2012.

Chapter 27

- Bill Rose described the progress on chapter 27. He called for an interim meeting in Spring 2011, perhaps in Chicago. Offers for assistance and attendance came from Hugo Hens, Dave Roodvoets, Anton TenWolde, Sam Glass, and Holly Bailey.

6.0 Program Subcommittee

Program Subcommittee chair: Sean O'Brien

Current Meeting

TC 4.4 sponsored one seminar during the Las Vegas meeting: “Building Envelopes for Mechanical Engineers: It’s all in the Handbooks”. Presenters were Bill Rose (also chair), Peter Adams, and Hartwig Kunzel.

Future Meeting (Montreal, Canada, Summer ‘11) – Theme: Sustainability

Montreal (Summer 2011):

- Conference tracks are: Refrigeration, HVAC, Fundamentals, Net Zero Energy Buildings, Professional Skills, Engineering Tools, Commissioning, and Alternative Technologies. Programs should fit into one of these tracks.
- Seminar and forum submissions are due 14 February 2011. Contact the program chair (smobrien@sgl.com) if you have ideas for forums/seminars and I can help you with the submission. Proposed submissions include a seminar on air leakage in building retrofits (Dalglish/Karagiozis) and a seminar on the performance of highly insulated building enclosures (Maref).

Chicago (Winter 2012):

- Conference tracks will be: Energy Efficiency, New Technologies & Applications, Integrated Design, Specialized Building Applications (e.g., data centers, hospitals), Energy Modeling Applications, Installation and O&M of HVAC Systems, High Performance Buildings, HVAC&R Sys/Equip, Prof Skills, HVAC&R Fundamentals/Apps, and Refrigeration.
- Paper submissions can be made online at: <http://ashraem.confex.com/ashraem/w12/cfp.cgi>
- The deadline for paper submissions or conference paper abstract submissions is 18 April 2011.
- TC 4.4 will be putting together a one-day “short course” on building enclosure fundamentals and applications for mechanical engineers. Sean O'Brien will be coordinating the effort. Interested parties can contact Sean regarding the course. We are seeking both presenters and contributors of useful material for the presentations.

7.0 Standards Subcommittee

Standards Subcommittee Chair, Theresa Weston

- SSPC 90.1: 2010 has been released.
- SSPC 90.2: is ongoing.
- SSPC 160 is meeting tomorrow. Second revision was approved.
- SSPC 100: we should get involved in it.
- SSPC 189.1: no update.
- GPC15 still dead.

8.0 Honors / ALI Subcommittee

- Nothing to report.

9.0 Old Business

- Nothing to report.

10.0 New Business

- Discussion on standard on building envelope. We invite anyone interested in pursuing this to contact Bill Rose.

Motion 3: Motion to adjourn by Marcus Bianchi

2nd: Rick Peters

Vote: Approved by Committee.

Meeting adjourned.

Marcus V A Bianchi
Secretary, TC 4.4
