

**AMERICAN SOCIETY OF HEATING, REFRIGERATING, AND
AIR CONDITIONING ENGINEERS, INC.**
1791 Tullie Circle, NE / Atlanta, GA 30329
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TC/TG/TRG MINUTES COVER SHEET

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

TC/TG/TRG NO.:	4.5	TC/TG/TRG TITLE:	Fenestration
DATE OF MEETING:	June 28, 2016	LOCATION:	St Louis, Missouri
DATE ISSUED:	June 30, 2016	RECORDED BY:	Thanos Tzempelikos

Name	Affiliation	E-Mail	Member (VM, CM, Guest)	Present
<i>Anil Parekh (Secretary)</i>	Natural Resources Canada	Anil.Parekh@NRCan.gc.ca	VM	N
<i>John Hogan (Standards)</i>	Consultant	John.hogan@igc.org	VM	Y
<i>Peter Lyons (Handbook)</i>	Peter Lyons and Associates	peter.lyons@fenestralia.com	VM-NQ	N
<i>Charlie Curcija (Calculation Methods)</i>	LBNL	ccurcija@lbl.gov	VM	Y
<i>Thanos Tzempelikos (Chair)</i>	Purdue University	ttzempel@purdue.edu	VM	N
<i>Joe Hetzel (Vice Chair)</i>	DASMA	jhetzel@thomasamc.com	VM	Y
<i>William DuPont (Research)</i>	Sunergy	waupi@msn.com	VM	N
<i>Josue Cavazos</i>	EFCO	jcavazos@efcocorp.com	CM	N
<i>Michael Collins</i>	University of Waterloo	mcollins@uwaterloo.ca	CM	N
<i>Sagar Rao</i>	AEI	sagar.rao@outlook.com	CM	Y
Dennis Wessel (TAC Liaison)			Guest	Y (part)
Total voting members: 7 Voting members present: 3				

SCOPE:

TC 4.5 is concerned with the identification and evaluation of all physical properties of (1) glasses and other glazing materials, (2) shading and shielding materials and devices, and (3) control devices and strategies which

influence the radiant, conduction, and convection transfer of both heat and light through fenestration systems. It is also concerned with the development of procedures for calculating and measuring solar heat gain, daylight admission, and heat transfer through fenestration systems.

COMMITTEE AND MEETING INFORMATION

Subcommittee Meetings:

Handbook:	Monday, June 17
Research:	Monday, June 17
Program:	Monday, June 17
Calculation Methods	N/A

TC Web Site: <http://tc45.ashraetcs.org>

INTRODUCTIONS AND ROSTER CHECK

Meeting started at 2:15pm. Voting 7, present 3. No quorum present.

APPROVE AGENDA

Agenda was approved unanimously.

APPROVE MINUTES FROM PREVIOUS MEETING

Minutes from the Orlando meeting: Willie DuPont moved; John Hogan second; Minutes were approved (5-0-0)

ANNOUNCEMENTS (TC Chair)

- Roster changes: The roster was reviewed by the TC and changes were submitted to TAC.

TC LEADERSHIP

Voting members are:

Thanos Tzempelikos (Chair, Program) - VM
John Hogan - VM
Joe Hetzel (Vice Chair) - VM
Anil Parekh (Secretary) - VM
Charlie Curcija (Vice Chair, Calculation Methods) - VM
Willie Dupont (Research) –VM

Peter Lyons (handbook) – Provisional NQ Member

LIAISON REPORTS

Technical Activities Committee (TAC)

Standards

No liaison present

Research Administration Council (RAC)

No liaison present

Conferences and Expositions Committee (CEC)

No liaison present

Handbook Committee

No liaison present

Chapter Technology Transfer Committee

No liaison present

ASHRAE Learning Institute (ALI) / Professional Development Committee (PDC) –
No liaison present

Special Publications
No liaison present

SUBCOMMITTEE REPORTS

Calculation Methods (Charlie Curcija)

- The meeting was not held

Research (William DuPont). Chaired by Thanos Tzempelikos

New RP

TRP-1710: “Effects of Dynamic Shading Devices on Daylighting and Energy Performance of Perimeter Zones.” *Anil Parekh/National Resources Canada*

- The PES did not have time to review the proposals on time. The PES will try to review proposals so a letter ballot will be used for voting and providing recommendation to RAC. PES Members are Anil Parekh, Charlie Curcija and William DuPont.

Research Topic Acceptance Reports (RTAR)

TC 4.5 RTAR Proposal: “Optical and Thermal Performance of Hollow Glass Blocks.” *Aziz Laouadi/NRC*

- William DuPont mentioned that the RTAR has been reviewed to RAC and waiting for comments.

TC 4.5 RTAR Proposal: “Develop Reference Representative Solar Spectra for Solar Heat Gain Calculations in North America,” *William C. duPont/Sunergy Consulting & Chris Gueymard/Solar Consulting Services*

- NFRC Version has been developed, but it needs to be rewritten in the ASHRAE RTAR format. The new draft should include more discussion about the separation of direct and diffuse solar irradiation.
- LBNL Windows implementation for new solar spectra model is dependent on funding, so the suggestion was made to focus this RTAR on Direct Gains.
- Revisions to RTAR (Chris will work with Willie to resubmit for the next meeting)

Research Projects (RP)

- a. TC 4.7 and 4.5 RP-1588: “Procedure to create hypothetical layer-by-layer fenestration descriptions when only the bulk properties such as U-factor and SHGC have been defined,” *Joe Huang/White Box Consulting*. Charlie Curcija said that the final report is being prepared.
- b. RP-1414: “Update of U-factors, Solar Heat Gain Coefficients and Visible Transmittances of Standard Fenestration Units made from Representative Fenestration Frame and Glazing Systems in the Fenestration Chapter of the Handbook of Fundamentals.” This research project is still underway. Charlie Curcija is PMS Chair.
- c. TRP-1710: “Effects of Dynamic Shading Devices on Daylighting and Energy Performance of Perimeter Zones.” *Anil Parekh/National Resources Canada*
 - The new project is supposed to start soon. PES Members are Anil Parekh, Thanos Tzempelikos, Charlie Curcija and William DuPont.

Long-Range Research Plan

Follow up progress on RTAR ideas:

- *Building Integrated Photovoltaics (BIPV)*. More discussion is needed to narrow down the scope and propose specific topics.
- Condensation in residential windows and related aspects. Charlie will try to develop a scope.
- Shading operation in commercial and residential buildings, manual and motorized.

Conferences and Expositions (Mike Collins). Chaired by Thanos Tzempelikos

ST LOUIS PROGRAM, JUN 25-29, 2016

No TC 4.5 sponsored sessions

LAS VEGAS PROGRAM, JAN 28-FEB 1, 2017

July 8, 2016: Final Conference Papers Submitted for Review (Includes Bio, Learning Objectives and Methods of Assessment)

August 8, 2016: Seminar, Forum and Workshop Proposals Due

September 7, 2016: Seminar, Forum, Workshop Accept/Reject Notifications

Transactions paper:

"An experimental study and model of a window with STPV", A. Athienitis, K. Kapsis/Concordia University

LONG BEACH PROGRAM, June 24 - June 28, 2017

August 29, 2016 Conference Paper Abstracts and Technical Papers Due

September 9, 2016 Conference Paper Abstract Notifications Due

December 9, 2016 Final Conference Papers Submitted for Review (Includes Bio, Learning Objectives and Methods of Assessment)

January 2, 2017 Website Opens for Seminar, Forum and Workshop Proposals

January 16, 2017 Conference Paper Accept/Revise/Reject Notifications Due

February 6, 2017 Seminar, Forum and Workshop Proposals Due

February 10, 2017 Revised Conference Papers/Final Technical Papers Due

February 20, 2017 Conference and Technical Paper Final Accept/Reject Notifications

TO BE CONFIRMED- Transactions Session: "Computer Simulation Methodologies to Predict the Performance of Blinds and Shading Systems," *Chair: ?*

1. "Modeling the Performance of Honeycomb and Cellular Shading Systems," *Charlie Curcija, Jacob Jonsson & Robert Hart/LBNL*
2. "Modeling the Performance of Pleated Shading Systems," *Charlie Curcija, Jacob Jonsson & Robert Hart/LBNL*
3. "Results from NFRC WINDOW6/THERM6 validation projects", *William duPont*

Handbook (Peter Lyons). Chaired by Thanos Tzempelikos

After a request by Joe Hetzel, and coordination between Peter Lyons and ASHRAE, Joe presented suggested final modifications to Chapter 15. He proposed 3 modifications that are going to be voted on through a ballot vote, since quorum was not present: (i) modified text in the second paragraph of the Chapter (ii) modified text for annual energy performance of high speed doors and (iii) modifications in Table 9. A letter ballot was initiated on Tuesday June 28, 2016.

Standards (John Hogan)

- Std 90.1:
- Std 90.2:
- Std 189.1:

TC 4.5 Website (Sagar Rao)

The new TC website is up and running. Sagar Rao is the webmaster and has updated the web pages.

OLD BUSINESS

None.

NEW BUSINESS

None.

ADJOURN

Approximately 4:00 pm

*Respectfully submitted by Thanos Tzempelikos (TC 4.5 Chair)
June 28, 2016*