

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

TC/TG/TRG NO.:                                 T.C. 6.7                                      DATE:                                 June 2010                                  
 TC/TG/TRG TITLE:                                 Solar Energy Utilization                                  
 DATE OF MEETING:                                 January 26, 2010                                      LOCATION:                                 Orlando, FL                                

MEMBERS PRESENT	YEAR APPTD*	MEMBERS ABSENT	YEAR APPTD*	EX-OFFICIO MEMBERS AND ADDITIONAL ATTENDANCE
Gaylen Atkinson	09	Cenk Yavuzturk (Chair)	08	Pam Androff
Costas Balaras (Intl)	07	Robert Aresty	CM	Julien Bec
John Brown	CM	Erv Bales	CM	Don Colliver
Andrew Chiasson (Sec)	CM	William Bahnfleth	CM	Xia Fang
Brad Collins	CM	Alan Chalifoux	CM	John Hollick
Charlie Cromer	09	Kevin Cross	CM	Michael Kummert
Henry Healey (ALI)	CM	Robert Davis	CM	David Rose
Wilfred Laman	09	Brian Dougherty (Std)	06	Jeb Schreiber
Andy Lowenstein	CM	Peter Ellis	CM	
Janice Means (Program)	CM	Robert Foster	CM	
Tim Merrigan (VC/Research)	08	David Gerlach	CM	
		John Gladstone	CM	
		D.Y. Goswami	CM	
		Cory Hasiak	CM	
		Richard Hayter	CM	
		Hugh Henderson	CM	
		Mark Hertel (Handbook)	09	
		Bion Howard	CM	
		Jim Huggins	CM	
		Pamela Immekus	CM	
		Sanford Klein	CM	
		Alfred Lutz	CM	
		Fariborz Mahjouri	CM	
		Jeff Mahoney	CM	
		Andrew McNamara	CM	
		Alfi Helmy Malek	CM	
		Svein Morner (Web)	CM	
		Stanley Mumma	CM	
		Joseph O'Gallagher	CM	
		Henry. Peebles	CM	
		Andrew Price	CM	
		Talal Rabiah	CM	
		Agami Reddy	CM	
		Harvey Stenger	CM	
		Menalaos Stylianou	CM	
		Ather Syed	CM	
		Gregoris Thoma	CM	
		Marija Todorovic	09	
		Dean Tompkins	CM	
		Christian Vachon	CM	
		Michael Wassmer	CM	
		Scott Wayland	CM	
		Dean Wiersma	CM	
		Bede Wellford	CM	
		Maurice Wildin	CM	
		Byard Wood	CM	
		Paul Zeigler	CM	

\*Starting month as a voting member is July of the year shown. CM = corresponding member.



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## DISTRIBUTION

ALL MEMBERS OF TC/TG/TRG

TAC CHAIR:           B. Becker          

TAC SECTION HEAD:   J. Dunlap  

LIAISONS:

Program:           L. Jackins                                ALI:           T. McGinn          

Handbook:   M Modera (Appl); T. Lawrence (S&E)                        RAC:           J. Hogeling          

Standards:           J. Kohler                                TEGA:                                   

Special Pubs:           J. Keen          

MANAGER OF RESEARCH AND TECHNICAL SERVICES:           M. R. Vaughn          

MANAGER OF STANDARDS:           S. Reiniche



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## **DRAFT MEETING MINUTES ASHRAE TC 6.7 – SOLAR ENERGY UTILIZATION Winter Meeting – January 2, 2010 Orlando, Florida**

### **I. CALL TO ORDER, MEETING AGENDA, AND MEETING MINUTES**

The meeting was called to order just after 1:00 PM by Vice Chair T. Merrigan. Quorum was not met at the start of the meeting, with only four voting members present, and five needed for a quorum.

More than five voting members (achieving quorum) were in attendance intermittently throughout the meeting, and the Louisville (summer 2009) meeting minutes were approved at 2:50 PM. Charlie Cromer moved to approve and Gaylen Atkinson seconded. Voting members present at that time were G. Atkinson, C. Balaras, C. Cromer, W. Laman, and T. Merrigan. The motion carried 5-0.

### **II. CHAIR’S REPORT (Cenk Yavazturk)**

No report. C. Yavazturk was absent from the meeting.

### **III. SUBCOMMITTEE REPORTS**

#### **A. HANDBOOK – MARK HERTEL**

M. Hertel was absent from this meeting. Tim Merrigan stated that revisions to Chapter 33 of the Applications Handbook are pending.

Tim Merrigan emphasized that the Handbook Subcommittee has been and is still seeking a new chair to replace Mark Hertel, and Costas Belaras was suggested as a possible chair after June 2010. No formal decision was made at this meeting. Costas expressed concern about inconsistent nomenclature between the solar-related chapters of the ASHRAE Handbooks and the nomenclature used internationally. Janice Means volunteered to coordinate on-line handbook revisions.

#### **B. RESEARCH – TIM MERRIGAN**

Janice Means reported on the research subcommittee meeting held Monday Jan. 25.

Two RTARs have been developed: (1) “Coupling of solar heating with heat recovery units” and (2) “Solar assisted (or boosted) geo co- and tri-generation”. The deadline for submission is Mar. 15.

Janice summarized other potential research ideas. At the previous TC 6.7 meeting, a possible joint RTAR with TC 6.6 related to solar hot water systems and their backup systems was discussed, but this idea was not very high on the TC 6.6 priority list. Other possible ideas include: guidelines for installation of solar cooling systems; net zero buildings and solar energy; and optimization of reclaiming useful heat from BIPV systems.

#### **C. PROGRAM – JANICE MEANS**

Janice Means summarized activities at the Orlando Meeting. There were no TC 6.7-sponsored seminars, but there were two papers presented at the Poster Session.

Proposed ideas for seminars at the Albuquerque Meeting included: (i) utility scale solar systems (i.e., concentrating systems or other), (ii) solar cooling for buildings, and (iii) use of small-scale absorption chillers.



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Proposed topics for the Las Vegas meeting included the solar decathlon, high solar combi systems with seasonal storage, solar cooling applications, and desiccants regeneration with solar energy.

## **D. STANDARDS – BRIAN DOUGHERTY**

See attached report submitted by Brian Dougherty. Charlie Cromer added that changes were completed for Standard 93 and that there were no public comments. Therefore Standard 93 was going to publication. Standard 95 is next for update.

## **E. WEBSITE – SVEIN MORNER**

No report.

## **E. MEMBERSHIP – CENK YAVUZTURK**

No report. John Dunlap (see TAC Report below) stated that the status of “International Member” will be discontinued.

## **IV. LIAISON REPORTS FROM SOCIETY & OTHER ORGANIZATIONS**

**ALI** (Henry Healey): Henry reported that the solar short course was given on Monday, Jan. 25 and was well-attended. Henry will propose to ASHRAE to add more subject matter related to solar PV, possibly as a second course.

**TAC** (John Dunlap): John discussed updating ASHRAE publications. TC 6.7 has a publication (*Operation and Maintenance Manual for Active Solar Heating Systems*) that ranked 5<sup>th</sup> on the revision priority to incorporate into a sustainable/NZEB design guide. The roster was also discussed, and final updates were due on the day of this meeting. There will be no more “International Members”. Instead, each TC can designate up to two members that can count toward quorum.

**RAC** (Jaap Hogeling): No report.

**Handbook** (Mark Modera and Tom Lawrence): No report

### **Other TCs:**

**LEED Energy and Atmosphere TAG** (Bion Howard): No report.

**American Solar Energy Society (ASES)**: Brad Collins discussed the on-going relationship between ASES and ASHRAE and the common goals of each society. ASHRAE is sponsoring the May 2010 ASES conference in Phoenix.

**American Society of Mechanical Engineers (ASME)**: No report.

**Standards Liaison**: See subcommittee report below.

**Solar Decathlon** (Mike Wassmer): Brad Collins (ASES) stated that over 60 schools applied and about 35 were accepted.

**Energy Guide** (Don Colliver): No report.

## **V. OLD BUSINESS**

None



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**VI. NEW BUSINESS**

A discussion ensued regarding TC 6.7 publications, since this TC has one publication on the priority list for sustainable/NZEB design guide. The need for a publication on solar air heating systems was brought up and John Hollick suggested developing a design manual. A need for a design manual on solar PV-thermal was also identified. Proposals to do this formally should come from the whole committee. A letter ballot was suggested.

**VII. ADJOURNMENT**

Meeting adjourned approximately 3:30 PM.



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Standards Subcommittee Report  
ASHRAE TC 6.7 Solar Energy Utilization  
2010 Winter Conference – Orlando  
Standards Committee Liaison to TC 6.7: James Vallort

**Std 93-2003R** *MOT to Determine the Thermal Performance of Solar Collectors*

SPC Chair: Charlie Cromer

SPC Liaison: Nadar Jayaraman

The current standard is a reaffirmation of the 1986 publication and its latest ANSI approval occurred on April 22, 2003. SPC 93R met on Monday, January 25, 2010. Anyone wishing to join the SPC (ASHRAE and non-ASHRAE members) are encouraged to do so. Please contact the SPC 93 chairman or the ASHRAE staff member who oversees Project Committee membership at 404-636-8400, ext 1125 or by email at [PCMembership@ashrae.net](mailto:PCMembership@ashrae.net).

**Std 95-1987P<sup>1</sup>** *MOT to Determine the Thermal Performance of Solar Domestic Water Heating Systems*

SPC Chair: Tim Merrigan

SPC Liaison: Boggarm Setty

Co-cognizant TC: 6.6 (Service Water Heating)

SPC 95P needs to formally recommend that ASHRAE conduct a Modified adoption of ISO Standard 9459-1: 1993, “Solar heating – Domestic water heating systems – Part 1: Performance rating procedures using indoor test methods.” The ISO standard will replace ASHRAE Standard 95. A Word version of the ISO standard containing both substantive and non-substantive modifications has been generated. Although ASHRAE staff originally agreed that SPC 95 did not have to be repopulated, the ASHRAE Standards Committee is now recommending that new members be added. Chairman Merrigan is addressing the membership issue.

**Std 96-1980 (RA 89)P<sup>1</sup>** *MOT to Determine the Thermal Performance of Unglazed Flat-Plate Liquid-Type Solar Collectors*

SPC Chair: James Huggins

SPC Liaison: Boggarm Setty

SPC 96P plans to pursue an identical or modified adoption of ISO Standard 9806-3: 1995, “Test methods for solar collectors -- Part 3: Thermal performance of unglazed liquid heating collectors (sensible heat transfer only) including pressure drop.” SPC 96 Chair Jim Huggins has requested that ASHRAE staff generate a Word version of the ISO standard so that the SPC may use it as a working draft. SPC 96 has been otherwise inactive over the last few years.

**Std 125-1992 (RA 06)** *MOT Thermal Energy Meters for Liquid Streams in HVAC Systems*

Cognizant (Lead) TC: 6.1, Hydronic and Steam Heating Equipment and Systems

Co-cognizant TC: 6.7

The reaffirmed standard has been published; an errata addressing an error may be downloaded at <http://www.ashrae.org/technology/page/120>. ASHRAE Staff completed a review of the standard on August 14, 2008 and have forwarded its findings to TC 6.1 while also requesting that the TC make a recommendation on whether to revise, reaffirm, or withdraw the standard. TC 6.7 members wishing to comment on the recommendation request are encouraged to contact TC 6.1, ASHRAE Staff, or TC 6.7’s Brian Dougherty.

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<sup>1</sup> \*NOTE: Standards 95 and 96 are designated as “Proposed” rather than as a “Revision” due to exceeding the maximum time frame in which a standard may retain the ANSI designation.



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## TC 6.7 Standards Subcommittee Report 2010 Winter Conference – Orlando

### Canvass Ballots - None

#### **ISO Technical Committee 180 (Solar Energy) Subcommittee 4 (Systems – Thermal Performance, Reliability, and Durability) ISO TC 180 Secretariat: Australia ISO TC180/SC4 Secretariat: USA (ASHRAE)**

ASHRAE holds the secretariat for Subcommittee 4 within TC 180, Systems – Thermal Performance, Reliability and Durability. Jim Huggins serves as the SC 4 chair.

ISO TC 180 plans to continue holding joint meetings with CEN/TC 312 and/or IEA Task Group 43, when possible. The most recent meeting took place in Pretoria, South Africa on October 15-16, 2009. The next meeting of TC180/SC4 is tentatively scheduled for March 2010 in Switzerland. In considering other collaborations, ISO/TC 180 will request IEC/TC 82 to cooperate in preparing standards dealing with thermal collectors having integrated PV devices (PV/T collectors).

Several ISO solar thermal standards are currently being revised or revisions are planned in the near future. Opportunities therefore exist for US experts to serve on ISO working groups and as members of the US Technical Advisory Group that ultimately formulates the US position on these ISO standards. Anyone who can serve in such a capacity is asked to contact Doug Tucker, Assistant Manager of Standards – International ([dtucker@ashrae.org](mailto:dtucker@ashrae.org) or 404-636-8400, ext. 504).

1. ISO Standard 9459-1: 1993, “Solar heating – Domestic water heating systems – Part 1: Performance rating procedures using indoor test methods”  
Cognizant SC: 4  
ASHRAE SPC 95 is pursuing a modified adoption of this ISO standard. No activity has been reported on the ISO Standard itself for a few years.  
ISO document stage code is 90.20 – international standard under periodic review.
2. ISO Standard 9459-2: 1995, “Solar heating – Domestic water heating systems – Part 2: Outdoor test methods for system performance characterization and yearly performance prediction of solar-only systems.”  
Cognizant SC: 4  
This standard is being revised. Spain, for example, is proposing modifications to Section 9, “Prediction of long-term performance,” during the systematic review ballot that is scheduled to end on 15 March 2010.  
ISO document stage code is 90.20 – international standard under periodic review.
3. ISO Standard 9459-3: 1997, “Solar heating – Domestic water heating systems – Part 3: Performance tests for solar plus supplementary systems”  
Cognizant SC: 4  
This withdrawn standard is being reinstated. The Secretary will prepare a New Work Item Proposal and a new draft based on Australian national standard AS 2984.



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## TC 6.7 Standards Subcommittee Report 2010 Winter Conference – Orlando

4. ISO/CD 9459-4, “Solar heating – Domestic water heating systems – Part 4: System performance characterization by means of component tests and computer simulation”  
Cognizant SC: 4  
The document has completed a first committee draft (CD) ballot. Comments were reviewed at the Pretoria meeting. Secretary Doug Tucker and Chairman Jim Huggins were tasked with revising the document in accordance with the accepted comments and discussions held during the meeting. The Secretary will thereafter submit the revised document to SC4 for a second CD ballot review. ISO document stage code is 30.60 – Close of voting/comment period.
5. ISO Standard 9459-5: 2007, “Solar heating – Domestic water heating systems – Part 5: System performance characterization by means of whole-system tests and computer simulation”  
Cognizant SC: 4  
The document was published as an international standard in May 2007.  
ISO document stage code is 60.60 – International standard published.
6. ISO Standard 9806-1: 1994, “Test methods for solar collectors – Part 1: Thermal performance of glazed liquid heating collectors including pressure drop”  
Cognizant SC: 5 (Collectors and other components)  
At the Pretoria meeting, TC 180 reaffirmed its previous decision to initiate New Work Items for revising all three parts of ISO Standard 9806. The projects will be carried out as joint ISO/EN Standards by CEN/TC 312/WG1 that will have additional membership from TC 180. The eventual documents will replace the current ISO 9806 and EN 12975-2 series of standards.  
ISO document stage code is 90.60 – international standard, close of periodic review.
7. ISO Standard 9806-2: 1995, “Test methods for solar collectors – Part 2: Qualification Test Procedures”  
Cognizant SC: 5 (Collectors and other components)  
See comments given above with ISO Standard 9806-1.  
ISO document stage code is 90.60 – international standard, close of periodic review.
8. ISO Standard 9806-3: 1995, “Test methods for solar collectors – Part 3: Thermal performance of unglazed liquid heating collectors (sensible heat transfer only) including pressure drop”  
Cognizant SC: 5 (Collectors and other components)  
See comments given above with ISO Standard 9806-1.  
ISO document stage code is 90.60 – international standard, close of periodic review.

Report Submitted By: Brian Dougherty



## TC/TG Activity Feedback Form

Please provide feedback on your TC/TG activities and return this form to your Section Head by email or drop off a printed copy in the Section Head's mailbox folder outside the ASHRAE Headquarters Room by Tuesday night 9:00 pm.

From TC 6.7	Committee Name: <i>SOLAR ENERGY UTILIZATION</i>
	Chair: <i>Cenk Yavuzturk</i>

Meeting was Held	(Day) <i>TUESDAY</i>	(Date) <i>JAN. 26, 2009</i>
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<b>Membership</b>		
	Number Present	Total Number on Committee
Voting Members	<i>6</i>	<i>9</i>
International Members	<i>1</i>	<i>1</i>
Corresponding Members	<i>5</i>	<i>47</i>
Visitors and Guests	<i>8</i>	

<b>Handbook Responsibilities *</b>		<b>Standards Responsibilities *</b>	
Volume and Chapter (number only)	Next Revision Due Date	Standards Number (number only)	Next reaffirmation date
<i>A 33</i>	<i>MARCH 2010</i>	<i>93-2003</i>	
<i>S 36</i>	<i>MARCH 2011</i>	<i>95-1987</i>	
		<i>96-1980</i>	
		<i>109-1986</i>	
		<i>125-2002</i>	

<b>Program Activities * at this Meeting</b>		
Transactions	Seminar	Forum

<b>Current Research Activities *</b>		<b>FAQs Responsibilities *</b>	
Research Project (number only)	PMS meeting held (yes/no)	FAQ number (number only)	Last time reviewed
		<i>79</i>	

Does Committee have Web Site on ASHRAE Server? YES .

If so, is Web Site up to date? YES .

Any requests of the Technical Activities Committee ?