

AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING ENGINEERS, INC.  
 1791 Tullie Circle, N.E./Atlanta, GA 30329  
 404-636-8400

**TC/TG/TRG MINUTES COVER SHEET\*\***

TC/TG/TRG NO.:                                 T.C. 6.7                                      DATE:                                 June 16, 2009                                

TC/TG/TRG TITLE:                                 Solar Energy Utilization                                

DATE OF MEETING:                                 January 27, 2009                                      LOCATION:                                 Chicago, IL                                

MEMBERS PRESENT	YEAR APPTD*	MEMBERS ABSENT	YEAR APPTD*	EX-OFFICIO MEMBERS AND ADDITIONAL ATTENDANCE
Mark Hertel (Handbook)	05	Andrew Chiasson (Sec)	05	Larry Markel
Tim Merrigan (VC/Research)	07	Christian Vachon	05	Jaap Hogeling (RAC)
Cenk Yavuzturk (Chair)	06	Robert Aresty	CM	Wilfred Laman
Janice Means (Program)	05	Erv Bales	CM	Don Colliver
Brian Dougherty (Std)	06	William Bahnfleth	CM	
Costas Balaras (Intl)	07	John Brown	CM	
Svein Morner (Web)	05	Alan Chalifoux	CM	
Andy Lowenstein	05	Brad Collins	CM	
Gaylen Atkinson	CM	Kevin Cross	CM	
Charlie Cromer	CM	Robert Davis	CM	
		Peter Ellis	CM	
		Robert Foster	CM	
		David Gerlach	CM	
		John Gladstone	CM	
		D.Y. Goswami	CM	
		Cory Hasiak	CM	
		Richard Hayter	CM	
		Henry Healey (ALI)	CM	
		Hugh Henderson	CM	
		Bion Howard	CM	
		Jim Huggins	CM	
		Pamela Immekus	CM	
		Sanford Klein	CM	
		Wilfred Laman	CM	
		Alfred Lutz	CM	
		Fariborz Mahjouri	CM	
		Jeff Mahoney	CM	
		Andrew McNamara	CM	
		Alfi Helmy Malek	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	CM	
		Dean Tompkins	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.



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## DISTRIBUTION

ALL MEMBERS OF TC/TG/TRG

TAC CHAIR: \_\_\_\_\_ B. Becker \_\_\_\_\_

TAC SECTION HEAD: \_\_\_\_\_

LIAISONS:

Program: \_\_\_\_\_ 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 27, 2009 Chicago, Illinois

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

The meeting was called to order shortly after 1:05 PM by Chairman Cenk Yavuzturk. A quorum was achieved with eight of ten voting members in attendance. The minutes from the Salt Lake City Annual Meeting in June 2008 were approved. (7-0-0-2, CNV)

### II. CHAIR'S REPORT (Cenk Yavuzturk)

Cenk Yavuzturk attended the TC chairs meeting on Sunday morning. During this TC chairs' meeting the focus was on training, reviewing programs, and discussing research activities. With regard to programs, the TC 6.7-sponsored seminars for Chicago – Seminar 21, *2007 Solar Decathlon Award-Winning Designs* and Seminar 32, *Sustainability Resustained: Lessons to Be Learned from Solar Technologies in Buildings in Recent Times* – were judged very successful, having reported attendance of 62 and 180 attendees, respectively. As for research, TC 6.7 does not have any current projects. Cenk informed attendees that TC 6.7's requested scope change (see below) was approved (note that new words are underlined and italicized, and deleted words are crossed out):.

Scope: Technical Committee 6.7 is concerned with all equipment, processes and systems which collect, convert, store and utilize solar energy or dissipate energy by nocturnal radiation. Overlap with other TCs is recognized where specific systems are included to utilize or distribute energy~~heat~~.

### III. SUBCOMMITTEE REPORTS

#### A. HANDBOOK – MARK HERTEL

Long-time subcommittee chairman Mark Hertel seeks someone to replace him as the handbook chair. Mark pointed out this is a good time for the transition because the next chapter up for revision appears in the 2011 Application Handbook. Also, the current members of the subcommittee are not very active and so new members are needed. As to the type of improvements foreseen for the next revision, the TC has been asked to add more examples of design calculations.

#### B. RESEARCH – TIM MERRIGAN

ASHRAE's research budget is approximately \$2.0 million. In response to their solicitation of the membership, ASHRAE received 138 responses on its proposed 2010-2015 strategic research plan. ASHRAE wants the new strategic plan to emphasize the bigger picture where more than one TC is involved and so hopefully stove-pipe research efforts are avoided. ASHRAE is assigning TCs to each of the strategic goals and a champion is being selected to lead the efforts. With regard to TC 6.7, the best fits appear to be cost effectiveness to net zero energy buildings and support of energy design guides.

Subcommittee chair Tim Merrigan reviewed the titles and objectives of RTARs and work statements that have been returned by the Research Administration Committee (RAC) at different times over the past few years. The attendees decided to take another look at these prior efforts and rank them for resubmittal. The four RTAR titles are: (1) Development of Solar-assisted Radiant Heating and Cooling Systems, (2) Validation of Passive Solar Cooling Estimation Procedures, (3) The Direct Regeneration of Desiccants with Solar Energy, and (4) Optimization and Testing of a Solar Cooling System. These RTARs were posted on the TC 6.7 website immediately following the Chicago meeting for review. Members were asked to rank



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these RTARs in an email reply to Tim. RTARs #3 and #4 received the highest rankings and so were submitted to RAC for their consideration.

Cenk Yavuzturk noted that some TCs are developing a document that delineates the next “X” number of years for the TC’s research goals. A starting point is the ASHRAE strategic plan and then identifying where the particular TC can contribute. Janice Means indicated that she is willing to start the process.

## **C. PROGRAM – JANICE MEANS**

The theme for Louisville is optimal indoor air quality. After much discussion, the TC voting members approved the following programs for Louisville (Janice moved; Andy Lowenstein seconded; 7-0-2, CNV):

1. Seminar: Combinations systems
2. Forum: How does solar thermal – passive and active – factor into the building energy labeling.

Costas Balaras agreed to help organize the proposed seminar. Potential speakers and topics include the IEA task group on solar cooling, an SAIC project with a 898 collector system coupled with thermal storage. Members agreed to seek co-sponsorship from TC 6.8 (Cenk), TC 6.9 (Janice), and/or TC 2.8 (Janice).

With regard to the potential forum, Ron Jarnagin, Terry Townsend, and Paul Torcellini were mentioned as the type of attendees sought at such a forum because of their involvement with the overall building energy labeling effort.

A Transactions session led by TC 6.8 has papers with solar thermal applications so TC 6.7 will offer to co-sponsor.

## **D. STANDARDS – BRIAN DOUGHERTY**

See attached report submitted by Brian Dougherty.

## **E. WEBSITE – SVEIN MORNER**

TC 6.7 webmaster Svein Morner reminded attendees to visit the website and, in particular, to view the membership page to make sure that the information is accurate.

TC 6.7 has three publications that are now out of print. ASHRAE wants us to remove references of these publications from the TC 6.7 web page. Attendees instead voted to petition ASHRAE Special Publications to allow us to provide these publications in a pdf format on the web site. The request is to be made in a letter from the chairman through the Head of Section 6. Part of the justification for the request is that the documents are referenced in the Handbook.

## **E. MEMBERSHIP – CENK YAVUZTURK**

TC 6.7 voting members for the coming society year are Cenk, Tim, Brian, and Costas (International). Candidates as new voting members are Gaylen Atkinson and Charlie Cromer. Voting members who are rolling off include Mark Hertel, Svein Morner, Andy Lowenstein, Janice Means, Andrew Chiasson, and Christian Vachon.



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## IV. LIAISON REPORTS FROM SOCIETY & OTHER ORGANIZATIONS

**ALI** (Henry Healey): No report

**TAC** (Gary ): No report

**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)**: No report.

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

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

**Solar Decathlon** (Mike Wassmer): No report.

**Energy Guide** (Don Colliver): Although renewables are a necessity to achieve net zero energy buildings, more economical options are available to get to the near term goal of a 30 percent reduction. Each of the energy guide documents are out for public review. So far, energy guides have been completed for new buildings (e.g., small offices, K-12 schools). A new document covering application for existing buildings is forthcoming.

A potential MBO for the TC is to become more involved in this effort. The next effort will be a 50% reduction in energy use series. All of the current documents in the series have been developed in less than a year.

## V. OLD BUSINESS

None

## VI. NEW BUSINESS

None

## VII. ADJOURNMENT

Meeting adjourned approximately 3:30 PM.



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Standards Subcommittee Report  
ASHRAE TC 6.7 Solar Energy Utilization  
2009 Winter Meeting – Chicago  
Standards Committee Liaison to TC 6.7: Jay Kohler

**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 held its third official meeting on Monday, January 26, 2009. The SPC plans to revise Standard 93 while making it more compatible with ISO Standard 9806. Anyone wishing to join the SPC (ASHRAE and non-ASHRAE members) are encouraged to do so. Please contact the SPC 93 Chair, Dr. Charles Cromer, 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 is in the process of recommending 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. SPC 95 Chair Merrigan will forward all the needed paperwork to ASHRAE staff for a vote on a publication public review. Although ASHRAE staff originally agreed that SPC 95 did not have to be repopulated in order for the modified adoption to move forward, the ASHRAE Standards Committee is now recommending that two members be added immediately. 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: Roger Hedrick

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.

**Std 109-1986 (RA 03)W** *MOT to Determine the Thermal Performance of Flat-Plate Solar Collectors Containing a Boiling Liquid*

This Standard has been withdrawn following approval by the ASHRAE Board of Directors on January 23, 2008.

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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 2009 Winter Meeting – Chicago

### **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.

### **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 TC180/SC4 last met on 17 October 2007 in Nicosia, Cyprus. This last meeting was held in conjunction with a meeting of CEN TC 312, “Thermal Solar Systems and Components.” Currently, the next meeting of ISO TC 180 has not been scheduled.

As noted below, 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 90.93 – international standard confirmed.
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 will be revised. A revision project team is currently being formed. Participating member countries are being asked to nominate experts who will assist with the revision.  
ISO document stage code is 90.93 – international standard confirmed.

## TC 6.7 Standards Subcommittee Report 2009 Winter Meeting – Chicago



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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 standard was withdrawn by ISO in 2005. SC4 passed Resolution 150 that calls for reinstating and revising the standard. Australia agreed to prepare the New Work Item Proposal (NWIP) and to generate a new draft that is based on the Australian national standard AS 2984. As of January 2009, no action has been taken on the NWIP.
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  
Jim Huggins, the project leader, is working on the latest revision. The next draft is project out for comment within the next few months.  
ISO document stage code is 30.00 – committee draft (CD) registered.
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/DTS 11924, “Solar heating – Domestic water heating systems – Test methods for the assessment of protection from extreme temperatures and pressures”  
Cognizant SC: 4  
The current document failed to receive sufficient votes for publication as a Technical Specification. SC4 agreed to add information from Annex C of EN 12976-2, “Thermal solar systems and components – Factory made systems – Part 2: Test methods,” within the draft revision.
7. 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 Cyprus meeting, TC 180 and CEN TC 312 agreed to have TC 180 initiate New Work Items for revising all three parts of ISO Standard 9806. Working Group 1 under CEN TC 312 will provide draft documents and other resource documents used in the revision of EN 12975 to the ISO working group that is tasked with the revision of ISO Standard 9806.  
ISO document stage code is 90.60 – international standard, close of periodic review.
8. ISO Standard 9806-2: 1994, “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.
9. 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





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***\*\*These draft minutes have not been approved and are not the official, approved record until approved by this committee.***

## 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>MARK HERTEL</i>

Meeting was Held	(Day) <i>TUESDAY</i>	(Date) <i>JUN. 24, 2008</i>
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<b>Membership</b>		
	Number Present	Total Number on Committee
Voting Members	7	9
International Members	1	1
Corresponding Members	1	47
Visitors and Guests	4	

<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
	<i>No. 21</i>	
	<i>No. 32</i>	

<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 ?