

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***

(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.: T.C. 6.7 DATE: May 22, 2008
 TC/TG/TRG TITLE: Solar Energy Utilization
 DATE OF MEETING: January 22, 2008 LOCATION: New York City, NY

MEMBERS PRESENT	YEAR APPTD*	MEMBERS ABSENT	YEAR APPTD*	EX-OFFICIO MEMBERS AND ADDITIONAL ATTENDANCE
Mark Hertel (Chair, Handbook)	03	Andrew Chiasson (Sec)	05	Larry Markel (RAC)
Tim Merrigan (VC/Research)	02	Christian Vachon	05	David Dinse (TVA)
Cenk Yavuzturk (Program)	03	Billy Black	CM	Paul Tanpitukpunese
Marija Todorovic (Int'l)	03	Norman Buckley	CM	Andrew McNamara
John Brown	04	Alan Chalifoux	CM	Russ Johnson
Janice Means	05	Brad Collins	CM	Wilfrid Laman
Andy Lowenstein	05	Kevin Cross	CM	
Brian Dougherty (Std)	CM	Peter Ellis	CM	
Costas Balaras	CM	William Fleming	CM	
Charlie Cromer	CM	Robert Foster	CM	
Robert Aresty	CM	John Gladstone	CM	
Erv Bales	CM	D.Y. Goswami	CM	
Gaylen Atkinson	CM	Cory Hasiak	CM	
		Richard Hayter	CM	
		Henry Healey (ALI)	CM	
		Hugh Henderson	CM	
		Bion Howard	CM	
		Jim Huggins	CM	
		Sanford Klein	CM	
		Fariborz Mahjouri	CM	
		Alfi Helmy Malek (Int'l)	CM	
		David Menicucci	CM	
		Svein Morner (Web)	CM	
		Stanley Mumma	CM	
		Richard O'Neil	CM	
		Henry. Peebles	CM	
		Tony Pierce	CM	
		Andrew Price	CM	
		Earl Rush	CM	
		David Schieman	CM	
		Harvey Stenger	CM	
		Dean Tompkins	CM	
		Robert Turner	CM	
		Michael Wassmer	CM	
		Maurice Wildin	CM	
		Byard Wood	CM	
		Paul Zeigler	CM	

*Starting month as a voting member is July of the year shown.



ASHRAE

Technology for a Better Environment

DISTRIBUTION

ALL MEMBERS OF TC/TG/TRG

TAC CHAIR: E. Groll/P. Graef

TAC SECTION HEAD: B. I. Kilgis/T.A. Weston

LIAISONS:

Program: J.H. Nix /L. Jackins ALI: J. DeBullet

Handbook: D. Meredith / D. Fitts RAC: L. Markel

Standards: J. Kohler TEGA: J. W. Gartner

Special Pubs: L. Fisher

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

MANAGER OF STANDARDS: C. B. Ramspeck



ASHRAE

Technology for a Better Environment

DRAFT MEETING MINUTES ASHRAE TC 6.7 – SOLAR ENERGY UTILIZATION Annual Winter Meeting – January 22, 2008 New York, New York

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

Meeting called to order shortly after 1:00 PM by Chair Mark Hertel. A quorum was achieved with seven of nine voting members in attendance. In addition to the chair, voting members present were: John Brown, Andy Lowenstein, Janice Means, Tim Merrigan, Cenk Yavuzturk, and Marija Todorovic (international member). (See Sections 2.2.3 and 5.1 of the *ASHRAE Manual of Procedures for Technical Committees, Task Groups, and Technical Resource Groups* for quorum requirements.)

Minutes from the Long Beach Summer Meeting, 2007 were approved.

II. CHAIR'S REPORT (Mark Hertel) TC Chairs Meeting:

- a) The Chapter Transfer Technology Committee will be presenting the webcast, "Integrated Building Design: Bringing the Pieces Together to Unleash the Power of Teamwork," on April 16, 2008.
- b) The theme for the 2008 Annual Meeting to be held in Salt Lake City is "Benchmarking".
- c) There is a goal to qualify sessions for PDH credit.
- d) ASHRAE and CEC are funding joint research projects.
- e) TC 6.7 website has been updated.
- f) ASHRAE expects TC's to develop MBO's.
- g) There are three slots open on this TC for voting members. As of July 1, 2008, Cenk Yavuzturk will become TC 6.7 Chair and Tim Merrigan will become the Vice Chair. The number of voting members on this TC has been reduced to seven. Brian Dougherty suggested assigning corresponding members to TC 6.7 committees.

III. SUBCOMMITTEE REPORTS

A. HANDBOOK – MARK HERTEL

Chapter 33 for the ASHRAE Systems and Equipment Handbook has been approved for publication. Examples pertinent to this TC are requested for applicable chapters in the Applications Handbook.

B. RESEARCH – TIM MERRIGAN

Two new RTARs are planned on the following topics: (i) Design Guidelines for a Collector Testing Procedure, (ii) Underground Thermal Storage (TC6.9 may be interested in co-sponsorship), (iii) Technical Characterization and Measurement of BIPV, and (iv) Optimization and Energy Conservation of PV-driven AC units.

The deadlines for submitting RTARs for this year are May 15, August 15 and December 15.



ASHRAE

Technology for a Better Environment

C. PROGRAM – CENK YAVUZTURK

TC 6.7 sponsored Seminar 44, “Solar Decathlon”, this morning. More than fifty people attended this lively seminar. There will be another Solar Decathlon seminar offered at the Salt Lake City meeting. This seminar will feature the top three seats in the competition: Technische Universtat from Germany (1st); University of Maryland (2nd); and Santa Clara University (3rd).

Additional future program plans include the following:

- (i) A seminar on Solar Combi Systems (combined Solar Heating, DHW and AC). Guidelines for sizing and case studies could be presented by Wilfred Laman. Costas Balaras will consider presenting for either Salt Lake or Chicago and will advise by next week.
- (ii) Seminar on the use of desiccant wheels to remove latent heat during summer.

Program information for the Salt Lake City meeting is due by February 8th and should include: Name of Speaker(s), Title(s) and Topic.

D. STANDARDS – BRIAN DOUGHERTY

The Standards Committee will meet on Monday at 3:00 PM for the Salt Lake City June meeting. Charlie Cromer is rewriting Standard 93 to make it more compatible with ISO Standard 9806.

See attached report submitted by Brian Dougherty.

E. WEBSITE – SVEIN MORNER

No report.

IV. LIAISON REPORTS FROM SOCIETY & OTHER ORGANIZATIONS

ALI (Henry Healey). No report.

TAC (Theresa Weston): No report.

RAC (Larry Markel):

- i) Seminar 66 from TC 1.9, Electrical Systems, was presented this morning. It’s title was “Connecting Your Net-zero Building to the Grid”.
- ii) The work statement regarding “*The Direct Regeneration of Desiccants with Solar Energy*” will be dropped if not re-submitted.
- iii) TC 9.9 Mission Critical Facilities, Technology Spaces and Electronic Equipment Data, is interested in the incorporation of solar with evaporative chillers for cooling datacom rooms. This could potentially be an opportunity for an RTAR.
- iv) Prior restrictions on who could submit for an RTAR have been lifted. ASHRAE wants the best people to work on research and especially wants multiple co-authors.
- v) The submittal deadline for RTARs is May 15, 2008.

Handbook (Dave Meredith, Applications; Doug Fitts, Systems and Equipment):

Doug Fitts advised that there is a new “Handbook Central” on the ASHRAE website. ASHRAE members can review chapter drafts at this site. The user name is “Handbook Hero” and the password is “HVACREV”. He requested that we look at the Chapter from an ‘outside perspective’ and request



ASHRAE

Technology for a Better Environment

others to also review including: other organizations, maintenance firms, engineering firms, etc. One needs to contact ASHRAE to formally review. Dave Meredith also advised that more input for CD+ is requested yearly with practical applications of formulas, drawings, examples, etc., with emphasis on sustainability.

Other TCs: No report.

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.

V. OLD BUSINESS

Membership Update: Janice K. Means will be the new Program Committee Chair beginning on July 1, 2008. Cenk Yavuzturk will become TC 6.7 Chair and Tim Merrigan will become the Vice Chair.

ASHRAE Headquarters Project: Work is proceeding. Attendees were encouraged to go online and review the solar systems (230 gallon thermo-siphon and PV).

Master Format Request: It is important to review the master formats regarding solar. PV is found in three sections. The process for making changes requires a form. Mark Hertel will circulate more information once received from CSI.

VI. NEW BUSINESS

Revision of TC 6.7 Scope of Work: The development of MBOs depends on how the committee's scope of work is defined. Tim Merrigan proposed the following statement for scope of work on January 12, 2008: "TC 6.7 is concerned with all equipment and systems which collect, store and utilize solar energy in all of its forms, or dissipate energy by nocturnal radiation. Overlap with other TCs is recognized where specific systems are included to utilize or distribute heating or cooling." Much brainstorming ensued. Mark Hertel will incorporate the comments into an email to the committee.

VII. ADJOURNMENT

Meeting adjourned approximately 3:30 PM.

Prepared by Janice K. Means and submitted by Andrew Chiasson, TC6.7 secretary.



ASHRAE

Technology for a Better Environment

Standards Subcommittee Report
ASHRAE TC 6.7 Solar Energy Utilization
2008 Winter Meeting – New York City
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 first official meeting on Monday, January 21, 2008. 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, Teri Davis (404-636-8400, ext 1125 or by email at PCMembership@ashrae.net).

Std 95-1987P¹ *MOT to Determine the Thermal Performance of Solar Domestic Water Heating Systems*

SPC Chair: Tim Merrigan

SPC Liaison: Roger Hedrick

Co-cognizant TC: 6.6 (Service Water Heating)

In August 1995, SPC 95P voted (5-0-1) to recommend 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. This recommendation initially sat dormant until a couple of years ago when ASHRAE added procedures on how to adopt international standards. Thereafter, ASHRAE staff generated a Word version of the ISO standard. Prior to this meeting, Brian Dougherty proposed both substantive and non-substantive modifications to the working draft. The proposed substantive modifications are consistent with the original SPC 95 members’ goal of changing Annex A, “Test day specifications”, from being classified as normative to being classified as informative. The document was forwarded to SPC 95 Chair Merrigan for review with the goal of moving it forward for 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 we add two members immediately. Chairman Merrigan plans to address the membership issue immediately.

Std 96-1980 (RA 89)P¹ *MOT to Determine the Thermal Performance of Unglazed Flat-Plate Liquid-Type Solar Collectors*

SPC Chair: James Huggins

SPC Liaison: Roger Hedrick

SPC 96P conducted a series of teleconferences and email exchanges in February and March 2007. After exploring options and reviewing pertinent past work on the subject, the committee reaffirmed its position 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.” Now that SPC 95 has progressed far enough along the ISO adoption pathway, SPC 96 is next in line for starting the ISO adoption process. The SPC 96 Chair has requested that ASHRAE staff generate a Word version of the ISO standard so that the SPC may use it as a working draft.

¹ *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.



ASHRAE

Technology for a Better Environment

TC 6.7 Standards Subcommittee Report 2008 Winter Meeting – New York City

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

The current standard is a reaffirmation of the 1986 publication. TC 6.7 voted (8-0-0-1, CV) to recommend that this standard be withdrawn via an email ballot conducted immediately prior to the January 2007 Winter Meeting. Knowledgeable members of the solar thermal community are not aware of a specific product (i.e., flat-plate collectors containing a boiling liquid) on the market for the last several years that is rated using ASHRAE Standard 109. Unlike other ASHRAE Standards, in addition, Standard 109 is neither referenced by the Solar Rating and Certification Corporation nor the basis for an ISO standard. A Withdrawal Public Review was conducted from September 14 to October 29, 2007. No comments were received. The withdrawal action must now receive final approval from the ASHRAE Standards Committee, Technology Council, and the Board of Directors.

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 reaffirmation public review was completed in late June 2005. No comments were received. The document was approved for publication by the ASHRAE Board of Directors on January 22, 2006. Since its publication, an errata was generated to address errors found by a users of the standard. This errata may be downloaded at <http://www.ashrae.org/technology/page/120>.

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 met on 17 October 2007 in Nicosia, Cyprus. TC 180 met in conjunction with CEN TC 312, “Thermal Solar Systems and Components,” on 16 and 17 October 2007 in Nicosia. Several resolutions were passed at both the TC and SC meetings. ISO TC 180, and SC4, tentatively plan to next meet in Beijing, China. As an alternative, TC 180 and SC4 may hold a meeting in conjunction with the CEN TC 312 meeting that is scheduled for London, England on 17 and 18 November 2008.

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 or 404-636-8400, ext. 504).



ASHRAE

Technology for a Better Environment

TC 6.7 Standards Subcommittee Report 2008 Winter Meeting – New York City

1. ISO Standard 9459-1: 1993, “Solar heating – Domestic water heating systems – Part 1: Performance rating procedures using indoor test methods”
Cognizant SC: 4
At their April 2006 meeting in Spain, SC4 passed Resolution 148 which recommended to SC5 that the relevant solar simulator specifications within Standard 9459-1 should be transferred to ISO standard 9806-1, “Test methods for solar collectors – Part 1: Thermal performance of glazed liquid heating collectors including pressure drop.” If implemented, SC4 would then act to ballot ISO 9459-1 for withdrawal, dependent upon a review of ISO 9459-1, Clause 4 – Symbols. Since ASHRAE SPC 95 is pursuing a modified adoption of this ISO standard, Brian Dougherty inquired whether these withdrawal plans were firm. Australia’s Ken Guthrie, the Chair of ISO TC 180, responded that the ISO standard would not be withdrawn if it is adopted as a national standard.
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.
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. At its April 2006 meeting, SC4 passed Resolution 150 that calls for reinstating and revising the standard. This resolution was upheld at the Cyprus meeting. Australia agreed to prepare the New Work Item Proposal and to generate a new draft that is based on the Australian national standard AS 2984.
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
In Cyprus, SC4 discussed specific elements of the working draft. By the end of the meeting, SC4 agreed to advance the draft, as revised, to the Committee Draft Stage (30.00) and requested that the Secretary, ASHRAE’s Doug Tucker, register the draft with ISO CS. The revised draft is to be circulated to SC4 within 2 month of the registration. Jim Huggins is the project leader.
ISO document stage code is 30.00 – committee draft (CD) registered.
5. ISO/FDIS 9459-5, “Solar heating – Domestic water heating systems – Part 5: System performance characterization by means of whole-system tests and computer simulation”
Cognizant SC: 4
The Draft International Standard (DIS) ballot passed with 12 of 13 P-members voting in favor; the US was lone disapproving vote. The negative vote was cast because the standard is based on the use of a proprietary software package that is not readily available. In the past six months, the Final Draft International Standard (FDIS) ballot was completed with the document being published as an international standard in May 2007.



ASHRAE

Technology for a Better Environment

ISO document stage code is 60.60 – International standard published.

TC 6.7 Standards Subcommittee Report 2008 Winter Meeting – New York City

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. The secretary is then to circulate the revised draft for a decision to publish.
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.
10. ISO/TR 12596:1995 / Cor 1:1996, “Solar heating – Swimming-pool heating systems – Dimensions, design and installation guidelines.”
Cognizant SC: 4
At its April 2006 meeting, SC4 passed Resolution 151 that calls for publishing an ISO Publicly Available Specification (PAS) that is based on the previously withdrawn technical report, ISO/TR 12596:1995. This resolution was upheld at the Cyprus meeting. The US will prepare the draft and circulate it to the SC4 members for a decision to publish.

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>MARK HERTEL</i>

Meeting was Held	(Day) <i>TUESDAY</i>	(Date) <i>JAN. 22, 2008</i>
------------------	----------------------	-----------------------------

Membership		
	Number Present	Total Number on Committee
Voting Members	<i>7</i>	<i>9</i>
International Members	<i>1</i>	<i>1</i>
Corresponding Members	<i>3</i>	<i>49</i>
Visitors and Guests	<i>7</i>	

Handbook Responsibilities *		Standards Responsibilities *	
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>	

Program Activities * at this Meeting		
Transactions	Seminar	Forum
	<i>No. 44</i>	

Current Research Activities *		FAQs Responsibilities *	
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 ?