

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***

(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: September 8, 2007
TC/TG/TRG TITLE: Solar Energy Utilization
DATE OF MEETING: June 26, 2007 LOCATION: Long Beach, CA

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	Andy Lowenstein	05	Doug Fitts (Handbook Liaison)
Cenk Yavuzturk (Program)	03	Christian Vachon	05	Lane Jackins (Programs)
Marija Todorovic (Int'l)	03	Svein Morner (Web)	CM	Tom Meyer (USGBC, GMC)
John Brown	04	Charilie Cromer	CM	
Janice Means	05	Sanford Klein	CM	
Brian Dougherty (Std)	CM	Tony Pierce	CM	
Costas Balaras	CM	Robert Aresty	CM	
Brad Collins	CM	Billy Black	CM	
		Norman Buckley	CM	
		Alan Chalifoux	CM	
		Kevin Cross	CM	
		Peter Ellis	CM	
		William Fleming	CM	
		Robert Foster	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	
		Fariborz Mahjouri	CM	
		Alfi Helmy Malek (Int'l)	CM	
		David Menicucci	CM	
		Stanley Mumma	CM	
		Richard O'Neil	CM	
		Henry. Peebles	CM	
		Andrew Price	CM	
		Earl Rush	CM	
		David Schieman	CM	
		Harvey Stenger	CM	
		Dean Tompkins	CM	
		Robert Turner	CM	
		Christian Vachon	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.



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DISTRIBUTION

ALL MEMBERS OF TC/TG/TRG

TAC CHAIR: E. Groll/P. Graef

TAC SECTION HEAD: B. I. Kilgis/D. Brundage

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



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MEETING MINUTES ASHRAE TC 6.7 – SOLAR ENERGY UTILIZATION Annual Summer Meeting – June 26, 2007 Long Beach, California

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

Meeting called to order at 13:05 by Chair Mark Hertel. A quorum was achieved with six of nine voting members in attendance. In addition to the chair, voting members present were: John Brown, Janice Means, Cenk Yavuzturk, Tim Merrigan 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 Dallas Winter Meeting, 2007 were approved. Moved by Tim Merrigan, seconded by Brian Dougherty with the following correction: Tim Merrigan was present.

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

Manual of Procedures: The manual of procedures was revised in March, accepted in April of 2007. Significant changes: Vice Chair now is more engaged. All corresponding members are to be assigned to a sub-committee and will be permitted to vote within the subcommittee. (The Manual is available on line.)

Roster: The new Section Chair is Theresa A. Weston (Dupont), who replaced Don Brundage. Don is now working at the Society level.

Thank you letter from the President. Advise Mark Hertel if you wish to have one sent to your employer for work on this TC.

ASHRAE Headquarters. The building will have a "living lab" for training. There is going to be a 20 kW PV system on roof.

New TC's: Newly formed TC's are included on ASHRAE's website.

ASHRAE Server Downage: All TC web sites went down with the server crash. Due to the crash, everyone should update and recheck their bios.

CTTC Web Casts: The April 2006 web cast had over 17000 viewers. The next web cast, "Integrated Building Design", will be broadcast on April 16, 2008.

III. SUBCOMMITTEE REPORTS

A. HANDBOOK – MARK HERTEL

Submitted Chapter on Systems and Equipment with committee vote. Also converting to kWh units. We want to submit some spreadsheets and other for the CD version of the Handbooks. Committee needs to review both chapters and look at what needs to be revised for future additions within the next two years. Next chapter is Applications 2010.

B. RESEARCH – TIM MERRIGAN

Potential Research. At last night's meeting, the committee discussed some potential research. Solar Radiant Heating and Cooling topic was turned down and needs to be reviewed. The committee is also looking into other topics: Storage, Cooling, Design Guide potential. Committee is open to other ideas which could be



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written into RTARS. Maria suggested topic of integrated PV, renewable energy integration (PV, thermal, etc.)

RTAR Form RTAR form is on the ASHRAE web site. Due August 15, 2007, but we need to circulate and get Larry's comments prior to that time. Brian Dougherty suggested contacting others who had indicated interest.

BIPV The topic of BIPV may be added to TC 4.4 Building Envelope. We don't know who will be the lead, but may share with TC 4.4. Mark requested feedback on if our TC should keep BIPV topic area or not. It was suggested that Erv Bales be contacted by Brian Dougherty to discuss his intentions and rationale in making a motion to have BIPV added to the TC 4.4. We will create an action item to review and possibly modify our 'definition' of work scope in examining the BIPV system.

C. PROGRAM – CENK YAVUZTURK

2008 ASHRAE Meeting in NYC (Safe & Healthy Buildings): Two seminars are planned: Solar Decathlon (NYAT, Georgia Tech, Penn State, Lawrence Tech Univ.) Mike Wassner (NREL) is speaking and will chair the session. Each presentation should be 20 minutes each. Renewable Energy (Urban Cities).

2007 ASHRAE Annual Meeting in Long Beach: Today's session, "What's New Under the Sun", was attended by approximately 170 persons, with standing room only.

2008 ASHRAE Annual Meeting in Salt Lake City: A potential transactions session was discussed. Maria suggested a paper on a BIPV case study (Far East), 3-wind turbines covered in Middle East Wind-Integrated Building case studies. Cenk Yavuzturk will also contact Tim Merrigan for another paper.

2008 ASHRAE Annual Meeting in Salt Lake City: Potential ideas for a seminar on "Net Zero Energy in Cold Climates". Other ideas are being solicited: Heat Pump. [If for transactions, then papers must be submitted by September 28, 2007.] HFH House in Denver; Net Zero House on Mall from 2001. "Living in a zero energy house".

D. STANDARDS – BRIAN DOUGHERTY

See attached report.

E. WEBSITE – SVEIN MORNER (Mark Hertel reported)

Attendance at Meetings: Svein wishes to continue as webmaster, but will not be attending meetings for the next three years.

Web Space: Available space is being expanded.

IV. LIAISON REPORTS FROM SOCIETY & OTHER ORGANIZATIONS

A. ALI – HENRY HEALY

Will the solar course be presented in NYC?

B. TAC SECTION 6 – DON BRUNDAGE (Mark Hertel reported)

TAC: Theresa A. Weston (Dupont) will replace Don Brundage as TAC Section 6 Liaison.
Research Liaison – Larry Markel



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Pending work statement: Need to submit it by Aug 15, 2008 if we want to get approval at the Tech weekend in October. If anyone wants to speak with him with regard to solar research, ASHRAE should be able to fund it.

Rescinded Action: Work statement authors can now bid on research.

Larry Markel offered his assistance with reviewing RTARS prior to turning them in..

Programs – Lane Jackins

Meeting AV Recordings: Beginning in NYC, everything will be recorded and releases will need to be signed.

Handbook Liaisons – '11 Applications – '08 Systems & Equipment – Doug Fitts

Codes & Standards Section: HB committee is asking if the section on Codes and Standards is ever used.

Currently this section is in every volume.

HB CD+: The Handbook Committee is looking for material for the CD+.

Other TC's

TC 2.8 & Special Publications will send out a request for input on the new Green Guide.

TC 1.4 Control Theory & Applications –Gaylen Atkinson – has a green buildings controls subcommittee working with the Green Guide which is interested in a liaison with TC 6.7. The issue was raised that solar controls are not typically integrated with BASs. A meeting scheduled for TC 1.4 NYC at 2:00 PM on Sunday.

LEED Energy and Atmosphere TAG – Bion Howard (no report)

Mark reported that we were asked to review guidelines from NAHB.

C. ASES – BRAD COLLINS

Overview of ASES/ASHRAE: There is an agreement to increase participation between both societies.

Next ASES Conference: Cleveland “Sustainable Energy Puts America to Work” on July 8-12 and then in May 2008 in San Diego.

Policy Issues: Policy issues are coming out in the U.S. therefore more players from all societies in the build environment are needed. Brad suggests a need to come together to discuss and act upon policy issues.

Articles: ASES is requesting articles from ASHRAE members for the ASES *Solar Today* that will help to educate the public.

Solar Tour: The National Solar Tour is scheduled every October. It is in its 11th year. Attendance has grown to 90,000 attendees in 46 states, some with multiple tours and/or multiple days of tours.

ASES Website: Common questions are answered at the ASES Website (www.ases.org) on topics such as: payback, carbon offset, information on who to get to install solar, etc.

Public Website: Another website, www.findsolar.com, was created by ASES in partnership with other groups (including the U.S. DOE) and is written for the public to answer questions about tax incentives, calculations, energy received from sun, carbon savings, etc. It also has other buttons with consultants, educational sources, etc.

Go to site for free downloads of research and climate change report at www.ases.org/climatechange.

D. SOLAR DECATHLON – MARK HERTEL

Schedule for Washington DC Mall: Oct. 3 – setup, Oct. 11 – opening, Awards Ceremony Oct 19, Oct 20 begin teardown

Request for Volunteers: ASHRAE is asking for volunteers for the Solar Decathlon. There will also be a tent on the mall for ASHRAE (NREL) with displays for public education. Displays are requested.



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V. OLD BUSINESS

A. MEMBERSHIP UPDATE

Diversity: Mark suggested that the committee diversify our membership, e.g., younger members, other countries, etc.

Bios: All members should check their bios.

Roster: Mark will add those requested to roster.

VI. NEW BUSINESS

A. GMC

Tom Meyer, ASHRAE liaison for the USGBC and on the Program Committee to plan Green Build, introduced the committee to the Green Mechanical Council, GMC. He is also the Executive Director GMC. The group is very involved in education. GMC was formed because contractors have difficulty reading 'handbooks', therefore all material available on the website is written as if to an 8th grade class. GMC also writes training manuals for schools. They have a desire to learn about renewables and are filling an advisory board on Solar Energy. Soon, they will be posting a virtual library. Therefore, they are seeking 30-minute educational Powerpoints. The organization is involved with a mechanical scoring system, e.g., for mechanical systems with Green Globes. Memberships are available. The GMC website is: www.greenmech.org. Their web site is receiving 8-10 thousand hits per day. An Academic Advisory Board is being formed. One does not need to be a member to sit on this board. GMC sponsors the EcoBuild Conference twice a year, in May (this year in Anaheim) and December (this year December 12th in Washington, DC).

B. PROFESSIONAL DEVELOPMENT – DAVE MEREDITH

Question: Has the short course, *Successful Solar Applications*, been revised?

VII. ADJOURNMENT

Meeting adjourned at 3:27 PM.

Respectively prepared and submitted by Janice K. Means on behalf of TC6.7 secretary, Andrew Chiasson.



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Standards Subcommittee Report
ASHRAE TC 6.7 Solar Energy Utilization
2007 Annual Meeting – Long Beach
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: Eli Howard

The current standard is a reaffirmation of the 1986 publication and its latest ANSI approval occurred on April 22, 2003. The formation of the SPC was approved at the June 2006 Annual Meeting in Quebec City. In accordance with current ASHRAE policy, all Standard Project Committees must obtain a minimum of five voting members within 12 months after the project committee is approved (see section 4.3 of the PC MOP). Two voting members were approved prior to the Long Beach meeting. Three more voting members and one non-voting member were approved by the ASHRAE Standards Committee at the Long Beach meeting. Despite satisfying ASHRAE requirements, SPC 93R still seeks additional members. Volunteers (ASHRAE and non-ASHRAE members) willing to serve on the committee are asked to contact the ASHRAE staff member who oversees Project Committee membership, Teri Davis (404-636-8400, ext 1125 or by email at PCMembership@ashrae.net). Potential committee members will be required to update or create a biographical record and complete an Individual Application for Project Committee Membership and Bias form.

In Long Beach, SPC 93R met informally on Monday, June 25, to start discussing logistics and plans for the revision. The committee also must address balance issues. Based on ASHRAE records, the committee has too many general interest members (4) and too few “users” members (0).

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)

SPC 95P has voted to 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. ASHRAE staff has confirmed that SPC 95 does not have to be repopulated in order for the modified adoption to begin. The August 1995 vote (5-0-1) to recommend the adoption is still viewed as acceptable. New SPC 95 members will be needed if comments are received during the public review. ASHRAE staff has generated a Word version of the ISO standard. Brian Dougherty has made non-substantive editorial corrections to the draft along with the one substantive change recommended by the original SPC 95 members: changing Annex A, “Test day specifications”, from being classified as normative to being classified as informative. The document must be forwarded to SPC 95 Chair Merrigan for a final review and then submitted to ASHRAE staff for public review.

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.



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Technology for a Better Environment

TC 6.7 Standards Subcommittee Report 2007 Annual Meeting – Long Beach

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.” Volunteers (ASHRAE and non-ASHRAE members) are still sought to serve on the SPC. If interested, please contact the ASHRAE staff member who oversees Project Committee membership, Teri Davis (404-636-8400, ext 1125 or by email at PCMembership@ashrae.net).

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. The ASHRAE Standards Reaffirmation Subcommittee approved TC 6.7’s recommendation for withdrawal at the Long Beach meeting. A “Withdrawal Public Review” will begin in September 2007.

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: 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 5 April 2006 in Las Palmas de Gran Canaria, Spain. The next meeting of TC 180, including SC4, is scheduled for the week of October 15, 2007 in Nicosia, Cyprus.



ASHRAE

Technology for a Better Environment

TC 6.7 Standards Subcommittee Report 2007 Annual Meeting – Long Beach

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 9459-3: 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. Australia agreed to prepare the New Work Item

Proposal to implement this resolution and to generate a new draft that is based on an Australian national standard.
3. ISO / AWI 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 program has been reinstated and will use ENV/CEN 12977-2, “Thermal solar systems and components – Custom built systems – Part 2: Test methods” as the basis for the ISO document. Consideration will also be given to referencing the Australian standard AS 4234, “Solar water heaters – Domestic and heat pump – Calculation of energy consumption.” Jim Huggins is the project leader. A draft of ISO 9459-4 (which is based on SRCC TM-1 method and uses warm-up and heat loss data to develop a TRNSYS model) has been submitted to the committee. The draft will be among the items discussed at the October 2007 meeting.
ISO document stage code is 20.00 – new project registered in TC/SC work program.
4. 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.
ISO document stage code is 60.60 – International standard published.



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TC 6.7 Standards Subcommittee Report 2007 Annual Meeting – Long Beach

5. ISO/WD TS 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 is being revised with the goal of publishing it as an ISO Standard. At its April 2006 meeting, SC4 agreed to include information in Annex C of EN 12976-2, “Thermal solar systems and components – Factory made systems – Part 2: Test methods,” within the draft revision of ISO/WD TS 11924.
ISO document stage code is 20.99 – working draft approved for registration as a committee draft.
6. 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)
ISO document stage code is 90.20 – international standard under periodic review.
7. 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.

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>JUN. 26, 2007</i>
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Membership		
	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>3</i>	<i>49</i>
Visitors and Guests	<i>4</i>	

Handbook Responsibilities *		Standards Responsibilities *	
Volume and Chapter (number only)	Next Revision Due Date	Standards Number (number only)	Next reaffirmation date
<i>APPLICATIONS</i>	<i>MAR. 22, 2010</i>	<i>95-1987</i>	
		<i>96-1980</i>	
		<i>125-2002</i>	
		<i>93-2003</i>	
		<i>109-1986</i>	

Program Activities * at this Meeting		
Transactions	Seminar	Forum
	<i>No. 54</i>	

Current Research Activities *		FAQs Responsibilities *	
Research Project (number only)	PMS meeting held (yes/no)	FAQ number (number only)	Last time reviewed
<i>1109</i>		<i>79</i>	
<i>1428</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 ?