

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: June 17, 2004

TC/TG/TRG TITLE: Solar Energy Utilization

DATE OF MEETING: January 27, 2004 LOCATION: Anaheim, California

MEMBERS PRESENT	YEAR APPTD*	MEMBERS ABSENT	YEAR APPTD*	EX-OFFICIO MEMBERS AND ADDITIONAL ATTENDANCE
Svein Morner (Chair)	01	B. Dougherty (Std/Sec)	00	Nance Lovvorn (RAC Liaison)
Tim Merrigan (VC/Research)	02	J. Huggins	00	Birol Kilkis (TAC Liaison)
Mark Hertel (Handbook)	03	H. Stenger	02	Andrew Lowenstein (G)
Maria Todorovic (Int'l)	03	D. Menicucci	02	John Brown (G)
		A. Helmy Malek (Int'l)	00	Christian Vachon (G)
Cenk Yavuzturk (Program)	CM			Cory Hasiak (G)
H. Healey (ALI)	CM	R. Aresty	CM	Peter Ellis (G)
Tony Pierce (Web)	CM	E. Bales	CM	
Andrew Chiassom	CM	B. Black	CM	
Kevin Cross	CM	N. Buckley	CM	
		M. Butler	CM	
		A. Chalifoux	CM	
		C. Cromer	CM	
		W. Fleming	CM	
		R. Foster	CM	
		J. Gladstone	CM	
		D. Goswami	CM	
		R. Hayter	CM	
		H. Henderson	CM	
		B. Howard	CM	
		S. Klein	CM	
		L. Lister	CM	
		F. Mahjouri	CM	
		S. Mumma	CM	
		R. O'Neil	CM	
		E. Olsen	CM	
		H. Peebles	CM	
		A. Price	CM	
		E. Rush	CM	
		D. Schieman	CM	
		E. Seiler	CM	
		D. Tompkins	CM	
		R. Turner	CM	
		M. Wassmer	CM	
		M. Wildin	CM	
		B. Wood	CM	
		P. Zeigler	CM	

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

DISTRIBUTION

ALL MEMBERS OF TC/TG/TRG

TAC COMMITTEE CHAIRMEN: M. C. Hegberg

TAC SECTION HEAD: B. I. Kilkis

LIAISONS:

Program: _____ F. W. Betz ALI: _____ S. A. Mumma

Handbook: _____ R. L. Davis RAC: _____ N. C. Lovvorn

Standards: _____ D. E. Knebel TEGA: _____ J. W. Gartner

Special Pubs: _____ M. A. Listvan

MANAGER OF TECHNICAL SERVICES: M. R. Vaughn

MANAGER OF RESEARCH: _____ M. R. Vaughn

MANAGER OF STANDARDS: _____ C. B. Ramspeck



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MEETING MINUTES ASHRAE TC 6.7 – SOLAR ENERGY UTILIZATION Winter Meeting – January 27, 2004 Anaheim, California

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

Chairman Svein Morner called the meeting to order. The attendees made self-introductions and a sign-in sheet was circulated. Four of eight voting members were present, thus not constituting a quorum. Absent international member Malek did not count against the quorum. (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.) No official voting took place at the meeting.

II. LIAISON REPORTS FROM OTHER COMMITTEES

Nance Lovvorn, the section 6 liaison for the Research Administration Committee (RAC), offered a recommendation to seek research topic acceptance requests (RTARs) that can gain co-sponsorship from other technical committees.

Birol Kilkis, the new Technical Activities Committee (TAC) liaison for Section 6, introduced himself.

III. CHAIRMAN’S REPORT

Chairman Morner reported on matters presented at the TC Chairs meeting/breakfast. ASHRAE is encouraging TCs to do more programs: symposiums, seminars, and forums. The deadline for seminar submittals for Nashville is February 13, 2004. Future program deadlines are listed in the below table.

ASHRAE has requested that TCs comment on the Green Guide (see the January 2004 issue of *ASHRAE Insights*, Vol. 19, Issue 1 or <http://www.ashrae.org/template/AssetDetail/assetid/30522>). Mark Hertel commented that solar thermal topics were not emphasized and suggested that the TC so comment. Henry Healey concurred. TC 6.7 agreed to provide comments. The Guide was not sent out to the TCs for commentary prior to publication.

ASHRAE is encouraging TCs to use the ASHRAE Headquarters building as an example building when providing example calculations and cases in the handbooks. Building details, including drawings, will be placed on the ASHRAE web site for download.

Program Package Deadlines		
Program	Technical Papers Due for Review	Completed Packages Due
Orlando, Florida – Winter 2005	—	August 6, 2004
Denver, Colorado – Annual 2005	September 24, 2004	February 18, 2005
Chicago, Illinois – Winter 2006	April 1, 2005	August 5, 2005
Quebec City – Annual 2006	September 23, 2005	February 10, 2006

IV. SUBCOMMITTEE REPORTS

A. HANDBOOK SUBCOMMITTEE – MARK HERTEL

TC 6.7 is responsible for two handbook chapters: Chapter 33 of the HVAC Systems and Equipment Handbook, “Solar Energy Equipment,” and Chapter 32 of the HVAC Applications Handbook, “Solar Energy Use.” TC 6.7 has approximately two years to work on its revision to Chapter 32 in the Applications Handbook. The first draft must be submitted within a year. The second year is used to collect comments and conduct editing. Mr. Hertel is leading the effort to re-sequence the information that is provided in the handbook. Information that had been published



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separately in design guides will be added to the handbook in an effort to make it more usable for solar design engineers.

B. RESEARCH SUBCOMMITTEE – TIM MERRIGAN

TC 6.7 has two RTARs: (1) Solar Radiant Heating and Cooling and (2) Optimization and Testing of a Double Effect Solar Driven Absorption Chiller and Dual Fired Generator. Neither RTAR was approved by RAC during their October 2003 meeting. These two RTARs will be modified and updated based on the comments received from RAC and then considered for resubmittal. In addition, an effort will be made to write one or two new RTARs. Dr. Todorovic indicated that she would try to develop one prior to the Nashville meeting. In Nashville, the TC will rank all available RTARs so that they may be submitted in the weeks following the June meeting.

Mr. Merrigan will check that the final report on 1109-TRP, a project conducted by Solar Energy Design Associates, is submitted to ASHRAE.

C. PROGRAM SUBCOMMITTEE – CENK YAVUZTURK

TC 6.7 and TC 2.8 (Building Environmental Impacts and Sustainability) co-sponsored a symposium at this meeting. Symposium AN-04-10, “Renewable Energy Sources, Energy Efficiency and BPS for Sustainable Local and Regional Development,” included three papers. Symposium chair Marija Todorovic reported that the session evaluations yielded an average score of about 4. ASHRAE records indicate that 49 people attended.

For the next meeting in Nashville, a seminar is planned. The title of the seminar is “Leading Edge Solar Energy Technologies.” Svein Morner will chair the session. Seminar presenters include Jeff Christian, Marija Todorovic, Andy Lowenstein, and Chris Vachon. One or possibly two seminars are being targeted for the 2005 Winter meeting in Orlando. Henry Healey offered to act as a seminar chair. Possible topics are standards issues and local issues. For the 2005 Annual meeting in Denver, the goal is to conduct a symposium. Cenk Yavuzturk offered to act as chair. Finally, for the 2006 Winter meeting in Chicago, a program dedicated to the winners of the 2005 Solar Decathlon competition is projected.

D. STANDARDS SUBCOMMITTEE – TIM MERRIGAN FOR BRIAN DOUGHERTY

Tim Merrigan summarized the standard subcommittee report provided by the absent Brian Dougherty. Mr. Merrigan emphasized that ASHRAE is seeking volunteers to participate on ISO TC 180 (Solar Energy) standards activities. Specifically, ASHRAE needs a chair for ISO TC 180/SC 4, “Systems – Thermal Performance, Reliability, and Durability,” and volunteers to serve on the US Technical Advisory Group (TAG) that formulates the US position on ISO TC 180 standard activities. Mr. Dougherty’s report is attached.

E. WEBMASTER - TONY PIERCE

Chairman Morner noted that design guides can be posted on the TC’s web page. ASHRAE has still not moved the TC 6.7 web page to the ASHRAE server. The target conversion was mid March. The transition was still pending in June. The present URL is <http://www.f-w.com/ashrae>, which is linked to the ASHRAE web site (<http://www.ashrae.org/>) by clicking, in order, on (1) Technology and Standards, (2) Technical Committees, and (3) TC 6.7 Solar Energy Utilization.

ASHRAE’s new policy is to post all seminar presentations.

F. ASHRAE LEARNING INSTITUTE – HENRY HEALEY

At the Anaheim meeting, ALI Coordinator Healey was the instructor for the short course “Cost Effective Commercial and Industrial Solar Applications.” Mr. Healey estimated the attendees to be between 20 and 30. The attendees agreed that the course should be repeated at every other Winter meeting.

Mr. Healey also reported that he gave a presentation to his local ASHRAE chapter.



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V. Membership

Chairman Morner went over the roster for the next society year. Jim Huggins, Brian Dougherty, and Alfi Malek will cycle off as voting members after the June 2004 meeting. New voting members will be Cenk Yavuzturk and John Brown. Peter Ellis asked to be added as a corresponding member.

Chairman Morner will continue in his present role for one additional year. Chairman Morner accepted volunteers for all subcommittee assignments except secretary. The committee, starting in July 2004, will be:

Svein Morner	-	Chair
Tim Merrigan	-	Vice Chair and Research Subcommittee Chair
Mark Hertel	-	Handbook Subcommittee Chair
Cenk Yavuzturk	-	Program Subcommittee Chair
Dave Menicucci	-	Member
John Brown	-	Member
Intl. Member	-	Maria Todorovic
Tony Pierce (CM)	-	TC Webmaster
Henry Healey (CM)	-	ALI Coordinator
Brian Dougherty (CM)	-	Standards Subcommittee Chair

VI. OLD BUSINESS - None

VII. NEW BUSINESS - None

VIII. ADJOURNMENT

The meeting was adjourned at 3:40 PM



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Standards Subcommittee Report
ASHRAE TC 6.7 Solar Energy Utilization
2004 Winter Meeting – Anaheim
Standards Committee Liaison to TC 6.7: David Knebel

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

The current standard is a reaffirmation of the 1986 publication. The standard received ANSI approval on April 22, 2003. No action is needed at this time.

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

SPC Chair: Tim Merrigan

SPC Liaison: Stephen Kennedy

SPC 95P remains in limbo while the ASHRAE Standards Committee develops ANSI-compatible procedures that will allow ASHRAE to conduct Identical and Modified adoptions of ISO and IEC Standards. SPC 95 voted back in August 1995 to recommend (5-0-1) that ASHRAE adopt ISO Standard 9459-1: 1993, “Solar heating – Domestic water heating systems – Part 1: Performance rating procedures using indoor test methods” as the replacement for ASHRAE Standard 95. The proposed adoption would be a modified adoption because SPC 95P further recommended that the normative annexes of the ISO standard be changed to informative. (Note: ISO Standard 9459-1:1993 is based on ASHRAE Standard 95-1987.)

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: Stephen Kennedy

SPC 96P plans to consider 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” in lieu of, or in addition to, revising ASHRAE Standard 96. Like SPC 95P, work on formally establishing a standards project committee and beginning the revision process has not moved forward because of the lack of ASHRAE procedures on how to adopt ISO standards. Once these procedures are in place, a new call for members for SPC 96P will be conducted as the committee officially consists of one member, the chair, at present.

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. The standard received ANSI approval on April 22, 2003. No action is needed at this time.

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. The standard will be sent to ANSI for their approval once its is revised.



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TC 6.7 Standards Subcommittee Report 2004 Winter Meeting – Anaheim

Std 125-1992 (RA 00) *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

ANSI approval gained on November 30, 2001. As part of its agenda for the Anaheim meeting, TC 6.1 has been requested to recommend whether Standard 125 should be revised, reaffirmed, or withdrawn. Anyone wishing to contribute to the discussion on how the R/RA/W vote on Standard 125 should proceed is encouraged to attend the TC.6.1 meeting in Anaheim or contact the TC 6.1 Standards Subcommittee Chair, Mark Hegburg.

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

Meetings of ISO TC 180 and its three subcommittees were held in Dublin, Ireland on November 10 to 13, 2003. The meetings were held to help restart activity within this TC, which had become dormant beginning in 2000. ASHRAE's Doug Tucker attended the two-day meeting. A copy of the draft report, and resolutions resulting from the meetings of ISO TC 180 and ISO TC 180/SC 4 were circulated to TC 6.7 members prior to the January 2004 meeting in Anaheim.

ASHRAE is seeking individuals to join the US Technical Advisory Group (TAG) for ISO TC 180. A call for members was included in the January 2004 edition of ASHRAE Insights; a copy of this notice was sent to TC 6.7 members prior to the Anaheim meeting. At this stage, any TAG duties would probably be handled via email correspondences. TAG members review, comment, and help form the US position on ISO standards for which TC 180 is cognizant.

1. ISO/DIS 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
Work on this ISO Standard ceased in the late 1990's. A Spring 2003 proposal (N216) to restart work on this standard was approved. The restarted work is to proceed in parallel development with CEN TC 312. At the November 2003 meeting of ISO TC 180/SC 4, a decision was made to make minor edits to the current draft in an effort to get it published and then immediately start a new revision process.
2. ISO/DIS 11924, "Solar heating – Domestic water heating systems – Test methods for the assessment of reliability and safety"
Cognizant SC: 4
Work on this ISO Standard ceased in the late 1990's. A Spring 2003 proposal (N218) to restart work on this standard was approved. The restarted work is to proceed in parallel development with CEN TC 312. At the November 2003 meeting of ISO TC 180/SC4, a decision was made to publish the current version of the document as a Technical Specification with the intention of revising the document and publishing it as an ISO Standard at a later stage. Professor G. Morrison offered to prepare the revised draft.

TC 6.7 Standards Subcommittee Report

American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.

A N I N T E R N A T I O N A L O R G A N I Z A T I O N



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2004 Winter Meeting – Anaheim

3. ISO Standard 9459-1: 1993, “Solar heating – Domestic water heating systems – Part 1: Performance rating procedures using indoor test methods”

Cognizant SC:

At the November 2003 meeting of ISO TC 180, a resolution was passed to have the secretariat move forward with paperwork to have the standard reconfirmed.

4. 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)

At the November 2003 meeting of ISO TC 180, a resolution was passed to request the SC 5 Secretariat to initiate the revision of ISO 9806 series of standards using the current work done by CEN in this area, including the current draft revision of EN 12975 Part 1 and Part 2.

Report Submitted By: Brian Dougherty

ASHRAE TC/TG/TRG ACTIVITIES SHEET

DATE: January 27, 2004

TC/TG/TRG NO.: 6.7 TC/TG/TRG TITLE: Solar Energy Utilization

CHAIRMAN : S. O. Morner VICE CHAIRMAN: T. J. Merrigan

SECRETARY: B. Dougherty

TC/TG/TRG MEETING SCHEDULE			
Location – Past 36 Months	Date	Location - Planned Next 18 Months	Date
Washington, D.C (ASES)	01/04	Nashville, TN	04/06
Cincinnati, OH	01/06	Orlando, FL	05/02
Atlantic City, NJ	02/01	Denver, CO	05/06
Honolulu, HI	02/06		
Chicago, IL	03/01		
Kansas City, MO	03/06		
Anaheim, CA	04/01		

TC/TG/TRG SUBCOMMITTEES	
Function	Chairman
Program Handbook Standards Research	C. Yavuzturk M. A. Hertel B. P. Dougherty T. J. Merrigan

RESEARCH PROJECTS – CURRENT			
Project Title	Contractor	Monitoring Comm. Chairperson	Report Made At Mtg.
URP-1109 – Optimization of Hybrid PV / Thermal Solar Collector	Solar Design Associates	P. Zeigler	Project complete except for ASHRAE paper

LONG RANGE RESEARCH PLAN				
Rank	Title	W/S Written	Approved	To RAC
1.	Solar radiant heating and cooling	RTAR submitted to RAC, 03/08	Ranked #1	Not selected by RAC, 03/10
2.	Optimization and Testing of a Double Effect Solar Driven Absorption Chiller and Dual Fired Generator	RTAR submitted to RAC, 03/08	Ranked #2	Not selected by RAC, 03/10
3.	Optimization of solar thermal storage for ground source heat pump applications	RTAR to be written by Yavuzturk		

HANDBOOK RESPONSIBILITIES					
Year & Volume	Chapter	Title	No.	Deadline	Handbook Liaison
07 HVAC Applications	32	Solar Energy Use			
08 HVAC Systems & Equipment	33	Solar Energy Equipment		05/02	R. Davis

STANDARDS ACTIVITIES - List and Describe Subjects
<p>STD 93-2003 MOT to Determine the Thermal Performance of Solar Collectors. Reaffirmation of the 1986 standard. Approved by ANSI on 03/04/22..</p> <p>STD 95-1987P* MOT to Determine the Thermal Performance of Solar Domestic Water Heating Systems. SPC 95P recommended adopting ISO Standard 9459-1 (with annexes marked informative rather than normative) as the next revision of Standard 95. SPC 95P cannot move forward until the Standards Committee updates its adoption procedures to be consistent with those mandated by ANSI on how to adopt an ISO standard. TC 6.6 is co-cognizant; TC 6.7 is the cognizant (lead) technical committee.</p> <p>STD 96-1980P* MOT to Determine the Thermal Performance of Unglazed Flat-Plate Liquid-Type Solar Collectors. SPC 96R has a chairman, Jim Huggins, but no members. A call for members on 02/12/13 did not yield any volunteers. The chair plans to recommend that the SPC review ISO Standard 9806-3. The SPC will have difficulty moving forward until the Standards Committee updates its adoption procedures to be consistent with those mandated by ANSI on how to conducted an identical versus a modified adoption of an ISO standard.</p> <p>STD 109-2003 MOT to Determine the Thermal Performance of Flat-Plate Solar Collectors Containing a Boiling Liquid. Reaffirmation of the 1986 standard. Approved by ANSI on 03/04/22.</p> <p>STD 125-1992 (RA2000) MOT Thermal Energy Meters for Liquid Streams in HVAC Systems. Reaffirmed in 2000. The cognizant (lead) technical committee is TC 6.1; TC 6.7 is co-cognizant. TC 6.1 is presently considering its recommendation on whether to revise, reaffirm, or withdraw the standard.</p> <p>*NOTE: Standards 95, and 96 are designated as “Proposed” rather than as a “Reaffirmation” or as a “Revision” due to exceeding the maximum time frame in which a standard may retain the ANSI designation. These standards will be sent to ANSI for their approval once they are reaffirmed/revise.</p>

<p>TECHNICAL PAPERS from Sponsored Research – Title, when presented (past 3 yrs. present & planned)</p> <p>None</p> <p>TC/TG Sponsored Symposia – Title, when presented (past 3 yrs. present & planned)</p> <p>1. Renewable Energy Sources, Energy Efficiency and BPS for Sustainable Local and Regional Development, Jan. 2004, Anaheim</p> <p>TC/TG Sponsored Seminars – Title when presented (past 3 years, present, & planned)</p> <p>1. Solar Domestic Hot Water Applications, June 2003, Kansas City 2. RES Integrated Sustainable Buildings, June 2003, Kansas City 3. The Solar Decathlon: Results of the 2002 Competition, Jan. 2003, Chicago</p> <p>TC/TG SPONSORED FORUMS - Title, when presented (past 3 years, present, & planned)</p> <p>1. What Can ASHRAE and Its Members Do to Increase the Use of Solar Energy?, Jan. 2003, Chicago</p> <p>JOURNAL PUBLICATIONS, when published (past 3 years, present, & planned)</p> <p>None</p>
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Submitted By: _____
B. Dougherty