

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

(Minutes of all Meetings are to be distributed to all persons listed below within 60 days following the meeting.)

TC/TG/MTG/TRG No. TC 6.9 DATE March 14, 2016
 TC/TG/MTG/TRG TITLE Thermal Storage
 DATE OF MEETING Monday, January 25, 2016 LOCATION Orlando, FL

MEMBERS PRESENT	YEAR APPTD	MEMBERS ABSENT	YEAR APPTD	EX-OFFICIO MEMBERS AND ADDITIONAL ATTENDANCE
Geoff Bares	2015	John Lau	2013	Rupal Choksi – G
Paul Steffes	2012	Jeff Kane	2014	Dharam Punwani – CM
John Nix	2014	Scott Shaffer	2012	John Andrepont – CM
Henry Becker	2013			John Dunlap - CM
Harshal Upadhye	2012			Richard Brooks – CM
Larry Markel	2015			Don Guan – G
Chris Mincey	2014			Guy Frankenfield - CM
Mike Filler	2012			Charles Dorgan – CM
Mark McCracken	2013			Ivan Thomas - CM
Blake Ellis	2015			Michael Deru – G
Ken Fulk	2015			Mohamed Ibrahim – G
				Farzin Rad - CM
				Ayyoub Momen – CM
				Brian Blenis – CM
				Bryson Borcini – G
				Milad Abulhasansari – G
				Clarke Story – G
				Nathan Lish – G
				Jonathan Malanga – G
				Steve Severini – G
				Jim Early – G
				Paulo Tabares - CM

DISTRIBUTION

<i>All Members of TC/TG/MTG/TRG plus the following:</i>	
TAC Section Head:	<u>Mark Hegberg</u>
TAC Chair:	<u>Dr. Thomas Lawrence</u>
All Committee Liaisons As Shown On TC/TG/MTG/TRG Rosters:	Lynn Werman - Handbook Liaison Dr. Harvey Sachs – Research Liaison Cyrus Nasser – Standards Liaison
Manager Of Standards Manager Of Research & Technical Services	Stephanie Reiniche Mike Vaughn

ASHRAE TC 6.9 - Thermal Storage - General Meeting

Meeting Minutes - Room Lake Down B, Hilton Orlando
Orlando, FL

Monday, January 25, 2016
4:30 - 6:00 PM

1. Preliminaries
 - a. The meeting was called to order at 4:32 PM by Geoff Bares, Chair.
 - b. Several weeks prior to the meeting, the agenda was posted on the TC 6.9 webpage and emailed to all TC 6.9 members.
 - c. Several months before this meeting, the prior meeting minutes were posted on the TC 6.9 webpage.
 - d. The Purpose Statement is posted on the TC 6.9 webpage.
 - e. Roll call was taken and 11 of the 14 voting members were present including the Chair. Quorum was established.
 - f. Everyone in attendance (including guests) was given the opportunity to introduce themselves. The Chair noted that in order to become a Corresponding Member, the most expedient option is to visit the ASHRAE website and use the "Join a TC" button on the Technical Committees webpage. Interested parties may also contact the Chair with their ASHRAE identification number.
 - g. No modifications to the agenda were suggested.
2. Approval of Minutes
 - a. The minutes from the Summer Meeting in Atlanta, GA were posted on the TC 6.9 website within 30 days of that meeting, and available to all members.
 - b. There were no suggested changes to the minutes.
 - c. Harshal Upadhye made a motion to approve the minutes. Chris Mincey seconded the motion. The motion was approved unanimously by a vote of 10-0-0 (Chair not voting, CNV).
3. Announcements by Chair – Geoff Bares
 - a. The Chair reported on the Section 6 Breakfast Meeting.
 - No issues with the seminars submitted by our TC
 - Publication liaison looking for submitting articles to ASHRAE Journal
 - Seeking reviewers for articles submitted to ASHRAE Journal
 - Hightower Award to Steven Duda; encouraging submissions for awards/honors
 - Bias Disclosure statement required by all presenters starting with summer meeting in St. Louis
 - Starting with this conference, live polling will be enacted via the ASHRAE app
 - Women in Research breakfast held on Monday, January 25, 2016
4. Liaison Reports
 - a. Professional Development Committee liaison - John Nix
 - Doug Reynolds
 - John Nix made a motion to propose a 4 hour seminar (short course) on TES Basics at the Las Vegas, Winter 2017 conference. Mike Filler seconded the motion. The motion was unanimously approved by a vote of 10-0-0- (CNV).
 - b. Section 6 TC Section Head – Mark Hegberg
 - The Section 6 TC Section Head was not present.
 - c. ASME PTC 53 liaison – John Lau
 - ASME has a Performance Test Code working group established to look at methodologies for specifying and commissioning energy storage systems.
 - John Lau was not present. Ken Fulk provided a brief status update.
 - No significant amount of progress. Still determining scope of work.
 - d. MTG.ASEC, Avoided Source Energy Consumption Due to Waste Heat Recovery and Heat Pump Technologies – Mike Filler
 - Committee has met several times
 - Finalized work statement for developing procedure for showing avoided source energy consumption with focus on waste energy received and heat pump application

5. Handbook - John Lau was not present, Geoff reported
 - a. Chapter 51 of the ASHRAE Handbook is currently in the final year of the four year cycle. All the updates have been completed. Galley proof will be available from ASHRAE for review in the next few weeks.
 - b. Thanks to John Andrepont, Henry Becker, Lucas Hyman, Paul Steffes, and Tom Vega for providing content to the Handbook.
 - c. The HVAC Systems & Equipment Handbook will be published in 2016.
 - d. Farzin Rad volunteered for Chair of the Handbook Subcommittee for the next four year cycle.

6. Programs - Chris Mincey
 - a. Thank you to Mark McCracken, John Andrepont, Douglas Reindl and Paul Steffes for hosting a very informative and well attended seminar “Integrating Cutting-Edge Technology: Renewable Energy and Thermal Energy Storage”. Approximately 200 registrants attended.
 - b. Review of Past Programs (Atlanta, GA – Summer 2015)
 - Seminar titled “Method of Testing the Performance of Cool Storage Systems” – Standard 150 was presented on Wednesday, July 1, 2015 at 9:45 a.m. by John Nix and Lucas Hyman
 - c. Current Programs (Orlando, FL – Winter 2016)
 - Two seminal proposals were submitted for Orlando
 1. “Integrating Cutting-Edge Technology: Renewable Energy and Thermal Energy Storage” was accepted and presented on Sunday, January 24, 2016 at 1:30 p.m. by Mark MacCracken, John Andrepont, Doug Reindl, and Paul Steffes.
 2. “Performance of Thermal Energy Storage Technology in Florida Schools”, seminar proposal was submitted for Orlando also but was rejected.
 - d. Future Programs (St. Louis, MO – Summer 2016)
 - Mike Filler made a motion to submit the seminar proposal titled, “Automated Thermal Energy Storage Controls” which would be submitted for the Summer 2016 St. Louis. The motion was seconded by Larry Markel and approved unanimously by a vote of 10-0-0 (CNV). This submittal involved:
 1. Automated control schemes used for thermal energy storage systems, which maximize the ROI of the TES system
 - Blake Ellis made a motion to co-sponsor a seminar hosted by TC 9.8 titled “Heat & Cooling with Woody Biomass for Sustainable & Resilient Buildings & Communities” which would include discussion regarding thermal energy storage. The motion was seconded by Ken Fulk and approved unanimously by a vote of 10-0-0 (CNV). John Karakash from TC 9.8 spoke to the TC about this co-sponsorship.
 - e. Future Programs (Las Vegas, NV – Winter 2017)
 - The committee discussed a fundamentals of TES (TES 101: The Basics) seminar. Geoff Bares and Guy Frankenfield volunteered.
 - John Nix to propose a 4 hour TES short course for the 2017 Winter Conference through the PDC.
 - f. Technical Tours
 - The committee will continue to try to assist the CEC by proposing future tour sites which include thermal energy storage

7. Standards - Mike Filler
 - a. Standard 94.2, Method of Testing Thermal Storage Devices with Electrical Input and Thermal Output Based on Thermal Performance
 - Based on discussion with members, there is little interest in or practical usage of this standard in the industry. The standard has sold very poorly in the ASHRAE bookstore, which also indicates little public usage.
 - Mike Filler made a motion to withdraw Standard 94.2. The motion was seconded by Paul Steffes and approved unanimously by a vote of 10-0-0 (CNV).
 - b. Standard 150, Method of Testing the Performance of Cool Storage Systems
 - The SPC did not meet in Orlando. No substantial progress has been made since the last meeting in Atlanta, in June 2015.
 - Mike Filler agreed to assume responsibilities as Chairman from John Nix.
 - The goal is to have the standard out for public review by the end of 2016.
 - c. Standard 100, Energy Efficiency in Existing Buildings
 - TC 6.9 does not contribute to the revision of this standard, but this standard may affect TC 6.9.
 - A Site Source working group will be meeting Monday, January 25, 2016 in the evening.

8. Research - Brian Silveti not present; report given by Geoff Bares
 - a. RP-1607 – Design and Utilization of TES to Increase the Ability of Power Systems to Support Renewable Energy Resources
 - The University of Wisconsin was awarded this research project and activity began in April 2015.
 - The PMS conducted a conference call in January 2016 to receive a progress report from the PI.
 - Doug Reindl updated the committee with a status of current progress.
 - A formal PMS meeting will be scheduled to discuss the research project status in St. Louis.
 - b. Work Statement (WS) 1716 - Design Guide for Cool Thermal Storage - Revision
 - Brian Silveti distributed a draft of the Work Statement to members prior to the conference and solicited comments
 - Committee members are asked to submit comments to Brian no later than February 8, 2016. The committee intends to approve via letter ballot prior to St. Louis meeting.
 - c. Work Statement (WS) 1762 - Design Guide for Combustion Turbine Inlet Cooling Systems (TC 6.9 is a co-sponsor)
 - Geoff Bares is working with the primary author, Dragos Paraschiv, to develop the Work Statement.
 - No significant progress was reported.

9. Long Range Planning/Website – Geoff Bares
 - a. Remote participation for meetings
 - ASHRAE is continuing to offer and expand the use of teleconference and web meeting access for technical committee meetings. The committee discussed using these channels to expand meeting participation.
 - A motion was made by Blake Ellis to request remote access for use at the St. Louis meeting. The motion was seconded by Chris Mincey and approved unanimously by a vote of 10-0-0 (CNV).
 - Guy Frankenfield volunteered to coordinate the remote participation part of the meeting.
 - b. Website - Mike Filler
 - The website interface has been revamped by ASHRAE, making it easier to navigate and easier to curate.
 - ASHRAE has encouraged increased usage of the TC website and posting of content.
 - Speakers at the TC sponsored Orlando seminar have agreed to allow posting their slides on the TC website

10. Honors and Awards - Mike Filler
 - a. Over 54 members were honored at the awards presentation on Saturday, January 23.
 - b. Hall of Fame honors deceased members of the Society who have made milestone contributions to the growth of ASHRAE-related technology or the development of ASHRAE as a society
 - Honoree – Calvin MacCracken
 - Mike Filler read an excerpt of Mr. MacCracken’s biography, highlighting his pivotal work in establishing the Thermal Energy Storage industry:
“He is best known to ASHRAE for his pioneering work with thermal energy storage (TES) used for Off-Peak Cooling of buildings. It was MacCracken’s patented ICEBANK technology, which dramatically reduces the costly peak electric loads in buildings, by shifting cooling production to off peak hours, which played a key role in the rebirth of TES. The all plastic heat exchanger and tank continues to be the standard technology today. Coupled with the commercial activities of Cal’s company CALMAC, and his activity in ASHRAE to support the development of thermal energy storage technology, great progress was achieved from which we benefit today. The first installation of his thermal energy storage (TES) system, ‘ICEBANK’ in 1981, helped to develop the Off-Peak Cooling market. This product is now being used in over 4,000 installations in 60 countries around the world.”
 - A complete biography can be found at:
<https://www.ashrae.org/membership--conferences/honors--awards/hall-of-fame>
 - c. Mike Filler encouraged everyone to keep their ASHRAE biographies current.
 - d. Nominees can complete a self-nomination form for distinguished service awards.
 - e. The Hightower Tech Achievement Award is given to members with great service on TCs, particularly members who have done work on multiple committees or were Chairs. Send nominations to Mike Filler. Include information on the last four years of service in the nomination. The awards are given out based on a points system.
 - John Nix was nominated for the Hightower Tech Achievement Award.

11. Old Business

- a. No old business was discussed.

12. New Business

- a. Membership

- To become corresponding member, go to the ASHRAE website.
- Voting members :
 1. Members rolling off (5) leaves us with 9 voting members; seeking new voting members
 2. Contact Geoff if interested in becoming Voting Member
 3. John Dunlap interested in becoming Voting Member

- b. New guest DC Pro – Mohammad Ibrahim

- Consultant for district cooling plants in UAE
- Projects include Kingdom Tower, FIFA stadium

- c. Discussion of participation of Phase Change Material (PCM) TES community in the TC.

- Generally a small number of commercially available technologies and suppliers
- Guest graduate student Milad Abulhasanari expressed a research interest in PCM TES

13. Adjournment – A motion was made by Blake Ellis to adjourn the meeting. The motion was seconded by Mark MacCracken, and approved unanimously by a vote of 10-0-0 (CNV). Meeting adjourned at 5:57 PM.