

ASHRAE TC 6.9 – Thermal Storage - General Meeting Minutes
Monday, June 26, 2017
4:30 – 6:00 PM
Long Beach, CA

1. Attendees:

1. Each person introduced themselves and an attendance sheet was distributed. Attendees included:

Ken Fulk	VM	Standards Subcommittee Chair
Brian Silvetti	CM	Research Subcommittee Chair
Chris Mincey	VM	Programs Subcommittee Chair
John Lau	VM	TC 6.9 Vice-Chair
Geoff Bares	VM	TC 6.9 Chair
John Nix	VM	PDC Liaison
Scott Shaffer	CM	
Farzin Rad	CM	
Guy Frankenfield	VM	
Cameron Wise	CM	
Henry Becker	VM	
Daniel Pyewell	CM	
Kamalakkannan Muthusubramanian	CM	
Charles Upshaw	CM	
Jamie Fine-Guest	G	
Paulo Tabares	CM	
Zidu Ma	CM	
John Dunlap	VM	
Blake Ellis	VM	
Larry Maricel	CM	
Mark MacCraken	CM	
Ayyoub Momen	CM	
Michael Deru	CM	
Michael Perevozchikov	CM	
Eleftherios Bourdakis	G	
Ivan Thomas	CM	
Huojun Yang	CM	
David Marina-Guest	G	

Andrew Bable	G	
Jasim Mahdi	G	
Ryozo Ooka	CM	
Ramin Faramarzi	G	
Niel Hayes-Guest	G	
Mike Filler	VM	

2. Preliminaries

- a. The meeting was called to order at 4:30 PM by Geoff Bares, Chair.
- b. The Purpose Statement is posted on the TC 6.9 webpage and was read aloud by the Chair. An addition was made to the statement to include the code of ethics.
- c. Everyone in attendance (including guests) was given the opportunity to introduce themselves.
- d. Roll call was taken and 10 of the 11 voting members were present including the Chair. Quorum was established.
- e. No modifications to the agenda were suggested.

3. Approval of Minutes

- a. Mark McCracken made a motion to approve the Las Vegas Winter Meeting 2017 minutes. Guy Frankenfield seconded the motion. The motion was approved unanimously by a vote of 10-0-0-CNV.

4. Announcements by Chair – Geoff Bares

- a. The Chair reported on the Section 6 Breakfast Meeting.
 - New Sections available on the web
 - CEC mentioned that they are looking for Track suggestions from the TSC
 - Specifically needed For 2019 Atlanta, GA meeting
 - Conference chair for Atlanta has not been determined
 - Technology portal is available with all past research and journal articles
 - § Portal can also be used to validate sources for research

5. Liaison Reports

- a. Section 6 TC Section Head – Mark Hegberg
 - Mark Hegberg was not present.
- b. Professional Development Committee (PDC) – John Nix
 - John Nix joined the meeting during a later agenda item. TC 6.9 circled back to this item when he arrived. John Nix is the liaison and the past Chair of the PDC.
 - TC 6.9 submitted a renewed thermal energy storage (TES) four-hour seminar for review by the PDC.
 - The new version includes information on using TES with renewable energy.
 - Doug Reindl is the presenter for the course and three additional members of TC 6.9 were added to support the course.
 - The PDC was sponsored by Geoff Bares and the application submitted.
 - The goal is for the PDC to review the course by the Long Beach, CA Summer Meeting so that the course can be scheduled for the Chicago, IL Winter 2018 Meeting.
- c. ASME PTC 53 – John Lau
 - ASME PTC 53 was established two years ago with the goal of establishing a performance test code for TES. This group has been very active and will be meeting in Charlotte NC on June 27, 2017. They are writing the specs for the first three sections. Since the PTC found that the HVAC industry already has its own codes, the PTC is not currently focused on HVAC-related codes. They are concentrating on specifications for Molten Salt, Fly Wheel technologies, and compressed air technologies.
 - The PTC found that the IEEE establishes its own codes for battery storage, so the PTC has recently been focusing on fly-wheels and air-compression storage and molten salts.
 - Frederick Constantino is no longer leading the PTC. The new lead is Ted Lazar.

- Members discussed whether TC 6.9 should continue to maintain a liaison for the PTC. Members reached consensus that TC 6.9 should continue to have a liaison to monitor the progress of the PTC in case they begin discussing something relevant to the HVAC industry. In the meantime, TC 6.9 shares its minutes with ASME PTC 53, and vice versa.
- d. MTG.ASEC (Avoided Source Energy Consumption) – Guy Frankenfield
 - The Work Statement (WS) titled “Avoided Source Energy Consumption Due to Waste Heat Recovery and Heat Pump Technologies” was revised and resubmitted in December 2016. The MTG is waiting to hear back from the Research Administration Committee (RAC). This is currently on hold due to internal decision making.
- e. 90.1 TC has discovered there are changes that need to be made, the MSC is looking for participation and ideas from other TSC.
- f. John Molnar provided an update from TC 9.8: Renamed to specialty building HVAC

6. Handbook – Farzin Rad

- a. The Authoring portal is now being used for revision of the handbook. All current TC members have access to this portal
- b. The 2016 HVAC Systems & Equipment Handbook revision was completed last year.
- c. The subcommittee collected suggestions for the 2020 edition. The suggestions include:
 - Information from RP-1607 – Design and Utilization of TES to Increase the Ability of Power Systems to Support Renewable Energy Resources
 - Possibility for design guide inclusion
 - Suggestion was sizing examples could be included
 - Passive thermal storage could also be included in the HB
 - Rearrange the structure of Chapter 51
 - Incorporate updates to reflect content from the revised Design Guide For Cool Thermal Storage (if available in time)
 - Use the ASHRAE portal to simplify the revision process
 - Names for reviewers are available (4) total
- d. Time line: End of year for identifying the changes
- e. The subcommittee is seeking volunteers to help with the revision.
- f. Members discussed the plan to set goals throughout the revision.

7. Programs – Chris Mincey

- a. Houston and Chicago were discussed, February 9th deadline for Chicago abstracts
- b. Lots of idea for Houston but none for Chicago
- c. District energy and co-gen plants—residential thermal energy storage for possible presentation
- d. TC 6.2 District Energy & TC 1.10 Cogeneration interested in working with 6.9
- e. Water treatment possible presentation
- f. TIC thermal storage possible
- g. TES to be considered as important for resiliency in buildings, possible ASHRAE
- h. Review Current Program (Las Vegas – Winter 2017)
 - No programs took place at this meeting.
 - TC 6.9 approved TES 101 but the proposal was not accepted.
 - TC 6.9 approved cosponsoring a seminar titled “Enhancing Resiliency in Critical Applications” with TC 6.2, District Energy but TC 6.2 was unable to solicit enough volunteers.
 - TC 6.5 presented 3 papers, looking for 6.9 to co-sponsor Chicago
 - Cooling panels with PCM
- i. Discuss Future Programs (Chicago/Houston—Summer/Winter)
 - a. How do we get more papers/programs accepted for TES? Changes to make TES more appealing and get better acceptance within ASHRAE.
 - b. PCM, resiliency, what is AHSRAE looking for?
 - c. Tie TES to internet of things?
 - d. Submission deadline for Chicago is August 1, 2017. Action: Ayyoub Momen to head presentation to be included under Systems and Equipment Track 1. Title: Advancement Energy Storage technology, including PCM, GLIDES, --to be tabled until the next meeting.
 - e. Model predictive control—passive thermal energy presented by John Molnar for Track 7.
 - f. Potential Topic: Shift from traditional paradigm of TES to new and innovative uses for TES?
 - g. Other ideas were discussed but no specific plans or ideas were tied to tracks.

- h. Geoff Bares: Guests suggested sponsoring a presentation on PCM thermal storage research. PCMs should be investigated to understand technology and application before we sponsor a presentation involving them.
- i. ASHRAE is looking for articles regarding the history of technologies and their development. TES would be a good topic. The Committee is looking for content from the TC—Geoff Bares will head this effort.

8. Standards – Ken Fulk

- a. Current T.C. 6.9 Standards were discussed:
- b. Standard 94.2-2010, Method of Testing Thermal Storage Devices with Electrical Input and Thermal Output Based on Thermal Performance: This standard was withdrawn two (2) T.C. meetings ago but ASHRAE continues to maintain that they have no record on this action so it remains active. Mike Filler is aware of this and is committed to completing the related documentation to make this happen. The issue appears to be that ASHRAE is requesting a Letter Ballot to document the vote.
- c. ANSI/ASHRAE Standard 150-2000 (RA 2014) – Method of Testing the Performance of Cool Storage Systems:
 - i. Reaffirmed as is in 2014 but still intended to be updated.
 - ii. Updates were planned to be completed by June, 2017 but some work remains to be completed.
 - iii. All revisions need incorporated into a final draft to send out for review by the SPC, after which final revisions will be made and then distributed for a vote for approval. This is currently expected to be completed no later than August 15th.
 - iv. Following this the standard will be sent out for public review. A 30 or 45 day review period will follow after which the SPC will need to resolve any review comments received. This is expected to be completed no later than September 30th.
 - v. Following these actions the standard will be submitted through Standards Committee, Technology Council and the ASHRAE Board of Directors for approval. This is expected to be completed no later than the fall Board of Directors meeting which occurs in late October or early November.
- d. Other Standards of Interest to T.C. 6.9:
 - i. ANSI/AHRI 900 (I-P)-2014, Performance Rating of Thermal Storage Equipment Used for Cooling (Essentially Replaces the Standard 94 series which have been withdrawn). This standard essentially replaces the ASHRAE 94 series standards, is current and used by the industry.
- e. New Standards or Guidelines to be considered-It was reported that upon completion of SPC 150 that a new guideline will be started to allow for testing to occur under more realistic test conditions, which the standard precludes.
- f. SPC 150 did have a scheduled meeting yesterday and some review of the old SPC 150 figures/diagrams occurred. The Annex which includes the “Test Results” sheet briefly reviewed. Minutes of that meeting were recorded and will be sent to the T.C. 6.9 Chair for distribution as needed. Mr. James Early, the SPCL, did attend this meeting. His replacement for next year also attended, Mr. Rich Swierczyna. The remaining work plan was reviewed.

9. Research – Paulo Tabares

- a. Status Update:
 - a. RP-1607 – Utilization of TES / Renewable Energy Resources
 - 1. The final report is complete and posted on the website
 - 2. University of Wisconsin did a great job
 - b. TC 6.9 will need to determine how to spread the word as widely as possible to share the report with the rest of ASHRAE and beyond.
- b. RTAR-1762 – Design Guide for CTIC Systems – Co-Sponsoring
 - a. This project received conditional approval with minor comments from RAC. The project went out for bid this spring. Geoff is representing 6.9. 3 bids were received looking to make recommendation by end of conference.

10. Long Range Planning/Website – Geoff Bares

- j. Dan reported that the website was being updated as needed, please submit your documents so they can be added Members are encouraged to share articles that they have written or that others have written related to TES that could be shared on the TC 6.9 website in order to increase the amount of technical content on the website.

11. Honors and Awards – Blake Ellis

- a. The following TC 6.9 Member's received the award of Distinguished Service Award at this conference:
 - John Dunlap, Voting Member
 - Blake Ellis, Voting Member
 - Michael Patton, Non-Voting Member (Handbook Liaison)
- b. DSA/ESA nomination deadline is May 1.

- c. Update Bio
 - An updated ASHRAE bio is important as it is reviewed with any award submission

- d. Hightower Award
 - a. Given to people about service the last four years on technical activities
 - i. TC chair and members of TAC & Tech Council are not eligible.
 - ii. TC chair submits the form to the TC section head on September 1.

- e. Other Awards
 - a. December 1 Deadlines
 - i. ASHRAE Hall of Fame
 - ii. Pioneers of the Industry
 - iii. F. Paul Anderson Award
 - iv. Fellow Nominations
 - v. Distinguished Public Service
 - vi. Honorary Member
 - vii. Distinguished 50-year Member
 - b. December 15 Deadlines
 - i. Homer Addams Award
 1. This award recognizes a graduate student who has been engaged in an ASHRAE research project at a university that has graduate programs in the areas of heating, ventilation and air conditioning, and has achieved a high standard of performance in this work.

12. Old Business

- a. Professional Development program—John Nix Thermal Storage seminar—potential for use in Houston

13. New Business

- b. Geoff Bares announced the new roster and he will submit the new roster to ASHRAE. The current and future rosters and each member's roles are as follows:

Current Voting Members as of Winter Meeting 2017	Roll Off Date	Role
Henry Becker	6/30/17	
Mark MacCracken	6/30/17	
John Lau	6/30/17	Vice Chair
Jeff Kane	6/30/17	
Chris Mincey	6/30/18	Programs
Geoff Bares	6/30/19	Chair
Blake Ellis	6/30/19	
Ken Fulk	6/30/19	Standards
John Dunlap	6/30/20	

Dr. Paulo Cesar Tabares	6/30/20	
Guy Frankenfield	6/30/20	

Future Voting Members as of 6/30/17	Role
John Lau	Chair
Brian Silveti	
Farzin Rad	Handbook
Trent Hunt	
Chris Mincey	Vice Chair
Geoff Bares	
Blake Ellis	
Ken Fulk	Standards
John Dunlap	Chair
Dr. Paulo Cesar Tabares	Research
Guy Frankenfield	

- Richard Brooks will take on the role of Programs Chair.
- Dan Pyewell will continue in the role of Webmaster.
- Cameron Wise will continue in the role of Secretary.

14. Adjourn

- a. Paulo Tabares made a motion to adjourn the meeting. Ken Fulk seconded the motion. The meeting was adjourned at 6:09 PM.