

**ASHRAE TC 6.9 – Thermal Storage  
General Meeting Minutes  
Monday, June 25, 2018  
4:30 – 6:00 PM  
Hilton, Floor 4 - Room G, Houston, TX**

**Attendees**

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

Daniel Pyewell	CM	Secretary/ Webmaster
Ken Fulk	VM	Standards Subcommittee Chair
Zidu Ma	CM	
Henry Becker	CM	
Brian Silveti	VM	
Mohamad Ibrahim	CM	
Scott Shaffer	CM	
Dharam Punwani	CM	
Joseph Rendall	G	
Ivan Thomas	CM	
Byron Jones	G	
Charles Upshaw	CM	
Steve Bourne	G	
Michael Deru	CM	
Ned Bent	G	
Jason Woods	G	
Verle Williams	CM	
Mark MacCracken	VM	
Mike Filler	CM	
Farzin Rad	VM	Handbook Subcommittee Chair
Paulo Tabares	VM	Research Subcommittee Chair
Geoff Bares	VM	
Trent Hunt	VM	
Callen Schwank	G	
Chris Mincey	VM	Vice Chair
John Nix	CM	PDC Liaison
Guy Frankenfield	VM	
John Dunlap	VM	
John Lau	VM	T.C. 6.9 Chair

**Preliminaries**

- Meeting called to order at 4:30 PM by Chairperson, John Lau.
- The TC 6.9 Purpose Statement and Code of Ethics Commitment was read by John Lau.
- The agenda and attendance sheet were circulated.
- Voting Member Roll Call – 10 voting members were present. Blake Ellis not present.
- Based on a total of 10 voting members, a quorum was determined.
- All attendees were given the opportunity to introduce themselves.
- Modifications to the agenda – none

**Approval of Minutes**

Chicago – Winter Meeting 2017. Motion to approve made by John Nix and seconded by John Dunlap. Unanimously approved.

**Announcements by Chair – John Lau**

Section 6 Breakfast

## 2018/2019 Award

ASHRAE letterhead should not be used for external purposes, only internal purposes.

125 years of ASHRAE – still looking for papers and presentation materials. Geoff Bares mentioned that there was a submitted abstract for history of TES. Geoff to follow up on the submittal.

John passed on an emphasis of awareness that Base Camp (similar to Drop Box) is encouraged be used by T.C.s. All members of T.C. are welcome to use it.

RPM – usage is declining and many TC chairs have reported that the quality is poor and the process is somewhat complicated. If it is needed for quorum, the T.C. can look at using it in the future. John Dunlap noted that RPM participants could not vote through RPM on another committee he witnessed (said that you have to be physically presented). Brian Silveti looked up the ASHRAE info on this, and concluded that as long as ASHRAE is used for the RPM interface, the remote votes can count.

John noted that the Atlanta Conference is early January 12<sup>th</sup>-16<sup>th</sup>, and to plan accordingly. Summer Meeting will be in Kansas City, MO June 22<sup>nd</sup> – 26<sup>th</sup>.

## Liaison Reports

- John Nix reported that the Thermal Storage Course will be offered tomorrow (Tuesday, June 26<sup>th</sup>) at the ASHRAE Houston Conference. They currently anticipate 10-12 people will be in attendance. It is a ½ day 3 hr. course entitled “Cool Thermal Energy Storage Systems for Air Conditioning”. Mark McCracken recommends changing the title for the next time it is offered to include buzzwords like “Smart Grids”, to catch more interest. The T.C. can always ask that this course be offered going forward.
- ASHRAE Design Certification will be offered in the future, for certifying designers. This pertains to people in engineering offices that are not P.E.s, that want a certification to do design work.
- For Standard 90.1, John Dunlap reported that there was nothing on the agenda that affected us. Mark McCracken indicated that 90.1 has fully ignored the smart grid initiative, which is being pushed by the new ASHRAE president. John Dunlap will put together a draft paragraph of recommendation and will send to the T.C. for approval for submittal to 90.1.

## Handbook – Farzin Rad

This is the second year of the 2020 HVAC Systems & Equipment Handbook revisions. All drafts and changes need to be wrapped up by January 31<sup>st</sup>. The Reviewers need to look at the content during February and March. The revisions need to be done by March 31<sup>st</sup>, 2019, with the final draft to be voted on at the Summer TC Meeting. Draft is then due for submittal on July 31<sup>st</sup>, 2019 to the Handbook Committee. The draft will be accessible via the portal.

- Farzin mentioned that training on the portal was conducted yesterday at the conference. He noted that the portal needs to be run on Internet Explorer.
- For the structure of Handbook Chapters – John Lau suggested some minor changes be made to reflect new content. This will be one of the last things to do. Farzin requested that this be done by next meeting.

- Some of the updates will include:

New Design Guide (no content determined yet to include, as guide is still being worked with a 3 mo. Extension)

- Results of 1607 – updates done and ready to be reviewed. The results were inserted in the draft handbook update, which includes one new paragraph and insertions into existing paragraphs. Guy Frankenfield has met with Doug and Amy, and went through the whole chapter to determine where to make changes, and has worked with Doug and Amy to make sure words are correct.
- Passive thermal storage. John Molnar offered to assist with this in Chicago’s meeting. Farzin will get in touch with John about this, as he has not heard anything.
- Heat storage in ground, pertaining to seasonal bore holes. This will be written by Farzin. Farzin indicated that it is pretty lengthy, and will need to be compressed in size. He indicated that this technology is being used and coupled with CHP (CHP summer heat stored in bore holes). There are 4-5 Community centers in Toronto under construction using this technology.
- Design guide example for heating was questioned. There was no recollection on what this is about, so it will be deleted.

## **Programs – Richard Brooks absent (Chris Mincey reporting for)**

### **Current programs:**

- 2 seminars will be conducted tomorrow. Chris Mincey is chairing the “Thermal Energy Storage at the Small Scale: Technologies and Applications for Residential and Small Commercial Buildings (Track 5)” seminar #42, at 8 a.m., in which Paulo Cesar, Stephen Bourne, Sajith Wijesuriya and Charles Upshaw will be speaking at. Geoff Bares is chairing and speaking at the 2<sup>nd</sup> seminar (#55) tomorrow, entitled “The Future of Thermal Energy Storage Supporting Resilient District Energy, CHP Systems and Microgrids” at 11 a.m. This seminar has been put together with different T.C.s. Doug Reindl, Steve Swinson, and Mark McCracken will also be presenting.
- We also co-sponsored 3 other seminars titled:
  - The Future of CHP: Packaged Systems, Resilience and Microgrids
  - Using District Energy to Survive a Storm: Case Studies in Disaster Preparedness
  - The Future of Thermal Cooling to Support Resilient CHP Systems
- 3 hour course on Thermal Energy Storage will be conducted at this conference. See John Nix’s Report on this course. Doug Reindl will be teaching this course.

### **Future Programs (Atlanta winter of 2019)**

Present a seminar for Atlanta “Building Energy Storage: the future of the smart grid” (for Track G). John Nix is to chair, with Mark McCracken and Guy Frankenfield to speak. It was requested to go out to co-sponsor this with T.C. 7.5. Motion to approve seminar was made by John Nix, seconded by John Dunlap, and the vote was approved 10 unanimously.

Beyond Atlanta (Kansas City 2019), possible seminars include:

- Thermal vs. Battery Storage
- Long term versus Short Term Storage.
- TES 101 – may be too general and needs to include some new buzzwords. Possibly, “All the things you wanted to know about TES but were too afraid to ask.”
- It was noted that the new ASHRAE president’s direction is to focus on dealing with the grid the way it has been built. This must include a recognized central value of energy storage that appears to be currently overlooked.
- TES and Smart Meters.
- John Andrepont Conference paper seminar regarding his previously published paper regarding Turbine Inlet Chilling

Potential Tour Sites:

Orlando potential tours. CBI TES OU Cooling tank and the University of Orlando TES Tank.

Austin tours - UT of Austin (Juan Ontiveros), Downtown Austin District Energy. and UT Austin CHP plant.

It was also mentioned to possibly use Enwave Chicago (Geoff Bares as contact) on the next Conference in Chicago.

Further notes:

Trenton Hunt requested any presentations available on CHW TES, for upcoming presentations in China. Geoff Bares to follow up with Trenton on this.

## **Standards – Ken Fulk**

Status Update:

- SPC 150 – Met in Houston Sunday afternoon. Vote was made and approved to send out standard draft for public review. Draft is now in pipeline, and may come back with some questions, or with something needing fixed. Standard will be finalized by Aug. 21<sup>st</sup>., and will be out on Sept. 7<sup>th</sup> for public review. Review comments need to be provided in October. The committee will respond to changes through October. Then, the standard will go to Standards committee, with anticipated approval by board at end of October, or early November.
- Rich Swierczyna, liaison for SPC 150, was supposed to come to main meeting, but did not attend. He has been copied on minutes and is aware of everything.
- SPC 94.2 Heat Storage – Mike Filler sent an email today to all committee members requesting withdraw of this standard. Once all have responded, he will be submitting request to ASHRAE. No physical vote for this was needed (in conclusion).
- ASME Safety Standard TES-2-200X is being developed. Ken to monitor what happens with this. It refers to Solid state TES, which is very confusing.
- AHRI 900-2014 – nothing new or different. No change in status.
- After Std. 150 is published, Ken indicated that the committee should promptly advance the creation of a guideline for testing. The T.C. may then need to change the name of the subcommittee to standards/ guidelines. This Action to seek a guideline will allow some flexibility/deviations to Std. 150, but still meet intent.
- John Dunlap voiced appreciation for all of the hard work Ken has put into this standard, and commended him for this effort.

## **Research –Paulo Cesar Tabares Velasco**

### Status Update:

- RP-1719 – Design Guide for Cool Thermal Storage – Conference call conducted a few weeks ago. Jason Glazier (with main contractor) promised 1<sup>st</sup> draft a week after this summer meeting. There will then be a few weeks to review and furnish comments for updating the draft. Based on this status, Paulo asked to provide a no-cost extension of 3-months for this research. Motion to approve was made by Ken Fulk, seconded by Geoff Bares. 9 voted yes, and 1 person abstained. Motion approved.
- Paulo also noted that Brian Silveti did a great service to society in past years serving for T.C. 6.9 Research.
- Paulo mentioned that ASHRAE now wants 2 abstracts for each project after they are funded and finished – the original technical version and one in plain English (for a general audience).
- Paulo also indicated that when finished with a research project, that he and the PMS chair need to fill out a form and tell ASHRAE the value of the project.
- Only 3 RTARs have been submitted in last period (year), 1 has been functionally accepted, and 1 rejected. The T.C. now has 4 opportunities/ year to submit RTARs WS's, etc to RAC.
- Draft Work Statements 1804 – not to proceed
- RTAR-1762 – Design Guide for CTIC Systems – Co-Sponsoring with TC 1.10. Geoff Bares provided an update. Dharam was also present in main meeting to provide an update: the award has been made to the contractor, and the update is underway, and they have completed a few preliminary milestones. Dharam indicates that the project is on schedule. Tasks 1,2, and 3 have been submitted to BMS. Plan to complete the guideline update by end of this year.
- New Research:  
Paolo proposes that the T.C. provide more time to brainstorm and make a big push on research.

### Interests:

TES for Energy Code Compliance.

Methods to Address High Flow Requirements when using TES for Emergency Cooling.

Paolo suggested that 2 months before the next meeting, a discussion take place about PCM and residential application initiatives. John Lau suggested that any parties with good practices and ideas be invited to come and present their technology and data in during the subcommittee meeting in Atlanta.

The mission of the new ASHRAE president was indicated – with the push on adaptable and renewable grids. Paulo indicated that we need to have a strong voice in that energy storage is not just batteries.

Brian Silveti asked whether any data on who downloaded/ purchased research reports is available. Paulo will follow up with Mike Vaughn about.

## **Long Range Planning/Website – John Lau/Daniel Pyewell**

- Daniel has been keeping our website up to date.
- Research Paper #1607 is now available via a link on the website.

- John would like to share materials that compare TES to other forms of storage (batteries).  
Guy has some ideas – if anyone comes across articles/ information – on what it costs for a battery storage project (Lead acid, Lithiom Ion) per MWhrs. Guy volunteered to collect articles as an unofficial ASHRAE action, requesting data including project installation costs and megawatt hours. The intent of this initiative is to put the data in a format that can be shared and used to compare the costs of different types of energy storage.

Mohamad Ibrahim, visitor from UAE, mentioned his company, DC PRO Engineering, has published an article “Electric batteries vs. Hot or Cold water Tanks.” The article compared Tesla Battery Electric Storage vs. Thermal Energy Storage and concluded TES has significant capital benefit over batteries. Mr. Ibrahim provided the link to the article to interested TC members.

#### **Honors and Awards – Blake Ellis**

- Blake was not present at meeting

#### **Old Business**

None.

#### **New Business**

- Voting Members – rolling off – Brian Silvetti and Chris Mincey
- Rolling on – Mark McCracken, Richard Brooks.

#### **Adjourn**

- Motion by John Dunlap to adjourn, seconded by Geoff Bares, and unanimously approved. Meeting adjourned.