

TC 9.1 Large Building Air-Conditioning Systems

Tuesday, June 24 1:00 PM – 3:00 PM CST

JW Marriott, 309

Name	Position	Voting Status	Attendance
Phillip Trafton	Chair	Voting	Yes
Ken Warren	Vice Chair	Voting	
R Lee Millies	Standards Subcommittee Chair	Voting	Yes
Jay Eldridge	Handbook Subcommittee Chair	Voting	
Dennis Wessel	Program Subcommittee Chair	Voting	Yes
Kelley Cramm	Member	Voting	Yes
Mark Pavol	Member	Voting	Yes
Madison Schultz	Secretary	Non-voting	Yes
Zehui Hong	Research Subcommittee Chair	Non-voting	
Elizabeth Primeau	Webmaster	Non-voting	Yes
Mark Fly	Member	Non-voting	Yes
Roland Charneaux	Research Liaison	Non-voting	Yes
Steven Hammerling	Staff Liaison	Non-voting	
Julie Majurin	Standard Liaison	Non-voting	
Brad Cochrane	Section Head	Non-voting	
James Bennett	TAC Chair	Non-voting	

Additional Members:

Doug Cochran, Stephen Duda, Charles Henck

Guests:

Alok Kumar (TC 1.10), Joy Altwies (new Section Head)

Online Attendees:

Liz Primeau, Mark Pavol

Meeting brought to order at 1:10pm by Phil Trafton.

Code of Ethics Commitment

In this and all other ASHRAE meetings, we will act with honesty, fairness, courtesy, competence, inclusiveness and respect for others, which exemplify our core values of excellence, commitment, integrity, collaboration, volunteerism and diversity, and we shall avoid all real or perceived conflicts of interests.

Scope

TC 9.1 is concerned with the general design concepts of the HVAC systems that are utilized for the conditioning of large buildings, including the integration of components into centralized and decentralized systems.

1. Approval of previous minutes

- a. Motion by Mark, Second by Lee, Vote: Unanimous CV

2. TAC Update (Joy)

- a. Updated Reference Manual at ashrae.org/tac
- b. Send Joy or sh9@ashrae.org the Activity Form (on basecamp)
 - i. Due 9pm today from Phil
- c. Looking for feedback on how the Spring roster update went
 - i. Feedback is mixed so eager for input
 - ii. Comments should be submitted on the bottom of the Activity Form
 - iii. Any changes to roster will be effective July 1
 - iv. Any changes to roster for next society year should be done in February for July 1, 2025
 - v. Any changes in the meantime are considered “emergency changes” and can be made. Changes to email address (and other contact info) should be done on ASHRAE Bio.
- d. Govt Affairs Office is looking for subject matter experts. If anyone is interested, let Joy know (or contact Govt Affairs Office).
- e. RBC is looking for distinguished lecturers if anyone is interested.

3. Sub-Committee Reports

- a. Handbook (Jay) Update by Phil
 - i. All chapters submitted and accepted
 - ii. Room for improvement: meeting the deadline
 - iii. Jay needs help with this, potentially looking for a new Handbook Subcommittee Chair.
- b. Research (Zehui) Update by Phil
 - i. No current research
 - ii. Phil is active in multi-family residential and sees room for improvement in the application by building officials.
 - iii. Brainstorm around connecting the draft of the new Strategic Plan and Presidential initiatives with TC 9.1
 1. Decarbonization, AI, Workforce Development, IEQ
 2. What data do we have to justify/prove the reduction of carbon emissions with new technologies?

- a. Phil going to work on an RTAR (Research Topic Acceptance Request)
 - 3. Carbon capture technology could be better integrated with buildings that are not currently carbon neutral
 - 4. NYC I-97 bans natural gas use. But there is insufficient grid support to allow for fully electric buildings to operate.
 - 5. Southern California seems to have sufficient grid to support, but all of the new buildings have not come online. 50-60% of vehicle parking places have to provide EV charging. PV is a required component. Tall buildings do not have large opportunities for meaningful PV arrays.
- c. Standards (Lee)
 - i. Guideline 16 on selecting outside/return air dampers for outside air economizer systems
 - 1. 9.1 is cognizant so reviews every 5 years
 - 2. Last published in 2022
- d. Honors and Awards (Mark Fly)
 - i. No updates
 - ii. Mark and Dennis going to collaborate regarding who could be nominated for Fellow
- e. Website (Liz)
 - i. Information is current.
 - ii. There is a form to submit for presentation ideas. None have been submitted yet.
 - iii. Subcommittee minutes are on Basecamp only currently. Liz will post them to the website.
 - iv. Committee meeting minutes get posted to the website.
 - v. Madison to send pdf of approved minutes to Liz to be posted.
- f. Programs (Dennis)
 - i. Conference call for programs was on April 2
 - ii. Right Sizing program chaired by Phil (developed by Dennis)
 - 1. Speakers: Susan, Jeff, Medi
 - iii. Kelley is looking into Evaporative Cooling in Prohibited Locations. Madison submitted this for Indy conference.
 - 1. Madison/Kelley to resubmit for Orlando
 - 2. Maybe make it a case study session
 - a. Kelley is working through issues with a project. State of Nevada considers a heat pump as a pressure vessel and requires ASME pressure vessel certification.
 - iv. Kelley working on another session as a follow-up to the previous forum on Decarbonization.
 - 1. What do you do if the client isn't particularly keen on "decarbonization"?
 - a. How to reframe with different language
 - 2. Looking for speakers
 - v. Ken Warren working on session on special challenges for grow facilities. Maybe a new MTG co-sponsorship could be good.
 - vi. Co-sponsored a session at this conference with Tall Buildings TC
 - vii. Energy and operating cost of various systems

1. For example, has ASHRAE Headquarters hit net zero when fully occupied? It is getting close.
- viii. Large System multi-zone control options
- ix. DOE Community GSHP research project
 1. Madison has been in communication with a research team that is doing this work. Will provide update.
 2. Might be a good conference paper
- x. Retrofit for 70s multi-zone systems
 1. Induction systems
 2. Multi-zone systems
 - a. VAV boxes with reheat coils are added to multi-zone ductwork
 3. 2-deck to 3-deck multizone units
 4. Speaker: Kelley
- xi. New requirement of Title 24 includes FEI from 1.0 to 1.3 will reduce available ESP on fans by 25%
 1. There are concerns in how to design systems to meet these new designs. Consider a program for next Summer Conference.
 - a. Lower static pressure by increasing duct size, equipment gets bigger, fans get bigger
- g. Pub Ed (Doug)
 - i. Trying to have number of pages per volume to be about the same
 - ii. Proposed new name of handbook to: “Refrigeration Part I and Building Operations/Maintenance Part II”. This is still in flux from an Ad Hoc of Pub Ed.
 1. A request to streamline the information may be coming.

4. Liaison Reports

- a. TC 4.3 (Steve)
 - i. TRAR has been approved. Working on new commercial garage ventilation standard
 1. Modern vehicles have less pollutants so an opportunity to revise ventilation rates
- b. TC 5.7 (Mark)
 - i. Working on multiple programs for Phoenix and Las Vegas conferences
 - ii. Opportunities to collaborate on Evaporative Cooling and Decarbonization programs discussed in Section 3.f above.
- c. TC 9.9 (Mark)
 - i. Lots of research ongoing
 - ii. Liquid cooling in data centers and resiliency discussions
 - iii. Over 500 members, published 15-20 books
 1. New plan discussed to combine information into “wiki style” webpage with subscription-based access
- d. TC 9.10 (Kelley)
 - i. Guideline 36 was set to publish a lab airflow controls systems without consulting TC 9.10
 1. Members of the TC felt unqualified to vote on the new updates
 - a. Formed working group to form consensus
 - b. Might require an additional public review
 2. Lesson Learned: Communicate and collaborate
 - ii. RP 1835

1. High velocity stackless fan
 - a. Does plume from induced flow fan look the same as a fan with a standard utility stack? Ohio State University is doing research into this with drones.
 - iii. Measuring sources of contamination in labs
 - iv. RP 780
 1. Contamination across energy recovery wheels is much higher than we originally thought
 - v. Updating lab design guide
 - e. TC 9.12 (Dennis)
 - i. Conference for Tall Building Decarbonization in NY is selling out, sign up now
 - ii. Working on new design guide
 - f. Standard 15 (Mark Fly, Doug)
 - i. 15.2 is trying to publish 2-page guidelines for contractors on best practices for handling A2L refrigerants
 - ii. Beginning generation of guideline(s) for A3 in occupied spaces
 - g. CEBD (Center for Excellence in Decarbonization) (Kelley)
 - i. Blake Ellis is Vice Chair, slated to be Chair next year
 - ii. Have several working groups doing work on guides. The last guide anticipated to be published in January. There is a delay between completing a guide and the publish date.
 - iii. Each Council has a representative to the CEBD to help with collaboration
 - iv. 45 minute presentations for Chapter have been created and are posted on their website. More content is being added continuously.
 - h. Planning Committee (Madison)
 - i. Draft has been presented to the Board
 1. Main Goals: Accessibility, High Impact prioritized, Agility, Industry Leaders
 - ii. Final Strategic Plan to be approved at Winter Conference
 - i. Research (Roland) – Reviewed previously discussed items in Section 3.b above. Phil and Ronald to connect on RTAR.
 - j. TC 5.1, TC 7.9, TC 9.8 – no updates
- 5. Old Business**
- a. None discussed
- 6. New Business**
- a. Discussed at this conference: Collecting information on embodied carbon continues to be an ongoing challenge. CIBSE has authority for the approval for the use of TM-65 by ASHRAE.
 - b. How do we get new members?
 - i. Reach out to Provisional Corresponding Members to help them engage
 - ii. Send Meeting Minutes to all on roster
 1. Secretary is responsible to send approved and draft minutes
 - iii. Consider personal invitations to people, make sure the room is welcoming, do interesting research, engage guests as they come, add info and link to the TC website on email signatures
 - iv. Gather research on how many hits out website receives from staff
 - v. Liz adding information on TCs to the Student Program
 - vi. Collaboration with TC 1.4

7. **Next Meeting:** Orlando Conference, 11 February 2025, 1-3pm
8. **Adjournment** at 3:06pm

DRAFT