



MINUTES

DRAFT

TC8.11 Unitary and Room Air Conditioners and Heat Pumps

**2019 ASHRAE ANNUAL MEETING
Kansas City, MO**

**Monday, June 24, 2019: 4:15 – 6:30 PM
Location: KCCC, 2103C**

TC8.11 Subcommittee Meeting – Sunday, June 23, 3:00-6:30 PM
Location: Marriott-West, 2nd Floor, Basie C1

TC8.11 PMS RP-1721 Meeting – Sunday, Jan 23, 2:00-3:00 PM
Location: Marriott-West, 2nd Floor, Basie C1

Note: These draft minutes have not been approved and are not the official, approved record until approved by the Technical Committee.

Minutes

1. Call to order Christensen
Meeting was called to order at 4:18 p.m.
2. Review Scope
Technical Committee 8.11 is concerned with products for use in comfort cooling and/or heating systems. The factory engineered vapor compression systems include: (1) unitary equipment which generally requires the field engineering of the product mounting and ducting, piping and electrical connections, (2) room air conditioners such as window mounted units and ductless split systems and (3) packaged terminal equipment. Specifically excluded are unitary combustion engine driven systems.
3. ASHRAE Code of Ethics Commitment Christensen
In this and all other ASHRAE meetings, we will act with honesty, fairness, courtesy, competence, integrity and respect for others, and we shall avoid all real or perceived conflicts of interests. (See full Code of Ethics: <https://www.ashrae.org/about-ashrae/ashrae-code-of-ethics>)
4. Introductions All
a. Determination of a Quorum Christensen

VOTING MEMBERS FOR THIS MEETING (Need 7 for a Quorum)

Chad Kirkwood-2020 (Present)	Dane Christensen-2020 (Present)	Kasey Worthington-2019 (Present)
Chris Stone-2022 (Present)	Darin Nutter-2021 (Present)	Henry 'Skip' Ernst-2021 (Present)
Sivakumar Gopalnarayanan-2020 (Present)	Jeff Warther-2022 (Present)	Chad Bowers-2022 (Present)
Kishan Padakannay-2021 (Present)	Bo Shen-2021 (Present)	Dutch Uselton-2020 (Present)

- b. Quorum was met. 12 of 12 voting members present.
- c. Since last meeting 4 new provisional members have joined TC through the website request. 1 out of 4 of these members were present in Kansas City.
5. Agenda additions All
a. No additions
6. Chair's Report Christensen
a. Chair's Goals
 - i. Provide leadership to ASHRAE with integrity and purpose
 - ii. Increasing diversity among activity committee participation
 1. Pulling in at least 3 new members
 - We had at least 3 new members join between last two meetings. Dane would like to keep this influx of participation.
 2. Establish a YEA chair to improve engagement with YEA
 - Request was made for a volunteer to take on this role
 - i. Zhiwei "Joy" Huang has agreed to be the YEA Chair for TC8.11
 - iii. Increasing our program engagement
 1. 4 or more sponsored or co-sponsored program sessions per conference
 2. Put the TC on track for one conference paper session annually
 - iv. Maintain Successful TC Research
 1. Continue to facilitate and support already started research projects sponsored by TC 8.11
 2. Ensure at least 2 additional research projects initiated within the next two years out of TC 8.11
 - v. Ensure handbook chapters are revised on time with meaningful and appropriate content
 - vi. Support completion and publication of standard 37
 - vii. Modernize the committee business practices

- b. Announcements and Highlights from TC Chairs' Breakfast Meeting
 - i. TAC provided an update to the reorganization of TCs: the thought/plan would be a modest restructuring compared to the original proposal/concept presented in Atlanta.
 - 1. Driving factors:
 - TC working in silos; too specific; need more global perspective
 - Need increase collaboration for programs, research and handbook
 - Need to increase meeting efficiency & effectiveness of members' volunteer time
 - Need to reduce the number of meeting rooms at each conference to allow for more venue flexibility and reduced cost.
 - ii. CEC has a standing request for future society meeting program track suggestions and highly encouraging TCs to submit ideas.
 - iii. Upcoming workshops and conference information will include on basecamp by Dane for committee members reference.
 - iv. It is highly encouraged for TC attendees to get a TC-Only name badge if not registered for the conference.
 - v. Craig M requested permission to show TAC TC8.11 QR Code for meeting sign in to demonstrate and help promote how new technology can help improve ASHRAE meetings/conferences.
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7. Liaison reports (as they arrive) Liaisons
 - a. Refrigeration Committee
 - i. This committee will be changing their name.
 - ii. A dedicated track will be at every winter meeting called "Refrigeration and Refrigerants".
 - b. MTG – Low GWP Refrigerants Uselton
 - i. AHRTI 9007-2 is finished and available
 - ii. DOE funded research "Oakridge Project" parts 1 and 2 are completed and part 3 is just starting.
 - iii. AHRTI 9012 is ongoing.
 - iv. ASHRAE RP-Projects
 - 1. Seminar 44 in Kansas City
 - summarized progress and results for these RPs
 - 2. RP-1806
 - on going
 - 3. RP-1807
 - finished and available
 - 4. RP-1808
 - finished and available
 - v. AHRTI 9013 is almost complete.
 - vi. AHRI has setup a landing page at ahri.net to link all these project results.
 - vii. AHAM has written a guideline/manual for handling flammable refrigerants for technicians. Version 1 is now available and version 2 is soon to be published.
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8. Approval of minutes from Atlanta Christensen
 - a. **Motion to approve Atlanta draft minutes, Sivakumar Gopalnarayanan Seconded by Darin Nutter. PASSED unanimously 11-0-0-CNV (chair not voting)**
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9. Membership/Roster Berg
 - a. Rolling off after this meeting effective EOM June-19: Kasey Worthington
 - b. Rolling on after this meeting effective BOM July-19: Kirk Stifle
 - c. 3 VM will be rolling off after next summer meeting effective EOM June-20:
 - i. Sivakumar Gopalnarayanan, Dutch Uselton, Chad Kirkwood
 - ii. Dane Christensen to stay on while still Chair
 - d. Will ask for volunteers for new voting member in Orlando

- e. New Handbook Chair after current chapter submission: Robert “Bob” Berry

10. Subcommittee reports

a. Programs

Jeff Warther

- i. Kansas City Statistics
 - 1. Conference Paper Abstracts: 96 Submitted, 83 Approved
 - 2. Conference Paper: 39 Presented
 - 3. Technical Papers: 20 Submitted, 11 Presented
 - 4. Seminars: 110 Submitted, 73 Presented
- ii. August 2nd 2019 is the due date for Orlando seminars submissions
 - 1. We need to work quickly to have a program for Orlando
- iii. Orlando track review
 - 1. HVAC&R Fundamentals and Applications
 - 2. System and Equipment
 - 3. Refrigeration and Refrigerants
 - 4. Cutting Edge Approaches
 - 5. High Efficiency Design and Operation
 - 6. Big Data and Smart Controls
 - 7. Ventilation, IAQ and Air Distribution Systems
 - 8. Standards, Guidelines and Codes
- iv. Floor opened for discussion for potential ideas for Orlando and Austin
 - 1. It was proposed to have a conference paper session in Austin on updates and research done for standard 37 submitted under Track “Research summit”.
 - Jeff W. to reach out to get an update if the standard qualifies for a conference paper session.
 - 2. It was proposed that we do a debate and/or forum between/about TC 8.11 and SPC 221
 - Jeff W reached out to chair of SPC 221 and they have agreed to be a part of a program for Orlando.
 - 3. Potential Seminar for Hot and Humid Climate in Orlando
 - Thought was to circle back to the 2 speakers that agreed to do this seminar in Houston and see if we can get a third speaker to round out this seminar for Orlando
 - Zhiwei “Joy” Huang agreed to be chair of this session and plans to reach out to speakers after the meeting. She will work to get program pulled together and TC plans to vote by letter ballot once the details are worked out.
 - 4. Dane and Omar have some speakers and ideas that might fit into Track #6 in Orlando.
 - Omar has agreed to be chair of this session and plans to reach out to speakers after the meeting. He will work to get program pulled together and TC plans to vote by letter ballot once the details are worked out.

b. Research

Eric Berg

- i. Highlights from Research Chair Breakfast
 - 1. 7 RTARs considered at the last RAC meeting
 - 1 accepted, 2 conditionally accepted, 3 rejected
 - 2. 13 WS considered at the last RAC meeting
 - 1 accepted, 5 conditionally accepted, 7 return
 - 3. 6 RP went out for bid and 27 bids were returned
 - 4. New work statement template is now available on basecamp.
 - 5. PMS meetings are open to all ASHRAE members please try to schedule these at the ASHRAE events.
 - 6. PMS training available every fall and spring as well as a webinar on the ASHRAE website.
 - 7. Currently ASHRAE is working on a webinar training for PES.
 - 8. ASHRAE is working on a new Research Strategic Plan
 - Looking for people to serve on this planning panel.

9. ASHRAE has started putting all RP-WS information (cost, project length, etc.) into a database to help PMSs on RP WS generation and bid selection.
- ii. Current 8.11 RPs
1. RP-1645
 - Completed.
 2. RP-1705
 - **Final report was circulated following the Atlanta meeting along with letter ballot which was Approved 12-0-0**
 - Report is already published and ASHRAE members can download the report by logging in and searching the ASHRAE technology portal for RP-1705.
 - <https://technologyportal.ashrae.org/>
 3. RP-1721
 - Presentation was given in sub-committee meeting in Kansas City
 - i. Modifications to the test setup were made based on Atlanta meeting comments and reviewed by PMS.
 - ii. Three sets of results for the baseline were presented for horizontal pipes.
 - iii. A bypass valve was added to help with low flow.
 - iv. Diaphragm pump was replaced with a gear pump which has seemed to solve the noisy data. This also allowed them to get down to lower discharge pressures.
 - v. A heater was added to each oil separator with PID controls to keep the oil separators above condensing temperature.
 - vi. Discussion on if RP should move forward with 410a or pick another refrigerant. PMS to take action item to review. It was discussed to do all other refrigerant on the test matrix first to allow time for PMS to decide to use 410a or something else.
 4. RP-1733
 - Presentation was given in sub-committee meeting in Kansas.
 - i. Modifications were made to the setup which uses a different mechanism to move the second air mixer and TC grind forward and backwards in duct. The original belt system was not sufficient and a chain system was implemented.
 - ii. They show some preliminary results which seem to depict the following trends: increasing total duct length between the mixers and sampling plane increases the mixing effectiveness. Also, by increasing the distance between the 1st and 2nd mixture increases the mixing effectiveness but it is relatively small compared to the effect of increasing duct length.
 - iii. PI proposed that it may be valuable to do testing without a 2nd mixer to help with pressure drop.
 - iv. Testing is needed with the left right mixer position in the 1st spot as the hot/cold air divided in the vertical orientation.
 - v. CFD part of the RP is mostly done and the experimental part is just getting started.
 5. RP-1743
 - Presentation on project status/update given in sub-committee meeting in Kansas City
 - i. Issue with test room has been resolved and repaired; expect to start testing mid-July-19

- ii. They have done preliminary leak testing on their test duct setup and have achieved less than 1% leakage rate.
- 6. RP-1785
 - Presentation on project status/update given in sub-committee meeting in Kansas City
 - i. Details on the test setup and coil test holder along with diagrams and pictures were presented.
 - ii. PI has proposed/developed a method to measure the internal volume of the test sections. This method of measurement uses the idea gas law much the same way a pycnometer measures density.
 - **Motion was made to grant a 1 year no cost extension, Chad Kirkwood. Seconded by Chris Stone. PASSED unanimously 11-0-0-0-CNV (chair not voting)**
- 7. RP-1824
 - WS was approved by RAC and is going out for bid in October.
 - i. RAC suggested extending RP length from 18 months to 24 months.
 - John Winkler agreed to be chair of the PMS
- iii. Ideas
 1. Room Stratification Impacts on Psychrometric Testing
 - Scott Karmer had WS ready and has submitted to Eric Breg.
 - Eric plans to review WS with our Rack Liaison first then send it out to TC 8.11 members for letter ballot.
 - Got comments back from RAC Liaison which need to be addressed
 2. Filtration in Mini Splits and VRF System
 - Lead by TC 2.4 and Tom Justice
 - No progress to report
 3. New 41.2 has been released, would like to compare the effects of the results based on the difference between this release, older versions, and ASHRAE 37
 - Eric brought up topic with RAC liaison at Research Chair Breakfast.
 - i. RAC seems not interested. Stance is the New Standard has already been released.
 - Within 8.11 members still seem to have concerns about this and it was proposed to go straight to a WS.
 - Chad K. plans to bring up this topic for more discussion and action in SPC 37 meeting.
 4. Oil Retention in MC HX
 - Chad Bowers working on RTAR
 - This is a co-sponsor opportunity with TC 8.4
 - About 80% done.
 - No Progress since Atlanta.
 5. Cyclic test result correlation based on unit design/configuration
 - No action at this point



TC 8_11 Research
Summary.xls

- c. Handbook
 - i. 2020 - Handbook Systems and Equip
 1. Chapters 49: Unitary AC (Due: 7/4/2019) and 50: Room AC/PTACs (Due: 7/11/19)
 - Didn't get a lot of feedback.

- In Chapter 49 plan to include the new efficiency table for 2023
- In Chapter 50 plan to clarify the CEER calculation.
- Members are asked to review draft in the next few days as a letter ballot is planned to be circulated very quickly after Kansas City meeting for approval to meet submission deadlines.

d. Standards

Chris Stone

- i. ASHRAE 221p
 - 1. They rejected most of the comments made during public review #2
 - 2. They are planning on going out for 3rd public review soon.
- ii. ASHRAE 16 has combined with ASHRAE 58
 - 1. Released in 2016
 - 2. Plan to vote on reaffirmation or open for edit at Orlando meeting. Will circulate material prior to Orlando Meeting.
- iii. SSPC 205
 - 1. Nothing new to report
- iv. ASHRAE 37
 - 1. Currently going through a major revision
 - 2. Combining 37 and 116
 - 3. APR Expected: 2019
 - 4. Plan to reaffirm with formatting changes in Orlando
- v. ASHRAE 137
 - 1. Reaffirmed 2017
- vi. ASHRAE 206
 - 1. Reaffirmed 2017
- vii. SPC 213p
 - 1. Nothing new to report
- viii. AHSRAE 41 series
 - 1. Multiple ASHRAE 41s are in the revision state.
 - 2. Chris Stone encouraged TC members/attendees to get involved with the SPCs for the 41 series standards
 - 3. New SPC 41.13 opened and meeting now
- ix. ISO
 - 1. Multiple ISO Standards relevant to this TC are very active.
 - 2. Chris Stone encouraged TC members/attendees to get involved with the Standards



Std_Report_June2019_TC811 final.docx

e. Website

Darin Nutter

- i. "Up to date"
- ii. Darin N. would like to post citation to RP when finished.
 - 1. Eric to work with Darin to make this happen as RPs finish up.

11. Awards

- a. Like everyone to think about this topic for Orlando

12. Old Business

- a. None

13. New Business

- a. None

14. Adjournment

a. **Motion to adjourn.**

- i. Meeting was adjourned at 6:22 p.m.