

2018 ASHRAE WINTER MEETING  
Chicago, IL

**TC8.11 Unitary and Room Air Conditioners and Heat Pumps**

**Monday, January 22, 2018: 4:15 – 6:30 PM**  
**Location: Palmer House, Water Tower room**

Sunday, Jan 21, 2:00 PM - 3:00 PM (Clark 7) – TC 8.11 PMS Meeting: RP-1721 Oil Return and Retention in Gas Lines  
Sunday, Jan 21, 3:00 PM - 6:30 PM (Clark 7) – TC 8.11 Handbook/Program/Research Subcommittee  
Tuesday, Jan 23, 8:00 AM-9:30 AM (Monroe) – Seminar 35 (co-sponsor): Low GWP Refrigerants in Heat Exchange Eq: Part 1  
Tuesday, Jan 23, 9:45 AM-10:45 AM (Adams) – Debate 2: Low GWP Refrigerants in Heat Exchange Equipment  
Wednesday, Jan 24, 9:45 AM-10:45 AM (Monroe) – Conference Paper Session 16: Low GWP Refrigerants

**Minutes**

1. Call to order Messmer  
Meeting was called to order at 4:15 p.m.
  
2. ASHRAE Code of Ethics Commitment Messmer
  - a. 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>)
  
3. New People Messmer
  - a. 5 first time attendees
  
4. Introductions All
  
5. Determination of a Quorum Messmer
  - a. Quorum was met. 12 of 12 voting members present.
  
6. Announcements and Highlights Messmer  
From TC Chairs Breakfast Meeting

- a. Due To ASHARE 125th Anniversary they are wanting/requesting abstracts on historical papers



ASHRAE's Historical  
Committee Call for Pa

- b. News portals online available to be helpful tools. Please check them out.
- c. If you would like to join a TC you will need to join online-Dane



Winter 2018 TC  
Breakfast Handout.pr

7. Agenda additions All
  - a. Executive session to vote after adjournment
  
8. Liaison reports (as they arrive) Liaisons
  - a. MTG – Low GWP Refrigerants Uselton/Sethi
    - i. Research
      1. Three Current Projects

- RP-1806
    - i. Contract awarded to Gexcon
    - ii. Currently, approximately one year into project. Significantly behind what was expected.
    - iii. The delay could turn out to be good, as findings in the original vapor only leakage scenario has been enhanced to include two phase leakage, standing pool fires, etc.
  - RP-1807
    - i. Purpose of project was to review available literature around the world on how to handle/store flammable refrigerants.
    - ii. Australia stands out as a country that already has standards/regulations on transporting/handling end of life procedures for this type of refrigerants.
    - iii. This allows us to identify where risk/gaps are and to focus our efforts on areas that need improvements/further work.
    - iv. This is in final review by the PMS and should be available soon.
  - RP-1808
    - i. Contractor is CTS
    - ii. Purpose is to look at mechanical joints available in industry to understand how dependable these joints are in the field, as well as over their lifecycle.
    - iii. Expect to finish up 3<sup>rd</sup> quarter
2. Other organizations are doing parallel research in this area as well (CARB,AHRTI,DOE)

- b. MTG – ASEC Baxter
1. MTG has been disbanded

9. Approval of minutes from Long Beach Messmer
- a. Motion to approve Long Beach draft minutes, Ray Rite. Seconded by Sivakumar Gopalnarayanan.  
**PASSED unanimously 11-0-0-0 CNV (chair not voting)**

10. Subcommittee reports Jeff Warther
- a. Programs



Jan 2018 TC 8.11  
Program Chair\_HOUS

- i. Review of tracks for Houston. (9 total)
  1. HVAC&R Systems and Equipment
  2. Fundamentals and Applications
  3. District Energy and Cogeneration Plants
  4. HVAC & Resiliency: Safeguarding our World
  5. Residential – Modern Building in Hot and Humid Climates
  6. Professional Skills
  7. Research Summit
  8. HVAC&R Control Freaks
  9. HVAC&R Analytics
- ii. Discussion on potential seminar for Houston (Track 5)
  1. Title: “Sizing and Performance in Hot and Humid Climates”
    - Abstract Due Date: Feb 9<sup>th</sup>
    - Chair: Yunho Hwang
    - Potential Subjects/Presenters:
      - i. Florida Solar and Energy
      - ii. Building Science Corp.
      - iii. AHRTI 9008

- iv. NIST (Jon Winkler)
- v. RP-1445
  - TC4.1 Doing seminar that is quite similar
- 2. Title reworded to include Low GWP refrigerants.
- 3. Motion to sponsor seminar "Sizing and Performance in Hot and Humid Climates Including Low GWP Design" for Houston, Dutch Uzelton. Seconded by Sivakumar Gopalnarayanan.  
**PASSED unanimously 11-0-0-0 CNV (chair not voting)**
- iii. Discussion on potential seminar for Houston (Track 8)
  - 1. Title: "We are up in your business...RTU retrofit successes"
    - Abstract Due Date: Feb 9<sup>th</sup>
    - Chair: Grant Wheeler
    - Jeff already has 3 presenters
  - 2. Motion to sponsor seminar "We are up in your business...RTU retrofit control successes" for Houston, Dane. Seconded by Byron.  
**PASSED 10-1-0-0 CNV (chair not voting)**
    - Henry 'Skip' Ernst thinks it is going to be hard to get approved
- iv. Atlanta Track Review
  - 1. System and Equipment
  - 2. Fundamentals and Applications
  - 3. Refrigeration
  - 4. Construction, Operation, and Maintenance of High Performance Systems
  - 5. Common System Options and Misapplications
  - 6. Convergence of Controls, Indoor Air Quality, and Energy Efficiency
  - 7. Building Integrated Renewables and Natural Systems
  - 8. The Engineers Role in Architecture

Bring Ideas to Houston

- v. TC 8.11 is Co-Sponsoring two programs in Chicago
  - 1. Seminar 35
  - 2. Debate 2

b. Research

Eric Berg

- i. Highlight from Research Chair Breakfast
  - 1. RAC is adding another deadline to Review RTAR and WS: March 15<sup>th</sup>
  - 2. Large backlog of projects were ready for bid. All were released.
  - 3. Selected 6 finalists for the Innovative Research Grant (Total of 40 candidate submissions)
  - 4. Reminder to have full votes for both the sponsoring and co-sponsoring TCs on all submission forms.
  - 5. Need PMS member to be from all sponsoring TCs
  - 6. WS form now requires milestones for the project which will be tied to payments.
  - 7. It was stressed we must fill out the Dispersion of ASHRAE Sponsored Results form at the end of RPs. PMS Chair is responsible to submit this form.
- ii. Current 8.11 RPs
  - 1. RP-1645
    - Completed and expecting report very soon.
  - 2. RP-1705
    - Phase one completed
    - Expected to be finished in October
    - Presentation on primary results given in sub-committee meeting in Chicago
  - 3. RP-1721
    - Presentation on project status/update given in sub-committee meeting in Chicago
    - Having some difficulties getting parts and components

- Currently running a few months behind schedule
  - Started collaboration with University of Kent in Belgium in hopes to help speed up the project.
  - Expect to have some results by Houston
4. RP-1733
    - WS approved
    - 6 bids submitted
    - PMS is ready to make a recommendation to TC 8.11 (Executive Session)
  5. RP-1743
    - Presentation on project status/update given in sub-committee meeting in Chicago
    - Currently finalizing test equipment and matrix
    - Request for Chad Kirkwood to join PMS  
Chair of 8.11 approved
  6. RP-1785
    - Presentation on project status/update given in sub-committee meeting in Chicago
    - Multiple web meetings to finalize test matrix and coils between Long Beach and Chicago
    - On the verge of getting the coils on order and building/fabricating the test setup.
    - It is believed they are just slightly behind schedule
    - Another web meeting planned in a month
    - Request to add member to PMS
      - i. Chair of 8.11 approved
  7. RP-1824
    - Currently RTAR approved
    - WS not moving along as quick as expected
    - Hope to work on this and go out for letter ballot
    - Next due date is March 15<sup>th</sup>.
- iii. Ideas
1. Cyclic test result correlation based on unit design/configuration
    - No action at this point
  2. Room Stratification Impacts on Psychrometric Testing
    - Scott Karmer has WS ready to submit
    - May need a different form for this WS due to bypassing the RTAR stage.
- iv. Recommendation was made that TC8.11 should nominate a member/s for the Research Service Award.
1. Discussed possible members to be considered
  2. Chair and Omar to work together to get member/s nominated



TC 8\_11 Research  
Summary.xls

- c. Handbook Ray Rite
- i. TC responsible for Chapter 1 in Applications
    1. Due date April 12<sup>th</sup>
    2. Still have a few more updates to do
    3. Ray has asked to do a letter ballot
    4. Highlights of the proposed changes
      - Chapter Name "Residences" to "Residential"
      - Reorganized content in the single family section
      - Added window Air Conditioners
      - Clean up on the controls sections
    5. Craig thinks we need to get input from people that have expertise in room air conditioners for next revision

- ii. Letter ballot for approval of Chapter 1 in Applications went out February 5, 2018  
Letter Ballot Results March 6, 2018

**PASSED UNANIMOUSLY 11-0-0-0 CNV (chair not voting)**

- d. Standards Byron
  - i. ASHRAE 16 has combined with ASHRAE 58
    - 1. Released in 2016
  - ii. ASHARE 15.2
    - 1. New Standard being developed
    - 2. APR being published shortly
    - 3. Request was made for participation
  - iii. SSPC 205
    - 1. Just went out for APR
    - 2. Meeting away from PPR
    - 3. Brief Summary of 205:
      - Defining what manufactures/OEMs should provide for equipment performance maps.
  - iv. ASHRAE 37
    - 1. Currently going through a major revision
    - 2. Combining 37 and 116
    - 3. APR Expected: 2019
  - v. ASHRAE 137
    - 1. Reaffirmed 2017
  - vi. ASHRAE 206
    - 1. Reaffirmed 2017
  - vii. SPC 213p
    - 1. New Standard defining Calculations for Psychrometric Properties of Air
    - 2. Most people reference Fundamentals handbook, but other standards cannot reference these calculations from Fundamentals as this handbook is not peer reviewed.
  - viii. AHSRAE 41 series
    - 1. Multiple ASHARE 41s are in the revision state.
    - 2. ASHRAE 41.7 is currently out for reaffirmation in Chicago.
  - ix. ISO
    - 1. Sub Committee 6
      - Current working groups meeting about twice a year.
        - i. WG 1
          - 1. Just published a draft.
          - 2. Voting starts March 3<sup>rd</sup>.
        - ii. WG 3
        - iii. WG 10
        - iv. WG 12
    - 2. ISO TS 16491
      - Task Group formed to revise this guideline to add a section to cover WSHP



Std\_Report\_Jan2018  
\_TC811 RevA (003).

- e. Website Darin Nutter
  - i. Updated

- 11. Membership/Roster Messmer
  - a. Four VMs rolling off in June
    - i. Ray Rite, Byron Horak, Kevin Mercer, Craig Messmer
  - b. Chair's Nominees (effective July 1<sup>st</sup>)
    - i. Chair- Dane Christensen
    - ii. Vice Chair- Chad Kirkwood
    - iii. New VMs- Jeff Warther, Chris Stone, Chad Bowers

- c. Ray Rite wanting to step down from Handbook Chair
  - i. Recommendation for Ted Duffy to take over Handbook Chair

12. Old Business  
 a. None

13. New Business
- a. TC 1.13 is asking TC8.11 for support on a New Track at June 2019 conference  
 Title: "Optimization of HVAC&R"
  - b. Motion TC 8.11 would support a New Track for June 2019 titled "Optimization of HVAC&R", by Dane Christensen. Seconded by Bo Shen Man.  
**PASSED 10-0-0-1 CNV (chair not voting)**

14. Adjourn

- a. **Motion to adjourn.**
  - i. Meeting was adjourned at 6:05 p.m.

15. Executive Session

- a. Motion for TC 8.11 approves the recommended bidder for RP-1733 by the PCS, Kevin Mercer. Seconded Byron Horak.
  - 1. **PASSED 10-0-0-1 CNV (chair not voting)**

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

Dutch Uselton	Darin Nutter	Bo Shen Man
Kevin Mercer	Ray Rite	Kasey Worthington
Kishan Padakannaya	Dane Christensen	Henry 'Skip' Ernst
Craig Messmer	Byron Horak	Sivakumar Gopalnarayanan



## ASHRAE's Historical Committee

### Announces Call for Papers for the Society's 125th Anniversary

ASHRAE will celebrate the 125th anniversary of its founding during the 2019-2020 Society year.

As a part of the celebration, the Historical Committee has announced a call for papers on technologies and topics that occurred between the years 1920 – 2000. What do you consider are the milestone industry advances in heating, ventilating, refrigeration and air conditioning? How did they develop, who did it, how does it impact us now? HVAC&R engineering changed our lives! What did we engineers do? How did we do it? Your topic can be specific or broad, but let's document the history. Accepted papers will be published in ASHRAE Transactions and presented at a Society Winter or Annual Conference during the celebration year.

Abstracts are due March 2018. Upon acceptance, papers are due September 2018. Papers can be a maximum of 30 double-spaced pages in length and undergo a double-blind review.

To submit an abstract, go to [mc.manuscriptcentral.com/ashrae](http://mc.manuscriptcentral.com/ashrae).

For more information, contact Jeff Haberl, 979-845-6507, [jhaberl@tamu.edu](mailto:jhaberl@tamu.edu).

Instructions to submit an ASHRAE 125th Anniversary paper:

1. Go to: <https://mc.manuscriptcentral.com/ashrae>
2. Enter the paper details:
  - a. Title
  - b. Short 100 words or less promotional abstract
  - c. Select the publication subcategory of the Conference in which you prefer to present the manuscript: Atlanta 2019 or Kansas City 2019. The 2019 ASHRAE Winter and Annual Conferences take place as follows: Jan. 12 – 16 in Atlanta, GA and June 22 – 26 in Kansas City, MO > Save and Continue
  - d. Select 3 keywords
1. Enter the author and co-author information: To check if an author already exists in the journal's database, enter the author's e-mail address and click "Find." If the author is found, their information will automatically populate for you. > Save and Continue
2. Cover letter: Use the space provided to indicate "ASHRAE 125th Anniversary Paper"
3. File Upload: Use the file upload module to submit your review abstract in Word format.
4. Review the details entered and submit

<https://www.ashrae.org/membership--conferences/conferences/papers-and-programs>

**Conferences and Expositions Committee Information Items for Technical Committees  
Winter Meeting, Chicago, 2018**

**1. Presentation Deadlines:**

CEC has had an ongoing issue with presentations not being uploaded for commercialism review before the conference. This is problematic because it requires a “fire drill” for CEC on Saturday and Sunday to process commercial reviews for these presentations before they can be uploaded to the system. For clarification, presentation requirements include:

- a. Uploads need to be substantially complete; including the AIA Disclaimer and Learning Objectives. Blank slides and place holders do not constitute a substantially complete presentation.
- b. Recent Presentation Upload History
  - i. For Chicago, 38 presentations had not been uploaded by the January 10<sup>th</sup> deadline.
    - 1. 24 presentations were still not uploaded as of 1/20/2017.
    - 2. 22 of those 24 were TC sponsored.
  - ii. For Long Beach, 41 presentations were not uploaded by the final due date.
  - iii. For Las Vegas, 48 presentations were not uploaded by the start of the conference.

CEC needs to hold speakers accountable for making deadlines. Starting with the 2017 Winter Meeting in Las Vegas, CEC started enforcing a 3 strike policy for speakers who do not up load their presentation by the published deadline. If a speaker receives 3 strikes they will not be able to present for the following year (two conferences).

**2. Program statistics for Chicago; for a total of 106 available slots:**

<b>Seminars</b>	<b>Workshops</b>	<b>Panels</b>	<b>Forums</b>
115 submitted	10 submitted	11 submitted	16 submitted
67 presented	5 presented	1 presented	2 presented
 <b>Debates</b>	 <b>Conference Papers</b>	 <b>Technical Papers</b>	
10 submitted	132 abstracts submitted	21 submitted	
3 presented	92 abstracts approved	18 presented	
	67 CP presented	6 Technical Paper Sessions	
	17 Conference Paper Sessions		

**3. Potential Sources Bias Disclosure:**

Since the 2016 Annual Meeting in St. Louis, speakers are required to fill out a potential sources bias disclosure document that will note affiliations/ involvement with any organizations with financial or commercial interest in the subject matter to be discussed, in accordance with the ASHRAE code of ethics. This IS REQUIRED to present at an ASHRAE Conference.

**4. AIA/CES Presenter Quality Commitment:**

All Presenters are REQUIRED to complete the following documents in order to have their presentation included in the conference program:

- AIA/CES Presenter Quality Commitment Statement
- Consent to Record

5. **Student Paper Recognition:**

Continuing the Student Paper Awards that were initiated at the 2017 annual meeting, we have selected the following . Certificates will be awarded to the following students at their assigned conference paper session. There will be (1) “Best Paper” and (2) Honorable Mentions for graduate candidates and PDH candidates (6 total papers awarded). (2)

**PhD Best:** Liquid Removal through Vibrations on a Flexible Film for Condensing/Dehumidification

**Authors:** Ryan Huber, Giselle Guanes and Melanie Derby

Conference Paper Session 3 – Improvements in Heat Transfer Equipment - **Sunday, January 21, 2018: 11:00 AM-12:30 PM**

**PhD Honorable:** A New Model for Frost Growth Incorporating Droplet Condensation and Crystal Growth Phases

**Authors:** Ellyn Harges and Lorenzo Cremaschi

Conference Paper Session 3 - Improvements in Heat Transfer Equipment - **Sunday, January 21, 2018: 11:00 AM-12:30 PM**

**BS/MS Best:** Resilient Design, Commissioning and Operation of the Canadian High Arctic Research Station

**Authors:** Jean-Francois Pelletier, Michael D. Brown, Guillaume Castonguay and Cynthia Cruickshank

Conference Paper Session 1 – Operation and Design for Resilient and Responsive Buildings - **Sunday, January 21, 2018: 9:45 AM-10:45 AM**

**BS/MS Honorable:** Dynamic HVAC Operations with Real-Time Vision-Based Occupant Recognition System

**Authors:** Siliang Lu, Erica Cochran Hameen and Azizan Aziz

Conference Paper Session 5 – Designing Building Systems for Thermal Comfort - **Monday, January 22, 2018: 8:00 AM - 9:30 AM**

6. **2018 ASHRAE Annual Conference in Houston, TX:** [www.ashrae.org/houston](http://www.ashrae.org/houston)

- a. Seminar, Forum, Panel, Debate and Workshop proposals are due Friday, February 9, 2018 (as of Jan 19, 2018 we have received 155 submissions)
- b. Web site opens for presentation uploads Monday, April 30, 2018
- c. All presentations due online Friday, June 1, 2018

- **Track 1: HVAC&R Systems and Equipment:**

Track Chair: Frank Schambach

Email: [frankschambach@mindspring.com](mailto:frankschambach@mindspring.com)

- **Track 2: Fundamentals and Applications:**

Track Chair: Dennis Alejandro

Email: [denzjac@yahoo.com](mailto:denzjac@yahoo.com)

- **Track 3: District Energy and Cogeneration Plants:**

Track Chair: Kimberly Pierson

Email: [kdpwildcat@gmail.com](mailto:kdpwildcat@gmail.com)

- **Track 4: Safeguarding your HVAC&R System:**

Track Chair: Rich Rose

Email: [richr@mticontrols.com](mailto:richr@mticontrols.com)

- **Track 5: Residential – Modern buildings in Hot and Humid Climates:**

Track Chair: Dimitris Charalambopoulos

Email: [dimitris@ashrae.gr](mailto:dimitris@ashrae.gr)

- **Track 6: Commissioning– Optimizing New & Existing Buildings and their Operation:**

Track Chair: Kevin Marple

Email: [kmarple@benzco.com](mailto:kmarple@benzco.com)



- e. CEC welcomes suggestions for tracks! We value your input. TAC/CEC agreed that the Comment Section on the activity form is the location for the TC to provide this information.

**8. Speaker Ratings:**

About 12 speakers from Long Beach had speaker ratings below 3.5 out of 5.0. These speakers were sent letters indicating that if they receive two additional low ratings they will be required to provide proof that they have received speaker training before they will be permitted to speak again.

**9. CEC Announces a Call for Reviewers and Paper Session Chairs:**

ASHRAE has a number of conferences coming up that include papers, and CEC seeks your help in reviewing them. Additionally opportunities to chair a paper session are available. Specifically, there is an immediate need for reviewers and session chairs for the 2018 Annual Conference and various specialty conferences.

Please submit your interest in reviewing a paper or chairing a paper session using the online form: [http://web.ashrae.org/cec\\_request/](http://web.ashrae.org/cec_request/). Please contact Tiffany Cox, ASHRAE Assistant Manager, Conference Programs, at [tcx@ashrae.org](mailto:tcx@ashrae.org) for more information.

**10. ASHRAE 125<sup>th</sup> Anniversary Call for Papers**

The Historical Committee has announced a call for papers on technologies and topics that occurred between the years 1920 – 2000. Accepted papers will be published in ASHRAE Transactions and presented at a Society Winter or Annual Conference during the celebration year. Abstracts are due March 2018. Upon acceptance, papers are due September 2018. To submit an abstract, go to [mc.manuscriptcentral.com/ashrae](http://mc.manuscriptcentral.com/ashrae). For more information, contact Jeff Haberl, 979-845-6507, [jhaberl@tamu.edu](mailto:jhaberl@tamu.edu).

**11. Specialty Conferences**

ASHRAE’s topical conferences are focused on a particular aspect of the industry and bring together professionals for networking and professional development. Two specialty conferences are available for the remainder of 2018.

2018

Date	Conference	Location	Website
Sept 26-28	ASHRAE Building Performance Analysis Conference and SimBuild	Chicago, IL	<a href="http://ashrae.org/BuildPerform2018">ashrae.org/BuildPerform2018</a>
Oct 4-5	3 <sup>rd</sup> International Conference on Efficient Building Design	Beirut, Lebanon	<a href="http://ashrae.org/Beirut2018">ashrae.org/Beirut2018</a>

**12. CLIMA 2019**

The CLIMA 2019 Congress has announced a call for papers and a call for reviewers. The congress takes place May 26 -29, 2019 in Bucharest, Romania. Papers are requested in the areas of advanced HVAC&R technology and IEQ; high performance buildings; information and communication technologies for intelligent building management; and sustainable urbanization

and energy system integration. Abstracts are due Sept. 30, 2018. Upon acceptance, papers are due Nov. 30, 2018. Reviewers with a background in these topics are requested. To submit an abstract, sign-up to be a reviewer or for more information, visit <http://www.clima2019.org>.

### 13. Program Types:

**Technical Paper Session:** TC sponsored/organized paper sessions are encouraged and may be submitted at: [http://web.ashrae.org/cec\\_request/](http://web.ashrae.org/cec_request/). Final approval is contingent upon successful peer review of the individual paper. These sessions present papers on current applications or procedures, as well as papers resulting from research on fundamental concepts and basic theory. Papers presented in these session have successfully completed a rigorous peer review. Forms for written comment are available at each session, and sent to respective authors for reply and publication in ASHRAE transactions, if received by a certain date.

**Conference Paper Session:** TC sponsored/organized paper sessions are encouraged and may be submitted at: [http://web.ashrae.org/cec\\_request/](http://web.ashrae.org/cec_request/) Final approval is contingent upon successful peer review of the individual paper. These sessions present papers on current applications or procedures, as well as papers reporting on research in process. These papers differ from technical papers in that they are shorter are length and undergo a much less stringent peer review.

**Seminar:** These sessions feature presentations on subjects of current interest. There are not papers attached to seminars.

**Workshop:** These sessions enable technical committees and other ASHRAE committees to provide a series of short presentations on a topic requiring specific expertise. These short presentations are provided with an increased emphasis on audience participation and training in a specific set of skills. There are not papers attached to workshops.

**Forum:** The sessions are “off-the-record” discussed held to promote a free exchange of ideas. Reporting of forums in limited to allow individuals to speak confidentially without concern of criticism. There are not papers attached to forums.

**Panel Discussion:** Panel discussions can feature a broad range of subjects and explore different perspectives on industry related topics. This session format includes a panel of 3-4 speakers each addressing a facet of the session topic, followed by an interactive discussion lead by the session chair. Panel Discussions may be 60 minutes or 90 minutes in length and will be posted online in the Virtual Conference.

**Debate:** Debates highlight hot-button issues commonly faced by our membership. Industry experts, either on teams or as individuals, argue opposing sides of an issue, concluding with position summaries and audience feedback. Debate sessions may be 60 minutes or 90 minutes in length and will be posted online in the Virtual Conference.

# 2018 ASHRAE Annual Conference

**Houston TX | June 23 – 27, 2018**

- ~~Thursday, January 11, 2018: Website Opens for Seminar, Workshop, Forum, Debate and Panel Proposals~~
- ~~Monday, January 15, 2018: Conference Paper Accept/Revise/Reject Notifications~~
- Friday, February 9, 2018: Program (Seminar, Forum, Workshop, Debate and Panel) Proposals Due
- Friday, February 9, 2018: Revised Conference Papers/Final Technical Papers Due
- Monday, February 19, 2018: Conference and Technical Paper Final Accept/Reject Notifications
- Tuesday, March 1, 2018: Registration Opens
- Monday, March 19, 2018: Seminar, Forum, Workshop Accept/Reject Notifications
- Monday, April 30, 2018: Upload of PPTs Begin
- Friday, June 1, 2018: All PPTs Due Online
- Wednesday, June 20, 2018: Final Day for Commercialism Revision Upload prior to on-site

## **Houston Conference Tracks include:**

- HVAC&R Systems and Equipment
- Fundamentals and Applications
- District Energy and Cogeneration Plants
- HVAC & Resiliency: Safeguarding our World
- Residential – Modern Building in Hot and Humid Climates
- Professional Skills
- Research Summit
- HVAC&R Control Freaks
- HVAC&R Analytics

### **Track 1: HVAC&R Systems and Equipment**

- **Track Chair: Frank Schambach**  
**Email: [frankschambach@mindspring.com](mailto:frankschambach@mindspring.com)**
- Selection of equipment and systems is paramount to HVAC&R design. Papers and programs in this track will assist designers, engineers, and operators in the design, selection, and operation of HVAC&R systems and equipment.

### **Track 2: Fundamentals and Applications**

- **Track Chair: Dennis Alejandro**  
**Email: [denziac@yahoo.com](mailto:denziac@yahoo.com)**
- Fundamentals are the foundation for understanding applications in engineering. Key components of ASHRAE fundamentals include thermodynamics, psychrometrics, fluid and mass flow. This track provides opportunities for papers and presentations of varying levels across a large topic base. Concepts, design elements and shared experiences for theoretical and applied concepts of HVAC&R design are included.

### **Track 3: District Energy and Cogeneration Plants**

- **Track Chair: Kimberly Pierson**  
**Email: [kdpwildcat@gmail.com](mailto:kdpwildcat@gmail.com)**
- As our world resources become more and more sparse there is an industry-wide movement toward efficiency and sustainability. One of the ways in which we can look to minimize our carbon footprint is to combine our resources. District energy systems and cogeneration plants do just that and are quite popular in some locales but have yet to gain traction in other developed cities. We will look at the advantages and limitations, do's and don'ts and best practices of utilizing this type of shared system.

### **Track 4: Safeguarding your HVAC&R System**

- **Track Chair: Rich Rose**  
**Email: [richr@mticontrols.com](mailto:richr@mticontrols.com)**
- From seismic events to power outages and human error, how secure is your HVAC&R System? Mechanical, plumbing, electrical, and control systems all work together to create our living buildings, so it is imperative that designers and operators take into account the reactivity and interaction of these systems in response to natural disasters, human interference and other catastrophic events. Topics in this track include considering your design layout and accessibility, backup systems, supports and bracing, and more.

### **Track 5: Residential - Modern Buildings in Hot and Humid Climates**

- **Track Chair: Dimitris Charalambopoulos**  
**Email: [dimitris@ashrae.gr](mailto:dimitris@ashrae.gr)**
- Residential dwellings require designers to consider a different scope of building functions, occupant use, and comfort. With increasing utility rates and a movement toward net zero housing, the traditional residential design models are continuously diversifying and evolving. This track will discuss how we can integrate modern residential design and building practices into hot and/or humid climates with specific challenges ranging from indoor comfort to ventilation and mold.

### **Track 6: Professional Skills**

- **Track Chair: Kevin Marple**  
**Email: [kmarple@benzco.com](mailto:kmarple@benzco.com)**
- This track is designed to provide professionals an opportunity to develop in the areas of presentation skills, leadership, teambuilding, understanding various business operations, interpersonal skills, etc. In short, the Professional Skills Track can cover all aspects of business outside of engineering/technical applications and lends itself to interactive session types such as workshops and forums.

### **Track 7: Research Summit**

- **Track Chair: Melanie Derby**  
**Email: [derbym@ksu.edu](mailto:derbym@ksu.edu)**
- Active research, and the exchange of those research findings are critical to the development of our HVAC&R industry and environment. The sixth annual research summit invites researchers to share those results; and this year we announce an exciting collaboration with ASHRAE's archival research publication, *Science and Technology for the Built Environment* (STBE). Researchers are invited to present papers, seminars, forums or participate in panel

discussions. Authors may also pursue an opportunity to further develop their submissions for later publication in STBE

### **Track 8: HVAC&R Control Freaks**

- **Track Chair: Gary C. Debes**

**Email: [gcdebes@verizon.net](mailto:gcdebes@verizon.net)**

- This track will focus on all things controls (note: please see track 9 "MiniTrack" as well). We invite you to join this exchange addressing one of the most dynamic areas in HVAC&R. Topics may range from design innovations spreading through our industry to the latest in building integration and observation, or even troubleshooting the most common issues occurring in building management systems.

### **Track 9: HVAC&R Analytics**

- **Track Chair: Vikrant Aute**

**Email: [vikrant@umd.edu](mailto:vikrant@umd.edu)**

- This track will focus on the application of analytics algorithms/tools to automate systems. The tools and data are readily available, but the challenge is in using them in a timely and effective manner to add value to our HVAC&R Systems. By discussing the basics of analytics, methods, case studies and lessons learned we can consider if machine learning is ready to replace conventional controls.

Item	State	TC/TG	Title	PI	PMS/Liaison	Status	June 2016 - St. Louis	January 2017 - Las Vegas 1/29/17	June 2017 - Long Beach	January 2018 - Chicago
1645	RP	8.04, 8.11	A Research Study to Determine and Compare New Accelerated Corrosion Tests for Microchannel and Standard Tube & Fin Heat Exchangers		Rusty Tharp	Ongoing	Expected to complete project by the end of the year. Scheduled to be complete by March 2017	Update from Chad Bowers. Scheduled to finish on time this fall.	Project going well. Asked for a 3 month extension to finish some testing that was added to the scope.	Submitted a final report in September. Presenting a Seminar on Tuesday. Comments were submitted back to PI, still working on addressing comments.
1705	RP	8.04, 8.11	Investigation of Air-side Fouling on Outdoor Condensing Heat Exchangers	University of Nebraska	Hugh Henderson	Ongoing	Project awarded to U of Nebraska. Hugh Henderson chair of PMSC. Project just got started. PMSC will have first meeting in Orlando. Have coils from field units that will be tested in the lab.	Update from Chad Bowers. Finishing literature survey and gather field samples. The PI gave an update on this research. Develop an accelerated test that a manufacturer could conduct. Collecting fouling samples from different geographies. Fouling reduces airflow is the main effect on a single stage system. Will also test different cleaning methods. Asked for PMS members, Omar A. volunteered. Collected samples from around Omaha. Will collect samples from systems around Las Vegas. Dutch discussed some data that Lennox collected in the 1980's from some condensers that had been in the field. The fouling had little performance impact.	PI is a little behind on setting up lab for testing. Asked for a 1 year extension. University of Nebraska	PI had a webinar between Long Beach and Chicago. PMS meeting tomorrow. In testing phase. Have half dozen coils that were fouled, then cleaned and tested for capacity. Working now to create test dust to recreate fouling effect. Project should be complete in October.
1721	TRP	8.11, 10.3	Oil Return and Retention in Unitary Split System Gas Lines	Purdue University - Eckhard Groll	Ray Rite* (8.11), Chris Seeton (3.4), Gordon Struder (10.3), Eric Berg (8.11), Xudong Wang (AHR)	Ongoing	Co-sponsors should vote to resubmit after revisions. Need to remind TC that the results of the vote are important for getting RTAR/WS approved. 6/26/16 - Resubmitted to RAC. Conditionally accepted.	PES has reviewed bids and has a recommendation. TC needs to vote at full meeting. 1/30/17 - PES reviewed selection process with committee. A vote was held to approve the PES recommended bidder, results were 10-0-0-CNV 5-15-17 - Bidder was awarded the contract. Initial meeting set for Long Beach.	Project awarded to Purdue, Groll and Braun. RA Shah gave a presentation of the work completed so far. Discussion on best test method for determining oil retention and size of test matrix. Chad addressed RAC's comments an resubmitted by May 15th deadline. Work statement was approved by RAC with no changes needed. Will go out for bid this fall.	PMS has been having regular meetings with PI. Literature review complete, test matrix complete, now working on designing and building the test stand. The selection of components has taken longer than expected. PI is requesting a 5 month extension for this task.
1733	WS	8.11	Develop Design Criteria for Psychrometric Air Sampler and Mixer Apparatus for Use in ASHRAE Test Standards	TBD	Chad Kirkwood*, Eric Berg, Darryl Denton, Chris Stone, Scott Cheesman, Xudong Wang	Submitted	6/26/16 - Eric Berg working on revisions. Will send out for approval by letter ballot	Had a discussion on any changes that needed to be made before submitting to RAC. 1/30/17 - Voted to submit to RAC with some minor correctors. 10-0-0-CNV	9.6.17 - Chad updated the document to respond to RAC's comments and sent to Curtis E. for review. Curtis approved the changes and the updated document was sent to RAC on 9.6.17.	1-16-18 - PES reviewed bid proposals and determined a recommended bidder. Need to vote at TC 8.11 (executive session) to formally approve so recommendation can be submitted to RAC. 1-22-18 - One PMS member from Lennox needs to roll off.
1743	RP	8.11	Effect of Inlet Duct and Damper Design on ASHRAE 37/116 Fan Performance and Static Pressure Measurements	Oklahoma State University - Christian Bach/Omar San	Eric Berg*, Darryl Denton, Vance Payne, Jon Winkler, Xudong Wang	Ongoing	6/26/16 - Received three bids for this project. PES is reviewing.	PES has reviewed bids and has a recommendation. Letter ballot was sent out and approved the PES recommendation. The results of the vote were 7-0-0 5-15-17 - Bidder was awarded the contract. Initial meeting set for Long Beach.	Project awarded to OSU, Bach. First meeting will be in Long Beach. Bach did not have an update at this meeting. Will schedule a web meeting for early August.	PMS has been having regular meetings with the PI. Literature review and lab visits are complete. PMS has approved test setup design and construction of the test setup is underway.
1785	TRP	8.11	Refrigerant Charge Modeling for Residential Split Systems	Oklahoma State University - Christian Bach/Craig Bradshaw	Ray Rite* (8.11), Chad Kirkwood (8.11), Eric Berg (8.11), Scott Wujek (8.4), Bo Shen, Mark Olsen (6.3 Liaison)	Ongoing	Submit work statement by August 15th, 2017. 6/26/16 - Resubmitted to RAC. Conditionally accepted.	PES has reviewed bids and has a recommendation. TC needs to vote at full meeting. 1/30/17 - PES reviewed selection process with committee. A vote was held to approve the PES recommended bidder, results were 10-0-0-CNV 5-15-17 - Bidder was awarded the contract. Initial meeting set for Long Beach.	Project awarded to OSU, Bach. Bach did not have an update at this meeting. Will schedule a web meeting for early August.	PMS has been having regular meetings with the PI. Heat exchanger selections have been made and approved by PMS. Heat exchanger construction underway. 1-22-18 - One PMS member from Lennox needs to roll off.
1824	RTAR	8.11	Accounting for Barometric Pressure Impacts on Psychrometric Performance Testing of Unitary Air Conditioning and Heat Pump Equipment	TBD	Chad Kirkwood*, Mark Olsen, Scott Cheeseman, Chris Stone, Darryl Denton	Approved	Priority #1 for SPC 37. SPC 37 to review RTAR at this meeting.	Jon will put the RTAR in the new form and send to Craig and Eric to circulate to the VM's prior to full meeting. 1/30/17 - Voted to submit RTAR subject to addressing comments from committee and any comments from RAC liaison. 10-0-0-CNV 5-15-17 - Submitted RTAR to RAC	RTAR was accepted without comment. Need to start work statement. New WS form will be available mid July. Start with PDF form and copy and paste into new form. Jon will be the WS author, will need volunteers for the PES/PMS.	Jon Winkler has been working on the work statement but it is not complete. Mark Olsen offered to help. Need to have either Scott or Eric drop off since they work for the same company.

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ASHRAE Standard  
ANSI/ASHRAE 16-2016  
Standard 16-2016 -- Method of Testing for Rating Room Air Conditioners and  
Packaged Terminal Air Conditioners (ANSI Approved)

Standards 16 and 58 been combined into one standard with the number designation being 16.  
Standards Project Committee (SPC) 16, *MOT for Rating Room Air Conditioners and Packaged  
Terminal Air Conditioners/Heat Pumps*. **Standard has been updated and released in 2016**

[ASHRAE 58-1986 \(R2009\)](#)

Standard 58-1986 (R2009) -- Method of Testing for Rating Room Air Conditioner  
and Packaged Terminal Air Conditioner Heating Capacity (ANSI/ASHRAE  
Approved)

See discussion provided above under ASHRAE 16-2016. Standard has been combined  
into ASHRAE 16

**We may be asked to withdraw this at some time in the future.**

[ASHRAE STANDARD 15.2](#)

Safety Standard for Residential Refrigeration Systems  
New standard being developed systems 5 Ton or less. Single system serving single dwelling.  
6 Web and 6 face to face.

**SSPC 15 SC 15.2 8am – 12pm Tuesday June 27, 2017. Monthly meetings are scheduled. Final  
Standard planned for 2018.**

**Commented [SC1]:** Need update

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ADD:

SPC 205 Standard Representation of Performance Simulation Data for HVAC&R  
and Other Facility Equipment

First Public review did go out in 2017 and the committee is in process of  
reviewing the comments received.

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**ANSI/ASHRAE Standard 37-2009 -- Methods of Testing for Rating Electrically Driven Unitary Air-Conditioning and Heat Pump Equipment (ANSI Approved)**

ASHRAE 37 has been opened up for revision. **Next meeting will be held Wednesday Jan 24, 2018 Chicago 8:00am – 12:00pm.**

Review of prior meeting minutes, Revision of the TPS, Work Plan, and Status of RTAR's for required research projects were discussed during that meeting. Combining 37 and 116 into a common document.

TPS and Work plan have been submitted and approved. Note that SPC 116 has been disbanded and SPC 37 will continue development.

SPC Chairs: Chris Stone, Chad Kirkwood  
SPC Liaison: Erick Phelps

**ASHRAE Standard 116-2010 -- Methods of Testing for Rating Seasonal Efficiency of Unitary Air Conditioners and Heat Pumps**

Standard 116 was last released in 2010.

SPC 116 disbanded as the SPC 37 will combine 116 into the new revision of that standard.

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**ANSI/ASHRAE Standard 137-2013 (RA 2017) -- Methods of Testing for Efficiency of Space-Conditioning/Water-Heating Appliances that Include a Desuperheater Water Heater (ANSI/ASHRAE Approved)**

Lead TC: 6.6 (Service Water Heating)  
Co-cognizant TC: 8.11

Reaffirmed in 2017

**ASHRAE 206:2013 (RA 2017) - Method of Testing for Rating of Multi-Purpose Heat Pumps for Residential Space Conditioning and Water Heating**

ASHRAE Standard 206 was published June 2013. Addenda a, b, c released in 2014. Voted to reaffirm at the Orlando Meeting January 2016. Reaffirmed in 2017

**SPC 213P, Method for Calculating Moist Air Thermodynamic Properties**

**PURPOSE:**

The purpose of this standard is to establish a standardized method of calculating thermodynamic properties of moist air for use in analyzing heating, ventilating, air-conditioning, and refrigerating applications. Sponsoring TC is TC1.1 Chair Vikrant will take over for James Schaefer.

Meeting in Long Beach 8am-12pm Tuesday June 27 2017.

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**SSPC 41 –Standard Methods for Measurement**

Many of the SPC's under this section are of interest to TC8.11 as there are referenced and used within the standards maintained by this TC. Input to these SPC's are encouraged so the methods of test can refer to them as required. Additional requests and guidance will be supplied to these SPC's specifically SPC 41.1, SPC 41.2 and SPC 41.6 as revisions to ASHRAE are addressed.

- 41.1-2013 Temperature, Jan 23, 2018 Tue Meeting 10am-12pm
- 41.2-2018 Airflow, Final approval end of 2017. To be published 2018
- 41.3-2014 Pressure, Jan 21, 2018 Sun Meeting 10am-12pm
- 41.4-2015 Lubricant Jan 22, 2018 Mon Meeting 4:15pm -6:15pm
- 41.6-2014 Humidity Jan 22, 2018 Mon Meeting 10am – 12pm
- 41.7-2015 Gas Flow Vote to reaffirm Jan 2018
- 41.8-2016 Liquid Flow Published in 2016 (No Meeting)
- 41.9-2011 Refrigerant MF Calorimeters PPR draft approved Jan 20, 2018
- 41.10-2013 Refrigerant MF Flowmeters. Jan 23, 2018 Tuesday Meeting 8am-10am
- 41.11-2014 Power, Jan 22, 2018 Monday Meeting 2:15pm – 4:15pm
- 41.12 was disbanded. Intend to reference ASME PTC 19.1. Ad Hoc Uncertainty Examples Subcommittee created June 2016 meet 3pm – 4pm after SSPC41

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**ISO Technical Committee 86 (Refrigeration and Air Conditioning)  
Subcommittee 6 (Air Conditioners and Heat Pumps)**

- Secretariat: [ANSI](#)
- Secretary: Maryline Lamborn
- Chairperson: Paul Lindahl

Working Group Designations – Active

TC 86/SC 6/WG 1 Air-source air-conditioners and heat pumps

TC 86/SC 6/WG 3 Water and brine source heat pumps and air

TC 86/SC 6/WG 10 Energy recovery ventilators

TC 86/SC 6/WG 12 Heat Pump Water Heaters

**Current Activity:**

Working Group 1 of ISO TC 86/SC6 is currently working on updating ISO Standards 5151, 13253, and 15042.

WG activity to revise ISO 5151, 13253 and 15042 have been approved. First task of the WG will be to make all necessary corrections and alignment of symbols. Reviewing comments from public review at last meeting.

First Draft Completed for ISO 18326, Single-duct portable air conditioners and heat pumps – Testing and rating for performance.

WG 3, WG 10, WG 12 will be meeting in March in South Korea

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ISO has published the three Annual Performance Factor (APF) standards. April, 2013.

Default Bin distribution were not typical of USA and Europe and currently do-not characterize typical operation over the entire range of use. Existing distribution is mainly applicable to south Asian climates.

**ISO 16358-1**

Air-cooled air conditioners and air-to-air heat pumps — Testing and calculating methods for seasonal performance factors  
Part 1: Cooling seasonal performance factor

**ISO 16358-2**

Air-cooled air conditioners and air-to-air heat pumps — Testing and calculating methods for seasonal performance factors  
Part 2: Heating seasonal performance factor

**ISO 16358-3**

Air-cooled air conditioners and air-to-air heat pumps — Testing and calculating methods for seasonal performance factors  
Part 3: Annual performance factor

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ISO/TS:2012 16491 - Guidelines for the evaluation of uncertainty of measurement in air conditioner and heat pump cooling and heating capacity tests

ISO/SC6 WG3 has formed a task group to revise 16491 and add a section to cover water source equipment testing.

**Current Activity:**

ISO 5151:2010, Non-ducted air conditioners and heat pumps — testing and rating for performance. *Updated Standard was released in **June 2010** as a revision to 1994 version.*

ISO 13253:2011, Ducted Air Conditioners and Air-to-Air Heat Pumps – Testing and Rating for Performance. **APPROVED June 2011**

ISO 15042:2011, Multi-Split System Air Conditioners and Air-to-Air Heat Pumps – Testing and Rating for Performance **APPROVED November 2011**

[ANSI/AHRI/ASHRAE/ISO 13256-1:1998](#) (RA2012)

Standard 13256-1:1998 Water-source Heat Pumps Testing and Rating for Performance Part 1: Water-to-air and Brine-to-air Heat Pumps (ANSI/ARI/ASHRAE ISO)

This standard has been co-adopted by ASHRAE and AHRI and carries ANSI designation. The standard is referenced in ASHRAE Standard 90.1, is used in the AHRI certification program, and is available for purchase from ASHRAE. The 1998 standard was reaffirmed by ISO in early 2005.

[ANSI/AHRI/ASHRAE/ISO 13256-2:1998](#) (RA2012)

Standard 13256-2:1998 Water-source Heat Pumps Testing and Rating for Performance Part 2: Water-to-water and Brine-to-water Heat Pumps (ANSI/ARI/ASHRAE ISO)

New Draft Standard ISO 20733 for Seasonal Efficiency of Water Source Heat Pumps WG3 Activity

Working Group Meetings for TC 86 SC 6 were held in July 2015 at the AHRI office in Arlington, VA. Meetings for WG1, WG3, and WG10 occurred during the same week.

WG3 meeting was held in in Plano, Texas February 2016

Meetings were held for SC6 and the Working Groups May 18-25, 2016, in Atlanta

October 24<sup>th</sup> 2016 WG3, WG10, WG12 will meet at AHRI office, Arlington, VA

March 20, WG3 meeting in Lyon, France

May 9<sup>th</sup> and 10<sup>th</sup> WG1 meeting in Brugge, Belgium

Report Submitted By: Christopher Stone