

**AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING  
ENGINEERS, INC.  
1791 Tullie Circle, N.E./Atlanta, GA 30329  
404-636-8400  
TC/TG/TRG MINUTES COVER SHEET**

**(Minutes of all TC/TG/TRG Meetings are to be distributed to all persons listed below within 60 days following the meeting.)**

TC/TG/TRG NO 8.1 DATE February 20, 2017  
TC/TG/TRG TITLE Positive Displacement Compressors

DATE OF MEETING January 31, 2017 LOCATION Las Vegas, NE

MEMBERS PRESENT	YEAR APPT D	MEMBERS ABSENT	YEAR APPTD	EX-OFFICIO MEMBERS AND ADDITIONAL ATTENDANCE
Dr. Margaret Mathison	2012	David Bergeron	2013	See Attachment 1
Dr. Michael Perevozchikov	2014	Dr. Jason Hugenroth	2014	
Andrew Welch	2012			
Dr. Alex Leyderman	2016			
James Douglas	2016			
Heinz Juergensen (MNQ)	2013			
Dr. Georgi Kazachki	2014			
Dr. Christopher Seeton	2016			
Mike Wegenka	2014			

**DISTRIBUTION**

TC:	All members of TC8.1
TAC Section Head:	Dustin Meredith
TAC Chair:	Michael Bilderbeck
All Committee Liaisons As Shown On TC/TG/TRG Rosters:	David Yasher– Section 8 Research Liaison David Fisher – Refrigeration Handbook Chair Michael Patton – Systems Handbook Chair James Aswegan – Standards Jim Tauby – SPLS Liaison Francis Mills – Special Pubs Joseph Sanders – Technology Transfer Committee
Staff Liaison	Mike Vaughn

### **Call To Order - Margaret Mathison**

Margaret Mathison called the meeting to order at on Tuesday January 31, 2017. A sign-in sheet was circulated and is included as Attachment 1 to these minutes. Reminder to review the ASHRAE Code of Ethics (Attachment 2)

### **Establishment of a Quorum – Jim Douglas (Membership Chair)**

A roll call was taken. Voting members present were Dr. Margaret Mathison, Dr. Michael Perevozchikov, Andrew Welch, Dr. Alex Leyderman, James Douglas, Heinz Juergensen (MNQ), Dr. Georgi Kazachki, Dr. Christopher Seeton, and Mike Wegenka. With 9 of 11 voting members present, a quorum was established.

All members and visitors present self-introduced.

### **Liaisons**

#### **Standards Liaison – James Aswegan**

Standard 23.2 is up for reaffirmation or revision.

#### **TAC Section Head – Dustin Meredith**

Thank you members for attendance. Confirmation that quorum was achieved.

E-mail [Sh8@ashrae.net](mailto:Sh8@ashrae.net) with any questions for the section head.

### **Approval of the St. Louis Minutes – Margaret Mathison**

An amendment was proposed by Margaret Mathison to correct the minutes from “Scott MacBain called the meeting to order at on Tuesday” to “Scott MacBain called the meeting to order at 3:30pm on Tuesday” and change Membership Summary from “... on 7/1/16” to “... rolling on 7/1/16”. Scott MacBain moved to accept the St. Louis minutes as amended and Michael Perevozchikov seconded the motion. The motion passed unanimously. (8-0-0, 2 absent, CNV).

### **Chair’s Report (from TC/TG Section 8 Breakfast Meeting)**

#### **1. 2016-2017 Hightower Award Recipient – Paul Lindahl, TC 3.6 & TC 8.6**

Mr. Paul Lindahl’s contributions to ASHRAE TC 3.6 and TC 8.6 in the past four years include being a handbook contributor to multiple chapters, a special liaison assignment to SSPC 90.1, and tours in various leadership positions on both TCs.

Mr. Lindahl’s contributions to ASHRAE technical committees, and especially to TC 3.6 and TC 8.6 in the last four years, have been exemplary and make him a well deserving recipient of the George B. Hightower Technical Achievement Award.

#### **2. 2016-2017 Service to ASHRAE Research Award Recipient - Joseph Huber, TC 1.3**

Mr. Joseph Huber’s contributions to ASHRAE TC 1.3 (Heat Transfer and Fluid Flow) in the past four years included being a contributor to multiple RTARs and work statements. Research Subcommittee chair for the TC, and Proposal Evaluation Subcommittee (PES) member, and Project Monitoring Subcommittee (PMS) member for multiple projects. Mr. Huber’s contributions to ASHRAE technical committees, and especially to TC 1.3 in the last four years, have been exemplary and make him a well deserving recipient of the Service to ASHRAE Research Award.

### **3. ASHRAE members for SY 16-17 now have free online access to ASHRAE's *Science and Technology for the Built Environment* (STBE) through their existing ASHRAE.org account**

STBE is ASHRAE's archival research publication offering comprehensive reporting of original research in science and technology related to the stationary and mobile built environment, including indoor environmental quality, thermodynamic and energy system dynamics, materials properties, refrigerants, renewable and traditional energy systems and related processes and concepts, integrated built environmental system design approaches and tools, simulation approaches and algorithms, building enclosure assemblies, and systems for minimizing and regulating space heating and cooling modes. The journal also features review articles that critically assess existing literature and point out future research directions.

You can access your free online subscription to STBE through the ASHRAE website under the blue bar drop-down menu – *Resources & Publications*. ASHRAE will reassess the free access option on an annual basis and may discontinue access if interest is low.

### **4. New ASHRAE Technology Portal is Now Available**

The new ASHRAE Technology Portal provides easier free member access to ASHRAE Journal articles and ASHRAE Research Reports through a new robust search feature. We will still sell the reports and articles in the bookstore for nonmember purchase. URL <http://technologyportal.ashrae.org>. **Announcements and Reminders for TC/TG/TRG & MTG Chairs LAS VEGAS 2017**

### **5. Peer Review of *Advanced Energy Design Guide for K-12 School Buildings: Achieving Zero Energy***

In partnership with AIA, IES, and USGBC and with support from the DOE, ASHRAE has embarked on a new series of Advanced Energy Design Guides focusing on achieving zero energy performance. The first guide in the series is for K-12 School Buildings. The project committee is finalizing the first draft in anticipation of the first peer review. The 65% Complete Technical Refinement Draft for the Advanced Energy Design Guide for K-12 School: Achieving Zero Energy will be available for review and feedback from February 6, 2017 to February 17, 2017. All review input must be received by February 19, 2017. Once received, the input will be compiled and then reviewed by the committee who will make changes to the draft based on that input. To participate in the review, please go to [www.ashrae.org/freeaedg](http://www.ashrae.org/freeaedg) to download the review process instructions and review input form as well as a copy of the document for review (in pdf format). The draft will be available for download starting on February 6, 2017 through Friday, February 17, 2017.

### **6. One New Multidisciplinary Task Groups (MTGs) have been formed since St. Louis meeting**

#### **MTG.ACR – Air Change Rate**

**Scope:** MTG.ACR will coordinate TC/TG/TRG/SSPC technical activities to help evaluate the technical basis and adoption of airflow rate specifications in terms of Air Change Rate (ACR) or Air Changes per Hour (ACH) for spaces such as cleanrooms, laboratories, patient rooms, operating rooms, and other similar spaces. Responsibilities include the development of research projects, development and presentation of technical programs for all types of spaces which currently require ACR specifications, and a special publication detailing aspects of the ACR philosophy and practice. The work of this MTG will potentially impact design guidelines, ASHRAE Handbook, and related ASHRAE standards. This MTG intends to involve other national and international groups and organizations in these efforts

The following committees and outside groups are currently represented on this MTG: TC 2.2, 4.3, 5.3, 5.8, 9.2, 9.6, 9.10, 9.11, SSPC 62.1, SSPC 170, I2SL, NIOSH, AIHA and potentially more that wish to also join.

The chair of this MTG is Kishor Khankari.

For more information on this new MTG and the nine other existing MTGs, please go to the MTG section on the following web page: <http://www.ashrae.org/tcs> .

If your TC would like to have a voting representative on a particular MTG, please contact the ASHRAE Manager of Research and Technical Services, Mike Vaughn, at [MORTS@ashrae.net](mailto:MORTS@ashrae.net).

## **7. Updated TC Website Template – Initial Feedback, if any?**

Since the Atlanta meeting, the Society's Electronic Communication Committee (ECC), ECC staff, TAC volunteers Gage and Cooper, and a consultant have been working to modernize and streamline the template for TC websites and now most of the TC websites have been moved to this new template. The new template so far includes **Announcements and Reminders for TC/TG/TRG & MTG Chairs LAS VEGAS 2017** WIZYWIG editing, automatic rosters, and simplified document uploading. There is no longer a need for HTML editing. If you have any feedback on the new template or suggestions for additional features, please let your Section Head and MORTS know.

## **8. New Restructured TC MOP (Manual of Procedures) to be issued after Las Vegas Meeting**

TAC has restructured the TC MOP so that it is easier to navigate and find information.

## **9. How to Import Your TC Roster Information into MS-Outlook**

Detailed instructions on how to import your TC roster information into MS-Outlook has been created and an e-mail announcement will be issued to all TC chairs, vice chairs, and secretaries once these instructions and the restructured TC MOP are posted to the TC page of the website ([www.ashrae.org/TCs](http://www.ashrae.org/TCs) )

## **Standards – Jim Douglas**

TC 8.01 is the cognizant or co-cognizant technical committee for four separate ASHRAE standards:

### **Subcommittee 41.9, Standard Methods for Refrigerant Mass Flow Measurement Using Calorimeters – M. Perevozchikov**

The 41.9 revision subcommittee committee met on December 5 for an interim meeting and it was decided that the work was done with the exception of the Uncertainty Analysis section, so the meeting in Las Vegas has been canceled. Pat Collins has submitted one section and Adam Michalson has offered to complete the other three examples needed. Once these are completed the PPR can begin.

### **Subcommittee 41.10, Standard Methods for Refrigerant Mass Flow Measurement Using Flowmeters – J. Neel**

The 41.10 revision subcommittee met on Tuesday, January 31st from 8:00 to 10:00 am. Committee made good progress at the meeting and additional action items were assigned. An interim meeting will be scheduled to continue work on the draft prior to the summer meeting. New members and guests are always welcomed.

### **Subcommittee SPC 23.1R, Margaret Mathison, Chair, Methods of Testing for Performance Rating Positive Displacement Refrigerant Compressors and Condensing Units That Operate at Subcritical Pressures of the Refrigerant**

The subcommittee has sent out the PPR1 draft for review. No meeting was scheduled for the Las Vegas meeting.

### **Subcommittee SPC23.2-2014, Methods of Test for Rating the Performance of Positive Displacement Compressors that Operate at Supercritical Pressures of the Refrigerants**

Standard is up for period maintenance in 2017 and TC8.1 will be responsible for the update.

Jim Douglas made a motion and seconded by Georgi Kazachki to revise the standard. The motion passed (8,0,0 CNV). Scott MacBain agreed to be chairman. Volunteers to assist: Michael P., Margaret Mathison, Craig Bradshaw, Orkan Kurtulus, Drew Welch.

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**Other standards that effect the TC 8.01 committee:**

**Subcommittee 41.11, Standard Methods for Power Measurement – R. Hall**

41.11-2014 is due for periodic maintenance in January 2017 and the cognizant group approved a motion to Revise. Member volunteer were: Mike Wegenka, Jim Douglas, Eric Anderson, Alex Leyderman., Orkan Kurtulus, Rick Hall, Mark Kedzierski, and Michael Todd as chairman.

**Guideline 2-2010 (RA 2014)**

Guideline 2 is up for maintenance 2017. This guideline does not meet the mandatory language issue so it will be necessary to revise this standard.

The TC1.02 is required to vote on this subject to either Revise or Withdraw the guideline and decision to Revise was approved by the cognizant group. A chairman shall be appointed at a later date.

**Program - Erik Anderson**

- Conference website for Las Vegas Winter Meeting: <http://www.ashrae.org/LasVegas/>
- TC 8.1 co-sponsored Seminar 12: Variable Speed Drives and Chillers – Back to Basics, chaired by Rick Heiden. It was reported to be very well attended with a good speaker variety.
- Discussion on scheduling of seminars and interaction within tracks or committee meetings
  - Proposal for Long Beach: Co-sponsor TC 10.7 Program “High Efficiency Commercial Refrigeration Systems with Natural Refrigerants”
    - To be chaired by Georgi Kazachki
    - A motion was made and seconded. Motion passed (8,0,0 CNV)
  - Proposal for Chicago: Positive Displacement Compressors – Back to Basics
    - To be chaired by Rick Heiden
    - To include 3 presentations (these are concepts, not titles): Positive Displacement State of the Art (Compression Types), Testing of Positive Displacement Compressors, and Updates to Standard 23.1 – Handling Economization in Testing and Analysis
    - A motion was made and seconded. Motion passed (8,0,0 CNV)
  - Proposal for Chicago: Impact of Regulatory and Market Trends on Compressor and System Design
    - To be chaired by Greg Chilcote
    - To include 3 or 4 presentations (these are concepts, not titles): Regulatory and Market Trends, Compressor and System Design Integration, Compressor Modulation, and Impact of Refrigerants on Compressor Design
    - A motion was made and seconded. Motion passed (8,0,0 CNV)
- Speaker ratings – if a speaker is poorly rated, the society may ask that member not present again without proof of speaker training. Also submissions must be made on time to allow review for non-commercialism. Both three strike policies
- No other seminars or conference papers proposed

**Research Subcommittee – Craig Bradshaw (Chair)**

- Please bring any suggestions for new RTARs or improvements to the RTAR process to Craig Bradshaw
- If you have ideas or an interest in the research subcommittee, please contact Craig Bradshaw or attend the subcommittee meeting in future meetings.
- ASHRAE is looking for new members for standing committees
- Project Management Subcommittees will require training during future ASHRAE research projects
- 3 RTARs were submitted and all were accepted, 4 Work Statements were submitted and 1 was accepted

- RTAR 1793 accepted for motor cooling research / thermal conductivity (co-sponsored)
  - Rick Heiden indicates that the Work Statement will be ready for letter ballot very soon
    - Currently seeking volunteers for proposal evaluation committee and project monitoring subcommittee, also possible co-funding from another organization.
- There was discussion of what research is currently being pursued and what may be needed in the areas of refrigerants and oils
  - TC 3.4 pursuing multiple related topics researching new refrigerants and oils
    - Foaming properties of low-GWP refrigerant mixtures at Work Statement
    - Properties of HFO's and lubricants at Work Statement
    - A model of low-GWP refrigerant and oil mixtures at RTAR
  - Alex Leyderman to write an RTAR for dielectric properties of new refrigerants with oil concentration. Chris Seeton to help revise RTAR once written.
- Justin Prosser – performance prediction uncertainty of off design speed or pulse modulated compressors to support AHRI standard development
  - It was confirmed that AHRI has found means to pursue this research

#### **Handbook – Alex Leyderman (Chair)**

- A motion was made by Alex Leyderman and seconded by Georgi Kazachki to approve and submit the revisions to Chapter 8, Dehydrating, Charging, and Testing. Motion passed (8,0,0 CNV)
- No issues identified with chapter dehydration charge and test – currently obsolete, need information from manufacturers
  - Chris Seeton will offer suggestions
  - Standard 147 has been updated – could be reviewed (Greg Chilcote)
  - Interim meeting maybe requested if significant additions are made
- Next chapter will be done using new tools

#### **Membership – Jim Douglas (Chair)**

- We have 10 voting members at the time of this meeting, 1 non-quorum international member
- We have Andrew Welch, David Bergeron, and Heinz Juergensen (MNQ) rolling off after the Annual Meeting in June, John Neel, Craig Bradshaw, Doug Collings, and Eric Anderson rolling on 7/1/16

#### **Website – Greg Chilcote (Webmaster)**

- The website is up to date for minutes and agenda
- Seminar presentations are up to date through
- Research link to project final reports exists on the TC website

#### **Old Business – Margaret Mathison**

- None.

#### **New Business - Margaret Mathison**

- None.

#### **Motion to Adjourn**

- Motion to adjourn by Doug Collings, Second by Mike Wegenka

**Attachment 1 ATTENDANCE LIST**

TC 8.1 Attendance List – Las Vegas

Name	Company	Status
Margaret Mathison	Iowa State University	Chair/VM
Michael Perevozchikov	Emerson	Vice Chair/VM
Drew Welch	Johnson Controls	Secretary/VM
Craig Bradshaw	Oklahoma State University	Research/CM
Greg Chilcote	Trane	Webmaster/CM
Jim Douglas	Imagineering and More	Membership Standards/VM
Alex Leyderman	Fairchild Controls	Handbook/VM
Erik Anderson	Anderson Engineering	Programs/CM
Heinz Juergensen	Bitzer	VMNQ
Georgi Kazachki	Dayton Phoenix Group	VM
Chris Seeton	Shrieve	VM
Mike Wegenka	Trane	VM
Eric Berg	Lennox	CM
Matt Cambio	Ingersoll Rand	CM
David Halbrooks	Purdue University	CM
Rick Heiden	Trane	CM
Joe Sanchez	Bitzer	CM
Doug Collings	Tecumseh Products	CM
Eckhard Groll	Purdue University	CM
Dwayne Johnson	Trane	CM
Satheesh Kulankara	Johnson Controls	CM
Alexander Lifson	Carrier	CM
Scott MacBain	Carrier	CM
John Neel	Johnson Controls	CM
Eddie Rodriguez	Daiken Applied	CM
John Scott	Natural Resources Canada	CM
James Aswegan	Titus	Standards Liaison
Justin Prosser	AHRI	CM
Vishal Sharma	ORNL	CM
Orkan Kurtulus	Purdue University	Guest
David Rockwell	Carrier	Guest
Gus Olivera	Climacool Corp	Guest
Ray Good	Danfoss / TC 8.2 Programs Ch	Guest
Amroime Bou Abboud	Danfoss	Guest
Dustin Meredith		Section 8 Head

## **Attachment 2: Code Of Ethics**

### **ASHRAE Code of Ethics**

(Approved by ASHRAE Board of Directors January 31, 2007)

As members of ASHRAE, we pledge to act with honesty, fairness, courtesy, competence, integrity and respect for others in our conduct.

Efforts of the Society, its members, and its bodies shall be directed at all times to enhancing the public health, safety and welfare.

Members and organized bodies of the Society shall be good stewards of the world's resources including energy, natural, human and financial resources

Our products and services shall be offered only in areas where our competence and expertise can satisfy the public need.

We shall act with care and competence in all activities, using and developing up to date knowledge and skills.

We shall avoid real or perceived conflicts of interest whenever possible, and disclose them to affected parties when they do exist.

The confidentiality of business affairs, proprietary information, intellectual property, procedures, and restricted Society discussions and materials shall be respected.

Each member is expected and encouraged to be committed to the code of ethics of his or her own professional or trade association in their nation and area of work.

Activities crossing national and cultural boundaries shall respect the ethical codes of the seat of the principal activity.