



1791 Tullie Circle, N.E./Atlanta, GA 30329

404-636-8400

TC/TG/MTG/TRG MINUTES COVER SHEET

APPROVED

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

TC/TG/MTG/TRG No. 8.1 DATE February 7, 2023

TC/TG/MTG/TRG TITLE Positive Displacement Compressors

DATE OF MEETING February 7, 2023 LOCATION Hybrid/ Atlanta, GA, USA

VOTING MEMBERS PRESENT	YEAR APPTD	VOTING MEMBERS ABSENT	YEAR APPTD	EX-OFFICIO MEMBERS AND ADDITIONAL ATTENDANCE
Alex Schmig		Hans-Joachim Kretzschmar		See Attachment 1
Chris Seeton		Justin Prosser		
Davide Ziviani		Margaret Mathison		
Erik Anderson		Michael Hwang		
Georgi Kazachki				
Heinz Jürgensen				
Jim Douglas				
Michael Perevozschikov				
Riley Barta				
Scott MacBain				

DISTRIBUTION: All Members of TC8.1 plus the following:

TAC Section Head: Charles Henck	SH8.1@ashrae.net
All Committee Liaisons As Shown On TC/TG/MTG/TRG Rosters (Research, Standards, ALI, etc.)	See ASHRAE email alias list for needed addresses.
Mike Vaughn, Manager Of Research & Technical Services	MORTS@ashrae.net

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

1) Call to Order – Davide Ziviani (Chair)

- Introductions
- Minutes – **Riley Barta (Secretary)**
- Establishment of Quorum (13 VMs) - **Jim Douglas (Membership Chair)**

Davide Ziviani called the meeting to order at 3:35 PM on Tuesday, February 07, 2023. Attendees were reminded to review the ASHRAE Code of Ethics (<https://www.ashrae.org/about/governance/code-of-ethics>).

All members and visitors present self-introduced as part of a formal roll call to establish the meeting attendee list. There were **33** total attendees at the meeting (**22** in person and **11** online). Attendees are listed in **Attachment 1**.

2) ASHRAE Code of Ethics Commitment: 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) Establishment of a Quorum – Jim Douglas

The Technical Committee consists of 13 voting members, one of which is a non-quorum voting member. 9 of the 13 voting members were present.

4) Executive Discussion – Davide Ziviani

Agenda overviewed, next meeting will take place in Tampa on Tuesday during the summer conference, hybrid meeting.

- Ground Rules Covered
- Background Covered
- Leadership Updates from Toronto meeting shared.
- Craig Bradshaw thanked for his time and effort chairing the committee.
- Pandemic and its influence on finances briefly discussed and updates have been given on research fundings.
- Basecamp access noted – if someone does not have access, please reach out to dziviani@purdue.edu

5) Review and Approval of the 2022 ASHRAE Annual Meeting in Toronto Minutes

Jim Douglas moves that the 2022 Summer meeting minutes (Toronto Hybrid Conference) be approved, Alex Schmig seconds. The vote passes: **(8-0-0-4 Chair not Voting)**

6) Liaison Report (as they arrive)

- Section 8 Head (Charles Henck)
- Research Liaison (Carl Huber)

Charles Henck provided a brief introductions and general updates from Chair's Breakfast. Carl Huber did not attend TC8.1, but Davide Ziviani was at the Research SubComm Chair Breakfast.

7) Report on TC/TG Section 8 Chair's Breakfast Meeting – Davide Ziviani

- Davide Ziviani attended the Chair's Breakfast
 - Slides to be uploaded to Basecamp
 - New research proposals should align with ASHRAE strategic goals (until 2025)
 - ASHRAE.org/decarb
 - New RTARs etc. should target these initiatives
 - Hightower Awards from 2022 and 2023 announced
 - CEC 2023 Winter program updates shared
 - 1 Debate; 2 Forums; 4 Panels; 72 Seminars (4 AHRI Expo Sessions); 2 Workshops; 109 Paper Sessions
 - International Standards Interactions Task Force looking for members with experience in an overseas market. Contact TACVChair@ashrae.net
 - Task Force for Building Decarbonization structure announced and presented

8) Standards – Jim Douglas (Chair)

- **Standard 23P, *Methods for Performance Testing Positive Displacement Refrigerant Compressors and Compressor Units*.**
 - **Standard 23-2022, that combines Standards 23.1-2019 and 23.2-2019 into a single standard, has been published.**
 - 23-2022 will be due for maintenance at the 2025 Winter Conference
- **Standard 41.4, *Standard Methods for Measurement of Proportion for Lubricant in Liquid Refrigerant*.** SSPC 41 Subcommittee 41.4-2015R, chaired by Jim Douglas
 - Held a virtual meeting on 5/3/22 to review the testing progress on a new apparatus for sampling refrigerant/lubricant mixtures out of the liquid line.
 - Additional virtual meeting to be held in October 2022.
- **Standard 41.9, *Standard Methods for Refrigerant Mass Flow Measurement Using Calorimeters***
 - In public review until August 8th
 - Addendum A added
- **Standard 41.10, *Standard Methods for Refrigerant Mass Flow Measurement Using Flowmeters*.**
 - Vote passed on title, purpose, and scope in Toronto.
- **Standard 225-2020, *Method for Performance Testing Centrifugal Refrigerant Compressors and Condensing Units*** – Up for maintenance, vote to either “reaffirm”, “revise” or “withdraw”
 - From 2022 Annual Meeting in Toronto: Motion passed to transfer ownership to TC8.2
- **Standard 30-2019, *Method of Testing Liquid Chillers***
- **ISO/TC 86/SC 4**
 - WG2-Positive displacement rating standard
 - WG3-Centrifugal compressor standard (based on AHRI 1520 and JB/T 12843)
 - WG4-ISO 917

9) Research – Matt Cambio (Chair)

- Report from Research Subcomm. Chair's Breakfast (Monday Feb 6th, 6:30 – 9:15 am EST)
- Grants that were previously paused are now back available (GIA, IRG, NIA)
 - i) SY2022-2023 Budget: \$5.5M
 - ii) Currently 42 active projects: active cost of \$150k, total value of \$6.2M
- Only 3 RTARs this meeting – encouraged increased activity here, aligned with ASHRAE strategic objectives

- One work statement from TC 8.1 (WS-1793) has been idle since 2020
 - i) Text needs to be updated to align with strategic plan
 - ii) Then the work statement can be resubmitted
- **WS-1793 – Motor cooling research/thermal conductivity method of test**
 - i) Idle since 2020, needs to be revised; discussion with Daryl Showalter TC8.2
- **1879-TRP – Foamability properties of LGWP refrigerants**
 - i) Chris Seeton is liaison to TC 3.4
 - ii) Project started Nov 15th, 2022; Main TC3.4, will vote to form PMS
- **RTARs ideas from Toronto:**
 - i) Assessment of Extrapolation Capabilities and Uncertainty Quantification of Multi-Refrigerant Semi-Empirical Compressor Models [Davide to initiate the RTAR draft]
 - (1) Davide and Craig to initiate RTAR draft
 - ii) Decarbonization, high temperature heat pumps
- Joe Sanchez mentioned a need for quantification of good liquid-vapor separation (CO2 as example) in the context of protecting compressors. Effectiveness vs. compactness and relationship with droplet size
 - i) Awoke interest and made strong points.
 - ii) Collaboration with TC 10.1 (driven by 10.1, supported by 8.1)
 - iii) Experimental setup would be a good complement to and provide validation of CFD
 - iv) Strong support, would need an RTAR to start
 - v) Chris Seeton – comments on lubricant impact
 - (1) Action item: RTAR initiated by Joe

10) Program - Erik Anderson (Chair)

- TC 8.1 sponsored in Atlanta:
 - **Seminar 8 (Intermediate)**, “Back to Basics: Compressor and System Integration Strategies and Modulation” (Chair: Davide Ziviani). Co-Sponsor: TC8.2
 - (1) Good attendance overall, good experience and positive feedback
 - **Seminar 62 (Intermediate)**, “The Risk of Decoupling Efficiency and Decarbonization” (Chair: Craig Bradshaw). Co-Sponsor: TC8.2 and Decarbonization MTG
 - **Seminar 63 is also co-sponsored by 8.1**
- For 2023 Annual Conference in Tampa:
 - Track 1: HVAC&R Systems and Equipment (Track Chair: Ng Yong Kong)
 - Track 2: Fundamentals and Applications (Track Chair: Brian Fronk)
 - Track 3: Research Summit (Track Chair: Davide Ziviani)
 - Track 4: Pathways to Net Zero Energy and Decarbonization (Track Chair: Rafi Karim)
 - Track 5: Future-Proofing the Built Environment (Track Chair: Scott Peach)
 - Track 6: Building Automation and Control (Track Chair: Raul Simonetti)
 - Track 7: Professional Development and Education (Track Chair: Ahmed Abdel-Salam)
- 2023 Annual Tampa: Alex’s suggestion titled “Cycle architectures to decarbonize heating”
 - Type of compressor vs. applications
 - Building code applications
 - Davide to chair
 - Motion to approve by Chris Seeton, second by Alex Schmig
 - **Vote passed 8-0-0-4 (Chair not Voting)**
- 2023 Annual Tampa: Alex Schmig’s suggested seminar based on the right compressor for the right job.
 - 10.6 has interest and offered to co-sponsor.

- Alex to chair, there are already 3 to 4 speakers.
- Motion made by Davide Ziviani, seconded by Michael Perevozchikov
- **Vote passed 8-0-0-4 (Chair not Voting)**
- Chicago 2024: discussion postponed to Annual Meeting in Tampa
- 2023 Annual Tampa: Seminar on updates/challenges MOT/MOR; ASHRAE 23 / AHRI 540 / Std 225 MOT / AHRI 1520P
 - 8.1 & 8.2 co-sponsorship
 - Alex Schmig motion, Riley Barta seconded
 - **Vote passed 8-0-0-4 (Chair not Voting)**

11) Handbook – Scott MacBain (Chair)

- TC8.1 Refrigeration Chapter 8-factory Dehydrating, Charging & Testing (revision due 2026)
- TC8.1&8.2: 2024 HVAC Systems and Equipment: Chapters 38 (Compressors) and 43 (Liquid Chilling Systems) for revision in 2024. (due May/July 2023)
- Kevin is the new handbook liaison

12) Membership - Jim Douglas (Chair)

- No voting members are rolling off
- **Leadership Plan: Starting 2023 Annual Meeting**
 - Chair: Davide Ziviani
 - Vice Chair: Alex Schmig
 - Secretary: Riley Barta
 - Handbook: Scott MacBain
 - Programs: Erik Andersen
 - Standards: Jim Douglas
 - Research Chair: Matt Cambio
 - Webmaster: Eric Berg
 - Membership: Jim Douglas
 - Other subcommittee chairs are reaffirmed
- Looking for active participants and grow the membership

13) Website – Davide Ziviani

- Website is up to date.
- Basecamp will also be updated
- Programs submitted over the years also to be uploaded

14) Old Business

15) New Business

- Pre-Meeting will take place a few weeks before summer meeting
- YEA members Present - 5
 - 4 In-person & 1 Online

16) Adjourn

Motion to adjourn by Jim Douglas at 10:45 AM

Attachment 1 – Meeting Attendance List

In Person

1. Davide Ziviani (Chair)
2. Alex Schmig (Vice Chair)
3. Craig Bradshaw (VM)
4. Conner Hayes (Guest)
5. Matt Cambio (Research SubCom Chair)
6. Tasha Williams (Guest)
7. Michael Perevozchikov (VM)
8. Joe Sanchez (CM)
9. Manfred Burke (Guest)
10. Heinz Jürgensen (VM)
11. Miguel Boscan (Guest)
12. Charlie Henck (Section Heat)
13. Amroine Bou Abboud (Guest)
14. David Okhman (Guest)
15. Nataliya Onufriychuk (Guest)
16. Scott MacBain (Handbook SubCom Chair)
17. Chris Seeton (VM)
18. Jethro Medina (CM)
19. Ian Wright (Guest)
20. Junjie Luo (Pro-CM)
21. Syed Angkan Haider (Pro-CM)
22. Sugun Tej Inampudi (Pro-CM)

Online

23. Jim Douglas (Standards SubComm Chair)
24. Riley Barta (Secretary)
25. Erik Anderson (Program SubComm Chair)
26. Georgi Kazachki (VM)
27. SA Sherif (CM)
28. Alfredo Oliveira (Guest)
29. Sugun Tej Inampudi (Pro-CM)
30. Syed Angkan Haider (Pro-CM)
31. Haotian Liu (CM)
32. Doug Collings (CM)
33. Nicholas Nicholson (Guest)

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.