



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

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TC/TG/MTG/TRG MINUTES COVER SHEET

(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 January 26, 2021

TC/TG/MTG/TRG TITLE Positive Displacement Compressors

DATE OF MEETING January 26, 2021 LOCATION Virtual (in place of Chicago, IL)

MEMBERS PRESENT	YEAR APPTD	MEMBERS ABSENT	YEAR APPTD	EX-OFFICIO MEMBERS AND ADDITIONAL ATTENDANCE
Eric Berg	2018	Erik Anderson	2017	See Attachment 1
Dr. Craig Bradshaw	2018	Hans-Joachim Kretzschmar	2017	
Doug Collings	2018			
Georgi Kazachki	2020			
Scott MacBain	2017			
Margaret Mathison	2020			
John Neel	2017			
Justin Prosser	2020			
Joe Sanchez	2018			
Dr. Davide Ziviani	2020			

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

TAC Section Head: Kevin Mercer	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

Call to Order – Craig Bradshaw

Craig Bradshaw called the meeting to order at 3:05 PM on Tuesday, January 26, 2021. Attendees were reminded to review the ASHRAE Code of Ethics (<https://www.ashrae.org/about/governance/code-of-ethics>).

Craig presented his goals as chairman for 2021 – 2023:

- Maintain excellence in programs and standards
 - Continue timely execution of world-class standards
 - Maintain 2-3 programs at each meeting
- Have Ch. 8 updated and executing a plan to update Ch. 38 and 43 to reflect the most state of the art
- Develop at least one research idea into a TRP that the TC owns
- Continue to look for synergy/collaborative opportunities with other TC's
- Non-profit

All members and visitors present self-introduced as part of a formal roll call to establish the meeting attendee list. There were 27 total attendees at the meeting. Attendees are listed in Attachment 1.

Establishment of a Quorum – Craig Bradshaw

The TC presently has 12 voting members including 1 non-quorum voting member. A roll call of the voting members was taken and a quorum was established with 9 of 11 Voting Members present. Doug Collings joined the meeting before the discussion of programs, bringing the total number of Voting Members to 10 out of 11.

Approval of Minutes – Craig Bradshaw

Davide Ziviani moved to accept the summer virtual (Austin) minutes as distributed and Scott MacBain seconded the motion. The motion passed. (8-0-0-2, CNV).

Liaison Report – Chris Seeton

- ASHRAE is out of funds for research due to not having AHRI expo, which provides 50% of funds. Fundraising was also down (still around \$2M). Have been able to maintain funding on all projects started by April of last year. Some of those projects are reaching completion. At that point may be able to start new projects that have already been bid on.
- The foamability project from this TC is postponed but has gone through the evaluation process.
- You can contribute to ASHRAE research through a button on the website.
- Many members of RAC (11 of the 14) are from universities or national labs, so good opportunity for getting in RTARs and WS for fundamental research. URPs have been paused.
- Vegas is looking good.

Chair's Report – Craig Bradshaw

- Craig attended the breakfast on December 11 and will circulate the slides that were provided.
- The TC reorganization committee has issued their final report, which encouraged a lot of mergers. One change is that committees will have to reaffirm that they want to continue every year.
- There is a new procedure for interim meetings requiring interim meeting details to be posted on the website at least two weeks in advance if virtual, four weeks in advance if in person.
- CEC is still planning for the summer Phoenix meeting to occur in person.
- The Environmental Health committee gave an update on ASHRAE's efforts related to COVID guidance.

ASHRAE Standards –James Douglas (Chair)

- **Standard 23.1, *Methods of Test for Performance Testing Positive Displacement Compressors that Operate at Subcritical Pressures of the Refrigerants*.** Standard 23.1-2019 is a published standard.
- **Standard 23.2, *Methods of Test for Rating the Performance of Positive Displacement Compressors that Operate at Supercritical Pressures of the Refrigerants*.** Standard 23.2-2019 is a published standard.
- **Standard 23P, *Methods for Performance Testing Positive Displacement Refrigerant Compressors and Compressor Units*.** Scott MacBain is the chair of SPC-23P. Standard 23-2020 combines Standards 23.1-2019 and 23.2-2019 into a single standard. Public Review of the 2nd Independent Substantive Change (ISC) is underway and will conclude on 2/1/21.
- **Standard 41.4-2014R, *Methods for Proportion of Lubricant in Liquid Refrigerant Measurement*.** SSPC 41 Subcommittee 41.4-2015R, chaired by Jim Douglas, did not meet during the Austin Virtual Conference and will not meet during the Chicago Virtual Conference because COVID-19 has delayed testing of the latest lubricant sampling apparatus. The present goal is to reach consensus on the first PPR draft at the 2022 Annual Conference.
- **Standard 41.9-2018, *Standard Methods for Refrigerant Mass Flow Measurement Using Calorimeters*.** The first 41.9-2018R Publication Public Review (PPR) ended on December 28, 2020, and there were no Public Review comments, so the final publication of the standard now needs to be approved. Publication of the standard will likely occur before the end of 2021. Congratulations to Michael Perevozchikov, the chair of the 41.9-2018R revision committee and the members of that committee.
- **Standard 41.10-2013R, *Standard Methods for Refrigerant Mass Flow Measurement Using Flowmeters*.** Standard 41.10-2020 has been published. Congratulations to John Neel, the chair of the 41.10-2014R revision committee and the members of that committee. This standard will be up for periodic maintenance in 2023. There were a few corrections that were addressed by the SSPC41 committee and will be added to the published standard as an Addendum A.
- **ASHRAE 30, *Method of Testing Liquid Chillers*.** Justin Prosser provided an update. They have two addenda out that they would like people to look at if they're interested in chillers. Addendum C will include testing of adiabatic 4-pipe chillers. Addendum D, regarding steady state criteria, is out already for public review.

Program – Craig Bradshaw for Erik Anderson (Chair)

- TC 8.1 sponsored two seminars in Winter Conference 2021 (Feb. 9 – 11):
 - Seminar 74 (Advanced), “Numerical challenges in modeling of vapor compression systems and components.” On-demand seminar. Margaret Mathison chaired the seminar.
 - Seminar 87 (Intermediate), “What Makes a Compressor a Heat Pump Compressor.” On-demand seminar. Davide Ziviani chaired the seminar.
- Programs for Phoenix:
 - Carryover seminars intended for Chicago:

- “Latest Developments in Low-GWP Refrigerants and Systems for Refrigeration,” chaired by Georgi Kazachki. Joe Sanchez moved to sponsor the seminar for the summer meeting and Davide seconded. The motion passed **(9-0-0-1, CNV)**.
- “CFD for Compressors,” chaired by Matt Cambio. One scroll, one rolling piston, and two centrifugal presenters. Was initially accepted for winter conference but will resubmit for summer. Will be sponsored by 8.2. Davide Ziviani moved to co-sponsor and Doug Collings seconded. The motion passed **(9-0-0-1, CNV)**.
- New topics from the program subcommittee meeting with TC 8.2:
 - “Back to Basics: The Right Compressor for the Job.” Basic seminar for positive displacement and centrifugal compressors chaired by Margaret Mathison. Matt Cambio will give overview, Craig and Davide will provide student speakers on positive displacement compressors, Matt will find centrifugal speaker. Justin Prosser moved to sponsor and Davide Ziviani seconded. The motion passed **(9-0-0-1, CNV)**.
- “Working Fluids and Application Consideration for Low Temperature Refrigeration.” TC 3.4 voted to sponsor a seminar on lubricants for low temperature systems (e.g., required for COVID vaccines). Chris Seeton will serve as one speaker but is looking for additional speakers (manufacturers or researchers with experience servicing compressors for low-temperature applications). Contact Cris if interested in speaking. Georgi Kazachki moved to co-sponsor and Doug Collings seconded. The motion passed **(9-0-0-1, CNV)**.
- For Vegas:
 - ASHRAE 23 vs. ASHRAE 225 vs AHRI 1520, chaired by Justin Prosser. Will wait until 1520 is released to submit seminar.

Research Subcommittee – David Ziviani (Chair)

- Update on WS 1879
 - Title: “Foamability properties of LGWP Refrigerant and Oil Mixtures”
 - Sponsorship: 3.4 (sponsor), 8.1 (co-sponsor)
 - Lead Author: Chris Seeton
 - PES has evaluated the bids and is waiting in queue for funding.
- Update on WS 1793:
 - Title: “Development of method of test for motor component thermal conductivity”
 - Sponsorship: 8.2 (sponsor), 8.1 (co-sponsor), 1.11 (co-sponsor)
 - Lead Author: Rick Heiden
 - The WS was conditionally approved and has been updated. Need to finish up review.
- Research Chair Breakfast will be held on February 11.
- Craig Bradshaw and Davide Ziviani submitted a URP to support compressor development titled: “The future of compressor technologies for air-conditioning applications with near zero-GWP refrigerants.” Once funding can move forward, will be passed to TC for review.
- Discussed possibility of project to look into lubrication issues with low temperature refrigerants. Davide Ziviani will begin drafting ideas for RTARs with help from Craig Bradshaw and Chris Seeton. Ideas will be circulated to committee.

Handbook – Scott MacBain (Chair)

- A joint subcommittee meeting was held with TC 8.2
- 2022 Refrigeration Handbook
 - One chapter revision is due 4/2021:
 - Chapter 8, “Dehydration and Charging”
 - MacBain, Perevozchikov, and Sanchez have volunteered to help with the revision
 - Additional volunteers are welcome
- 2024 HVAC Systems and Equipment Handbook
 - Two chapters will be due in 2024:
 - Chapter 38, "Compressors" (Sections 1, 2 and 3)
 - Chapter 43, "Liquid-Chilling Systems" (Sections 1, 2 and 4)
 - Betz, Bradshaw, Duda, Heiden, Hunt, MacBain, Perevozchikov, Turner, Ziviani have volunteered to help with the revision
 - Additional volunteers are welcome
 - ASHRAE is behind on adding editable files to the authoring portal. Should be posted by May.
- Scott will set up interim meetings in order to finish revision work
 - E-mail Scott to be included on the web meeting invite

Membership – Jim Douglas (Chair)

- The committee currently has 12 voting members (one international). Four YEA members were in attendance.
- Erik Anderson, Doug Collings, Scott MacBain and John Neel will roll off at the end of June
- Jim will check to see if Doug Collings can stay on for Trane. If not, Alex Schmig will roll on in his place.
- Riley Barta, Jim Douglas, Michael Perevozchikov, and Chris Seeton will roll on at the start of July. Jim will check to see if Riley can serve as an additional international member.
- Craig Bradshaw will remain chair, Joe Sanchez will remain vice-chair, and Margaret will remain as secretary.
- Anyone interested in joining TC as a provisional corresponding member can do so from the ASHRAE website.

Website – Eric Berg (Webmaster)

- Website is up to date
- Eric will replace draft minutes with final minutes
- Minutes also will be posted on Basecamp (basecamp.com)

Old Business – Craig Bradshaw

None.

New Business - Craig Bradshaw

None.

Motion to Adjourn

Motion to adjourn by Jim Douglas at 5:16 PM.

Attachment 1 – Meeting Attendance List

1. Eric Berg, VM, Webmaster
2. Craig Bradshaw, VM, Chair
3. Doug Collings, VM
4. Georgi Kazachki, VM
5. Scott MacBain, VM, Handbook
6. Margaret Mathison, VM, Secretary
7. John Neel, VM
8. Justin Prosser, VM
9. Joe Sanchez, VM, Vice-Chair
10. Davide Ziviani, VM, Research
11. Riley Barta, CM
12. Matt Cambio, CM
13. Robert Chevasco, Guest
14. Kris Crosby, Guest
15. Jim Douglas, CM, Standards/ Membership
16. Eckhard Groll, CM
17. Vincent Hwang, PCM
18. Heinz Jurgensen, CM
19. Orkan Kurtulus, CM
20. Haotian Liu, CM
21. Michael Perevozchikov, CM
22. Hermann Renz, CM
23. Alex Schmig, CM
24. John Scott, CM
25. Chris Seeton, CM
26. SA Sherif, Guest
27. Wayne Zhang, PCM

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.