



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 June 28, 2022

TC/TG/MTG/TRG TITLE Positive Displacement Compressors

DATE OF MEETING June 28, 2022 LOCATION Hybrid/ Toronto, ON, CA

MEMBERS PRESENT	YEAR APPTD	MEMBERS ABSENT	YEAR APPTD	EX-OFFICIO MEMBERS AND ADDITIONAL ATTENDANCE
Craig Bradshaw				See Attachment 1
Eric Berg		Hans-Joachim Kretzschmar		
Alexander Schmig		Vincent Hwang		
Davide Ziviani		Georgi Kazachki		
Michael Perevozchikov				
Riley Barta				
Joseph Sanchez				
James Douglas				
Justin Prosser				
Margaret Mathison				

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

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

Call to Order – Craig Bradshaw

Craig Bradshaw called the meeting to order at 3:35 PM on Tuesday, June 28, 2022. Attendees were reminded to review the ASHRAE Code of Ethics (<https://www.ashrae.org/about/governance/code-of-ethics>). They are also listed in *Attachment 2*

All members and visitors present self-introduced as part of a formal roll call to establish the meeting attendee list. There were 23 total attendees at the meeting. Attendees are listed in *Attachment 1*.

Establishment of a Quorum – Craig Bradshaw

The Technical Committee consists of 13 voting members, one of which is a non-quorum voting member. 10 of the 13 voting members were present.

Executive Discussion

Ground Rules Covered

Background Covered

Davide Motions to endorse the PES recommendation for RP 1879, Riley Seconds. The vote passes (9-0-1-3)

Approval of Minutes – Craig Bradshaw

Jim Douglas moves that the 2022 Winter meeting minutes (Las Vegas Hybrid Conference) be approved, Joe Sanchez seconds. The vote passes: **(7-0-1-5 Chair not Voting)**

Liaison Report -Chris Seeton

- RAC has money now
- 17 projects in queue
 - 8 Approved and out for bids
 - 6 Received
 - Wrap up the queue in the spring
- Hoping TC's come up with new projects
 - New funding will be made available for new projects

Chair's Report – Craig Bradshaw

- Craig Bradshaw attended the Chair's Breakfast and Training Workshop on Sunday, June 26th.
 - Updated MOP for FG's
 - MTG's no longer included
 - Emphasis of TC Strategic planning/leadership
 - What work do we want to accomplish together?
 - At winter meeting, TC's will be evaluated if they want to continue
 - Call for help from society on a decarbonization effort
 - How best to handle better virtual/hybrid meetings?
 - TC to have a dedicated liaison for handling technical challenges (With respect to meetings)

ASHRAE Standards –James 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. At our last meeting, we made a motion to Withdraw Standards 23.1-2019 and 23.2-2019, and that has since been accomplished.

- **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
- **Standard 41.9, Standard Method for Refrigerant Mass Flow Measurements Using Calorimeters**
 - In public Review until August 8th
 - Addendum A added
- **Standard 41.10, Standard Methods for Refrigerant Mass Flow Measurement Using Flowmeters.**
 - Standard 41.10-2020 is a published standard. Standard 41.10-2020 Addendum a. has been published and can be downloaded at no cost from the ASHRAE website. The new 41.10-2020R Subcommittee, chaired by Brandon Kelley, will meet virtually for the first time in June to begin to revise this standard. Please contact Rick Hall (rhall.1492@gmail.com) if you would like to participate in the revision of this standard as a guest or as a subcommittee member.
 - Voted on title, purpose, and scope in Toronto. 14-0-0-4, with letter ballot being mailed to those not in attendance
- **Standard 225-2020, Method for Performance Testing Centrifugal Refrigerant Compressors and Condensing Units** – Up for maintenance, vote to either “reaffirm”, “revise” or “withdraw”
 - This is an error and TC 8.2 should handle this.
- **Standard 30-2019, Method of Testing Liquid Chillers**
 - Will be published with addendum a,b, and f
 - Working on other addendums (See *Attachment 3*)
- **ISO/TC 86/SC 4**
 - WG2-Positive displacement rating standard
 - Focus is immersing markets
 - WG3-Centrifugal compressor standard
 - Draft based on AHRI 1520 and JB/T 12843
 - WG4-ISO 917
 - To be updated as compressor method of test for both positive displacement and centrifugal compressors

Program -- Erik Anderson (Chair)

- Program for Toronto
 - Sponsor:
 - Seminar 40: Chiller-Heater Systems Enabled by Compressors and Ice. Wednesday at 8am. TC 8.2 is co-sponsoring this seminar.
 - *Compressors in Heating Applications* – Drew Turner
 - *Chillers in Heating Applications* - Paul Kozlov
 - *Chiller-Heater System Considerations* - Charlie Marino
 - *Electrification, Heat Pumps and Thermal Energy Storage: Using Yesterday's Waste Energy for Tomorrow's Heating* - Mark MacCracken
 - Back to basics air cooled vs water cooled
 - Tiffany Abruzzi and Rick H to chair
 - Deemphasis of energy efficiency with decarbonization
 - Paul Kozlov to speak
 - Drew Turner to speak
 - Craig to chair
 - Back to basics: compressor and system integration strategies
 - Davide to Chair

- Ideas for Tampa
 - None Yet

Research Subcommittee – David Ziviani (Chair)

- **Research Subcomm. Chair's Breakfast** (Monday June 6/27/2022):

- Reviewed general questions on operations
- Updates on RAC Membership for SY2021-2022 and SY2022-2023
 - ExCom Chair: Omar Abdelaziz
 - Vice-Chair: Bill Murphy
 - Liaisons:
 - Section1: Ahmed Kashef
 - Section2: William Hutzell
 - Section3: Chee Sheng Ow
 - Section4: Natascha Milesi-Ferretti
 - Section5: Jin Wen
 - Section6: Stefan Elbel
 - Section7: James Bogart
 - Section8: TBD
 - Section9: Roland Charneux
 - Section10: Lorenzo Cremaschi
- Research budget:
 - Typically \$2.6-2.7M per year. Funds normally covers 12-15 projects per year along with IRG, NIA, GIA
 - Funds collected thus far \$1.8M and covers current contract commitments only
 - IRG, NIA, GIA are suspended till SY2022-23; URPs are stopped for the time being
 - the Research Promotion (RP) was very successful; The RP campaign supports ASHRAE Research, Education, YEA programs, Scholarships, Endowed Funds, the RP General Fund and Special Initiatives; Total of \$2,300,519 for SY 20-21 including \$1,769,785 for Research.
- RAC Reviews for SY 2021-22 to date:
 - **Fall 2021 meeting:** Approved Research Strategic Plan; 6 Research Topic Acceptance Requests (RTARs); 5 Work Statements; 3 Released for Bid
 - **Winter 2022 Meeting:** 1 RTAR (carry over from Fall 2021); 0 WS; 17 TRPs that are ready to bid in Spring 2022 – impact SY22-23 budget
 - **Spring 2022 Meeting:** 3 RTARs; 2 Publication Topic Acceptance Request (PTAR); 1 WS; 8 Projects released for Bid
 - **Annual 2022 Meeting:** 2 WS; 2 RTARs; 8 Research projects awarded for Bid (pending)
 - [Chris Seeton] 17 projects in the queue
- **Web-based initiatives:** new electronic process to handle RTAR/RP

- **WS-1793 - Motor cooling research / thermal conductivity method of test**

- Returned with comments (not rejection)
- Need to add comments and resubmit/revote
- Revote at Toronto (need recent)

- Main point of contact? Rick Heiden suggested alternative lead. Craig as PMS/evaluation.
- Aug 15th / Dec 15th RTAR deadline
- **1879-TRP – Foamability properties of LGWP refrigerants**
 - TC 8.1 Voted to endorse the PES recommendation on 6/28/2022
- RTAR on, “Capillary Tube and Short Tube Orifice Performance for Low GWP Refrigerants” from TC8.8 - Not supporting
- URP Suspended
- **New RTARs:**
 - Assessment of Extrapolation Capabilities and Uncertainty Quantification of Multi-Refrigerant Semi-Empirical Compressor Models [Davide to initiate the RTAR draft]
 - Decarbonization, high temperature heat pumps:
 - [Tiffany Abruzzi]– Focus could be on both high and low-temp heat pumps
 - [Chris Seeton] Suggestion that the topic should be cost-effective heat pump solutions for challenging applications
 - [Drew Turner] Guidelines for low-cost HP for challenging applications and cost-effective
 - Not sure this fits as a research topic; perhaps a seminar
 - Application solution benchmarking activity?
 - Decarbonization guidelines under development
 - Tiffany volunteer to help developing an RTAR, but requesting help; Davide will provide template and help
 - Suggestion to partner with TC8.11
 - Make sure that both low and high-temp are in-scope

Incoming TAC Liaison

- Activity form is due in about 1 week
- Leadership tutorials online (approximately 10 hours’ worth)
- August 9th seminars are due for ATL
 - Make sure you are completely filling out the form
- New roster starts July 1st
 - Make sure any changes are submitted by July 9th
- TC’s can have as many interim meetings as they want

Handbook – Scott MacBain (Chair)

- Chapter 8 – Factory Dehydrating, Charging & Testing
 - i) Published in 2022
- Chapter 38 (Compressors) and 43 (Liquid Chilling Systems) due in 2024
- Additional notes see *Attachment 4*

Membership – Jim Douglas (Chair)

- Joe Sanchez, Eric Berg and Craig Bradshaw are rolling off
- Erik Anderson, Chris Seaton, Scott MacBain, and Heinz Juergenson rolling on
- **Leadership Plan: Starting 2022 Annual Meeting**
 - i) Chair: Davide Ziviani
 - ii) Vice Chair: Alex Schmig
 - iii) Secretary: Open Riley Barta
 - iv) Research Chair: Matt Cambio
 - v) Other subcommittee chairs are reaffirmed

Website – Eric Berg (Webmaster)

- Website is up to date.
- Still need to add Las Vegas meeting minutes

Old Business – Craig Bradshaw

None.

New Business - Craig Bradshaw

- Basecamp
 - Documents have been uploaded to basecamp
 - We're going to try to use basecamp more frequently
- TC8.1 Chairpersons Goals [Craig]
 - 3 of 4 of the 2021-2023 chair goals have been met, and the other is currently in progress (See *Attachment 5*)
- Justin Prosser makes the motion to officially transfer ownership of STD 225 from TC 8.1 to 8.2. Motion passes (9-0-1-3 CNV)
- YEA members Present -6
 - 3 In-person
 - 3 Online

Motion to Adjourn

Motion to adjourn by Jim Douglas at 4:56PM

Attachment 1 – Meeting Attendance List

In Person

1. Craig Bradshaw
2. Justin Prosser
3. Jethro Medina
4. Margaret Mathison
5. Haotian Liu
6. Eric Berg
7. Michael Perevozchikov
8. Scott MacBain
9. Chris Seeton
10. Greg Kalinyak

Online

11. Alex Schmig
12. Joe Sanchez
13. Davide Ziviani
14. Jim Douglas
15. Riley Barta
16. Erik Anderson
17. Jerry Edwards
18. Sugun Tej Inampudi
19. Andy Hjortland
20. Matt Cambio
21. Phillip Johnson
22. Eckhard Groll
23. Chee S Ow

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.

Attachment 3: Standard 30-2019 Report

Standards Report

ASHRAE Standard 30-2019 (Justin Prosser, Chair SSPC30)

Standard 30-2019

- **Addendum a.** Published in May 2020. Mainly clean-up including a requirement to test based on defined operating mode set points.
- **Addendum b.** Published in April 2020. Mainly clean-up including clarification of Δp_{adj} . **Republished to add missing calibration workbook (.xlsx).**
- **Addendum c.** Addition of adiabatic, free-cooling, and 4-pipe chillers by introduction of hybrid operating modes. APR1 Nov 2020. **PPR1 public review expected in 2022.**
- **Addendum d.** Review of steady-state criteria. APR1 Nov 2020. **PPR1 public review expected in 2022.**
- **Addendum e.** Harmonization with AHRI 550/590, Section 4. Addition of air sampling arrays. **PPR1 public review expected in 2022.**
- **Addendum f.** Inclusion of AHRI 550/590, water pressure drop calculation tool. **PPR1 public review closes July 17, 2022.**

Standard 30-2022 will consolidate of 2019 version with Addenda a, b, & f.

No action required by TC 8.1.



Attachment 4: Handbook Updates

TC 8.1 & 8.2 Handbook – Scott MacBain (Chair)

Agenda

- TC 8.1: Refrigeration: Chapter 8 - Factory Dehydrating, Charging & Testing
 - 2022 Last Publication: MacBain, Sanchez, Perevozchikov
 - 2026 Next Revision: Scott MacBain, Chris Seaton, Michael Perevozchikov
- TC 8.1 & 8.2: 2024 HVAC Systems & Equipment: Chapter 38 and 43 (due May/July 2023)
 - Davide Ziviani, Craig Bradshaw, Michael Perevozchikov, Rick Heiden, Scott MacBain, Fred Betz, Drew Turner, Trent Hunt, Steve Duda, Paul Kozlov
 - Confirm document access on authoring portal: <https://authoring.ashrae.org/>
 - Contact Chris Walter (CWalter@ashrae.org) if any issues with Microsoft login
 - Status at ASHRAE is hot off the press. Timing for their upload of 38 & 43 to portal was delayed from March, May, July: Latest Est. TBD (6/23)!!

Handbook_Chapters					
Chapter No	Title	Files Due to HQ	Volume	TC	
38	Compressors (pt 2 of 2)	5/30/23	HVAC Systems and Equipment	08.02	
43	Liquid-Chilling Systems (pt 2 of 2)	7/11/23	HVAC Systems and Equipment	08.02	

From: Kennedy, Heather <h.kennedy@ashrae.org>
 Sent: Thursday, June 23, 2022 11:22 AM
 To: Kennedy, Heather <h.kennedy@ashrae.org>
 Cc: Alger, Jeri <JAlger@ashrae.org>
 Subject: [External]ASHRAE Handbook: Authoring Portal Updated with 2024S and 2025F Files

Dear TC Chairs and Handbook Subcommittee Chairs with Chapters in the 2024S and 2025F Handbook Volumes:

The moment many of you have been waiting for has arrived. The ASHRAE authoring portal has been updated and the base files for your chapters are ready and waiting for you.

Attachment 5: TC 8.1 – Chairman Goals*, 2021-2023

TC 8.1 – Chairman Goals*, 2021-2023

1. Maintain excellence in programs and standards
 1. Continue timely execution of world-class standards - ✓
 2. Maintain 2-3 programs at each meeting – *10 total programs* ✓
2. Have Ch. 8 updated and executing a plan to update Ch 38 and 43 to reflect the most state of the art ✓
3. Develop at least one research idea into a TRP that the TC owns – *in progress*
4. Continue to look for synergy/collaborative opportunities with other TC's – *maintained solid collaboration with TC 8.2* ✓



**These are Craig Bradshaw's personal goals for the committee*