

ASHRAE TC 10.1

Custom Engineered Refrigerant Systems, Piping, Controls and Accessories

ASHRAE 2023 Annual Conference - TC 10.1 meeting minutes

June 27, 2023 ~ 12:30 – 2:00 pm ET (UTC -4)

Tampa Marriott Waterside: Meeting Room 12 (3)

<https://meet.goto.com/872979573>

To: Members and guests of TC 10.1

From: Jim Caylor, Chair

Date: June 27, 2023

I. Preliminaries.

A. Call to order.

B. 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 interest and behavior that is discriminatory and/or harassing.

1. <https://www.ashrae.org/about/governance/code-of-ethics>

C. Self-introductions & attendance sheet.

D. Verify quorum – voting members:

1. Jim Caylor	6/2023*	Chair
2. Wayne Borrowman	6/2026	Handbook Subcommittee Chair
3. Tom Wolgamot	6/2024	Program Subcommittee Chair
4. Alec Cusick	6/2026	Research Subcommittee Chair
5. Greg Scrivener	6/2023*	Standards Subcommittee Chair
6. Andy Schoen	6/2026	Webmaster
7. Willis Brayman	6/2023*	
8. Kartik Patel	6/2026	
9. Steven Sanders	6/2026	
10. Heather Sharif	6/2027	
11. Gordon Struder	6/2024	
12. Martin Timm	6/2026	
13. Christopher Williams	6/2023*	

II. Additions/changes to agenda.

III. Review and approval of 2023 Winter Conference draft minutes.

- A. 2023 Winter Conference committee meeting draft minutes have been previously distributed and are being mailed with this agenda.
- B. *Motion to approve TC 10.1 2023 Winter Conference minutes (motion passes with no objections or abstentions).*

IV. Chair's Report (Jim Caylor).

- A. Six (6) officers including six (6) voting members.
- B. Committee officer vacancies.
 - 1. Standards Subcommittee Chair – after 07/01/2023.
 - 2. Vice Chair – current.
 - 3. Chair – after 07/01/2023.
- C. Committee officers and voting members manage Committee until leaders are found.
- D. Thirteen (13) voting members (VM).
 - 1. **Substantial VM roll OFF after 2023 Annual Conference.**
 - 2. Brayman, Caylor, Scrivener and Williams roll OFF after July 1, 2023.
 - 3. Nine (9) voting members after July 1, 2023 (Borrowman, Cusick, Patel, Sanders, Schoen, Sharif, Struder, Timm and Wolgamot).
 - 4. Balance new insulation and refrigeration VM.
- E. Nineteen (14) provisional corresponding members.
- F. Eighteen (20) corresponding members.
- G. Total of (47) members.
- H. *Kent Anderson offered to return as Voting Member Non-Quorum (VMNQ).*
- I. *After many years of faithful service to TC 10.1, Bill Brayman has announced that he will be retiring. The Chair and the rest of TC 10.1 would like to thank Bill for devoting so much of his time, sharing his knowledge and experiences, and helping guide the work of this committee for the betterment of others and society as a whole. Congratulations and we wish you all the best in your retirement Bill!*

V. Liaison Reports.

- A. Section 10 Head – Tina Brueckner (SH10@ashrae.net)?
- B. Other Societies.
 - 1. ASHRAE 15 (Chris Williams).
 - a. *The ASHRAE 15 Project Committee is currently split into four subcommittees: (1) general code compliance, (2) residential, (3) commercial, and (4) refrigeration.*
 - b. *Current EPA guidance does not allow changing a system from utilizing a non-flammable refrigerant to a flammable refrigerant. The EPA would be interested in how to potentially address is; however, ASHRAE 15 has not yet figured out*

how to address this issue. The ASHRAE 15 PC is reviewing potential options as to how to this might be allowable (e.g., review by a consulting engineer or equipment manufacturer).

- c. *ASHRAE TC 8.7 (Variable Refrigerant Flow) is proposing a seminar at the upcoming ASHRAE Winter Conference in Chicago (January 2024) but would like co-sponsors. Since the requirements in ASHRAE 15 have significant implications for VRF systems and TC 10.1 is a primary committee for ASHRAE 15, it might be good for TC 10.1 to co-sponsor this proposed seminar.*
 - d. *Motion for TC 10.1 to co-sponsor TC 8.7's proposed seminar for the 2024 ASHRAE Winter Conference (motion passes with no objections or abstentions).*
2. ASME (Jim Caylor).
 - a. *ASME B31.1, B31.3, B31.4, B31.5 and B31.8 chairs are working under Don Frikken to standardize language on qualifying unlisted components. There is substantial agreement on most of the text, but questions remain as to what defines "extensive successful experience under comparable conditions" (para. 504.7).*
 - b. *It has been proposed that paragraph 504.7(c) of ASME B31.5 be revised to increase the heat transfer component proof test design pressure from 3x to 3.5x.*
 3. CSA (Wayne Borrowman).
 - a. *Unlike ASHRAE 15, CSA B52 covers all ammonia refrigeration systems. Not only does it address installation, but operation and maintenance as well. A significant number of changes to CSA B52 have been proposed and are out for public review. Some proposed changes include: aligning CSA B52 with IIAR Standard 2; allowing air changes in accordance with IIAR Standard 2; clarification of "accessible roof level" with respect to relief valves; decommissioning and dismantling requirements; pipe marking/labeling; and specifications for copper tubing.*
 - b. *There is also concern regarding large systems with various gases (not just ammonia), but they are looking to include both ammonia and carbon dioxide (CO₂).*
 4. Other (Kent Anderson)
 - a. *To raise awareness to all – Kent, Andy Pearson, and Alex Pachai have just authored three (3) papers for the upcoming IIR Congress in Paris (August 2023) on ammonia risk assessment. A significant difference between ISO Standard 817 (widely applies outside the U.S.) and ASHRAE Standard 34 was found with respect to ammonia toxicity (i.e., ISO 817 treats ammonia with chronic toxicity, yet ammonia has no chronic toxicity issues – it only has acute issues). When the current flammability and toxicity designations were previously created, a value of 400 ppm was pulled out of "thin air" (less than 400 ppm was toxic, more than that was non-toxic); however, the criteria used for this was a workplace exposure level well below 400 ppm. The only other refrigerant and ended up being considered toxic using this criterion was R-123. The OSHA 8-hour Permissible Exposure Limit ("PEL") for ammonia of 50 ppm*

was based on comfort & irritation – it has nothing to do with health & safety.

5. Insulation societies.
 - a. NIA (National Insulation Association).
 - i. MICA (Midwest Insulation Contractors Association).
 - ii. Refrigeration.
 - iii. Cryogenic.
 - b. ASTM.

VI. Handbook Subcommittee Report (Wayne Borrowman).

A. Handbook chapters.

1. Insulation: Chapter 10 (Insulation Systems).
2. Refrigeration: Chapter 1 (Halocarbon), Chapter 2 (NH₃), Chapter 3 (CO₂), Chapter 4 (Overfeed), Chapter 5 (Component Balancing), Chapter 13 (Secondary Coolants), Chapter 45 (Concrete Dams), Chapter 46 (Chemical Industry), Chapter 47 (Cryogenics), Chapter 48 (Ultralow Temperature) and Chapter 49 (Biomedical Applications) and Chapter 50 (Terminology) will be reviewed for the 2026 RHB.

a. Chapter 1 (Halocarbon).

- i. *A working group for revising Chapter 1 has met monthly since February 2022, working to weed-out old information and update with current data. The rewrite process has begun and will be ongoing to be in good shape for revisions to be submitted & incorporated into the 2026 Handbook.*

b. Chapter 2 (Ammonia) - Ch 3 (Carbon Dioxide) - Ch 5 (Component Balancing).

- i. Jim Caylor to also seek OEM & contractor input.

c. Chapter 13 (Secondary Coolants)

- i. *Currently only deals with single-phase fluids; however, phase-change fluids such as CO₂ or “volatile brine” solutions are of potential future use. It could be helpful to potentially refer to Chapter 3 for overall design considerations for using CO₂ as a secondary coolant where useful, and potentially insert new content within Chapter 3 to discuss the use of CO₂ as a secondary coolant.*

B. *The Handbook Subcommittee wanted to remind all that electronic items such as a spreadsheet or video can easily be provided with electronic copies of the ASHRAE Handbooks.*

1. *An Excel file which calculates refrigerant carrying capacities for piping that was previously developed & shared within TC 10.1 could be considered to be submitted – please submit to Wayne Borrowman.*

C. *Current due date around June 2025 for revisions to the ASHRAE Handbook – Refrigeration.*

D. *All Handbook submissions should be submitted in a PDF format such that all comments, notes, edits can be easily handled. However, for the purposes of TC 10.1 editing/revising handbook chapters, the process of making all edits using Track Changes within the working MS Word file of the chapter is still best – the version submitted via Email should*

just be a PDF.

- E. *There was a suggestion to consider converting drawings/charts within Handbook chapters from black & white to color where it might aid or provide value to the reader.*

VII. Research Subcommittee Report (Alec Cusick; project author/leader).

- A. RP-1703 (Testing the Performance of Vapor Retarder Systems Used with Mechanical Insulation Systems in Below-Ambient Applications).
 - 1. Co-sponsor with TC 1.8 (lead committee).
 - 2. Charley Petty (lead) and Gordon Hart (contributors).
 - 3. *June 26, 20203 – 10 members met in-person and virtually. Charlie noted that there are 5 members of the Project Monitoring Subcommittee (“PMS”): himself, Bill Brayman, Monroe Shumate, Heather Sharif, and Gordon Hart. Bill visit the contractor 11 days prior to see how testing was proceeding & meet with project managers. A progress report was provided to the PMS. Bill commented on the testing of flexible elastomeric insulation, cellular glass insulation, and vapor retarder mastic. There were concerns regarding sealing of butt & lap joints, which are being done with a pressure-sensitive adhesive. There was considerable discussion with the mastic testing and how the minimum thickness was established since thicker the material has a lower expected permeance. Since samples are being tested in both the flat and cylindrical configurations, the thickness for the different samples should be approximately the same. The contractor agreed to add additional mastic thickness to pipe samples prior to testing for vapor permeance.*
 - 4. *The testing for RP-1703 is proceeding, albeit more slowly than expected 1 year ago. Given the physical size and operating conditions of the chamber (90 °F & 90 %RH) and size of the test samples (18 inches in height & 6 inches in diameter), it takes a while for testing to be performed. It’s currently anticipated that testing will be completed at the end of 2023.*
- B. RP-1721 (Oil Return and Retention in Unitary Split System Gas Lines).
 - 1. Co-sponsor with TC 8.11 (lead committee).
 - 2. Gordon Struder is on PMS.
- C. RTAR-1871 (Hygrothermal Modeling of Below Ambient Pipe Insulation Systems in Buildings and Refrigeration).
 - 1. Co-sponsor with TC 1.8 (lead committee).
 - 2. Manfred Kehrer and Gordon Hart are authors.
 - 3. *Nothing has changed with respect to this project status. This project will be approved after test data is received from RP-1703.*
- D. RTAR-1513 (old) Liquid/Vapor Separation in Vessels.
 - 1. Originated in TC 10.1.
 - 2. Doug Scott, Alec Cusick, and/or Bent Wiencke to update.
 - 3. *Past history of information on this was assembled in January 2023. IIAR is interested in co-sponsoring this research. Need to determine who has the bandwidth to carry this forward.*

4. *Alec Cusick offered to help in revising & resubmitting the RTAR. Kent Anderson also offered to help. Jim Caylor will send meeting invites to Alec, Doug, and Kent by end of this week to begin initial work on updating and revising this RTAR.*

VIII. Programs (Tom Wolgamot)

- A. *Looking to see if there is anyone interested in speaking on a topic in Chicago – if not, he currently has a proposal for a potential 3-speaker seminar to discuss code requirements & ramifications of A2L refrigerants, CO₂ design philosophies/approaches, and then issues found commissioning CO₂ refrigeration systems.*
- B. *Suggested to also hold a forum (open discussion) to solicit feedback on topics/information that should be incorporated into the Refrigeration Handbook.*
 1. *This forum idea was well-received and encouraged by members of TC 10.1.*

IX. Old Business.

- A. Action Items.
 1. Charlie Henck – Section 10 Head?
 2. Update roster and activity forms.
 3. Review code of ethics and update website biographical information.

X. New Business.

- A. Feedback from new meeting format.

XI. Next Meeting: Chicago, IL; 01/20-24/2024.

- A. <https://www.ashrae.org/conferences/2024-winter-conference-chicago>
- B. Marriott Marquis Chicago, 2121 S Prairie Ave., Chicago, IL 60616.
 1. Registration link open in early September 2023.
- C. Virtual and face-to-face!

XII. Adjourn.

- A. *Motion to adjourn (motion passes with no objections or abstentions)*