



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. 1.3 DATE February 11 2025, 1-3 ET, LOCATION Orlando FL

TC/TG/MTG/TRG TITLE Heat Transfer and Fluid Flow

1. Call to Order (Wilson)

2. Introduction of members and guests

Wilson, Gotterbarm, Jaorder, Dingel, Ravi,

3. Establish quorum requirements (Wilson)

4. ASHRAE Code of Ethics Commitment (Wilson) 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.>)

Wilson asks all attendees to review the new and updated code of ethics.

5. Review of Agenda (Wilson)

6. Review/Approve minutes from Summer 2024 meeting (Wilson)

7. TRP-1909 (Padakannaya) – EXECUTIVE SESSION

8. Section Head Comments

9. Liaison Comments

No liaisons present.

10. Membership Subcommittee (Gotterbarm)

Derby, and others to roll on as voting members. Gotterbarm shares new voting members balance. **7 (i), 6 (a).**

Melanie Derby	Chair	voting 06/30/2025 (a)
Michael Wilson	Vice-Chair	voting 06/30/2026 (a)
Gurunarayana Ravi	Handbook Subcommittee Chair	voting 06/30/2026 (i)
Achim Gotterbarm	Membership Subcommittee Chair	voting 06/30/2026 (i)
Pratik Deokar	Program Subcommittee Chair	voting 06/30/2025 (i)
Joe Huber	Research Subcommittee Chair	voting 06/30/2027 (i)
Omar Abdelaziz	MTG.LOWGWP MEMBER-VOTING	voting 06/30/2024 (a)
Vikrant Aute		voting 06/30/2027 (a)
Lorenzo Cremaschi		voting 06/30/2024 (a)
Stefan Elbel		voting 06/30/2027 (a)
Icksoo Kyung		voting 06/30/2025 (i)
Ray Rite		voting 06/30/2024 (i)

Kashif Nawaz		Rolling on 01/07/24 (a)
Lingnan Lin		Rolling on 01/07/24 (a)
Arindom Joardar		Rolling on 01/07/24 (i)
Kalyan Boyina		Rolling on 01/07/24 (i)

7 YEA members present, encouraged to join leadership positions

11. Handbook Subcommittee (Ravi)

Ravi confirmed that Chapters 3, 4, 5, and 6 of the handbook require revisions in 2025. No comments had been submitted. Ravi invited new members to join the subcommittee, explaining that the role involves revising chapters, proposing new ideas, and having access to review the handbook and suggest improvements.

12. Program Subcommittee (Deokar)

Two submissions were made as the main sponsor, and three as co-sponsors, the list was shared via presentation slides. One submission was accepted and scheduled for the next day at 8:00 AM. Wilson inquired about feedback on rejected proposals. Ravi confirmed no feedback was received, but future resubmissions were allowed. Wilson emphasized the need for feedback on rejections. Wilson asked if the committee was interested in submitting for the Phoenix, AZ conference (deadline: Feb 26), tracks listed in the presentation slide. No proposals related to flammable refrigerants were submitted. One seminar (co-sponsored) had no response. Deokar agreed to follow up. Nawaz mentioned possibly bringing in a speaker from Oak Ridge for Seminar B related to flammable refrigerants. Aute suggested reaching out to Jose instead of Lena for coordination, citing previous session experience on layered microchannels. Aute agreed to contact Jose. Jokar

expressed interest in contributing to a seminar on low-GWP flammable refrigerants. Aute confirmed that he will email Deokar to facilitate introductions.

New Proposals:

Topic C (Proposed by Bruce) on thermal management of batteries. Deokar to contact potential speakers. Bruce emphasized its importance and recommended resubmission based on group input. Kashif may also suggest speakers (as noted in the previous meeting). Topic D on a panel previously submitted needed speaker confirmation for resubmission. Deokar will follow up with Dr. Ohadi (not present in meeting). Nawaz intended to revise and resubmit his seminar for Phoenix. Deokar inquired about preferred track—Track 3 was suggested. Motion made by Lin on topic “Next Generation HVAC&R Technologies”, Huber seconded. Motion passed 11–0. Kashif requested to revise title.

Additional Ideas:

Rite proposed a topic on thermal conductivity of aluminum solids and methodologies from Purdue and Georgia Tech, topic still open. Nawaz might have a potential speaker from Oak Ridge focused on thin fins. Bruce proposed stronger copper alloys and extension to tubes. Wilson asked about brazed joints. Nawaz suggested a broader topic on metal alloys for HVAC applications, including Al alloys testing. Rite suggested co-sponsorship under TC 8.5 for fin perspective. Nawaz mentioned the idea could also be aligned with Track 1.1, more suitable for Las Vegas than Phoenix. Wilson proposed email ballots and requested Deokar to discuss with Rite. Dingel inquired about appropriate program track.

13. Webmaster (Lin)

Lin uploaded the meeting to the website and requested suggestions for site improvements. Lin announced resignation, Yang will take over webmaster responsibilities.

14. MTG Liaison: Low GWP Refrigerants (Omar Abdelaziz -Liaison, Satheesh Kulankara –Alt#1, Evraam Gorgy–Alt#2)

Nawaz reported the upcoming meeting and proposed focus on A3 refrigerants. Rite asked about the meeting agenda. Aute confirmed that an agenda has been prepared.

15. Research (Huber)

a. Research Update

Huber presented updates based on breakfast session topics and presentation slide. RAC members and \$3.9M research budget reported. Projects can be approved up to \$350k. ASHRAE currently has 37 active RPs, 1007 total projects, with \$87.9M spent. A new ASHRAE research strategic plan (2025–2028) to be released post-June 2025 to incorporate values and goals, and it will be under evaluation.

Research guidelines include budget estimation components for realistic project planning. A digital research submission and tracking system will be rolled out soon. Deadlines approaching for submissions. Paul Turnbull received the “Service to ASHRAE” award, nominated by TC. Ayub

inquired about URPs. Huber confirmed RTARs are still valid. If confidence is high, direct submission to Work Statement is possible.

RP 1683 was discussed at the review meeting on the previous Sunday. Rite asked about status of projects. Abbas, Cremaschi, Bowers, Bruce involved. The presentation lasted over 1 hour, it was data-intensive. Experiments were completed, correlation work was still ongoing. Challenges with -40°C tests was discussed. Email ballot planned within the next month.

b. Discussion on RTAR “Propane DX for Enhanced Round Tubes”

RTAR draft distributed and sent to liaison for feedback. Discussions included tube diameter ranges, refrigerant vs. oil scope, and testing conditions: Ayub proposed dropping “DX” and including OD units. Lin asked about 5/8” usage; Wilson confirmed it was standard for propane. Aute, Huber confirmed smaller tubes could be evaluated. Deokar proposed 7 mm as an option; Huber cautioned against expanding scope too far. Focus on microfin geometry preferred. Discussion included void fraction, oil content, refrigerant behavior at low temperatures. Bruce noted oil concentration ratio (OCR) measurement complexity due to density differences. Committee leaned toward simplifying the scope—geometry or oil, not both. Visualization experiments deemed difficult at -40°C; suggested exploring them at higher temps. Bruce and Huber to gather feedback.

Additional Research Proposals:

Ben Dingel (TC 8.5), Gotterbarm collaborated on an RP related to condensation tube bundles with low-GWP refrigerants. Aim was to quantify heat transfer coefficient, consider non-condensables, and decarbonization aspects. Motion: Dingel moved for TC 1.3 co-sponsorship, Huber seconded. Motion passed 7–0–0.

Potential New RTAR Topics:

Propane and brazed plate heat exchangers in chillers (Bruce). Liquid-to-refrigerant applications (Wilson). Void fraction and charge predictions (Aute, Joarder). Two-phase pressure drop modeling for BPHX with hydrocarbons (Joarder). A3 refrigerants in commercial chillers (Bruce). Double wall HX studies, contact resistance, and charge retention (Deokar, Boyina, Abdel’s ACRC work). Huber requested charge retention to be included in the minutes and considered in the next meeting.

16. Chair Comments (Wilson)

Jason Atkinson, section head, and Wilson attended the chairs’ breakfast. Roster updates are in progress. Current TC meeting time of 1 pm was deemed appropriate. Dingel made the motion to adjourn. Joarder seconded. Meeting Adjourned.

17. New Business

18. Next meeting: Phoenix, AZ