



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

404-636-8400

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 7, 2023, 1-3:30 ET, LOCATION Atlanta, GA

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

MEMBERS PRESENT	END YEAR	MEMBERS ABSENT	END YEAR	EX-OFFICIO MEMBERS AND ADDITIONAL ATTENDANCE
Kashif Nawaz	2023	Icksoo Kyung	2025	Vikrant Aute
Lorenzo Cremaschi	2024	Xiaofei Wang	2023	Tobias Barth
Melanie Derby	2026	Michael Wilson	2026	Min Che
Pratik Deokar	2025			Cristiano Dias
Achim Gotterbarm	2026			Ahmed Elatar
Gurunarayana Ravi	2026			Arindom Joardar
Raymond Rite	2024			Amir Jokar
				Daniel Howard
				Dhruv Hoysall YEA
				Jung-Tsung Hung
				Sugun Tej Inampudi
				Chris Keinath
				Satheesh Kulankara
				Lingnan Lin
				Minoo Mehdizad
				Stanislav Perencevic
				Pedro Perez
				Eric Ratts
				Harvey Schowe
				Kyle Schuman
				SA Sherif
				Cheng-Min Yang
				Weihuan Zhao

TC 1.3 Scope

TC 1.3 is concerned with the fundamental principles of the transport of energy, mass, and momentum, especially the study of and application to, physical processes in air conditioning, refrigeration, heating and related areas of environmental engineering.

1. Chair Nawaz called the meeting to order at 1:04PM ET

2. Introduction of members and guest

3. Establish quorum requirements

Seven voting members were in attendance.

4. ASHRAE Code of Ethics Commitment

Chair Nawaz read the code of ethics: 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>.)

5. Review of Agenda Chair Nawaz reviewed the agenda for today's meeting.

6. Review/Approve minutes (Summer 2023 in Toronto) (Melanie Derby)

There was a typo in one attendee's name which Secretary Derby will fix. Motion to approve (Rite /Guru). 6-0-1 abstention

7. Section Head Comments

8. Liaison Comments

Sonya Pouncy- Handbook Liaison reviewed upcoming deadlines. In general, edited chapters are due by July 31, 2024, although each chapter has its own deadline (e.g, March 8, 2024 for Ch 3). The latest deadline is July 19, 2024 for Ch 33. Even if there no changes or edits, the TC still needs to vote on approval/reaffirmation of each individual chapter.

9. Membership Subcommittee (Achim Gotterbarm)

Noted that there is a good balance between industry and academia. Need to add Vikrant Aute and Omar Abdelaziz to the TC 1.3 roster.

10. Handbook Subcommittee (Guru Ravi)

2021 Handbook versions are in a Word format. Ch 3-6 in Fundamentals are available for member updates and comments. Dr. M. Shah commented on Ch 5-6. All updates should be completed/approved by early 2025. Contact Guru if interested in editing these chapters; Chair Nawaz encouraged the TC 1.3 committee to participate; if interested, contact gurunarayana.ravi@lennoxind.com

11. Program Subcommittee (Pratik Deokar)

a. Status of other current/proposed programs

For Toronto, TC 1.3 submitted a seminar about flow evaporation and condensation of low GWP refrigerants with speakers Lin, Mancin, Jajja. The program included modeling and experimental elements, and the program was cosponsored by TCs 8.4, 8.5, and MTG.LowGWP, but the program was not accepted. Chair Nawaz suggested talking to CEC and plan to resubmit to Tampa in the research summit or Fundamentals track.

TC 8.5 is proposing a session regarding heat transfer with novel surfaces (e.g., topography modification with additive manufacturing). It was suggested to recruit a speaker from Oak Ridge National Laboratory. Vikrant Aute will work to identify a third speaker. TC 1.3 will be the main sponsor for this and TC 8.4 cosponsor. Program submissions are due 2/27.

Both were approved 7-0 (Deokar/Derby)

Previously, there was a discussion regarding a forum on heat pump/heat exchangers related to the decarbonization of buildings. The program was not submitted; Pratik Deokar will follow up with Dr. Ohadi.

12. Status of other current/proposed programs

N/A

13. Webmaster (Lin)

Lingnan Lin has been in contact with Tara at ASHRAE regarding roster issues. No other website updates were reported.

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

Satheesh Kulankara provided an update that the MTG met 2 times. There are no programs being presented at the current meeting. For the Tampa conference in June, they are submitting two seminar submissions regarding safety standard updates that have been recently updated. RP 1806 is ongoing, and RP 1855 is nearly complete, with a draft report submitted.

15. Research (Joe Huber)

a. Updates from the Society research meeting

Joe Huber provided an update from the chair breakfast on Monday morning. There are currently 42 active projects with an average cost of 150k. Due to COVID-19-related budget reductions, many items that were discontinued (e.g., ASHRAE New Investigator, Graduate Student Grant-In-Aid Program, Homer Adams awards, etc) will resume this year. Although there were nine projects out to bid, most did not receive bids. It is possible this is because these projects were written pre-COVID, so perhaps budgets weren't high enough. It was mentioned that realistic budgets are necessary for responsive bids. Only 3 RTARs are being considered at this meeting.

As some of the backlog is being worked through, writing RTARs are being encouraged. RTARS should relate to strategic plan and demonstrate a need in industry.

Both 1683-RP and 1800-RP teams presented at Research meeting on Sunday

b. 1683-RP: “Experimental Evaluation of 2-Phase Pressure Drop and Flow Pattern in U-Bends with Ammonia”

Dr. Abbas presented on Teams and gave a test facility and sample update; they expect the system to be online soon. Ray Rite is PMS chair. Dr. Cremaschi, is testing the low temperature data in parallel. There were some questions regarding ovality being introduced in U-bends and hairpins. Dr. Abbas is making both samples; ovality measurements are being pursued. Two quarterly reports are needed from the PIs.

The team requested a no cost time extension and the PMS encourages and supports this.
(Rite/Nawaz) Passes 7-0

c. RP-1800: “Spray Evap. on Enhanced Tube bundles with low GWP Pure ref. and ref./miscible oil mixtures”

Dr. Cremaschi presented data on square and triangular pitch bundles, including pure refrigerant and refrigerant-oil mixtures. Zahib Ayub is PMS chair, although Huber presented to TC 1.3. The research team is working on a correlation. The project’s end date is February 2023, and the PI is working on a final report. If the PMS receives the final report by the end of February, there is no need for a NCTE.

RTAR 1909 in progress regarding condensing furnace with complex heat transfer processes (combustion), mass transfer, and stratified flow. There are currently no existing correlations. This RTAR received conditional approval 1.5 years ago. The team is working on the work statement, will email it to TC 1.3 for email approval, and is aiming for March 15 deadline to RAC. Huber suggested looking for potential investigators so we can have bids. Chair Nawaz mentioned seeking potential co-sponsorship from other TCs.

d. Co-sponsorship opportunities

Harvey Schowe from TC 2.8 water energy nexus wanted to gauge interest in research on pipe friction loss in pipe fittings. This would expand previous ASHRAE research conducted in 2005-2006 and could result in modifications to the Moody chart, and be included in a handbook. Is TC 1.3 interested in cosponsor? Huber requested additional information to send to membership. The time frame for voting is currently unknown.

e. Pending research topics and future research plans

Vikrant Aute noted that the fluted tube RTAR is still in progress.

There was some discussion on phase change heat transfer in natural refrigerants. The topic area is of interest to the committee. Huber asked the committee to contact him regarding this if you use natural refrigerants.

16. Chair Comments (Kashif Nawaz)

The Chair's breakfast occurred on Sunday. The main discussion was the activity form (business conducted during TC meeting). He is working with Achim Gotterbarm to work on roster emailing issues. It was noted that ASHRAE needs a better audio system to support hybrid meetings. It was noted that tracking attendance can be difficult for online meetings.

17. New Business

No new business was discussed

18. Next Meeting: Tampa, FL June 27 Tues 1PM ET

19. Adjourn The meeting adjourned at 2:42 PM ET (Rite/Achim) Approved 7-0