



**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. TC8.5 DATE 1/18/2019

TC/TG/MTG/TRG TITLE LIQUID TO REFRIGERANT HEAT EXCHANGERS

DATE OF MEETING 1/14/2019 LOCATION ATLANTA, GA, USA

MEMBERS PRESENT	YEAR APPTD	MEMBERS ABSENT	YEAR APPTD	EX-OFFICIO MEMBERS AND ADDITIONAL ATTENDANCE	
Satheesh Kulankara	7/1/2018	Steven Eckels	7/1/2015	Pedro Perez	Icksoo Kyung
Bryce Moore	7/1/2018	Sankar Padhmanabhan	7/1/2015	Ahmed Elatar	Stanislav Perencevic
Joseph Huber	7/1/2018	John Thome	7/1/2016	Minoo Mehdizadeh	Nicholas Zupp
Kashif Nawaz	7/1/2017	Kaushik Oza	7/1/2016	Vikrant Aute	Onkar Phatak
Adnan Ayub	7/1/2018	Lorenzo Cremaschi	7/1/2016	Zahid Ayub	Joshua Rothe
Evraam Gorgy	7/1/2018			Andrea Bigi	Burak Adanur
Achim Gotterbarm	7/1/2017			Pratik Deokar	Steffen Rieger
Michael Wilson	7/1/2017			Benjamin Dingel	Timm Buehrle
				Yirong Jiang	Shenglan Xuan
				Manfred Knab	Younglu Hou
				Andreas Knopfler	Ted Wayne
				Alireza Behfar	
<b>DISTRIBUTION: All Members of TC/TG/MTG/TRG plus the following:</b>					
TAC Section Head: Dustin Meredith			SH8@ashrae.net		
All Committee Liaisons As Shown On TC/TG/MTG/TRG Rosters (Research, Standards, ALI, etc.)					
Mike Vaughn, Manager Of Research & Technical Services			MORTS@ashrae.net		

1. Meeting called to order by chair Satheesh Kulankara at 4:20 PM. Scope of TC was read by the chair. There were 37 attendees at the meeting. The attendees introduced themselves. Chair reminded attendees of the ASHRAE Code of Ethics.
2. Establishment of Quorum
  - Members present: Satheesh Kulankara, Bryce Moore, Joseph Huber, Kashif Nawaz, Adnan Ayub, Evraam Gorgy, Achim Gotterbarm, Michael Wilson
  - 8 of 14 voting members were present, establishing quorum
3. Review/approve minutes from previous meeting
  - Meeting minutes from Summer 2018 Houston were reviewed. One correction was made regarding the spelling of Minoo Mehdizadeh's name.
  - Joseph Huber moved to approve minutes, seconded by Adnan Ayub. Minutes were approved unanimously (8-0).
4. Chairman's breakfast report (Satheesh Kulankara)
  - Abstracts & seminar program proposals for summer 2019 conference in Kansas City are due 2/8/19. Conference paper abstracts are due Mar 18<sup>th</sup>. There will be a new Research Summit track, which accepts extended abstracts and which will publish results in the ASHRAE journal.
  - The 2018 George B Hightower award for technical achievement went to David Moss. 2018 Service to ASHRAE research award went to Jensen Zhang.
  - MTG.BD (Building Dampness) has been dissolved as of the Winter 2019 conference. MTG.HWBE (Health and Wellness in the Built Environment) and TC2.10 (Resiliency & Security) were formed.
  - Training sessions are available on how to use the Basecamp tool for document sharing and collaboration. Background information on Basecamp and the Basecamp rollout plan is available [here](#) and [here](#).
  - Members interested in teaming with the Residential Building Committee on research projects are encouraged to contact the committee with for more information.
5. Liaison comments (Dustin Meredith)
  - Feedback was received from a survey of TC members, highlighting several complaints and concerns about the current structure of ASHRAE TCs. These included:
    - i. Inability to attend programs due to meeting schedule conflicts
    - ii. Siloing of common/similar work topics due to presence of small TCs with limited scope
    - iii. Duplication of administrative work due to large number of TCs
    - iv. Proliferation of TCs due to TCs being formed but never phased out
    - v. Pace of progress in TC work is too slow due to minimal work being done between meetings
    - vi. It was also noted that ASHRAE is facing a "budget crisis", in part due to the large quantity of conference room space needed at each conference.
  - In order to address these issues, a proposal has been made to restructure TCs over the next year. Key features of the plan are:
    - i. Reduce number of TCs from 114 to roughly 30 TWGs (technical working groups)
    - ii. Programs will be scheduled in the mornings, while TWGs will meet in the afternoons in 2-hour blocks. Subcommittee business is encouraged to happen during breakout sessions within the main meetings.

- ASHRAE leadership is requesting TC feedback on what groups can be integrated, thoughts on proposed restructuring, etc. Feedback will be collected over 60 days. Replies should be sent to chair & liaison.
- Initial feedback:
  - i. (Z. Ayub) This will be a “herculean task”, TCs currently fill 3 hrs not including subcommittee meetings. It may be unrealistic to expect committee-level progress and decision-making to occur outside meetings and over phone/email. ASHRAE leadership needs to cut inactive committees and not schedule meeting rooms for small groups. Don’t penalize well-functioning committees.
  - ii. (K. Nawaz) What survey was sent out? What was the distribution list? Is the survey data available? Several team members and committee chairs have not received any communication or requests for input.
  - iii. (A. Knopfler) ASHRAE should make survey/feedback data available to TC members.

6. Membership subcommittee report (Satheesh Kulankara)

- 3 voting members rolling off (Steven Eckels, John Thome, Sankar Padhmanabham)
- Vikrant Aute and Stanislav Perencevic are invited to be voting members. There was an open call for others interested.
- Kashif Nawaz will continue as research chair.
- Pedro Perez will take over for Joseph Huber as webmaster
- Adnan Ayub will take over for Sankar Padhmanabham as handbook subcommittee chair
- Mino Mehdezadeh will take over for Steven Eckels as program subcommittee chair
- There was a call for volunteers as MTG members. Satheesh Kulankara will be the primary, with Vikrant Aute as secondary and Kashif Nawaz as alternate 2.

7. Handbook subcommittee report (Satheesh Kulankara)

- No progress on handbook summary of RP1556. Zahid Ayub will draft a summary of the work for the handbook.
- Bryce Moore wrote a draft section on falling film evaporators, as proposed in the Houston 2018 meeting. Bryce will send the section to the team for revision, voting, and approval. Bryce and Satheesh will provide a target deadline for feedback so the team can vote to approve the section at the summer meeting in Kansas City.

8. Program subcommittee report (Satheesh Kulankara)

- For the Atlanta conference, of 156 abstracts submitted, 149 were approved and 70 papers resulted.
- TC8.5 will sponsor a “Back to Basics” program for Orlando (winter 2020). Proposed topics:
  - i. Uncertainty analysis for chiller HXs (presenter TBD)
  - ii. Selecting the right tube material for your application (Adnan Ayub)
  - iii. Discussion of tube enhancements (Andreas Knopfler)
  - iv. Others?

9. Standards subcommittee report (Joseph Huber)

- Revision of standard 24 (evaporator testing standards) are in progress. The SC has requested an altered title, purpose, and scope to better match the content of the changes. If approved, the draft is ready for release.
- Standards 22 and 181 were reaffirmed with no changes.

10. Webmaster report (Joseph Huber)

- The website is up to date as of the Winter 2019 conference.
- Pedro Perez will take over as Webmaster following the Winter 2019 conference.

11. MTG liaison report

- Three research projects were discussed in Houston (summer 2018)
  - i. RP1806 – Post-ignition simulation for A2L and A3 refrigerants. The MTG needs to discuss alternate paths for analysis.
  - ii. RP1807 – Guidelines for safe refrigerant handling (study of best practices). Project was voted for approval.
  - iii. RP1808 – Assessment of field-made mechanical joints. Work is complete and PI has sent in the final report for review.
- Work statement 1885 was proposed. It will study byproducts of combustion of flammable refrigerants, and associated cleanup procedures.

12. Research subcommittee report (Kashif Nawaz)

- (B. Dingel) RP1677 – Fouling performance of internally enhanced condenser tubes used in cooling tower applications
  - i. The project PI presented Sunday at the Research subcommittee meeting.
  - ii. The team is working through the 4<sup>th</sup> of 5 test series. Once data collection is completed, model development and predictive work will follow – to be completed by early 2020.
- (Z. Ayub) RP1800 – Spray evaporation on enhanced tube bundles with low-GWP refrigerants in an evaporator comprising an enhanced tube bundle
  - i. TC8.5 is cosponsoring this work with TC1.3
  - ii. This study will use both boiling and condensing tube enhancements, in square and triangular tube pitch arrangements.
  - iii. Electric heat will be used rather than water calorimetry for heat transfer measurements.
  - iv. Early work will focus on R1234ze with more refrigerants to follow (TBD).
- (K. Nawaz) TRP1731 – Heat Transfer Performance of Medium Pressure Lower GWP Refrigerants in a Flooded Evaporator Comprising an Enhanced Tube Bundle
  - i. The work statement is still in progress. Refrigerants, tube types/pitches, and refrigerants will be harmonized with RP1800 to facilitate direct comparisons.
- (K. Nawaz) RTAR is in progress for CO<sub>2</sub> condensation on tubes applicable to cascade systems. K. Nawaz will circulate the document to the TC members for approval.
- K. Nawaz called for a research proposal investigating external CO<sub>2</sub> condensation on tubes.

13. New business

- The TC resumed discussion of ASHRAE proposal to consolidate TCs
  - i. Reception to the proposal was unenthusiastic. The TC expressed concern over the lack of transparency and communication of the feedback the proposal is based on. It was also noted that the proposal will greatly increase the responsibility of subcommittee chairs, which may in turn discourage new members from taking leadership roles.

14. Schedule next meeting (S. Kulankara)

- Monday, 6/24/19, 4:15-6:30 PM in Kansas City, MO

15. The committee voted unanimously to adjourn the meeting at 6:38