



1791 Tullie Circle, N.E./Atlanta, GA 30329
404-636-8400

TC/TG/MTG/TRG MINUTES COVER SHEET

TC/TG/MTG/TRG No. TC8.5 DATE 6/24/2019

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

DATE OF MEETING 6/24/2019 LOCATION MARRIOTT EAST, KANSAS CITY, MO, USA

MEMBERS PRESENT	YEAR APPTD	MEMBERS ABSENT	YEAR APPTD	EX-OFFICIO MEMBERS AND ADDITIONAL ATTENDANCE	
Satheesh Kulankara	7/1/2016	John Thome	7/1/2016	Pedro Perez	Omer Sarfraz
Joseph Huber	7/1/2016	Kaushik Oza	7/1/2018	Ahmed Elatar	Saad Saleem
Kashif Nawaz	7/1/2017	Bryce Moore	7/1/2018	Minoo Mehdizadeh	Juli Fan
Adnan Ayub	7/1/2018			Vikrant Aute	Rong Gao
Evraam Gorgy	7/1/2018			Zahid Ayub	Timm Buehrle
Achim Gotterbarm	7/1/2017			Pratik Deokar	William Asher
Michael Wilson	7/1/2017			Benjamin Dingel	Jordan Morrow
Sankar Padhmanabhan	7/1/2015			Andreas Knoepfler	Guru Ravi
Lorenzo Cremaschi	7/1/2016			Liping Liu	
Steven Eckels	7/1/2015			Stanislav Perencevic	
				Nicholas Zupp	
DISTRIBUTION: All Members of TC/TG/MTG/TRG plus the following:					
TAC Section Head: Dustin Meredith			SH8@ashrae.net		
All Committee Liaisons As Shown On TC/TG/MTG/TRG Rosters (Research, Standards, ALL, etc.)					
Mike Vaughn, Manager Of Research & Technical Services			MORTS@ashrae.net		

1. Meeting called to order by chair Satheesh Kulankara at 4:18 PM. Scope of TC was read by the chair. There were 27 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, Joseph Huber, Kashif Nawaz, Adnan Ayub, Evraam Gorgy, Achim Gotterbarm, Michael Wilson, Lorenzo Cremaschi, Steven Eckels, Sankar Padhmanabhan,
 - 9 of 13 voting members were present, establishing quorum at the beginning of the meeting. A 10th voting member joined after the beginning of the meeting.
3. Review/approve minutes from previous meeting
 - Meeting minutes from Winter 2019 Atlanta were reviewed.
 - Steven Eckels moved to approve draft minutes as circulated, seconded by Adnan Ayub. Minutes were approved unanimously (9-0-0-CNV).
4. Chairman's breakfast meeting summary (Satheesh Kulankara)
 - TAC has received a lot of feedback on the proposal to reorganize TCs in functional groups. The feedback received indicated that there is a variety of opinions on the topic. TAC is going to review the comments to identify future steps. Only relatively small changes to improve efficiency are being implemented for now (such as all TC Chairs attending one meeting rather than separate meetings for each section to help identify best practices). No major changes are anticipated prior to Summer 2020. TAC reminded TC chairs that the main goal of the reorganization proposal is to use members' time efficiently and effectively.
 - ASHRAE president has offered to send letters to the employers of ASHRAE TC volunteers thanking them for the supporting their employee's service to ASHARE. All TC members will receive an e-mail with details on how to request the letter
 - Seminar and Forum proposals for Orlando meeting are due by August 2
 - Hightower award and Service to ASHRAE Research award nominations are due by September 1. Please let the chair know if any of the TC members would like to make a nomination
 - CEC is requesting tracks for ASHRAE conferences starting from Austin in Summer 2020
 - ASHRAE is looking for volunteers to chair program sessions and act as reviewers for technical papers. Please let the chair know if any of the TC members would like to volunteer for this effort.
5. Liaison/Section Head comments (Dustin Meredith)
 - TAC received significant feedback on the proposal to restructure TCs. The original proposal to restructure the TCs has been put on hold to review the feedback. An Ad-Hoc group is reviewing the feedback and will provide recommendations to TAC sometime during Fall 2019. TAC is still looking for feedback on streamlining TC structure to improve efficiency.
 - Dustin Meredith is rolling off as the section head after the Kansas City meeting. Dustin also received Service to ASHRAE award. TC 8.5 congratulated Dustin on receiving the award and thanked him for all his support for the TC during his time as the section head.
 - Kevin Mercer is the incoming section head for Section 8
6. Membership subcommittee report (Satheesh Kulankara)
 - Updated roster for the 2019-2020 society year is not yet available
 - 3 voting members rolling off (Steven Eckels, John Thome, Sankar Padhmanabhan)

- Vikrant Aute and Stanislav Perencevic will be rolling on as voting members after the Kansas City meeting
- Kashif Nawaz will continue as research chair.
- Pedro Perez will take over for Joseph Huber as webmaster
- Adnan Ayub will be the new handbook subcommittee chair
- Minoos Mehdizadeh will be the new 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.
- There was an open call for others interested in committee membership

7. Handbook subcommittee report (Adnan Ayub)

- Two new section drafts were circulated prior to the meeting for review. One section is a new section about falling film evaporators and the other section is a section summarizing results of RP1556
- Several minor changes were recommended by the committee. The subcommittee chair will work on updating the sections with the comments received and recirculated back to committee for review prior to Orlando meeting. The plan is to have the sections to be voted on at the Orlando meeting.

8. Program subcommittee report (Minoos Mehdizadeh)

- For the Kansas City conference
 - i. 168 abstracts submitted for conference papers and extended abstract papers, 125 were approved and 61 papers presented.
 - ii. 110 Seminars were submitted, 73 presented
 - iii. 20 technical papers were received and 11 papers presented
 - iv. 8 workshops submitted, 4 were scheduled
 - v. 5 panels submitted, 3 scheduled
 - vi. 3 debates submitted, 2 scheduled
- Discussion on submitting a seminar program titled “Innovative technologies and design for shell and tube heat exchangers” for Orlando (Winter 2020) with the topics below. John Huber moved to approve the submission of the seminar session. Achim Gotterbarm seconded. The motion was approved 7-0-0-CV.
 - i. Advances in Heat Transfer using Enhanced Chiller Tubes (Andreas Knoepfler)
 - ii. Boiling of Ammonia in a vertical enhanced tube bundle under annular flow (Adnan Ayub)
 - iii. An Axial Resistance-Varying Method for Improved Quantification of Enhanced Surface Condenser Tube Performance (Cameron Nelson)

9. Standards subcommittee report (Joseph Huber)

- SPC 24 submitted the approved draft standard to ASHRAE for publication review. There were no comments during the public review. SPC 24 has received the final version of the standard last week for editorial review. Once the editorial review is completed, the updated standard will be published.
- No actions are needed on Standards 22 and 181 at this time

10. Webmaster report (Pedro Perez)

- The website is up to date as of the Summer 2019 conference.

11. MTG liaison report (Satheesh Kulankara)

- Three research projects were discussed during the Kansas City meeting
 - i. RP1806 – Post-ignition simulation for A2L and A3 refrigerants. The MTG needs to discuss alternate paths for analysis.
 - ii. RP1808 – Assessment of field-made mechanical joints. Report was approved by the MTG and will be available from the ASHRAE website shortly
 - iii. RP1885 – Study of combustion by-products was submitted to RAC and was returned with comments. The WS is being updated based on the RAC comments
- Final report from RP 1807 – Guidelines for safe handling of flammable refrigerants is available from the ASHRAE website
- There is a seminar session sponsored by the MTG at the Kansas City meeting on Tuesday, 6/25

12. Research subcommittee report (Kashif Nawaz)

- ASHRAE has started work on developing a new strategic research plan.
- ASHRAE has plans to start setting 10% of research funds aside for publication authors to focus on. A pilot project is being selected for this initiative.
- ASHRAE is working on giving guidelines for costing of new research projects. This will be based on an analysis of recently completed research projects.
- There is a new work statement template for new research proposals that includes a section for a simplified description of new projects for research promotion activities
- Nominations for service to ASHRAE research awards are due on Sep 1
- Omar Saffraz won the Homer Addams award for work on RP-1742
- PMS Chair needs to ensure that Research Liaison and ASHRAE manager of research are invited to all meetings for related to an active project
- (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 has completed the 4th of 5 test series and is about to start work on the 5th test series. Once data collection is completed, model development and predictive work will follow. The project is expected to be completed by February 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. PI is Prof. Lorenzo Cremaschi from Auburn University
 - iii. The project has just started. The PI presented plans for the project during the research meeting. Descriptions of the planned test apparatus and an expected uncertainty analysis was provided during the meeting.
 - iv. There are two refrigerants one of which is R1234ze. The 2nd refrigerant will be decided in consultation with the PMS
- (E. Gorgy) TRP1731 – Heat Transfer Performance of Medium Pressure Lower GWP Refrigerants in a Flooded Evaporator Comprising an Enhanced Tube Bundle
 - i. RAC returned the WS with comments. Evraam Gorgy is the lead author of the WS. Evraam has not yet received the comments from RAC and will update the WS for resubmission after reviewing the comments.
- (K. Nawaz) RTAR is in progress for CO₂ condensation on tubes applicable to cascade systems. K. Nawaz will circulate the document to the TC members for approval.

- TC is looking for an author for an RTAR on condensation of lower GWP refrigerants on tube bundles
- Vikrant Aute and Mike Wilson will work on a draft RTAR on tube-in-tube fluted tube heat exchanger focused on condensation.

13. New business

- No new business

14. Schedule next meeting (S. Kulankara)

- Monday, 2/3/20, 4:15-6:30 PM in Orlando, FL

15. The committee voted unanimously to adjourn the meeting at 6:27