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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. TC 8.5 \_\_\_\_\_ DATE 5/2/2017

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

DATE OF MEETING JANUARY 30, 2017 LOCATION LAS VEGAS, NV, USA

MEMBERS PRESENT	YEAR APPTD	MEMBERS ABSENT	YEAR APPTD	EX-OFFICIO MEMBERS AND ADDITIONAL ATTENDANCE	
Satyam Bendapudi	07/01/2016	John Thome	07/01/2016	William Asher	Yirong Jiang
Sankar Padmanabhan	07/01/2015			Baolute Ren	Amir Jokar
Steven Eckels	07/01/2015			Cancan Zhang	Icksoo Kyung
Joseph Huber	07/01/2016			Kashif Nawaz	Kaushik Oza
Zahid Ayub	07/01/2014			Aui Popi	Chao Shen
Benjamin Dingel	07/01/2014			Achim Gotterbarm	Ratnesh Tiwari
Lorenzo Cremaschi	07/01/2016			Steven Trimble	Pedro Perez
Andreas Knoepfler	07/01/2016			Michael Wilson	Minoo Mehdizadeh
Yang Zou	07/01/2016			Andrea Bigi	
Satheesh Kulankara	07/01/2016			James Bogart	
				Evraam Gorgy	
<b>DISTRIBUTION: All Members of TC/TG/MTG/TRG plus the following:</b>					
TAC Section Head: Dustin Meredith			<a href="mailto:SH8@ashrae.net">SH8@ashrae.net</a>		
All Committee Liaisons As Shown On TC/TG/MTG/TRG Rosters (Research, Standards, ALL, etc.)					
Mike Vaughn, Manager Of Research & Technical Services			<a href="mailto:MORTS@ashrae.net">MORTS@ashrae.net</a>		

1. Meeting called to order by chair Satyam Bendapudi at 4:20 PM. The scope of the TC was read by the acting chair. There were 29 attendees at the meeting. The attendees introduced themselves.
2. Establishment of Quorum
  - The following voting members were present at the meeting: Satyam Bendapudi, Yang Zou, Satheesh Kulankara, Sankar Padmanabhan, Steven Eckels, Joseph Huber, Andreas Knoepfler, Zahid Ayub, Lorenzo Cremaschi, Benjamin Dingel
  - The following voting member were absent at the meeting: John Thome
  - 10 out of 11 voting members were present at the beginning of the meeting, establishing quorum.
3. Review/approve minutes from previous meeting
  - The meeting minutes from the Summer 2016 St. Louis meeting were reviewed and approved without any changes.
  - Zahid Ayub moved to accept the draft minutes. Sankar Padmanabhan seconded. The minutes were approved 10-0-0-CV by the TC voting members.
4. Chairman's reports/comments
  - Satyam Bendapudi attended the Chair's breakfast and provided comments that are summarized below
    - ASHRAE is deploying a new technology portal for journal articles and technical papers (URL: [technologyportal.ashrae.org](http://technologyportal.ashrae.org))
    - One new MTGs has been formed. MTG.ACR (Air Change Rate). If anyone from TC 8.5 would like to represent TC 8.5 at MTG.ACR, please contact committee chair Satyam Bendapudi.
    - ASHRAE MOP been modified (relatively small changes)
    - 2017-2018 roster update is underway
    - Seminar and Forum proposals for Summer 2017 meeting at Long Beach are due on Monday, Feb 6, 2017.
    - RAC is prioritizing research affecting the residential sector
    - CEC has a standing request for future program tracks and sessions. CEC is looking for more volunteers.
    - Handbook Committee is looking at trends that show the number of revisions to handbooks dropping in the last several years.
    - Joseph Huber has won the Service to ASHRAE Research award.
5. Section Head (Dustin Meredith) Comments
  - Section head did not have any further comments.
6. Liaison Comments
  - Prakash Dhamsala (Handbook Liaison)

- Request to evaluate results from research projects from all over the world for inclusion in ASHRAE handbooks

#### 7. Membership Subcommittee Report (Kaushik Oza)

- Membership subcommittee chair Kaushik Oza presented a report on the TC membership and reviewed the changes to the roster. Evraam Gorgy rolled out as a voting member to avoid conflicts as a result of a new employer. Andreas Knoepfler rolling out as voting member at the end of June 2017. Achim Gotterbarm and James Bogart to roll in as new voting members for 2017-2018 society year.
- TC 8.5 has 60 members

#### 8. Handbook Subcommittee Report (Sankar Padmanabhan)

- TC 8.5 is responsible for two chapters in the HVAC Systems and Equipment handbook. The next update is 2020. Revised chapters are due by the middle of 2019.
- Any TC member can go to the online authoring portal and make revisions to the document. Handbook Subcommittee chair can restrict access if there are too many changes.
- Handbook Subcommittee chair made a request to the TC members to help change the images of equations in the current version to actual equations for the upcoming version

#### 9. Program Subcommittee Report (Steven Eckels)

- There are no technical sessions sponsored by TC 8.5 at the Las Vegas meeting
- There is a track for heat exchangers at the Winter 2018 Chicago meeting. MTG.Low GWP is also considering putting together a mini-track for Chicago. Authors are encouraged to submit conference papers on low GWP refrigerants to these tracks.
- Steve Eckels proposed a motion to submit a conference paper session on fouling and corrosion (exact title to be decided later) for Chicago and to seek co-sponsorship from TC 8.4 for this session. Zahid Ayub seconded the motion. Motion was approved 10-00-CV.
- Sankar Padmanabhan proposed a motion to submit a conference paper session on the effect of void fraction of heat exchanger operation and performance (exact title to be decided later) for Chicago. Steven Eckels seconded the motion. Motion was approved 10-0-0-CV.

#### 10. Standards Subcommittee Report (Joseph Huber)

- TC 8.5 is responsible for 3 standards: Standard 22 MOT for water cooled condensers, Standard 181 MOT for liquid to liquid heat exchangers and Standard 24 MOT for rating liquid coolers.
- ASHRAE provided comments questioning whether Standard 22 conforms to the mandatory language requirement. As a result, there was a discussion in the TC on whether the standard conformed to mandatory language requirement. After discussion,

Joseph Huber proposed a motion for the TC to affirm that the existing Standard 22 meets mandatory language requirements. Zahid Ayub seconded the motion. The motion was approved 10-0-0-CV.

- There was a discussion on updating a reference included in Standard 22 from IEEE 120 to ASHRAE 41.11-2014. This standard is referenced in a note in Standard 22. There was a discussion on changing the note to an informative note to clarify requirement. After discussion, Joseph Huber proposed a motion to make the change to the reference from IEEE 120 to ASHRAE 41.11-2014 and to change the word "note" to "informative note" in the Standard 22 and for the committee to affirm that these two changes are editorial in nature and do not constitute a substantive change to the standard. Steven Eckels seconded the motion. The motion was approved 10-0-0-CV by the TC. Joseph Huber will fill out the necessary forms for these changes and send them to TC Chair Satyam Bendapudi for review. Chair will review the form and forward to ASHRAE.
- ASHRAE requested that TC 8.5 affirm that Standard 181 conforms to mandatory language requirements. Joseph Huber made a motion to affirm that Standard 181 conforms to mandatory language requirements. Andreas Knoepfler seconded the motion. The motion was approved 10-0-0-CV
- Standard 24 is undergoing major revision. The first meeting of the SPC for Standard 24 is on Tuesday, 1/31/2017. The revision will follow ANSI guidelines due to changes in the PC MOP.

#### 11. Journal/Insights/Webmaster Report (Joseph Huber)

- The TC website is up to date

#### 12. MTG.Low GWP Liaison (Steven Eckels)

- TC 8.5 is a member of the Low GWP Refrigerants MTG. Steven Eckels is the primary representative of TC 8.5. Satheesh Kulankara is the first alternate representative. There is a lot of research activity in MTG. Low GWP. Three research projects are being considered. Bidders were selected for RP 1806 and RP 1807. RP 1808 is being evaluated.

#### 13. Research subcommittee report (Kashif Nawaz)

- RAC has approved 3 RTARS since the last ASHRAE meeting
- RAC has reviewed 4 WS since the last ASHRAE meeting and has returned 3 with comments.
- If WS are conditionally approved, all items in the conditional approval need to be addressed. All cosponsoring TCs have to vote. Any abstentions or negative votes need to be explained with details. If external agencies are supporting the project, a letter of support from the agency is recommended to be included with the WS submission. The timeline and milestones for a project should be included in the WS. Bidders should also provide a timeline and milestones for the project.

- RAC has resumed the innovative research project. There were 33 innovative research proposals. RAC has selected 6 for funding.
- Joseph Huber has won the Service to ASHRAE Research award. The TC applauded Joseph Huber for the achievement
- A meeting to review research activities was held on Sunday, January 29.
- RP1677 (Measurement and Prediction of Waterside Fouling Performance of Internally Enhanced Condenser Tubes Used in Cooling Tower Applications)
  - PMS chair Benjamin Dingel provided an updated on the activities within RP1677. The PI provided an updated on the status of the project during the research review meeting. There were also teleconference between the PMS and PI between the Summer 2016 St. Louis and Winter 2017 Las Vegas meetings. The construction and shakedown of the experimental facility is now complete. The focus has changed from facility construction to testing. The PI has developed a process for controlling the water chemistry within specifications. The PI has started tests with high fouling potential water at medium velocity. There is a concern that particulate fouling may be uncontrolled during the testing. This will require monitoring residues in the test facility water and may require filtration to be added. The PMS and PI have agreed to conference calls between ASHRAE meetings to review progress and address concerns. PMS will also address specific questions and concerns that came up during the main TC meeting from the TC members and provide feedback to the PI.
- TRP1800 (Spray Evaporation on Enhanced Tube Bundles with Low GWP pure Refrigerants & Refrigerant/Miscible Oil Mixtures)
  - This is a TRP proposed by TC 1.3 and cosponsored by TC 8.5. RAC returned the WS for TRP1800 largely because of missing milestones. There were also some comments about the scope of the project. There was a discussion during the meeting. Zahid Ayub made a motion for TC 8.5 to cosponsor TRP1800 and send comments to TC 1.3 on some changes to the WS. Kashif Nawaz seconded the motion. The motion was approved 10-0-0-CV. Benjamin Dingel volunteered to collect the comments from TC members and forward to TC 1.3.
- TRP 1731 (Heat Transfer Performance of Medium Pressure Lower GWP Refrigerants in a Flooded Evaporator Comprising an Enhanced Tube Bundle)
  - There was a discussion on the WS for TRP 1731. After discussion, Joseph Huber proposed a motion to approve WS without further revisions for submission to RAC. Kashif Nawaz seconded the motion. The motion was approved 10-0-0-CV.

#### 14. New Business

- Benjamin Dingel provided an update on the revisions to ASME pressure vessel code. There is another meeting at ASME middle of February 2017 to review the proposed changes.

15. Schedule Next meeting

- o Chair scheduled the next meeting for Monday, June 26 from 4:15 PM to 6:30 PM during the ASHRAE meeting in Long Beach. The exact location for the meeting will be published in the meeting guide.

16. TC meeting adjourned at 6:05 PM