



**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. 8.4 DATE May 2, 2017

TC/TG/MTG/TRG TITLE Air-to-refrigerant heat transfer equipment

DATE OF MEETING Jan 31, 2017 LOCATION Las Vegas, NV

MEMBERS PRESENT	YEAR APPTD	MEMBERS ABSENT	YEAR APPTD	EX-OFFICIO MEMBERS AND ADDITIONAL ATTENDANCE
Dr. Sankar Padhmanabhan	2016	Mr. Shenghan Jin	2016	Please see attached
Dr. Kashif Nawaz	2016	Dr. Liping Liu	2015	
Dr. Chad Bower	2014	Dr. Ebrahim S. Al-Hajri	2016	
Dr. Omar Abdelaziz	2016	Mr. Ankit Sethi	2016	
Prof. Man-Hoe Kim	2013			
Dr. Hyunyoung Kim	2014			

DISTRIBUTION: All Members of TC/TG/MTG/TRG plus the following:	
TAC Section Head: Dustin Meredith	SH0804@ashrae.net
All Committee Liaisons As Shown On TC/TG/MTG/TRG Rosters (Research, Standards, ALI, etc.)	See ASHRAE email alias list for needed addresses.
Mike Vaughn, Manager Of Research & Technical Services	MORTS@ashrae.net

I. CALL TO ORDER

Sankar Padmanabhan, the Chair of TC 8.4, called the meeting to order at 3:30 p.m. The title, purpose and scope of the TC were read.

II. SELF INTRODUCTIONS AND ATTENDANCE:

Everyone present introduced themselves, and signed a roster sheet. Three (3) YEA members were recognized and appreciated for their participation. Chair identified 5 out of 10 voting members in attendance. Quorum was not met at the start of the meeting.

Voting Members at this meeting in Las Vegas are as follows:		End of term (Jun 30 of...)	Present
1.	Dr. Sankar Padhmanabhan (Chair)	(2019)	Yes
2.	Mr. Shenghan Jin (Vice-chair)	(2019)	No
3.	Dr. Kashif Nawaz (handbook sub. Chair)	(2019)	Yes
4.	Dr. Liping Liu (membership)	(2018)	No
5.	Dr. Chad Bower (research sub. chair)	(2018)	Yes
6.	Dr. Ebrahim S. Al-Hajri	(2020)	No
7.	Mr. Ankit Sethi	(2020)	No
8.	Dr. Omar Abdelaziz	(2020)	Yes
Voting Member non-quorum in this meeting			
9.	Prof. Man-Hoe Kim	(2018)	Yes
10.	Dr. Hyunyoung Kim	(2017)	Yes
Total Present			5 out of 10 VMs
Quorum			NO*

For those who could not attend the meeting, the option of E-meeting is available. However it is only restricted to voting members, officers, and PMSC chair and PMSC members. Corresponding members were not included at this point due to bandwidth constraints. Chair extended a warm welcome to all members and guests attending this meeting. There were also 28 corresponding members and 13 guests in attendance. Satyam Bendapudi, Secretary of TC 8.4, kept record of the meeting.

III. MEMBERSHIP REPORT

Chair presented the Membership Committee report. The TC has 10 voting members including 2 non-quorum. Dr. Hyunyoung Kim and Mr. Ankit Sethi will roll off as voting members after the Annual Meeting in Long Beach. Dr. Yang Zou will roll in as a voting member. It was brought to the Committees attention that the TC roster had two voting members from ORNL. Chair requested the two members to identify who would remain and who would withdraw. Dr. Abdelaziz agreed to roll off; Dr. Kashif Nawaz would continue.

IV. CHAIRS REPORT

Chair presented highlights from the Chair's breakfast. Report is appended to these minutes.

V. SECTION HEAD REPORT

The Section 8 Head Dustin Meredith commented that the meeting is well attended. No new announcement was made from the board. Section Head encouraged members to keep their bio up to date, and asked TC if there is any questions and offered any assistance if needed.

VI. HANDBOOK SUBCOMMITTEE REPORT

Handbook Sub-committee chair, Kashif Nawaz, relayed that the 2020 version of the following chapters were coming up for review:

Chapter 23 air cooling & dehumidification coils

Chapter 39 condensers

Chapter 27 air heating coils

Drafts of these chapters are available online through the ASHRAE website. Chari encouraged members to review the chapters and recommend updates, particularly to consider incorporating real-world examples from ASHRAE sponsored projects.

VII. PROGRAM SUBCOMMITTEE REPORT

Program Sub-committee chair, Ed Vineyard, presented the report. TC8.4 sponsored 1 session and co-sponsored 1 session during the Las Vegas meeting. The sessions were well attended. For Long Beach TC8.4 will submit one program on corrosion & fouling aspects of HX. Three speakers were identified. Advanced heat exchangers with polymer fillers as a paper was also proposed as a topic. Lorenzo Cremaschi called for co-sponsorship on papers related to fundamentals of frost, defrost & re-frost. Chad Bowers reported on a session related to Corrosion held in Las Vegas that he chaired. It was well presented and attended. Optimization of HVAC applications was proposed by Vikrant as a track for interest from TC8.4. Chair thanked the reviewers and reminded all members to update their profiles with keywords to facilitate selection of appropriate.

VIII. MINUTES OF PREVIOUS MEETING

Meeting minutes from the St. Louis meeting could not be voted on for approval due to lack of quorum. The action was taken to vote via email ballot.

IX. WEBMASTERS REPORT

Webmaster Christian Ludwig, reported that all approved prior meeting minutes had been posted to the TC8.4 web site. A proposal was made to provide links to recently completed TC8.4 sponsored projects on the site. Christian agreed to look into enabling that.

X. MTG LIAISON REPORT

MTG Liaison, Vikrant Aute, presented a report on Low GWP MTG. This MTG will coordinate TC/TG/TRG technical activities to help transition the HVAC&R industry to sustainable lower Global Warming Potential (GWP) alternative refrigerants. The MTG will further request participation from US DOE, AHRI, and others with shared goal. The MTG responsibilities include research, development and presentation of technical programs of all types on alternative lower GWP refrigerants. More details about the scope, objectives, impact and previous meeting minutes can be found at:

<https://www.ashrae.org/standards-research--technology/technical-committees/section-mtg-multidisciplinary-task-groups/mtg-lowgwp-lower-global-warming-potential-alternative-refrigerants>

17 TCs, 2 Standards and 4 External Organizations (AHRI, AHAM, UL and UNEP) are represented on this MTG. The MTG meets twice during each ASHRAE meeting

and also has intermediate web-meetings.

Highlights for January 2017 (before ASHRAE Meeting)

- A2L Refrigerant Research Kickoff meeting happened in July 2016. Individual projects and status listed below and details are available in the meeting minutes posted on the above website.
- WS1806: Flammable Refrigerants Post-Ignition Simulation & Risk Assessment; 12 month duration, motion to award this to Contractor-X approved. (Dec 2, 2016 Meeting). Project started on 1/2/2017.
- WS1807: Guide to Flammable Refrigerant Handling, Transporting, Storing and Equipment Servicing, Installation and Dismantling; Single Bid received. MTG to vote in Jan-2017 ASHRAE meeting, on whether to award or rebid.
- WS1808: Servicing and Installing Equipment using Flammable Refrigerants: Assessment of Field-Made Mechanical Joints; Revised in previous web meetings and now Approved for Bid (Nov 7, 2016 meeting)
- MTG to co-sponsor three program submissions for Long Beach meeting (to be voted in Feb 2017).
- MTG to meet on Sunday and Wednesday of the ASHRAE meetings. Sunday meeting (5-6pm) is for research project updates and Wed meeting (10am-12pm) is the main meeting.

XI. RESEARCH SUBCOMMITTEE REPORT

Research Sub-committee, Chad Bowers, presented a report from the Research chair's breakfast.

- RP 1645 work has been completed and the report being prepared. A 6 month no-cost extension is recommended to enable the completion of the report.
- RP 1705 literature survey has been completed. Samples from one location have been completed. Open presentations recommended for Long Beach during Res SC meeting time.
- RTARs have been submitted to RAC but no response received.
- WS 1683 re ammonia in u-bends was conditionally accepted, but was sent back for details on milestones & deliverables.
- TC8.4 co-sponsored (with TC8.11) RP1785 refrigerant charge modeling. The PES has evaluated the proposals and made a recommendation. TC8.11 has accepted the recommendation from the PES.
- RP1564 – study of oil miscibility in refrigerants inside coils is nearing completion.
- An RTAR on bio-inspired heat exchangers has been sent for review and is to be submitted to RAC by May.

XII. STANDARDS SUBCOMMITTEE REPORT

Standards sub-committee chair, Bill Fox, reported on:

- Standard 20 – remote air cooled condensers. The sub-committee is making progress. MOT64 for evaporative condensers is to be leveraged and it is expected that the sub-committee will have a good draft by the Long Beach meeting.
- Standard 25 – MOT for air coolers. The sub-committee is making progress. Updates are expected to be completed before June Meeting and submitted to the TC for review.

VII OLD BUSINESS

None.

XI NEW BUSINESS

None.

XII ADJOURNMENT

Due to lack of quorum, the meeting was adjourned without vote.