

AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING ENGINEERS, INC.

1791 Tullie Circle, NE / Atlanta, GA 30329
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TC/TG/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/TRG No. 8.4

TC/TG/TRG TITLE: Air-to-Refrigerant Heat Transfer Equipment

DATE OF MEETING: January 26, 2016 LOCATION: Orlando, FL

No.	First Name	Last Name	Affiliation	VM	CM	YEA Member	Guest	Email
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DISTRIBUTION

ALL MEMBERS OF TC/TG/TRG

TAC Chairman: _____ Bryan Becker _____

TAC Section Head: _____ Dustin Meredith _____

Professional Development: _____ Gordon Holness _____

LIAISONS:

RAC Research: _____ David Yashar _____

Program: _____ Lynn Werman _____

Standards: _____ Rick Larson _____

Handbook: _____ Russ Lendeman _____

Special Pubs: _____ Julia Keen _____

Chapter Technology Transfer: _____ Nathan Hart _____

STANDARDS STAFF LIAISON: _____ Claire Ramspeck _____

TECH SERVICES/RESEARCH STAFF LIAISON: _____ Mike Vaughn _____

FINAL APPROVED MINUTES
ASHRAE TECHNICAL COMMITTEE 8.4
AIR-TO-REFRIGERANT HEAT TRANSFER EQUIPMENT
ORLANDO, FL
TUESDAY, JANUARY 26, 2016

I CALL TO ORDER

Lorenzo Cremaschi, the Chair of TC 8.4, called the meeting to order at 3:31 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. Lorenzo Cremaschi identified 8 out of 9 voting members.

Voting Members at this meeting in Orlando are as follows:	End of term (Jun 30 of...)	Present
1. Dr. Lorenzo Cremaschi (chair)	(2016)	Yes
2. Dr. Sankar Padhmanabhan (vice-chair)	(2019)	Yes
3. Dr. Chad Bower (research sub. chair)	(2018)	Yes
4. Mr. Shenghan Jin (secretary)	(2019)	Yes
5. Dr. Vikrant Aute (MTG LowGWP Liason)	(2016)	Yes
6. Dr. Kashif Nawaz (handbook sub. Chair)	(2019)	Yes
7. Dr. Liping Liu (membership)	(2018)	Yes
Voting Member non-quorum in this meeting		
8. Prof. Man-Hoe Kim	(2018)	Yes
9. Dr. Hyunyoung Kim	(2017)	No
Total Present		8 out of 9 VMs
Quorum		YES

For those who could not attend the meeting, the option of E-meeting is available. However it is only restricted to voting member, officer. Corresponding member is not included at this point due to bandwidth constraints.

Lorenzo Cremaschi extended his warm welcome to all members and guests attending this meeting. There were also 30 corresponding members and 7 guests in attendance. There were 13 members and guests who were also YEA members. Shenghan Jin, the secretary of TC 8.4, kept record of the meeting.

II ROSTER CHANGE

Starting 07/01/2016, Dr. Lorenzo Cremaschi (chair) will roll off. Dr. Sankar Padhmanabhan will be the new chair. Mr. Shenghan Jin will be the vice chair. Dr. Satyam Bendapudi will be the secretary. Dr. Kashif Nawaz will be the handbook subcommittee chair. As of today, we have 7 voting members, 2 non-quorum voting members, and over 100 active corresponding members on the TC.

III NOTE FROM SECTION HEAD:

The new Section Head Dustin Meredith made self-introduction. He noticed 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.

IV REPORT FROM PROGRAM LIAISON

None at this time

V MINUTES OF PREVIOUS MEETING

Meeting minutes from the TC 8.4 meeting in Atlanta were voted for approval. Chad Bowers took motion, Sankar Padhmanabhan seconded. 7 voted in favor, 1 abstained (7-0-1) Vikrant Aute abstained due to delay from a previous meeting. The meeting minutes was approved by the voting members.

VII Chairman's notes on TC chair meeting:

Lorenzo read the minutes from the TC chair handout distributed during the breakfast chair meeting. The relevant minutes are attached below.

A. NEW!

1. 2015-2016 Hightower Award Recipient – Steve Duda, TC 4.3 & TC 9.1

Mr. Steve Duda's contributions to ASHRAE TC 4.3 and TC 9.1 in the past four years include 8 program presentations and 19 successful honors & awards nominations. He has also written 8 articles for the ASHRAE Journal and contributed to 6 Handbook chapters. Lastly, he has served in the past in all three officer positions (Chair, Vice Chair, and Secretary) for TC 9.1.

Mr. Duda's contributions to ASHRAE technical committees, and especially to TC 4.3 and TC 9.1 in the last four years, have been exemplary and make him a well deserving recipient of the George B. Hightower Technical Achievement Award.

2. 2015-2016 Service to ASHRAE Research Award Recipient – NONE

No nominations were received this year from any TCs for the Service to ASHRAE Research Award. The submission deadline for TC nominations for this award is September 1st each year. If you believe you have a deserving candidate on your TC, please go to the ASHRAE Research page (www.ashrae.org/research) and review details on this award under the heading Research Grants and Awards.

3. Four New Multidisciplinary Task Groups (MTGs) have been formed since Atlanta meeting

MTG.ASEC – Avoided Source Energy Consumption Due to Waste Heat Recovery and Heat Pump Technologies

Scope: MTG.ASEC will coordinate development of credible quantification methodologies of the avoided electric power generation and/or primary energy consumptions resulting from the application of heat pump and waste energy recovery technologies. Responsibilities of the MTG include the development of research and/or tool needs, and development of technical programs.

Ability to quantify avoided source energy reduction or recovery potentially impacts any building efficiency analysis. This MTG has the potential to significantly impact a number of other TCs including 1.5, 2.5, 2.8, 4.7, 5.5, 6.2, 6.8, 6.9, 7.4, 7.6, 8.7, 8.11 and

potentially more. Efforts have been made to interface with all of these TCs to discuss the potential development in this MTG.

The chair of this MTG is Cary Smith.

MTG.IAST – Impact of ASHRAE Standards and Technology on Energy Savings/Performance

Scope: MTG.IAST will generate research proposal(s) and work with the selected consultants/contractors to conduct research, collect and organize the data in a useful and conveniently summarized format for Initiative 1B of the Society Strategic Plan

“ASHRAE will research the true impact of its standards and technology” as requested by the BOD.

This MTG will provide information on the global impact of ASHRAE’s technology and standards efforts allowing ASHRAE’s groups to make adjustments in our efforts as required. The time period of this MTG is expected to be two years to no more than four years.

The chair of this MTG is Dan Pettway.

MTG.ISPAQE – Indoor Swimming Pool Air Quality and Evaporation

Scope: MTG.ISPAQE will coordinate the research project which will assess/identify the factors affecting air quality problems at indoor swimming pools including: air handling/air distribution system design and operation; water quality/water chemistry; pool water treatment operation and maintenance; pool types(flat water, agitated water, hot water); bather load; and evaporation rates of indoor pools to recommend changes to the ASHRAE Standard 62.1 (Ventilation for Acceptable Indoor Air Quality) indoor pool & deck ventilation rate and update the evaporation formula in the ASHRAE HVAC Applications Handbook volume.

This MTG will have a direct impact on the activities of the SSPC 62.1 and technical committees: TC 8.10 (Mechanical Dehumidification Equipment and Heat Pipes), TC 4.3 (Ventilation Requirements and Infiltration) and TC 9.8 (Large Building Air-Conditioning Applications), as well as, the Center for Disease Control (CDC) sponsored Model Aquatic Health Code (MAHC) code for design and operation of indoor pools.

The chair of this MTG is Keith Coursin.

MTG.OBB - Occupant Behavior in Buildings

Scope: MTG.OBB will coordinate TC/TG/TRG technical activities to help implement the recommendations from this MTG. This includes coordinating efforts in education, modeling, research, standards, marketing, advocacy, and fund raising within

ASHRAE. Research project initiation as the sponsoring committee is included in the scope of this MTG.

Occupant behavior in buildings refers to occupants’ comfort preference, presence and movement, and interactions with building systems that have impact on performance (thermal, visual, acoustic, and IAQ) of buildings. The interactions include adjusting the thermostat settings, opening or closing windows, dimming or turning on/off lights, pulling up or down window blinds, switching on or off plug-loads, and consuming domestic hot water.

The chair of this MTG is Tianzhen Hong.

For more information on these four new MTGs and the seven other existing MTGs, please go to the MTG section on the following web page: <http://www.ashrae.org/tcs> .

If your TC would like to have a voting representative on a particular MTG, please contact the ASHRAE Manager of Research and Technical Services, Mike Vaughn, at MORTS@ashrae.net.

4. Updated TC Website Template – Initial Feedback, if any?

Since the Atlanta meeting, the Society’s Electronic Communication Committee (ECC), ECC staff, TAC volunteers Gage and Cooper, and a consultant have been working to modernize and streamline the template for TC websites and now most of the TC websites have been moved to

this new template. The new template so far includes WIZYWIG editing, automatic rosters, and simplified document uploading. There is no longer a need for HTML editing. If you have any feedback on the new template or suggestions for additional features, please let your Section Head and MORTS know.

5. New TC E-mail Position Aliases Created for 15-16 Society Year

New position e-mail alias addresses have now been created for each of the remaining mandatory positions of the Technical Committee management team (Secretary, Standards Sub. Chair, Program Sub. Chair, Handbook Sub. Chair, and Webmaster). The 15-16 E-mail Alias list is posted on the ASHRAE website www.ashrae.org/TCs under the heading Procedures, Forms & Information for TCs/TGs/MTGs and TRGs.

6. CEC & TAC are looking for your feedback on ASHRAE's Technical Program Submission Process

CEC and TAC are soliciting your feedback on ASHRAE's Technical Program submission process, particularly of your program submissions are frequently rejected and you are frustrated with the current process. Please send information on some of your past submissions and any process improvement suggestions that you might have to TAC member Kelley Cramm at TACcoord2@ashrae.net before June 1, 2016.

B. AT THIS MEETING

1. On-Site Training Options

i. TC/TG/TRG Chair's Training Workshop Reminder

Sunday January 24th, 9:45-10:45 AM in Orlando V Room (Lower Lobby Level) in the Orlando Hilton Hotel. The presentation will start with a brief discussion of website issues observed while prepopulating the TC websites. The presentation will also inform the chairs about the new training webinars developed to help resolve some of the issues. Roster Update training will be the primary topic along with Refresher Training on TC Websites and Minutes.

ii. RAC's Research Subcommittee Chair's Breakfast

Monday, January 25th, 6:30 AM – 8:00 AM. Please encourage your Research Subcommittee Chair or another representative from the TC to attend this meeting so that your RAC Research Liaison (RL) can get an update on the TC's research activities and so that your RL can help resolve issues & questions that TC may have concerning their research program.

iii. TC Program Subcommittee Chair Training in Orlando

Tuesday, 1/26, 11:15AM – Noon, Room Lake Down B, (Lobby Level) Orlando Hilton Hotel. Don't complain about the meeting program and your TC's submissions if you have not been to training.

A few things you might learn in training are as follows:

- Incomplete program submissions is the biggest reason for rejection now. All information is needed up front for CEC selection process.
- A packaged session on a similar topic is the best way to greatly improve your chances for acceptance.
- There is no difference in how CEC handles 60 and 90 minute program slots. 60 minute slots are just as good as 90 minute slots if complete.

2. Location of Section Head Mailboxes & Free Wi-Fi Access at this Society meeting Mailboxes are located just outside ASHRAE Headquarters Office (Key Largo A – Lower Level – Orlando Hilton Hotel).

Also, Internet access and computers for e-mail are available in the Cyber Café located in the registration area during operating hours. Please be considerate to others and limit your usage to five minutes.

Wireless internet will be available in all meeting rooms at the Hilton. ASHRAE will be working with the internet provider to manage the bandwidth so that member expectations of accessibility and speed are fulfilled. We would like to request that everyone limit their usage to functions that do not use excessive bandwidth. Applications such as Facebook, YouTube, streaming video, etc. use excessive bandwidth. Wi-Fi Access: ASHRAE2016 is the network, orlando16 is password (case sensitive).

3. RPM (Remote Participation Meetings) being held in Orlando

The 9th RPM beta test (Remote Participation Meetings – Formerly known as E&P meetings), which allows some TC members to participate in the TC meeting from a remote location electronically, will occur in Orlando and the following fourteen TCs have agreed to participate in this test: TC 1.5, TC 1.12, TC 2.2, TC 4.2 (RP-1699 PMSC), TC 5.8, TC 6.8, TC 7.3, TC 7.9, TC 8.4, TC 8.8, TC 9.2, TC 10.2, TC 10.3 (RP-1569 PMSC)

– This represents a 20% increase over the number of RPM TC meetings hosted in Atlanta.

The chairs of those TCs participating should provide to their Section Head feedback on their RPM meeting experience before TAC meets on Wednesday morning, 1/27.

4. Women in ASHRAE Continental Breakfast – Monday, 1/25, 7 am to 8:30 am Orlando Hilton, Florida Ballroom 5-7, Lower Level

The purpose of this event is to encourage women to be active ASHRAE participants at the chapter, region, and/or society level and to provide ideas and information about how to do so. Current ASHRAE members will be on hand to provide insight and to share their experiences.

C. UPCOMING DEADLINES

1. 16-17 Roster Update Process & TC Input Deadline

Remember, the current 2015-2016 roster for your TC, TG or MTG is in effect until after the June meeting this year. The new committee rosters for Society year 2016-2017 will be created based upon the update information that each TC, TG or MTG provides to their section head at this meeting by midnight, Tuesday, 1/26/16 and these new rosters will go into effect on July 1, 2016. Please see your section head for the 2016-2017 Roster Update form if you still need a copy.

2. TC Activity Forms for the Orlando Meeting are due to Your Section Head before Wednesday, 1/27/16

TC/TG/TRG Activity Feedback Form (Excel) can be downloaded from the Technical Committee webpage under the “TC Forms and Documents” page - <https://www.ashrae.org/standards-research--technology/technical-committees/tc-forms-and-documents>. Section heads can also provide an electronic copy of the form if requested.

3. Seminar and Forum proposals for St. Louis are due by Monday, February 8th, 2016. Please visit the following site to submit your proposal: <http://ashraem.confex.com/ashraem/s16/cfp.cgi>

For more information, go to: www.ashrae.org/stlouis.

D. REMINDERS

1. 15-16 Rosters Access & Distribution - Remember, the current 2015-2016 roster for your TC, TG or MTG is in effect until after the June meeting this year – through Thursday, June 30th.

By now, each TC, TG and MTG chair should have received a PDF & MS-Excel file of their new 2015-2016 roster from their Section Head or staff for distribution to the committee. In addition, each member can view all of the rosters of their committees on the ASHRAE Website. Go to www.ashrae.org <http://www.ashrae.org>, click on the "Membership & Conferences" tab in the header, click on "My Membership" text in the left sidebar, and log in (if you have not logged in lately, you might need to set up a new username and password). Click on the "Update Your Bio / View or Edit Tour Profile" link. Now, you should see your current "bio info". Click on "Committees" on the left sidebar; all of the committees you are a member of will appear. Click on the "blue" roster text at the left hand side of a committee to reveal the roster with linked contact information.

Make sure everyone on your committee also knows how to access the roster.

The Provisional Corresponding Member (PCM) position is a relatively new position on TC/TG/TRG rosters. This position allows potential new members to be added by staff to the committee roster any time a request for membership is made by an individual. The position has a 2-year term on the committee. Staff will notify the chair and reissue a new roster to the committee chair any time a provisional member is added. The TC/TG/TRG chair has the option each year during the regular roster update process to convert provisional CMs that have been active participants on the committee the past year into regular CMs or voting members or drop them. If no action is taken, they will time expire from the roster and be removed by staff.

2. Useful TC/TG/TRG/MTG Chair Information and forms on ASHRAE website
Information for TC/TG/TRG and MTG chairs can be found on the Technical Committee page of the ASHRAE website at the following link: <http://www.ashrae.org/tcs>

3. Request for each TC to briefly review ASHRAE Code of Ethics at start of meeting See the following link for the latest version of the ASHRAE Code of Ethics:
<https://www.ashrae.org/about-ashrae/>

4. Make a Special Effort to welcome new Members, and Visitors to TC meeting Potential new members for your committee have been encouraged to drop-by your meeting. As a result, please make a special effort to recognize and warmly welcome all visitors to your meeting – A TC can never have too many willing and able volunteers.

5. Option for TC Subcommittee Meetings via Conference Calls and Web Meetings More and more TCs are taking advantage of a new Society service that allows TCs to hold subcommittee meetings by phone and/or web. Many TCs are finding this to be a more efficient way for them to conduct subcommittee business and it also allows TC members that can't travel to meetings on a regular basis a way to still contribute to the TC. Such a change can also eliminate potential conflicts with the TC's program sessions at Society meetings. Please pass your conference call/web meeting/webinar requests on to the Manager of Research and Technical Services, Mike Vaughn, at mvaughn@ashrae.org or MORTS@ashrae.net

6. Is Your Committee Website up to Date?

If not, please ask your webmaster to at least post the latest minutes and the Orlando meeting times and agenda. If your website has been neglected, add an action item for this meeting to appoint a responsible member of the TC/TG/TRG who will bring it back to life. The new TC website template has greatly simplified the duties of the TC webmaster and this form of communication is critical to the efficient operation of your committee, and for attracting new members.

Section Heads please highlight the information below in your meeting.

The recent conversion to a new TC website platform highlighted a couple areas where a refresher of the ASHRAE rules on website maintenance is warranted. First be aware that ASHRAE Products (i.e., handbook chapters, journal articles, final reports from research projects, etc.)

cannot be published on your TC's website. It is very appropriate to post the title and scope of the product and then link the reader to the ASHRAE bookstore or other location on the ASHRAE site where the product may be purchased. Any possible exceptions to this rule must be sent through Steve Comstock for review and approval (scomstock@ashrae.org). The second issue involves timely posting of the draft minutes. Draft minutes (and final, approved minutes from the prior meeting) should be posted to your website (or otherwise distributed to the members) by 60 days after the meeting. Please ensure that your secretary and webmaster are aware of this deadline. To assist your secretary in understanding the procedures for taking and reporting minutes, a video has been developed and posted on the Technical Committees' Training page (<https://www.ashrae.org/standards-research--technology/technical-committees/tc-training-and-presentations>). On the same page, a video has also been posted for use by webmasters to learn about the procedures and schedules for maintain the new websites.

7. TC 2015-2016 Master Calendar – Now Available through Google - The Technical Committee Master Calendar is now available through Google. In order to access this calendar you need to have a Google account.

Once you log into your Google account, follow the instructions below:

To add a friend's calendar, just follow these steps:

- At the bottom of the calendar list on the left, click Add and select Add a friend's calendar.
- Enter the appropriate email address (techservices1791@gmail.com) in the field provided, then click Add.

This calendar is public and will appear under 'Other Calendars' in the left column. To set up Google Calendar Sync to your Outlook:

- Make sure you're using a supported operating system and Outlook version.
- Download Google Calendar Sync (version 0.9.3.6) at
- http://dl.google.com/googlecalendarsync/GoogleCalendarSync_Installer.exe
- Once a dialog box appears, click Save File. The downloaded file should open automatically. If it doesn't, manually open it from your browser's download window.
- Click OK to confirm that you're aware this is an executable file.
- Read through the Google Calendar Sync Terms of Service, and click I Agree.
- Follow through the Installation Options and click Install to finish the set-up process.

Once Google Calendar Sync is installed on your computer, the Google Calendar Sync Settings window will appear:

In the Settings window, enter your email address and password and select the Sync Option you prefer. Read about each Sync Option.

You'll also be able to set the time interval for syncing to occur. Please keep in mind that 10 minutes is the minimum time interval allowed.

After the initial set-up, you can access the Google Calendar Sync Settings window again by double-clicking the calendar icon in your Windows System Tray.

E. RECENT ANNOUNCEMENT

1. RAC Prioritizing Research Topics Related to the Residential Sector

Starting in the 2015-2016, RAC will be prioritizing for bid accepted research topics that support Goal #3 below from the Research Strategic Plan.

Goal #3: To reduce significantly the energy consumption for HVAC&R, water heating and lighting in existing homes.

2. CEC's Standing Request for Future Society Meeting Program Track Suggestions The Conferences and Expositions Committee (CEC) oversees ASHRAE's annual and winter conferences and other specialty conferences and expositions globally. The CEC continually works to improve the conference experience for all attendees. To help keep a "pulse" on the technical issues facing professionals in the HVAC&R marketplace, and to create meetings that reach all of ASHRAE's constituencies, the CEC seeks ideas for tracks for the Long Beach 2017 meeting and annual and winter conferences beyond as well as topics for specialty conferences from TC members.

Please submit your suggestions to ASHRAE Staff member Tony Giometti (Giometti@ashrae.org). You can also add your track suggestion in the "Comment" section of the TC Activity form for the Atlanta meeting.

3. CEC Always Seeks TC Volunteers willing to Support Content Development and Quality Control for Society Technical Program at Society Meetings

Provide to your Section Head after each Society meeting a list of qualified volunteers from your TC that are potential Technical Session chairs and reviewers of session papers that are related to TC's scope for use by the Conferences & Expositions Committee (CEC) in developing technical content for future technical programs.

4. TAC Presentation Template for TC members to use with local Chapter

The new presentation template allows TC members, without a lot of effort, to give a presentation to their local chapter on TAC and the TCs in general and to also customize a few slides with information specific to their own TC or TCs. The template is posted now on the Technical Committee page of the ASHRAE website for download

5. Employment Discipline added to ASHRAE BIO Online Input Form

A new input field titled Employment Discipline has been added to the ASHRAE online member (BIO)graphical input form and TAC would like ALL TC members to self-declare their employment discipline prior to the start of the new Society year on July 1, 2016 by going to the Members Only section and enter their employment discipline information. The following link should take you directly to the screen, which is located under demographics: (<https://eweb.ashrae.org/eweb/DynamicPage.aspx?Site=ASHRAE&WebKey=8396a37a-9fc2-4f50-9332-5eebebe73494>)

Thus far, approximately 30.6% (up 2.6% since Atlanta meeting) of TC Members have declared their discipline.

6. The Professional Development Committee (PDC) is seeking ideas for new ASHRAE Learning Institute (ALI) courses.

The need is for practical courses of broad interest to be presented as face-to-face seminars or short courses, instructor-led online courses and self-paced courses. Examples would include courses with a focus on new technologies that need to be shared, fundamentals that may have been forgotten, standard applications that need explanation, and courses based on new design guides.

The objective of the ASHRAE Learning Institute (ALI) is to provide quality, authoritative and practical technical information of broad interest.

Contact Karen Murray (ASHRAE staff) at kmurray@ashre.org or Cameron Labunski (PDC chair) at cameronl@tgece.com with new course ideas.

F. CURRENT & UPCOMING ASHRAE CONFERENCE PROGRAMS**1. Program Focus at Orlando Winter Conference**

The Orlando Conference Technical Program addresses a wide variety of topics in the application of technology to practice. Specific program tracks are as follows:

- i. Track 1 - Cutting-Edge Technologies
- ii. Track 2 - Design Build
- iii. Track 3 - HVAC&R Fundamentals and Applications
- iv. Track 4 - International Design
- v. Track 5 - Modern Residential Systems
- vi. Track 6 - Systems and Equipment
- vii. Track 7 - The Great Debate
- viii. Track 8 - Guidelines and Codes

One particular track to note above is the Modern Residential Systems Track and the greater emphasis that the Society is now placing on the residential sector through this track, as well as through the new Residential standing committee, and the prioritization given by RAC to TC sponsored research focused on the residential sector.

2. St. Louis Annual Conference - June 25 – June 29, 2016

Seminar and Forum proposals for St. Louis are due by Monday, February 8th, 2016. Conference Website: <http://www.ashrae.org/stlouis/>

Conference Program Chair: Tom Kuehn Email: kuehn001@umn.edu

Program Focus at St. Louis Annual Conference

- i. Track 1: Advances in Refrigeration Systems and Alternative Refrigerants
- ii. Track 2: Research Summit
- iii. Track 3: Fundamentals and Application
- iv. Track 4: HVAC Systems and Equipment
- v. Track 5: Smart Building Systems/Remote Monitoring and Diagnostics
- vi. Track 6: Indoor Environment: Health, Comfort, Productivity
- vii. Track 7: Professional Skills Beyond Engineering
- viii. Track 8: Renewable Energy Systems and Net Zero Buildings

G. OTHER UPCOMING WORKSHOPS, CONFERENCES AND EVENTS**1. 2016**

- i. International Air-Conditioning, Heating, Refrigerating Exposition (AHR Expo) – 2016 - January 25 to 27, 2016 - Orlando, FL USA – Contact: <http://www.ahrexpo.com/>
- ii. 6th International Conference on Energy Research and Development – March 14 to 16, 2016 – State of KUWAIT – Contact: <http://www.ashrae.org/kuwait2016>
- iii. XII International HVAC&R and Plumbing Symposium – March 31 to April 2, 2016 – Istanbul, TURKEY – Contact: <http://www.ttmd.org.tr/sempozyum2016/eng/?p=program>

- iv. ASHRAE 2016 Webcast – Making Net Zero Net Positive: Solving the Efficiency & Cost Paradox – April 21, 2016 – 1 pm to 4 pm EDT – Contact: <https://www.ashrae.org/membership--conferences/webcasts>
- v. CLIMA 2016 - May 22 to 25, 2016 - Aalborg, DENMARK – Contact: <http://www.clima2016.org/welcome.aspx>
- vi. 2016 ASHRAE Annual Meeting – June 25 to 29, 2016 – St. Louis, MO USA – Contact: <http://ashraem.confex.com/ashraem/s16/cfp.cgi>
- vii. Indoor Air 2016 (14th International Conference of Indoor Air Quality and Climate) – July 3 to 8, 2016 – Ghent, BELGIUM – Contact: <http://www.indoorair2016.org/>
- viii. 2016 Purdue Conferences - Compressor/Refrigeration & Air Conditioning/High Performance Buildings Conferences – July 11 to 14 – West Lafayette, IN USA – Contact: <https://engineering.purdue.edu/Herrick/Events/Conferences>
- ix. ASHRAE and IBPSA-USA SimBuild 2016: Building Performance Modeling Conference – August 10-12, 2016 – Salt Lake City, Utah USA – Contact: <http://ashraem.confex.com/ashraem/ibpsa16/cfp.cgi>
- x. IAQ 2016 - Defining Indoor Air Quality: Policy, Standards and Best Practices – September 12-14, 2016 – Alexandria, Virginia USA – Contact: <http://ashraem.confex.com/ashraem/iaq16/cfp.cgi> Paper abstracts are due Nov. 30, 2015. Upon acceptance, papers are due March 14, 2016.
- xi. AHR Expo Mexico – September 20-22, 2016 – Monterrey, MEXICO – Contact: www.ahexpomexico.com
- xii. 2nd International Conference Efficient Building Design: Materials and HVAC Equipment Technologies - September 22 to 23, 2016 - Beirut, LEBANON – Contact: <https://www.ashrae.org/membership--conferences/conferences/2016-2nd-international-conference-efficient-building-design>
- xiii. IAQVEC 2016 (9th International Conference on Indoor Air Quality Ventilation & Energy Conservation in Buildings) – Oct. 23 to 26, 2016 - Seoul, SOUTH KOREA – Contact: <http://iaqvec2016.org/>

2. 2017

- i. 2017 ASHRAE Winter Meeting – Jan. 28 to Feb. 1, 2017 – Las Vegas, NV USA – Contact: <http://ashraem.confex.com/ashraem/w17/cfp.cgi>
- ii. 12th IEA International Heat Pump Conference - May 15 to 18, 2017 – Rotterdam, NETHERLANDS – Contact: <http://hpc2017.org/>

H. NEW TAC GUIDELINES FOR STANDING COMMITTEE LIAISONS SPEAKING AT SECTION BREAKFAST OR A TC MEETING

TAC has developed a new set of speaking guidelines (attached) for standing committee liaisons that wish to speak at the section breakfasts or at a TC meeting. These guidelines have been distributed to all standing committees that interface with TAC and the TCs regularly. TC chairs should expect that all liaisons wishing to speak to TC will adhere to these guidelines going forward.

- **REMARKS FROM SOCIETY LIAISONS TO TC/TG/TRG CHAIRS**
RESEARCH LIAISON REPORT

None at this time

- **LIAISON REPORTS FROM OTHER COMMITTEES**

None at this time.

- **SUBCOMMITTEE REPORTS**

- **PROGRAM SUBCOMMITTEE– OMAR ABDELAZIZ FOR ED VINEYARD**

- **General Comments and upcoming conferences:**

- It is noted that the conference paper/ seminar sessions at Atlanta meeting were well attended.
- The conference paper session 5 (Refrigerant advances) and seminar 22 (Innovative design, materials and manufacturing techniques for heat/mass exchangers) in Orlando (this) meeting are also well attended.
- For meeting in St. Louis, it is suggested a seminar related with the topic of optimization of air-to-refrigerant heat exchangers. Manhoe Kim, Sankar, Kashif Nawaz, Vikrant Aute will present. T.C 1.3 will sponsor and T.C. 8.4 and TC1.13 (the TC on Optimization) will co-sponsor. Ray Rite will chair this seminar. The deadline to submit is 2/8/2016.
- Conference paper abstract deadline is 3/14/2016 for Las Vegas. Full paper is due on 7/6/2106.
- Seminar in Las Vegas. A topic for a potential seminar might be related with hydrophobic layer that also prevents corrosion, with presentation on background, research, and applications. Chad Bowers will chair this session. David Ellerbrock and Prof. Seifollah Nasrazadani (the PI for a current ongoing TC8.4 sponsored research project on corrosion) may present at a seminar for Las Vegas on this topic. We need a third potential speaker and will discuss and try to finalize this seminar at St. Louis meeting.
- Potential topics for a seminar may also include heat exchanger optimization for part load conditions. Sankar Padhmanabhan, Stanislav Perencevic may present.

- **RESEARCH SUBCOMMITTEE – CHAD BOWERS**

- **Update from research breakfast**

- Need to submit Disposition of ASHRAE Research for 1535RP and 1564RP
- RTAR 1785 accepted with comments –address later
- AHRI Roadmap for 2L refrigerants – opportunities for TC8.4?
- Honors and awards – none given because none submitted
- RTAR/WS – voting
- 9 RTAR's considered – 5 accepted with comments, 4 rejected
- 4 WS's considered – 1 accepted, 1 conditionally accepted, 1 returned, 1 incomplete
- Provide cover letter on conditionally accepted to show how comments were addressed
- Abstentions/Negative votes – provide reasons for abstentions and negative votes
- Charge from Tech Council
- RAC to look into more applied research

- Possibly allocating funds for post project processing that will produce tools, presentations, etc. that add value to the membership and society
- Add a request for PI's to bring projector

Active Research Projects

1. Project 1645 Development of New Corrosion Test for Aluminum Heat Exchangers
Contractor: Prof. Seifollah Nasrazadani, University of North Texas
Project Monitoring Subcommittee: David Ellerbrock, Hyunyoung Kim, Russell Tharp, Claudi
2. TRP 1705 Investigation of Airside Fouling on Outdoor Heat Exchangers
Contractor: Prof David Yuill University of Nebraska
Project Monitoring Subcommittee: Hugh Henderson, Bill Fox, and Liping Liu

In summary, currently there is 2 active projects, 1 RTAR submitted. 2 RTAR under development. No work statement under way.

Potential Research Projects

- Refrigerant Charge Modelling in Coils for Unitary Split Systems –RTAR by Ray Rite and Chad Bowers from TC8.11. TC8.4 co-sponsoring. Submitted to RAC. Accepted with comments. Work statement to be sent out by mid-March for TC and liaison review.
- Reverse flow in microchannel heat exchangers suggested by Bill Fox – no new activity, keep on list.
- Acoustic issues in microchannel heat exchangers - not wide enough to have a research project, remove from list.
- Omar Abdelaziz, Ankit Sethi and Vikrant Aute will continue to work on the RTAR entitled “Heat Transfer and Pressure Drop of Low GWP Refrigerants in Small Diameter Tubes”. This should be one of our higher priority RTAR’s send by March, plan to submit by May 15 deadline. Plan is to focus on R410A and R404A replacements. Looking for co-sponsorship from 1.3.
- Sankar Padhmanabhan reworked an RTAR for NH₃ in U-bends for TC 1.3. TC 8.4 is interested in co-sponsorship. RTAR 1683 accepted (need to check on co-sponsorship). Sankar to write, Chad to help.
- Co-sponsorship of Dry condition, heat exchanger with TC 6.3 - potentially interested, but will wait for TC6.3. – no name attached, no update.
- Novel methods for defrost - No clear recollection of where/who this idea came from. Need to follow up with Tony Jacobi on ongoing ACRC research for potential duplication. – no update.
- Additional oil retention studies to add on to the data and modeling efforts from Project 1564. Chad Bowers will work on framing a new RTAR that will use RP 1564 as a springboard for the next step in similar work. The vice chair of RAC commented that the RAC would not consider a new project until project 1564 final report was published. Chad will review with PI from PR1564 and then begin working on RTAR for next meeting.
- Bio-inspired heat exchanger design. Shaobo Jia wrote a previous RTAR. Omar Abdelaziz agreed to review. Interest is based on ARPA-E work ongoing, lots of room/interest(?). Just keep an eye on this to see if the TC should pursue in the future.
- Numerical simulation for wet/frosted fin. – should be pursued with new fin designs. Use CFD combined with heat exchanger model. Yang Zhou. Should we say development of unified

semi-empirical frost model for heat exchanger level modelling for new fin geometries? Put objective to this at the next meeting (St. Louis)

- Microchannel heat exchanger scalability. – no update

New Ideas

- Charge/capacity understanding – literature survey with basic modelling (Vikrant will help with voidfraction study using new fluids)
- Heat exchanger leakage/detection heat exchanger level (A2L)
- Air side heat transfer for small diameter tubes – Bill Fox to work with Vikrant on RTAR
- 10.7 study of heat exchangers with A2L high glide refrigerants – cosponsorship from 8.4 being sought

STANDARDS SUBCOMMITTEE – RAYMOND RITE REPORTED FOR GARY PRICE TO THE MAIN TC

The standards sub-committee is responsible for three standards: SPC 25 Forced and natural convention air coolers, SPC 20 method of testing for air cooled condensers, SPC 33 method of testing forced circulation air cooling and air heating coils.

- SPC 25: Gordon Struder chair (but was not present at the meeting). Omar A. reported out that the SPC did meet in Orlando. However, they are down to four members and require six. A request for new members was made. Two individuals spoke up: Christian Bach - OkState) and Mary Opalke - AHRI (Mary indicated that she would probably not be the actual member but that she would be working with her colleagues to put forth a name)
- SPC 20: Ray Rite chair as of 10/26/15 due to Gary Price having to drop ASHRAE activities. SPC met in Orlando (I in person and 4 remotely and had quorum) Made progress on draft. Will continue to have monthly interim meetings remotely.
- SPC 33: Ram Narayanamurthy chair (not present at meeting) Bill Fox and Mary Opalke reported out that it is finished and will be published in the Spring as 33-2016. Congratulations to all who helped get this done.

HANDBOOK SUBCOMMITTEE – BILL FOX

Bill Fox will roll off as handbook subcommittee chair. Kashif Nawaz will be the new chair.

MEMBERSHIP –LIPING LIU

Lorenzo Cremaschi gave a brief update. As of today we have 9 voting members and over 100 active corresponding members on the TC. The subcommittee will maintain a list of CMs up to date.

Starting 07/01/2016, the officers will be as follows:

Officers TC 8.4 as of 07/01/2015		
1.	Dr. Sankar Padhmanabhan	Chair
2.	Mr. Shenghan Jin	Vice-chair, honors and awards
3.	Dr. Chad Bower	Research sub. Chair
4.	Dr. Satyam Bendapudi	Secretary
5.	Dr. Kashif Nawaz	Handbook
6.	Mr. Ed Vineyard	Programs
7.	Mr. Ray Rites	Standards
8.	Dr. Christian Bach	Webmaster
9.	Dr. Liping Liu	Membership
10.	Dr. Vikrant Aute	MTG Low GWP Liaison

Lorenzo and Vikrant will roll off as VM at the end of the June 2016 meeting and 3 new VMs were added to the roster.

Starting 07/01/2016, the VMs will be as follows:

Voting Members at this meeting in Orlando are as follows:		End of term (Jun 30 of...)
1.	Dr. Sankar Padhmanabhan	(2019)
2.	Dr. Chad Bower	(2018)
3.	Mr. Shenghan Jin	(2019)
4.	Dr. Kashif Nawaz	(2019)
5.	Dr. Liping Liu	(2018)
6.	Dr. Omar A Abdelaziz	(2020)
7.	Dr Ebrahim S Al-Hajri	(2020)
8.	Mr Ankit Sethi	(2020)
Voting Member non-quorum in this meeting		
9.	Prof. Man-Hoe Kim	(2018)
10.	Dr. Hyunyoung Kim	(2017)

WEBSITE – CHRISTIAN BACH

Changes have been made for the template to be more convenient. Project names may be desired to be displayed on the website.

HONOR AND AWARDS NOMINATION- SHENGHAN JIN

The committee has received nomination for Gary Price for his distinguished service. Points have been tallied but still need further information for nomination. The nomination deadline is 5/1 each year. Ray Rite agree to contact Gary Price.

Vikrant Aute suggested PIs to nominate graduate student who were/are involved in ASHRAE projects, such as Homer Adams awards:

<https://www.ashrae.org/membership--conferences/honors--awards/homer-addams-award>

IX MTG LIAISON REPORT

Vikrant Aute gave updates:

1. Co-sponsoring Seminar-61 (TC 10.7 lead), for Orlando 2016.
2. TC 1.3/8.5 is requesting co-sponsorship on RTAR on spray evaporators. The TC 8.4 agreed today (1/26/2016) that the MTG should co-sponsor this.
3. Tom Justice is new section head for MTGs
4. Dedicated track for St. Louis on Developments in Alternative Low GWP refrigerants. The MTG is very much interested in working with member TC to discuss/co-sponsor programs.
5. As of Dec 2, AREP-II, 27 of 30 reports received. The AREP Conference is on Jan 21, so far 19 presentations have been confirmed.

X OLD BUSINESS

None.

XI NEW BUSINESS

There is concerns that the research meeting being scheduled for 3 hours may discourage people attending. It is suggested to have change the schedule and add standard, handbook meeting.

XII ADJOURNMENT

Motion to adjourn meeting at 5:11pm.