

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

1791 Tullie Circle, NE / Atlanta, GA 30329
404-636-8400

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: June 30, 2015 LOCATION: Atlanta, GA

TC 8.4 Meeting Tue June 30 2015

No.	First Name	Last Name	Affiliation	VM	CM	YEA Member	Guest	Email
1	LORENZO	CREWASCU	OKLAHOMA STATE UNIV.	✓				crewascu@okstate.edu
2	Vikram	ANK	UMD	✓				Vikram@umd.edu
3	SPANISLAV	PERENCEVIC	GUNTNER		✓			S.perencevic@gquent
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5	SHENGHAN	JIN	UIUC		✓			sjin8@illinois.edu
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13	Kasuf	Nawang	Janson Controls		✓	✓		kasuf.nawang@jci.com
14	SANKAR	PADHMAABHAN	DANFOSS		✓			SANKAR@Danfoss.com
15	Mah-Hoe	Kim	Kyungpook U	✓				kimmh@ksme.org
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20	Richig	MONAN	AHRI		✓	✓		rmonan@ahrinet.org
21	MARY	OPALKA	AHRI			✓	✓	MOPALKA@ahrinet.org
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25	NATARAJ	HARINARAN	JCI	would like to become a CM		✓	✓	nataraj.k.harinaran@jci.com
26	Vinash	Gholap	JCI				✓	avinash.gholap@jci.com
27	keat	Perkins	Colmac Coil		✓			keat.perkins@colmaccoil.com
28	Ray	Rite	Trane		✓			ray.rite@trane.com
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31	Rusty	Tharp	Goodman				✓	RT1964@HOTMAIL.COM
32	Scott	Fisher	Refrimed				✓	ScottSFish@Gmail.com
33	S.A.	Sherif	Univ. of Florida		✓	NO		sasherif@uf.edu
34	Bill	Fox	TRANE	✓				Attended via e-meeting
35	CHAD	BOWERS	TRANE	✓				"
36	Eric	Berg	Lennox		✓			eric.berg@lennoxir.com

DISTRIBUTION

ALL MEMBERS OF TC/TG/TRG

TAC Chairman: _____ Bryan Becker _____
TAC Section Head: _____ Steve Duda _____
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 MINUTES
ASHRAE TECHNICAL COMMITTEE 8.4
AIR-TO-REFRIGERANT HEAT TRANSFER EQUIPMENT
ATLANTA, GA
TUESDAY, JUNE 30, 2015

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 6 out of 8 voting members, including 2 voting member attending via e-meeting. Since Chad Bower and William Burgess Fox both work in the same company, one of them abstained from voting.

Voting Members in this meeting	End of term (Jun 30 of...)	Present
1. Dr. Lorenzo Cremaschi (chair)	(2015)	Yes
2. Dr. Jun Wang (vice-chair)	(2015)	No
3. Dr. Chad Bower (research sub. chair)	(2018)	Yes (via e-meeting)
4. Dr. William Burgess Fox (handbook sub. Chair)	(2018)	Yes (via e-meeting)
5. Dr. Vikrant Aute (MTG LowGWP Liason)	(2016)	Yes
6. Dr. Yi Qu (webmaster)	(2015)	Yes
7. Dr. Liping Liu (membership)	(2018)	No
Voting Member non-quorum in this meeting		
8. Prof. Man-Hoe Kim	(2018)	Yes
9. Dr. Hyunyoung Kim	(2017)	No
Total Present		6 out of 8 VMs
Quorum		YES

Dr. Sankar Padhmanabhan is the e-chair for the e-meeting of TC8.4 in Atlanta. He was also present in the room.

There were also 22 corresponding members and 8 guests in attendance. There were 8 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 07/01/2015, we had 5 voting member rolling off: Dr. Lorenzo Cremaschi (chair), Dr. Jun Wang (vice-chair), Dr. Yi Qu. Also Dr. William Fox will roll off. Dr. Jun Wang is unable to serve as next chair so Lorenzo is going to extend his service as TC chair for one extra year, in order to identify the next chair and ease the transition of the chair in the best interest of the TC. Starting 07/01/2015, 3 voting members rolling on: Dr. Kashif Nawaz, Dr. Sankar Padhmanabhan, and Mr. Shenghan Jin. Therefore, we will have 7 voting members and 2 non-quorum (TOTAL: 9 voting members), starting 07/01/2015. In addition, starting 07/01/2015 we will have 9 voting members and 115 corresponding members on the TC, for a total of 124 members. Dr. Sankar Padhmanabhan will be the new vice-chair as of 07/01/2015.

III NOTE FROM SECTION HEAD:

The Section Head, Steve Duda, noticed that the meeting was well attended and welcomed all members and guests. He made a new announcement that he would retire from Section Head after this meeting and Dustin Meredith will be the new Section Head. Steve also offered any necessary help and assistance for a smooth transition. TC thanked him for his service.

Steve Duda also reminded the TC that the annual best TC award was point based: to have prompt update in meeting minutes, agenda, website, handbook chapters, etc. There was a new website template which he encouraged TC to use and announced that activity report could use the Excel template from Chicago meeting.

IV REPORT FROM PROGRAM LIAISON

None at this time

V MINUTES OF PREVIOUS MEETING

Meeting minutes from the TC 8.4 meeting in Chicago were voted. For approval. Yi Qu took the motion to approve, Vikrant Aute seconded. 5 voted in favor, 1 abstained (5-0-1), (Chad Bowers abstained because he and Bill Fox are from the same company). The meeting minutes was approved by the voting members.

VII Chairman's notes on TC chair meeting:

Lorenzo provide the main highlights of the minutes from the TC chair handout distributed during the breakfast chair meeting. The relevant minutes are attached below.

Announcements and Reminders for TC/TG/TRG & MTG Chairs, ATLANTA 2015

A. NEW!

- 1. PCM Process** - The process for adding new PCMs to TC rosters and notifying all affected parties has now been automated through the ASHRAE website. Potential new TC members now just need to click on the **JOIN A TC** button at the top of the TC page (www.ashrae.org/tcs) on the ASHRAE website to get started.
- 2. New Easier to Use Standard Website Template in Development** - We are working with the Society's Electronic Communication Committee (ECC), staff, and a consultant to modernize and streamline the template for TC websites. This will include WIZYWIG editing, automatic rosters and simplified document uploading. There will be no more HTML editing. We have a preliminary design and will be working with several volunteer beta testers from various TCs to finalize the design and operation. Anticipate release sometime in the fall of 2015.
- 3. Coming Soon! - New TC E-mail Position Aliases for 15-16 Society Year** - We are in the process of creating new position e-mail alias addresses 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 process will take 4-6 weeks. In the meantime, we ask that you review your membership profile to ensure that your email address is up-to-date. Your profile can be accessed by logging onto the "Member's Only" section at www.ashrae.org. The 15-16 E-mail Alias list will then be distributed to the TCs once this work is complete.
- 4. 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.*

B. AT THIS MEETING**1. On-Site Training**

i. TC/TG/TRG Chair's Training Workshop Reminder - Sunday June 28, 9:45-10:45 AM
in Salon C Room (2nd floor) in the Atlanta Hilton Hotel. This session will be a repeat of the same content that was presented in a 6/12 via a webinar for individuals that could not make this webinar. As with the Breakfast meeting, both the Chair and Vice-Chair are expected to attend if they did not attend the webinar; attendance will be tracked so that we can assess who has been trained. Bring questions - if you need an answer, it's quite likely others also need the same answer. We are also interested in hearing your feedback if you attended the webinar also. The main focus of this particular workshop will be on ASHRAE Tools for TCs.

ii. RAC's Research Subcommittee Chair's Breakfast – Monday, 6/29, 6:30 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. The training portion of this meeting will focus on the duties and responsibilities of Project Monitoring Subcommittee (PMSC) Chair. After the meeting, RAC plans to record this training presentation and post to the ASHRAE website as a new training webinar that current and new PMSC chairs can access at any time.

iii. TC Program Subcommittee Chair Training in Atlanta - Tuesday, 6/30, 11:15AM – Noon, Room 315, (3rd Floor) Atlanta 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. RAC Forum #3 – Is the ASHRAE Research Process Efficient?

Do you have a good idea for how the ASHRAE Research Program and its current processes could be improved? If so, members of the ASHRAE Research Administration Committee (RAC) would very much like to talk to you more about your idea in Atlanta at the forum below.

Monday, June 29

11:00 A.M. to 12:00 PM

Forum 3 – Is the ASHRAE Research Process Efficient

206/207 Room – 2nd Floor – Atlanta Hilton Hotel

3. Location of Section Head Mailboxes at this Society meeting & Free Wi-Fi Access at this Society meeting - Mailboxes are located just outside ASHRAE Headquarters Office (208/209 – 2nd Floor – Atlanta 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.

Internet is also available complimentary in your sleeping room in the Hilton.

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. Access code is ASHRAE2015 and the code is case sensitive.

4. **Retiring TC/TG/TRG Chair Certificates** - TC chairs that are completing their terms as chair at this Society meeting will be presented with a certificate of appreciation. Please coordinate with your Section Head as to when and where at the meeting you would like to be presented with the certificate (Section meeting or TC meeting)
5. **E&P Beta Test #8 TC meetings being Held in Atlanta** - The 8th beta test of Electronic and Present (E&P) meetings, which allows some TC members to participate in the TC meeting from a remote location electronically, will occur in Atlanta and the following ten TCs have agreed to participate in this test: TC 1.5, TC 2.2, TC 4.2 (RP-1561 & RP-1699 PMSC), TC 5.8, TC 6.8, TC 7.9, TC 8.4, TC 8.8, TC 9.2, TC 10.2
The chairs of those TCs participating should provide to their Section Head feedback on their E&P meeting experience before TAC meets on Wednesday morning, 7/1.

C. UPCOMING DEADLINES

1. **Thank You Letters to Employers** - ASHRAE President – Thomas Phoenix – has offered to send letters to the employers of TC volunteers this year thanking them for supporting their employee’s service on an ASHRAE TC during Society year 2014-2015. If requested by the volunteer, the letter will be sent to his/her employer by the end of July or early August and the volunteer will receive a copy.
Please let your committee members know that they will be receiving an email about employer thank you letters in early July with details on how to request a thank you letter.
2. **2015-2016 Hightower Award Nomination Process and Deadline** - Nominations for the 2015-2016 George B. Hightower Technical Achievement Award are due to you Section Head by September 1, 2015. The award recognizes outstanding technical leadership and contributions on a TC/TG/TRG during the past four years, excluding research and standards activities. Please go to the Technical Committee page of the ASHRAE website at the following link under the “Procedures, Forms...” heading: <http://www.ashrae.org/tcs>
3. **2015-2016 Service to ASHRAE Research Award Nomination Process and Deadline** - Nominations for the 2015-2016 Service to ASHRAE Research Award for TC volunteer efforts in research are due to RAC research liaison by September 1, 2015 (new date). Please go to the Research page of the ASHRAE website at the following link under the “Research Grants and Awards” heading: <http://www.ashrae.org/research>
4. **Seminar and Forum proposals for Orlando are due by Monday, August 10, 2015.** Please visit the following site to submit your proposal:
<http://ashraem.confex.com/ashraem/w16/cfp.cgi>
For more information, go to: www.ashrae.org/orlando.
5. **CEC requests for Program Tracks** - 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 Las Vegas 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.

D. REMINDERS

- 1. 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, 2015 by going to the Members Only section (<https://eweb.ashrae.org/eweb/DynamicPage.aspx?Site=ASHRAE&WebKey=8396a37a-9fc2-4f50-9332-5eebebe73494>) and enter their employment discipline information. The link should take you directly to the screen, which is located under demographics. Thus far, approximately 30.6% (up 2.6% since Seattle meeting) of TC Members have declared their discipline.
- 2. 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.
- 3. 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
- 4. Report on TC/TG/TRG websites in Section (SHs need to report to TCs which sites are not up to date.)** - Is your committee website up to date? If not, please ask your webmaster to at least post the latest minutes and the Atlanta 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. This form of communication is critical to the efficient operation of your committee, and for attracting new members. TAC and the Electronic Communications Committee (ECC) recently posted a webinar recording on how to set-up and maintain a basic TC website using the ASHRAE server and TC website template at the following link: <http://media.ashrae.biz/webinar/TrainingWebinar.avi>
- 5. Special effort to welcome new members, and visitors (potential members), particularly international members, to TC meetings** - 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.
- 6. 15-16 Rosters Access & Distribution** - Remember, the current 2014-2015 roster for your TC, TG or MTG is in effect until after the June meeting this year – through Wednesday, July 1st. 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 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.

7. 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>

The TC/TG/TRG Manual of Procedures (MOP) has been revised to include a new committee type, Multidisciplinary Task Groups (MTGs). MTGs are different from TCs, TGs, and TRGs. The objective of the MTG is to first try to better coordinate and focus the activities of the affiliated TC and non-TC groups (EHC, REF, SSPCs, outside groups, etc.) that make-up the MTG on the task for which the MTG was created without duplicating the functions of a TC or TG so that the task can be completed as efficiently as possible. In special cases, MTGs may also be authorized by TAC to assume some TC/TG functions, such as research, if it is deemed necessary to better complete their task assignment.

Since the need, purpose, and progress of each MTG is reassessed and reaffirmed by TAC each year, there are no term limits for the MTG Chair, Vice Chair, Members and Alternates.

8. Request for each technical committee to briefly review ASHRAE Code of Ethics at start of TC meeting - See the following link for the latest version of the ASHRAE Code of Ethics:

<https://www.ashrae.org/about-ashrae/>

E. RECENT ANNOUNCEMENTS

1. Outstanding TC Award - TAC will continue in the 2015-2016 Society year with the new Outstanding Technical Committee Award. The purpose of the award is to recognize, annually, a single Technical Committee within each TC Section that has the highest measured performance based on a set of weighted criteria as compared to other TCs within that same Section. The goal of this award is to reward TCs for the behaviors and activities that further the goals of TAC and exhibit excellence in the operation of a technical committee. The criterion used is a point system with values assigned to various metrics and activities, which are collected through an updated TC activity form. The award will serve to heighten TC Chair and committee member awareness of what activities are valued to encourage improved performance, and foster friendly competition between TCs within a Section.

2. Recent MTGs that have been formed - TAC approved the formation of the following new Multidisciplinary Task Group (MTG):

MTG.O&MEE – Operations and Maintenance Activities That Impact Energy Efficiency

Scope: MTG.O&MEE will coordinate TC/TG/TRG activities to help support the application of ASHRAE guidelines, Standards and other technical resources to support regulatory bodies, utilities, building owners and others who are attempting to enhance efficiency of existing buildings. Responsibilities include suggestions for research, development and presentation of technical programs of all types on maintenance and its impact on energy consumption and efficiency. It will be especially involved with interactions with those who are introducing and evaluating strategies for building efficiency enhancements.

For more information on this MTG and the six other active 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.

3. **Standard 203-2014 now available for use and reference** - Standard 203-2014, Method of Test for Determining Heat Gain of Office Equipment Used in Buildings, is published. The Chair of SPC 203, Glenn Friedman, would like to make other project committee chairs aware of it and possibly reference it in other standards. For questions please contact Glenn Friedman, gfriedman@taylor-engineering.com, (510) 263-1542 direct, (510) 220-5895 mobile.”
4. **Recent updates to the TC MOP (Manual of Procedures)** - Part 4 – Meetings of the Manual of Procedures (MOP) for ASHRAE technical committees (TCs/TGs/MTGs/TRGs) has been revised to clarify that attendance at technical committee meetings and subcommittee meetings must be open, except as allowed for by executive session procedures, and that an interim meeting is allowed with proper notification.
Section and 2.5.1.4 (1) has been amended to allow one Voting Member non-quorum to count towards the minimum number of voting members in Section 2.5.1.1, which is currently 6 voting members.

Section 5.1.2 has been amended to clarify how quorum is established for TCs with only six members and some designated a Member Non Quorum.

See the following link for the latest version of the TC MOP <http://www.ashrae.org/tcs>

5. **TC Activity Form** - TAC has developed a TC activity form that they would like all TCs to use at this meeting to report to their section head. This form 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.
6. **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.
7. **TC 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.

F. UPCOMING ASHRAE CONFERENCES

- 1. Program Focus at Atlanta Annual Conference** - The Atlanta Conference Technical Program addresses broad topics in the application of technology to practice, specific applications in hydronic heating systems, variable refrigerant flow systems, O&M and indoor environmental quality, as well as new reports on research taking place worldwide. Specific program tracks are as follows:

- Building Operation, Maintenance, and Optimization/Commissioning Track
- High Performance Building Track
- HVAC&R Fundamentals and Applications Track
- HVAC&R Systems and Equipment Track
- Indoor Air Quality Track
- Laboratories Track
- Modeling throughout the Building Life Cycle Track
- Moving Advanced Energy Design Guidance to Mainstream Track
- Refrigeration Track
- Research Summit Track

The Atlanta conference will also host the third annual ASHRAE Research Summit, which will present innovations in HVAC&R research with particular emphasis on high performance building design and its role in a clean energy economy, and brings together researchers to present and discuss the latest research. Researchers will present papers, seminars and forums or participate in panel discussions. Also, highlights on ongoing ASHRAE funded research will be presented.

- 2. Orlando Meeting - January 23 - 27, 2016**

- Orlando Seminar and Forum Session Proposals are due August 10, 2015
- Revised conference papers / Final Technical Papers due August 21, 2015
- Conf. and Tech. Paper Final Accept/Reject Notifications sent August 28, 2015
- Seminar, Forum, Workshop Accept/Reject Notifications sent September 11, 2015
- All presentation files (PPT) due online – January 4, 2016
- Conference Website: <http://www.ashrae.org/orlando/>

- 3. St. Louis Meeting - June 25 – June 29, 2016**

- St. Louis Conference Paper Abstracts Due are due September 14, 2015
- Technical Papers initial drafts due September 14, 2015

- Conference Paper Abstract Accept/Reject Notifications sent October 5, 2015
- Website Opens for Seminar, Forum and Workshop Proposals on January 4, 2016
- Final Conference Papers Submitted for Review due January 4, 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
Track Chair: Frank Schambach

Email: frankschambach@mindspring.com

This track seeks papers and programs that explore the wide range of refrigeration systems under development with special emphasis on the use of alternative refrigerants in vapor compression machines to address environmental concerns.

- ii.** Track 2: Research Summit
Track Chair: Jeffrey Spitler

Email: spitler@okstate.edu

The fourth annual Research Summit seeks papers that report results on any aspect of ASHRAE-related research including heating, cooling, ventilation, other energy uses in the engineered environment and associated environmental aspects.

- iii.** Track 3: Fundamentals and Application
Track Chair: David E. Claridge

Email: dclaridge@tamu.edu

Fundamental information and applications of fundamentals related to all aspects of HVAC&R are welcome. This can range from psychrometric properties and processes to combustion, controls, HVAC system and envelope fundamentals and beyond.

- iv.** Track 4: HVAC Systems and Equipment
Track Chair: Alan Neely

Email: alan_neely@pghcorning.com

This track will include presentations on best practices to implement traditional, non-traditional, and hybrid approaches to achieve successful HVAC&R systems design. Objectives include high performance systems and equipment, LEED certified designs and sustainable buildings.

- v.** Track 5: Smart Building Systems/Remote Monitoring and Diagnostics
Track Chair: Samir Traboulsi

Email: traboulsi.samir@gmail.com

Smart buildings address HVAC&R equipment operation (chiller sequencing, soft start), integration into complete systems and can potentially interface with multiple building complexes and micro grid operation. This track includes papers on advanced communication protocols, system integration, BMS tools, data management and analysis.

- vi.** Track 6: Indoor Environment: Health, Comfort, Productivity

Track Chair: Dennis Alejandro

Email: denzjac@yahoo.com

Buildings and other enclosed spaces are increasingly required to provide safe, healthy environments in an energy efficient manner. Papers in this track will review the balance between environmental health and energy efficiency in buildings and help define future education, policy and research directions.

vii. Track 7: Professional Skills Beyond Engineering

Track Chair: Rachel Romero

Email: rachel.romero@nrel.gov

This track seeks to ensure professional skills are being developed and maintained beyond engineering essentials. Emphasis will be placed on meeting the professional development and business needs of today and converting them into the building blocks of tomorrow's success.

viii. Track 8: Renewable Energy Systems and Net Zero Buildings

Track Chair: Kevin Gallen

Email: kevin@gallenengineering.com

Wind, hydroelectric and solar are just a few of the alternative and/or renewable energy sources that are being used in HVAC design as we strive for Net-zero and high efficiency buildings. This track will address recent advances in alternative energy systems and equipment and new design strategies for achieving Net-zero buildings.

G. UPCOMING WORKSHOPS AND CONFERENCES

1. 2015

- i. ISHVAC-COBEE 2015: 9th International Symposium on Heating, Ventilation and Air Conditioning (ISHVAC) and 3rd Conference on Building Energy and Environment (COBEE) - July 12 – 15, 2015 - Tianjin, CHINA – Contact: <http://www.cobee.org/>
- ii. ICR2015 (24th IIR International Congress of Refrigeration) - August 16 – 22, 2015 - Yokohama, JAPAN – Contact: <http://www.icr2015.org/index.html>
- iii. Cold Climate 2015 - October 20 – 23, 2015 - Dalian, CHINA – Contact: <http://www.coldclimate2015.org/>
- iv. 11th International Conference on Industrial Ventilation - October 26 – 28, 2015 - Shanghai, CHINA – Contact: <http://www.ventilation2015.org/>
- v. IBPSA 2015 (14th International Conference of the International Building Simulation Conference) – December 7 – 9, 2015 - Hyderabad, INDIA – Contact: <http://www.bs2015.in/>

2. 2016

- i. International Air-Conditioning, Heating, Refrigerating Exposition (AHR Expo) – 2016 - January 25 – 27, 2016 - Orlando, FL – Contact: <http://www.ahrexpo.com/>
- ii. CLIMA 2016 - May 22 – 25, 2016 - Aalborg, DENMARK – Contact: <http://www.clima2016.org/welcome.aspx>
- iii. IAQVEC 2016 (9th International Conference on Indoor Air Quality Ventilation & Energy Conservation in Buildings) – Oct. 17 – 19, 2016 - Seoul, SOUTH KOREA – Contact: <http://iaqvec2016.org/>

- **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 – ED VINEYARD**

- **General Comments and upcoming conferences:**

- For Orlando meeting, it is proposed to have a conference paper session. The deadline is 8/10/2015. There will be 2 papers: one by Lorenzo Cremaschi with topic in the subset of oil with refrigerant, the other by Omar Abdelaziz with topic in low GWP refrigerant for high ambient temperature.
- TC 1.3 put together a seminar, entitled “Design and material for heat and mass transfer heat exchangers”. TC8.4 could co-sponsor. Vote: Yi Qu took motion, Man-hoe seconded. 5-0-1. (Chad Bowers abstained because he and Bill Fox are from the same company). Voted to approve.
- For Orlando meeting, it is also proposed a seminar session with topic about “Performance of residential system with alternative refrigerant at high ambient temperature”. Ankit Sethi may offer 2 presentations. Omar Abdelaziz could have 1 presentation. Chad Bowers took motion to approve, Man-hoe seconded. 5-0-1 (Bill Fox abstained because he and Chad Bowers are from the same company). Voted to approve.
- For Saint Louis meeting, conference paper is due by 9/14/2015 for abstract and full text by 1/4/2016. Vikrant Aute and Ed Vineyard may each have one paper.

- **RESEARCH SUBCOMMITTEE – YIRONG JIANG FOR CHAD BOWERS**

- **Update from research breakfast**

- Current Research Status – 61 active projects with total value of 10 million. Since July 1st 2014, 11 projects were completed, 11 new projects approved, and 13 Tentative Research Project (TRPs) released for bid, no projects on-hold due to funding.
- RTAR & WS Status – 9 RTARs reviewed (3 accepted, 4 accepted w/ comments and 2 rejected). 8 WSs reviewed (4 accepted, 1 conditionally accepted, 1 returned and 2 rejected)
- TRPs & URPs – 8 TRP’s bid packages to evaluate. 4 URP’s are under review.
- Stage funding and project monitoring. The motivation is to: (1) improve the process for monitoring research projects and incorporate a few checks and balances in the process; (2) develop close relationship between the completed work and payments to contractors.; (3) identify signs of budget overruns; (4) Identify and stop the project at right time without incurring additional costs.
- ASHRAE strategic plan 2014.

Initiative 5 AHRAE’s role in the residential sector:

- translate science and technology into practical tools that drive effective building design, operation and management;

- perform research into improving the residential built environment;
- TAC/RAC increased residential emphasis.
- Research strategic plan goal 3: reduce energy consumption for HVAC&R, water heating, and lighting in existing homes... under review for updating
- TC2.08 addition of residential chapter to ASHRAE Green Guide: The design, construction, and operation of sustainable buildings

Initiative 1B

- Conduct research program to estimate impact of ASHRAE standards/technology on energy savings and performance; determine actual savings for selected segments; identify key factors in savings; documents directed to consulting engineers
- MTG proposal in preparation for cross-functional approach: members from TCs, SSPCs, AEDGs, PubEd, Marketing.

Active Research Projects

Update on Project 1564 Measurement of Oil Retention in Microchannel Heat Exchangers

Contractor: Prof. Lorenzo Cremaschi, Oklahoma State University

Project Monitoring Subcommittee: Samuel Yana Motta, Amir Jokar, Yi Qu, Omar Abdelaziz

The draft report has been reviewed twice by the PMS. The PI is addressing PMS's comments regarding the difference between model and data.

Project end date 7/31. Not further extension needed.

PMS commented that no further work is needed and the PI should include an explanation in the final report of the possible reasons that could explain why the model simulation results sometimes deviate from the experimental data.

Update on Project 1535 Heat Transfer and Friction Factor for Low Air Reynolds Numbers of Compact Heat Exchangers

Contractor: Prof. Cheng-Xian (Charlie) Lin, Florida International University

Project Monitoring Subcommittee: Chad Bowers, Aaron Conger, Omar Abdelaziz, Xudong Wang, Stanislav Perencevic

The final report was sent for PMS for review in mid-June. Official project end date is July 1, 2015.

PI is seeking a 3-month no cost extension to allow time for PMS to finish reviewing and PI to address comments. Vikrant Aute made motion to approve, Bill Fox seconded. Voted 5-0-1 to approve. Chad Bowers abstained because he is on the PMS.

Update of Project 1645 Development of New Corrosion Test for Aluminum Heat Exchangers

Contractor: Prof. Seifollah Nasrazadani, University of North Texas

Project Monitoring Subcommittee: David Ellerbrock, Claudi Marti-Callizo, Hyunyoung Kim, Russell Tharp, Stanislav Perencevic.

The PI for project 1645 did not attend Atlanta meeting. One of the PMS members were present, Stanislav Perencevic, who was able to provide some information regarding the status of this project.

The literature review and review of corrosion test standard has completed.

The project is currently on task 2.

The PI ordered coils from Alcoil for testing, but are waiting for more information.

The PI is expected to give next update at Orlando meeting.

Update on TRP 1705 Investigation of Airside Fouling on Outdoor Heat Exchangers
Currently has 8 proposals. PES is in the process of reviewing all proposals
PES Chair: Hugh Henderson, other PES members: Bill Fox, Liping Liu, Yi Qu. Hugh commented that since he is from TC 8.11. TC 8.4 needs to find someone to chair PMS.

Potential Research Projects

- Refrigerant Charge Modelling in Coils for Unitary Split Systems – Draft RTAR by Ray Rite and Chad Bowers from TC8.11 looking for co-sponsorship from TC8.4. Ray and Chad continues to work on this RTAR.
- Reverse flow in microchannel heat exchangers suggested by Bill Fox – Bill continuing to work on this idea
- Acoustic issues in microchannel heat exchangers – Sankar Padhmanabhan is continuing to work on an RTAR for this topic. Would like some input on relevant literature.
- 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”. Expect to have updates for next meeting. This should be one of our higher priority RTAR’s
- Sankar Padhmanabhan reworked an RTAR for NH3 in U-bends for TC 1.3. TC 8.4 is interested in co-sponsorship.
- Unconventional materials for heat exchanger construction (i.e. polymer heat exchangers) and novel manufacturing techniques - Shenghan Jin sent a one-page draft for Chad to forward to research liaison. Need to identify connections to TC 8.4.
- Co-sponsorship of Dry condition, heat exchanger with TC 6.3 - potentially interested, but will wait for TC 6.3. No updates.
- 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.
- Additional oil retention studies to add on to the data and modeling efforts from Project 1564. Chad Bowers agreed to 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, estimated 1 year from now.

New Ideas

- Bio-inspired heat exchanger design. Shaobo Jia is to revisit a previous RTAR. Omar Abdelaziz agreed to review.
- Numerical simulation for wet/frosted fin.
- Microchannel heat exchanger scalability.

- Co-sponsor TC. 1.3 RTAR of U-bend: It was previously raised that this work might have been done in a previous PhD work. TC 1.3 has gathered different opinions on whether this is repeated work and decide to resubmit RTAR again. Chad Bowers took motion for co-sponsorship, Vikrant Aute seconded. Voted 5-0-1 to approve for co-sponsoring. (Bill Fox abstained because he and Chad Bowers are from the same company)
- TC 5.3 is proposing a project on force air distribution. The idea is to investigate the same coil under different conditions and see how performance maps out the entire range of standard 33. It is in discussion stage and may start with small water flow rate, but can certainly include refrigerant if it interests TC 8.4. The heat exchanger will be flat plate fin-and-tube.

Lorenzo Cremaschi reminded the committee that there are currently 3 active projects and 2 of them will be finishing before the next meeting. Only 1 (corrosion) project will be active and air fouling project will be in an initial stage. It is encouraged to submit RTAR in Orlando and maintain this TC research active.

There was also a discussion about the new change research funding process. TC 8.4 provided feedbacks for the milestone ideas:

- It is suggested to set a criteria in terms of funding for whether it is necessary to set up milestones.
- It is concerned that AHRAE's establishing minimum payment may be inefficiency. And add additional work for PMS, thus slow down research process.
- It is suggested to have some mechanism for flexibility for unexpected circumstances: such as equipment break, etc.

In general, the TC worries that the added bureaucratically work may slow down research process. Lorenzo Cremaschi will draft email as feedback.

STANDARDS SUBCOMMITTEE –GARY PRICE

Standard 33 – Method of Testing Forced Circulation Air Cooling and Air Heating Coils.

Mary Opalke from AHRI gave update. SPC 33 has been meeting frequently, almost biweekly. Comments has been collected since early May and are due tomorrow. Will address them as SPC already has enough votes to pass. It is scheduled on 7/8 for a second meeting to get publication. It is expected very close to finish.

Standard 25 – Forced and Natural Convection Air Coolers

Gordon Struder gave brief update. The committee did no reach quorum. Committee will start to schedule monthly meetings. The liaison of SPC25 did a letter ballot and reaffirmed the standard 25.

Standard 20 - Method of testing for Air Cooled Condensers

Ray Rite gave brief update. Committee had a meeting on Sunday afternoon. Reached quorum. Good progress was made. Gary has been sending out updates (monthly meeting). Hope to finish by the end of the year.

Bill Fox will be new standard chair starting on 07/01/2016. He will help transition for new handbook chair.

HANDBOOK SUBCOMMITTEE – BILL FOX

Bill Fox gave an update. Chapter 23 and 27 were voted no change except for minor reference change. Man-hoe Kim took Motion, Yi Qu seconded. Voted 5-0-1 to approve (Chad Bowers abstained because he and Bill Fox are from the same company).

Chapter 39 need comments. There is a minor mistakes of “outlet” on page 11 that needs to change into “inlet”. Standard 20 agrees with that change. Vikrant motion, Man-hoe second. TC 8.4 made vote 5-0-1 to approve the change (Bill Fox abstained because he and Chad Bowers are from the same company)

Scott Fisher, hand book refrigeration chair, also gave update on hand book: a few chapters has been updated.

Kashif Nawaz will be the new handbook chair starting 07/01/2016.

MEMBERSHIP – LORENZO CREMASCHI FOR LIPING LIU

Lorenzo Cremaschi gave a brief update. As of today we have 9 voting members and 115 corresponding members on the TC, for a total of 124 members. The TC will continue maintaining a list of CMs up to date.

Starting 07/01/2015, the VMs will be as follow:

Voting Members as of 07/01/2015	End of term (Jun 30 of...)
1. Dr. Lorenzo Cremaschi (chair)	(2016)
2. Dr. Sankar Padhmanabhan (vice-chair)	(2019)
3. Dr. Chad Bower (research sub. chair)	(2018)
4. Mr. Shenghan Jin (secretary)	(2019)
5. Dr. Vikrant Aute (MTG LowGWP Liason)	(2016)
6. Dr. Kashif Nawaz	(2019)
7. Dr. Liping Liu (membership)	(2018)
Voting Member non-quorum in this meeting	
8. Prof. Man-Hoe Kim	(2018)
9. Dr. Hyunyoung Kim	(2017)
Total VMs (excluding non-quorum)	7
Total VMs including non- quorum	9

And the officers starting July 1 2015 will be as follows (in parenthesis are the new officers nominated starting effectively July 1 2016 and that will help during the transition in 2015/16):

Officers TC 8.4 as of 07/01/2015		
1.	Dr. Lorenzo Cremaschi	Chair (until 6/30/2016)
2.	Dr. Sankar Padhmanabhan	Vice-chair
3.	Dr. Chad Bower	Research sub. Chair
4.	Mr. Shenghan Jin	Secretary, honors and awards
5.	Dr. William Fox (/ Dr. Kashif Nawaz help)	Handbook
6.	Mr. Ed Vineyard	Programs
7.	Mr. Gary Price (/ Dr. William Fox)	Standards
8.	Dr. Yi Qu (/ Dr. Christian Bach)	Webmaster
9.	Dr. Liping Liu	Membership
10.	Dr. Vikrant Aute	MTG Low GWP Liason

WEBSITE –YI QU

There was some technical difficulties. Need help to update website.
Christian Bach will be new webmaster.

HONOR AND AWARDS NOMINATION- SHENGHAN JIN

No updates.

The detailed awards and nomination process can be found at: <https://www.ashrae.org/membership-conferences/honors--awards/ashrae-honors-and-awards-program#howtonom>

IX MTG LIAISON REPORT

MTG SCOPE REVIEW

This MTG is established to 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 EPA and AHRI. The MTG responsibilities include suggestions for research, development and presentation of technical programs of all types on alternative lower GWP refrigerants, suggestions for Life Cycle Climate Performance (LCCP) systems evaluation for different applications, development of lower GWP solutions for different applications, and a special publication detailing aspects of LCCP applied to the HVAC&R fields.

Meetings Held:

Jan 12, 2015 - Pre-ASHRAE Teleconference

Jan 28, 2015 - Meeting at ASHRAE.

The MTG meets on Wed (10am to 11am) of each ASHRAE meeting. In addition a pre-ASHRAE teleconference is also held.

General Summary:

1. The MTG is coordinating to have a track or miniconference focusing on Low GWP refrigerants in June 2016 (St. Louis).

This track is now announced as Track-1 for the 2016 Annual Meeting. The MTG will solicit program ideas from all TCs involved and discuss the co-sponsorship.

2. A new liaison (Mr. Ken Luther) for MTGs has been assigned. The MTG will coordinate with the liaison to get more TCs involved in the MTG.

3. For January 2015 Winter Meeting, 4 seminars were accepted

4. For June 2015 Annual Meeting, One seminar was accepted.

5. The MTG Research SC Chair maintains a spreadsheet of on-going research projects relevant to the MTG.

6. The AHRI-AREP Phase-II program is underway. Atleast one report from Phase-II is now publicly available. More reports will be made public in due course. There is a potential AHRI-AREP Phase-II Conferece in 2016, though not finalized.

7. The IIR-WP on LCCP sent out the first draft for the LCCP guideline for review. The second draft is being circulated within the WP. The WP will meet at the ICR-2015 in Yokohama and finalize the draft. It will then be available for public review. The draft documents include the simplified LCCP evaluation guidelines and also a spreadsheet to assist in LCCP calculation for different applications.

X OLD BUSINESS

None.

XI NEW BUSINESS

None.

XII ADJOURNMENT

Motion to adjourn meeting at 5:26pm.