



MINUTES

DRAFT

TECHNICAL COMMITTEE TC4.1

2019 Winter Meeting

January 14, 2019

Note: These draft minutes have not been approved and not the official, approved record until approved by the Technical Committee.



ASHRAE Technical Committee 4.1

Agenda for - TC4.1 Load Calculation Data & Procedures

Atlanta
January 14, 2019

TC4.1 Load Calculation Data and Procedures
Monday, 2:15 PM to 4:15 PM
Turin – Prom Floor - Caesars

- | | |
|---|------------------|
| 1. Call to Order | Suzanne LeViseur |
| 2. Roll Call | Suzanne LeViseur |
| 3. Introduction of Visitors | Suzanne LeViseur |
| 4. Approval and/or Corrections to Houston Meeting Minutes | Suzanne LeViseur |

Houston Meeting Minutes has not been distributed to members ahead of the meeting. Approval of Houston meeting will be approved by email ballot.

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|---|--------------------|
| 5. Liaison Comments | |
| Section Head | Dennis Wessels, PE |
| o Roster needs to be updated for fall 2019 | |
| o New TC MOB issued | |
| o New minutes cover sheet | |
| o New program proposal due Feb 8th | |
| o ASHRAE reorganization effort | |
| o See Attachment -V for TC Chair breakfast agenda for details | |

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|--|--------------------|
| Chapter Technology Transfer | Christopher Adams |
| Research | Michael Puchak, PE |
| o RP 1729 wrapping up | |
| o Meeting minutes need to be posted in 60 days | |
| o Include Michael Puchak in RTAR, WS development correspondence (RL4@ashrae.net) | |
| o Suggest to setup Base Camp for collaboration | |

- | | |
|-------------------------------|---------------------|
| Handbook | Bass Abushakra, PhD |
| Program | Som Shrestha, PhD |
| Staff, Research/Tech Services | Michael R. Vaughn |
| TAC Chairman | Thomas Justice |

- | | |
|---------------------------------|-------------------|
| 6. Research Subcommittee Report | Rolando Legarreta |
|---------------------------------|-------------------|

- New research chair will be Som Shrestha, Rolando Legarreta to help with the transition
- 1729-RP: Experimental Verification of Cooling Load Calcs for Radiant Systems
 - o Research team is wrapping up and summarizing findings
 - o The research team explored modifying RTSM method for radiant systems
 - o The next step would be suggesting modifications to handbook chapter. Handbook chair will arrange meeting to discuss the approach before June meeting

TC 4.1 Web Site: <https://tc0401.ashraetcs.org/>



ASHRAE Technical Committee 4.1

- See Attachment IV handbook meeting minutes
 - 1742-RP: Update to Measurements of Office Equipment Heat Gain Data
 - Project finished
 - New research RTAR on refrigeration heat gain development
 - Plan to have TC 4.1 to sponsor it. TC members will vote to sponsor it when RTAR is developed
 - Member discussed the appropriateness to sponsor it and agree that the results would be in TC 4.1's chapter
 - Som will take lead on RTAR development
 - TC members suggest changing the title of the RTAR
7. Programs Subcommittee Report Rachel Spitler
- Workshop 3 meeting notes
 - Jim Pegues volunteered to transcribed notes from workshop 3, see attachment VII
 - Future program ideas
 - History of cooling load methods
 - Growing facility cooling load calculations
 - See attachment III for program subcommittee report
8. Standards Subcommittee Report Glenn Friedman
- ANSI/ASHRAE/ACCA Standard 183-2007
ANSI/ASHRAE Standard 203-2015
9. Handbook Subcommittee Report Jim Pegues
Chip Barnaby
- Residential Chap 17
- The chapter has not been revised in 2 or 3 cycles. The material is old in that it does not provide factors for modern construction and energy codes which have highly insulated envelopes
 - Chip will contact residential building committee to seek inputs
- Non-Residential Chap 18 Jim Pegues
- Discussion about implications from RP 1729 on handbook revision
 - Jonathan Wooley and others from Center for the Built Environment at UC Berkeley presented suggested changes to the handbook during subcommittee meeting. The changes were based on their research study focusing on the heat transfer dynamic difference between radiant and air systems. TC members will set up a separate meeting to discuss action items to address those concern. The tentative approach is to identify and prioritize all changes needed, and potentially address the high priority ones for the next handbook cycle.
- See Attachment IV for handbook subcommittee report.
10. ASHRAE Website for TC4.1 Jim Pegues
11. Old Business Suzanne LeViseur
12. New Business Suzanne LeViseur
- Response needed to inquiry on ASHRAE's stands on cooling load calculation methods
 - Jim Pegues drafted response, and has sent to the committee to review



ASHRAE Technical Committee 4.1

- Voting members should review and vote via email for approval
- TC re-organization
 - TC member discussed the TC re-organization effort by ASHRAE at length
 - People recognized the need for improve efficiency but also expressed concerned for reduced work quality if subcommittee meetings were changed to web meetings with the re-organization. Benefits of In-person meetings include promote productive and communication, which are critical for research development
 - The committee will respond collectively to sh4@ashrae.net
 - See Attachment VI for ASHRAE TC reorganization proposal
- Indoor plant production facility design, systems, and equipment – MTG proposal form
 - Suzanne sent email to TC members requesting opinion on whether the TC would like to participate in the MTG. If so, which member should participate
 - Members responded to support participation
 - Bob Doeffinger volunteer to participate

13. Adjournment

Suzanne LeViseur



ASHRAE Technical Committee 4.1

Meetings

TC 4.1 Load Calculation Data and Procedures

Monday 2:15pm-4:15pm
Grand Ballroom A, Omni – M4, North

TC 4.1 Handbook Subcommittee

Sunday 3:00pm-4:00pm
(Sycamore, Omni – M2, North)

TC 4.1 Research Subcommittee

Sunday 4:00pm-5:00pm
(Sycamore, Omni – M2, North)

TC 4.1 Programs & Standards Subcommittees

Sunday 5:00pm-7:00pm
(Sycamore, Omni – M2, North)

RP-1729 Project Monitoring Subcommittee

Radiant Cooling

Sunday 8:00am-9:00am
(Redwood, Omni – M1, North)

Workshop 3

Room Loads to Equipment Sizing Missing Link: How Can ASHRAE Help Young Engineers?

Sunday 1:00pm-3:00pm
(Georgia World Congress Center, Building A, Level 4, Room A410)

Seminar 26

Load Calculation Considerations for Radiant Systems

Monday 8:00am-9:30am
(Georgia World Congress Center, Building A, Level 3, Room A301)

Seminar 38

Tall Space Load Calculations

Monday 11:00am-12:00pm
(Georgia World Congress Center, Building A, Level 4, Room A410)

Note: The Omni, North Tower, M2 level connects via covered walkway to GWCC, Building A on the 4th floor. Building A can also be accessed through doors on Andrew Young International Blvd. across from State Farm Arena.



ASHRAE Technical Committee 4.1

Officers and voting members for 2018/2019:

Suzanne LeViseur, PE	Chair	Voting
JingJuan Feng	Vice Chair	Voting
Rolando Legarreta, PE	Secretary/ Research Subcommittee Chair	Voting
James Pegues	Webmaster/Handbook Subcommittee Chair/BIM Liaison	Voting
Glenn Friedman, PE	Standards Subcommittee Chair	Non-Voting
Rachel Spitler	Programs Subcommittee Chair	Voting
Steven Bruning, PE		Voting
Jeffrey Spitler, PhD		Voting
Charles Barnaby		Voting
Elyse Malherek		Voting

TC/TG/TRG Activity Feedback Form

Version: 18-D1

Please provide feedback on your TC/TG/TRG activities and return this form by **Tuesday night 9:00 pm** to your Section Head by email or drop off a printed copy in the Section Head's mailbox folder outside the ASHRAE Headquarters Room.

Include activities performed since the last TC meeting (e.g. any letter ballots, submissions to RAC, award nominations, etc.)

PLEASE DO NOT LEAVE NUMERIC CELLS EMPTY. ENTER 0 IN CELLS IF THERE IS NO COUNT.

TC#	4.1		Committee Name:	Load Calculatinos								
			Chair:	Suzanne LeViseur								
Meeting was Held (City)	Atlanta		(Day)	Monday	(Date)	1/14/2019						
Membership				Quorum Established (Yes/No)								
				Number Present	Remote Participants	Total on Committee Roster						
Voting Members (excluding Non-Quorum Members)				7	0	9						
Non-Quorum Members				0	0	0						
Corresponding Members				9	0	45						
Provisional Members				3	0	24						
Visitors/Guests				2	0	n/a						
All members/guests who are ALSO YEA members				3	0	31						
Handbook Responsibilities				Standards Responsibilities								
Total Number of Chapters				2	Total Number of Standards		2					
Chapter(s) approved at this meeting				0	# Standards recommended		0					
Special Publications (last six months)				0	Title(s):							
Program Activities (For This Meeting)												
Total # of Forums			Total # of Seminars			Total # of Debates			Total # of Paper Sessions			
Submitted*	Sponsored	Co-sponsored	Submitted*	Sponsored	Co-sponsored	Submitted*	Sponsored	Co-sponsored	Submitted*	Sponsored	Co-sponsored	
1	1	0	2	2	1	0	0	0	0	0	0	
Other Presentations												
TC Research Results				0	Other Papers**				0			
Current Research Activities (active)						TC Management						
# of new/revised RTARs submitted						Minutes completed on time?						
1						NO						
# of other active RTARs						Agenda distributed on time?						
0						NO						
# of new/revised Work Statements submitted						Did Chair attend training?						
0						NO						
# of other active Work Statements						Did Vice Chair attend?						
0						NO						
# of active TRPs						Did Program Chair attend training?						
0						NO						
# of active RPs						Did Handbook Chair attend training?						
2						YES						
# of RPs completed & approved at this meeting						Did Research Chair attend breakfast?						
0						NO						
Problems getting RTAR/WS approved?												
NO												
Other Technical Activities						Award Nominations (last six months)						
# FAQs updated this meeting						# of Other Nominations: Hightower, Research, Fellow, etc.						
0						0						
# New members added to roster						Specify Award :						
3						none						
Any Concerns or requests for the Technical Activities Committee? (Please type in space below, use Alt+Enter to drop to a new line)												
Currently finalizing an RTAR that we will have a letter ballot on to submit prior to the February 15th RAC deadline. The idea came from another TC that asked us to take the lead - but they would co-sponsor Proposed restructuring caused quite an uproar - many have stated they will be submitting the form prior to February 15th.												



Shaping Tomorrow's
Built Environment Today

TC Sign-in Sheet

Meeting Info: _____ Date: _____

Name	Affiliation	E-mail	Member (Voting, Corresponding, or Guest?)	YEA Member? (Yes/No)
Russell Taylor	United Technologies	taylor@utrc.utrc.com	CM	N
Christian Bach	Oklahoma State University	cbach@okstate.edu	CM	N
Jeff Spitzer	OSU	spitzer@okstate.edu	Voting	N
Rachel Spitzer	Cyntegy	rspitzer@cyntegy.com	Voting	X
Steve Bruning	Newcomb Boyd	sbuning@newcomb-loyd.com	Voting	N
Jason DeGraw	NREL	jason.degraw@nrel.gov	Provisional CM	N
Bob Doelinger	ZMM, Inc	bob @zmm.com	CM	N
LIAM BOCKETT	IES Ltd	liam.bockett@iesinc.com	PCM	N
Mimi Malhotra	ORNL	malhotram@ornl.gov	PCM	N
Chris Barnaby		chrisbarnaby@gmail.com	Voting	N



Shaping Tomorrow's
Built Environment Today

TC Sign-in Sheet

Meeting Info: _____ Date: _____

Name	Affiliation	E-mail	Member (Voting, Corresponding, or Guest?)	YEA Member? (Yes/No)
JIM BEGUES	CANNON CORPORATION	James.F.Begues @cannon, etc.com	VM	N
LARRY SUN	DME	larry.sun@dmg hvac. com	CM	N
SOM SHRESTHA	ORNL	shrestha.s@ornl.gov	EM	N
James Wilkins	PM-Group	christophers.wilkins@ pmgroup-	CMA	N
BRIAN ROCK	UNIV. OF KANSAS	bracman@ka.edu	CM	N
Christopher Fernandez	Georgia Tech	cfern34@gatech.edu	G	N
Jingjuan Dave Feng	Taylor Engineering	dovefeng@gmail.com	VM	N
Stephen Roth	Carmelsoft	sroth@carmelsoft.com	CM	N
Timothy Moore	IES, Ltd.	t.moore@iesve.com	Guest	N
Glenn Friedman	Taylor Engineering	gfriedman@ taylor-engineering.com	NVM	N

TC 4.1 Programs and Standards Subcommittee Meeting

5-6 PM, Sunday, January 13, 2019

Sycamore Room, Second Floor of the Omni South Tower

Minutes prepared by co-chair, Rachel Spitler (rspitler@cyntergy.com)

1. Meeting convened at 5:16 PM. The chair was absent, but the co-chair and about five others were present.
2. The committee and guests were informed about the programs at the current meeting: Workshop 3, "Room Loads to Equipment Sizing Missing Link: How Can ASHRAE Help Young Engineers?" (1:30-3:00 PM on Sunday, January 13, in Room A410, Fourth Floor of the Georgia World Congress Center); Seminar 26, "Load Calculation Considerations for Radiant Systems" (8:00-9:30 AM on Monday, January 14, in Room A301, Third Floor of the Georgia World Congress Center); and Seminar 38,, "Tall Space Load Calculations" (11:00 AM – 12:00 PM on Monday, January 14, in Room A410, Fourth Floor of the Georgia World Congress Center).
3. Workshop 3 was briefly discussed – No clear result or path forward was obvious. Jim Pegues and Rachel Spitler to review results and discuss with Larry Sun and Glenn Friedman. One thing that was noticed was that there were a lot fewer attendees than expected; this seemed to be due to tours and other conflicts.
4. Future programs were discussed. Specifically, a historical program for Kansas City. Glenn Friedman had suggested "The Accuracy of Load Calculations". Chip Barnaby said providing a reality check would be helpful and raised the question that when capacity was short, what was the problem? Chip also mentioned that Jeff Haberl has a lot of historical information connected to load and energy calculations, but also advised that it might not be judicious to shine light on old methods that we no longer support. This was tabled for further discussion in the full committee meeting.
5. A recommendation was made to focus on one submission for Kansas City and then try to rebuild ideas for Orlando.
6. A future program suggestion was also made of "Climate Change and Load Calculations". A recommendation was made to see if the Climate Change committee (TC 2.5) has prediction information and could share with us. If so, we can run loads and present results. A decision was made to get in touch with TC 2.5 and plant some seeds, with the hope to do a presentation in a year or two.
7. There was no update on Standards.
8. The meeting adjourned at 5:44 PM.



ASHRAE Technical Committee 4.1

TC 4.1 Handbook Subcommittee Report

Atlanta, GA
January 13, 2019

1. Work Schedule for 2021 Handbook – Fundamentals – Chapters 17 and 18

Date or Timeframe	Work Phase	Description
1/2018 – 5/2019	Review	Review current chapter to identify revisions and additions.
11/2018 – 1/2020	Construction	Make revisions and additions
1/2020	Approval	Committee vote to approve revisions
TBD/2020	Submission	Submission of revised chapters to ASHRAE staff.
6/2021	Publication	Handbook sent to members.

2. Room Load Calculations for Radiant Systems

- a. The research team for RP-1729 gave a summary of project results.
 - They found the dynamic conversion of heat gain to load does change in a room with radiant cooling panels.
 - Heat is removed by radiation rather than convection as in air systems.
 - This tends to speed up heat gain conversion, and reduce the effect of room mass to moderate loads.
 - The RTSM method would need modification to represent behavior of this type of room.
 - Action: Jim to arrange a web meeting between now and Kansas City to develop proposal for short term actions for Chapter 18 resulting from RP-1729.
- b. Jonathan Woolley of the Center for the Built Environment at U Cal Berkeley gave a presentation on the need to redefine the term “cooling load” in Chapter 18.
 - The current definition of “cooling load” is appropriate for air systems, but not for other types of systems such as radiant systems, natural ventilation cooling, or systems that allow the room dry-bulb temperature to vary (drift). This proposal was motivated as a result of project work for the California Energy Commission (CEC) and the CEC’s interest in having ASHRAE create a more widely applicable definition.
 - Jonathan provided a list of issues that need to be addressed in Chapter 18 to resolve this problem.
 - Jonathan attempted to revise Chapter 18 to demonstrate how the changes could be made, but wound up rewriting every paragraph because the definition of cooling load is so intertwined with the material.
 - We discussed that the TC needs time to study the proposals and consider actions. Because we are late in the revision cycle, this work may spill into the 2022-2025 revision cycle.
 - Jim Pegues will circulate Jonathan’s presentation to committee members for review and discussion.
 - Jonathan will also share his revision of Chapter 18 with Jim who will also circulate for TC review.
 - Concern was expressed that rewriting the Chapter to use a comprehensively applicable definition of cooling load may make the chapter unusable. The majority of HVAC systems applied are still air systems. And the majority of readers are seeking load calculation procedures for that type of HVAC system. So a more appropriate solution may be to clarify in the existing material that the HBM and RTSM methods are formulated specifically for air systems, and add material noting that room load behavior changes for other system types (radiant, natural ventilation cooling, systems with drift), and



ASHRAE Technical Committee 4.1

referencing the ASHRAE and CBE research on the subject. This note could grow over time to provide more specific advice for calculation loads for those system types.

- No decisions on actions taken. First step is to allow TC to review the presentation materials.
3. Residential Load Chapter
 - a. Chip Barnaby noted the TC needs to consider how to proceed on this Handbook chapter.
 - b. The chapter has not been revised in 2 or 3 cycles. The material is old in that it does not provide factors for modern construction and energy codes which have highly insulated envelopes.
 - c. Options are
 - (i) Leave chapter as is for another cycle
 - (ii) Drop the chapter from the handbook since the industry overwhelmingly uses ACCA Manual J
 - (iii) Revise the chapter, supplying updated factors representative of modern construction practices and codes. This requires substantial work to develop the new factors.
 - d. Action: Proceed with the member reviews of the chapter.
 - e. Action: Chip will contact the Residential Building Committee to seek input on whether continuing to have a residential load chapter is important for supporting the ASHRAE residential focus, and to seek advice in general.
 4. Revision of Chapter 18 Example Problem
Was not discussed due to lack of time. Will be addressed separately by web meeting.
 5. Guidance About Deriving System Loads from Room Loads
Discussed as part of Programs subcommittee.
 - a. Workshop 3 was held Sunday. ~60 attended the presentation, but ~30 participated in the group discussions.
 - b. Feedback was captured and will be transcribed by Jim Pegues and circulated to TC members for follow-up discussion.
 - c. Any actions regarding Chapter 18 content will result from the follow-up discussion.

ATTACHMENT 1

AGENDA
SECTION TC/TG/TRG CHAIR'S BREAKFAST MEETING
2019 Winter Meeting
Atlanta, GA

Sunday, January 13th

6:30 A.M. – 8:00 A.M. EST

OMNI Hotel – ALL Section meetings located in North Tower of Omni

Section 1, Grand Ballroom C, M4 Floor
Section 3 Willow Room, M4 Floor
Section 5, Redwood Room, M1 Floor
Section 7, Cottonwood B, M1 Floor
Section 9, Dogwood A Room, M1 Floor
Section MTG, Juniper Room, M2 Floor

Section 2, Magnolia Room, M2Floor
Section 4, Cypress Room, M2 Floor
Section 6, Grand Ballroom B, M4 Floor
Section 8, Dogwood B Room, M1 Floor
Section 10, Sycamore Room, M2 Floor

- I. CALL TO ORDER
- II. ROLL CALL AND INTRODUCTIONS (5 minutes)
- III. ADDITIONS AND/OR CHANGES TO THE AGENDA (5 minutes)
- IV. REVIEW ANY SPECIAL ASSIGNMENTS, ACTION ITEMS FROM LAST MEETING, AND NEW ISSUES (10 minutes).
New Assignments:
A. To be determined
- V. DISTRIBUTE WRITTEN INFORMATION AND REQUESTS FROM SOCIETY LIAISONS TO TC/TG/TRG CHAIRS (30 minutes).

Additional Potential Announcements/Reminders:

A. NEW!

1. 2018-2019 George B. Hightower Award Recipient – David Moss – TC 9.9
2. 2018-2019 Service to ASHRAE Research Award Recipient – Jensen Zhang – TCs 2.3, 4.3, and 4.10
3. Discuss if TGs, TRGs, and MTGs in section will continue in 19-20 Society Year
4. 19-20 Roster Update process & Schedule
5. MTGs that have been formed since Houston Meeting – MTG.HWBE (Health and Wellness in the Built Environment)
6. New Resilience & Security TC formed
7. New version of TC MOP (Manual of Procedures) has been posted the Technical Committee page on the website under the heading *Procedures, Forms & Information for TCs/TGs/MTGs and TRGs*
8. How to Import Your TC Roster Information into MS-Outlook
9. Fall 2018 Basecamp webinar feedback, if any?
10. Residential Building Committee (RBC) interested in co-sponsoring related TC research.

B. AT THIS MEETING

1. On-Site Training Options – TC Program Subc. Chair and Research Subc. Chair Training
2. Free Wi-Fi Access at this Society Meeting
3. Name Badges

C. UPCOMING DEADLINES

1. TC Activity Forms for the Atlanta Meeting are Due to Section Heads before Wednesday, 1/16/19
2. Seminar and Forum proposals for Kansas City are due by Friday, February 8, 2019
3. Remote Participation Meeting Requests for 2019 Annual meeting – Kansas City are due by April 5th, 2019 **Subcommittee meetings and RPMs will NOT be scheduled unless requested through the Meeting Request form.** The link will be available February 4th, 2019

D. REMINDERS

1. 2018-2019 Rosters Access & Distribution
2. 2018-2019 E-mail Position Alias List Available
3. Useful TC/TG/TRG/MTG Chair Information and forms on ASHRAE Website

4. Request for each TC to review ASHRAE Code of Ethics at start of TC meeting
5. Make Special Effort to Welcome New Members and Visitors (Potential Members) to TC Meeting
6. Option for TC Subcommittee Meetings via Conference Calls and Web Meetings
7. Is your TC Website Up-to-date? – Houston minutes posted? – Atlanta agenda posted?
8. 2018-2019 TC Master Calendar – Now Available through Google

E. RECENT ANNOUNCEMENTS

1. CEC's Standing Request for Future Society Meeting Program Track Suggestions
2. CEC Seeks TC Volunteers willing to Support Content Development and Quality Control for Society Technical Program at Society Meetings
3. The Professional Development Committee (PDC) is seeking ideas for new ASHRAE Learning Institute (ALI) courses

F. CURRENT & UPCOMING ASHRAE CONFERENCE PROGRAMS

1. Program Focus of Atlanta Meeting
2. Kansas City Meeting – June 22 – 26, 2019
3. Orlando Meeting – February 1 – 5, 2020

G. OTHER UPCOMING WORKSHOPS AND CONFERENCES

1. See Item G in handout

VIII. REMARKS FROM SOCIETY LIAISONS TO TC/TG/TRG CHAIRS

Liaison members from Research Administration, ASHRAE Program, Handbook, Standards, and other standing committees will have an opportunity to describe their committee activities that relate to the TC/TG/TRG functions, if time permits. Written announcements must be provided as a minimum by liaisons in order to have an opportunity to speak at this meeting.

ADJOURN

Note: This agenda will be discussed and finalized during the full TAC meeting in Atlanta. This draft of the agenda is only intended to promote thinking prior to and discussion during that meeting.

**Announcements and Reminders for TC/TG/TRG & MTG Chairs
ATLANTA 2019**

A. NEW!

1. 2018-2019 George B. Hightower Technical Achievement Award Recipient – David Moss, TC 9.9

Mr. David Moss contributions to ASHRAE & TC 9.9 in the past four years is impressive and includes the following: Lead author and technical editor of the 2016 ASHRAE Datacom Book “IT Equipment Design Impact on data Center Solutions”, Book #13. Major contributor to three other Datacom Book Series Books (Book #1 4th edition, Book #13 and Book #14) Seminar #5 presenter at 2014 annual meeting. Seminar # 42 presenter in 2017 at winter meeting. Led the ASHRAE IT subcommittee team effort in 2016 to reverse the change to IEC 62368-1 standard. David’s willingness to take on hard tasks for the TC and ASHRAE makes him a well-qualified recipient for this award.

2. 2018-2019 Service to ASHRAE Research Award - Jensen (Jianshun) Zhang TC 8.6 in the last

Prof. Jensen Zhang is a valued member of the ASHRAE research community. He has helped to write many RTARs and several WS, as well as having been the PI for projects. He brings many ideas and much enthusiasm to the table. In the last few years, just in TC 2.3, he has worked on RTAR-1846 *Real Time Small sensors* and proposed RTARs on a reactive air cleaner performance test method for VOC levels, the role of gas filtration improving IAQ in residences, and corrosion in data centers. Often the originally proposed RTAR doesn’t end up being submitted, but the discussions of ideas feeds into other work that the committee submits. He also contributes to the ASHRAE Research Program by sending references to other groups to help with their RTAR/WS.

3. Discuss and confirm which TGs, TRGs, and MTGs in section will continue in 19-20 Society Year or merge or disband

TAC voted to disband MTG.BD, Building Dampness at this meeting.

4. 2019-2020 Roster Update Process & Schedule

By now, each TC Chair should have received an e-mail from ASHRAE Staff (Tara Thomas), containing a unique link to an online workbook for your particular TC that will allow you to update membership and roster assignments in order to create your SY19-20 roster. Please make sure that you received this e-mail and that the completed workbook is submitted on or before Tuesday night, January 15th, of the Winter Meeting. A recorded training presentation on how to use this workbook is posted on our website at <https://www.ashrae.org/technical-resources/technical-committees/tc-training-and-presentations>. On-site training will not be available at the winter meeting.

5. MTGs that have been formed since Houston Meeting – MTG.HWBE (Health and Wellness in the Built Environment)

Scope: MTG.HWBE will coordinate TC/TG/TRG technical activities related to enhanced health and wellness of the occupants in the built environment. The focus of the MTG will be to help to foster and expand internal and external organizational partnerships in this subject area, particularly with organizations developing green building rating systems (e.g., ASHRAE bEQ, LEED; WELL, Living Building Challenge; RESET, etc.) government agencies and research institutes. The objective of this coordination is to strengthen and improve the development and utility of these green building rating systems, to increase ASHRAE’s knowledge and expertise in

this emerging field, and to become more effective in disseminating the results of research and practice in this field to ASHRAE members and others.

MTG.HWBE will bring together expertise from various ASHRAE groups (TC 1.12, TC 2.1, STD 55, EHC, STD 189, SSPC 62.1, SSPC 62.2 and others) and from other non-ASHRAE organizations (AIA, CDC, Google, GSA, Harvard CCHGE, IAQA, IEQ-GA, ILFI, ISHRAE, IWBI, NIBS, USGBC,) to work in close collaboration to achieve the following objectives:

- ✓ aggregate existing and newly issued scholarly and non-scholarly literature related to enhanced health and wellness in the built environment;
- ✓ ensure that research results and other developments are integrated into existing ASHRAE publications such as handbooks, guidelines, guides and standards;
- ✓ develop and maintain technical online resources on ASHRAE's website regarding enhanced health and wellness in the built environment;
- ✓ provide opportunities for new, potentially co-funded, research and development on how to measure the tangible effects of the built environment on the enhanced health and wellness of the building's occupants; and
- ✓ Communicate the tangible and non-tangible benefits of applying building enhanced health and wellness criteria and requirements to ASHRAE's current design, construction and operational and maintenance practices.

Other TCs GPCs, and SPCs may also now wish to participate in this MTG with a Voting Representative and Alternate(s) given its scope and charge. If so, the MTG will be meeting as follows at the 2019 winter meeting in Atlanta: Tues. (1/15) 12 pm to 2 pm Walnut (M3, North), Omni.

6. New TC Formed

Title: TC 2.10 (Resilience and Security) – NEW!

Scope: TC 2.10 Resilience and Security is concerned with fundamental scientific and engineering design principles for the resilience of the built environments subjected to extraordinary events including mitigating consequential damages, remediation, and recovery.

TG2 HVAC Security requested and was approved to become TC 2.10. Jason DeGraw is chair of this committee.

7. New TC MOP (Manual of Procedures) issued in December 2018

TAC has revised the TC MOP to address a couple issues and the new TC MOP can be found on the ASHRAE website www.ashrae.org/TCs under the heading *Procedures, Forms & Information for TCs/TGs/MTGs and TRGs*.

8. How to Import Your TC Roster Information into MS-Outlook

Detailed instructions on how to import your TC roster information into MS-Outlook has been created and an e-mail announcement will be issued to all TC chairs, vice chairs, and secretaries once these instructions and the restructured TC MOP are posted to the TC page of the website (www.ashrae.org/TCs)

9. TAC and ECC conducted a training webinar for TCs on Dec. 7, 2018 – Any Feedback?

An introductory training webinar on Basecamp was conducted for TCs this past fall. If you would like to review this webinar and the supporting documents, please go to the following webpage on the ASHRAE website and scroll down to the **Basecamp** heading:

<https://www.ashrae.org/technical-resources/technical-committees/tc-training-and-presentations>

If you have any feedback for improvement, please pass it on to MORTS@ashrae.net

10. Opportunity to Team-up with the Residential Building Committee on Research Projects

The Residential Building Committee (RBC) is interested in learning about potential research activities within or closely related to its scope. (See below) If your TC, TG, MTG, etc. is working on an RTAR or work statement that fits the scope of RBC, please let us know. If it proves to be of mutual interest, RBC would like to be a co-sponsor. Research requests supported by multiple committees and/or standing committees usually earn preference due to the broader support.

Excerpt from Residential Building Committee Scope:

This committee shall be responsible for identifying major residential trends impacting the practice of HVAC&R, and making recommendations on new activities and policies in response to these trends. In addition, this committee shall serve as a resource to the Society on activities and issues that relate to residential impacts of building technologies including but not limited to ventilation, and thermal organizations that focus on residential buildings.

Please send a copy of the RTAR or Work Statement to RBC Staff Liaison Lilas Pratt:
lpratt@ashrae.org

11. Distribution of TC minutes changed in TC MOP

The TC MOP and *TC/TG/MTG/TRG Minutes Cover Sheet* form have both been updated and you are no longer required to send the TAC chair a copy of your minutes after each meeting. The new minutes cover sheet can be found on the ASHRAE website www.ashrae.org/TCs under the headings *Procedures, Forms & Information for TCs/TGs/MTGs and TRGs – Routine Forms for TC/TG/MTGs/TRGs.*

12. Basecamp Information from ECC

More and more TCs and standing committees are making use of ASHRAE's subscription to Basecamp3 to better organize, store, and distribute online committee files that are needed for their meetings through a dedicated committee Basecamp site. If you would like to learn more about Basecamp and how to request a site for your particular committee, please go to the Electronic Communications Committee (ECC) web page: (<https://www.ashrae.org/technical-resources/technical-committees/tc-training-and-presentations>) and scroll down to the section titled *Basecamp*

B. AT THIS MEETING

1. On-Site Training Options

i. **RAC's Research Subcommittee Chair's Breakfast**

Monday, January 14th, 6:30 AM – 9:30 AM in Grand Ballroom D2/E, M4 Floor, North Tower, Omni Hotel. 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 any resolve issues & questions that the TC may have concerning their research program. The training portion of this meeting will include a trivia test on the *Research Manual*.

ii. **TC Program Subcommittee Chair Training in Atlanta**

Tuesday, January 15th, 11:15 AM – Noon, A409 Room, 4th Floor, Bldg. A, Georgia World Congress Center (GWCC). *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:

- *Handbook chair meeting.*

- 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. Free Wi-Fi Access at this Society meeting

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 Omni Hotel, and Georgia World Congress Center (GWCC). 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.

Username: ASHRAE2019

Password: atlanta19

Username & passwords are case sensitive

3. Name Badges

As offered in the past, members of TCs who are not registered for the Conference and plan to only attend TC meetings may receive a free, plain white name badge. The purpose of these badges is for TC members not registered for the Conference to be able to identify one another in meetings.

To receive your badge, please go to the ASHRAE Registration desk located in the International Ballroom (A-D) at the Omni Hotel in the North Tower on level M2 and look for the sign for "TC Badges." Please identify yourself as someone only attending committee meetings, not registered for the Conference, who would like a white name badge. An ASHRAE staff person will create a badge for you that includes your name, company name and city, state and country (if outside the U.S.). The badge will not have a QR code and will not allow you into the Technical Program.

However, if you'd like to register for the entire Conference you can do so in advance or on-site. We realize your time is limited, one-day registrations (\$240 for Members) are available as well as one-session registrations (\$70). If you wish to register for one day of the Technical Program you or one session, you can do so at the ASHRAE Registration desk. The One-Day option gives you access to the Virtual Conference which is viewable on-demand for 18 months. Questions? Contact meetings@ashrae.org.

C. UPCOMING DEADLINES

1. TC Activity Forms for the Atlanta Meeting are due to Your Section Head before Wednesday, 1/16/19

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.

2. Seminar and Forum proposals for Kansas City are due by Friday, February 8th, 2019.

Please visit the following site to submit your proposal:

<https://ashraem.confex.com/ashraem/s19/cfp.cgi>

For more information, go to: <https://www.ashrae.org/conferences/annual-conference>

3. 2019 RPM (Remote Participation Meetings) Request for Kansas City Meeting

ASHRAE has streamlined the process for requesting RPM meetings moving forward, which will allow us to confirm meeting information earlier in advance of the actual meeting dates.

The updated procedures are as follows:

- ALL committees that want to be considered for an RPM capable meeting in Kansas City next June must turn in an ASHRAE Meeting Room Request Form for Kansas City to the ASHRAE Meetings section.
- The request should include the reasons why you are requesting RPM meeting capability.
- RPM meeting requests for the upcoming Kansas City Annual meeting should be submitted by Friday, April 5th or sooner. **Subcommittee meetings and RPMs will NOT be scheduled unless requested through the online Meeting Request form.** The link will be available February 4th, 2019
- Confirmation emails (verifying the requests) will be sent out in May 2019
- Requests received after the above date may not be accommodated due to high and growing demand for this service.

D. REMINDERS

1. **2018-2019 Rosters Access & Distribution** - Remember, the current 2018-2019 roster for your TC, TG or MTG is in effect until after the June meeting this year – through Friday, June 30th.

By now, each TC, TG and MTG chair should have received a PDF & MS-Excel file of their new 2018-2019 roster from their Section Head or staff for distribution to the committee. In addition, each member can view all of their ASHRAE committee rosters on the ASHRAE Website. Go to www.ashrae.org <http://www.ashrae.org>, click on the "Membership" tab in the header, then click on "My Participation" text in the "My ASHRAE" column, and scroll down and click on the "Manage" button. Log in with your username and password and then Click on "Committees" in left-hand side bar to view all your committee rosters. 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. **TC 18-19 E-mail Position Aliases list now Available**

The 18-19 E-mail Alias list with the position aliases positions of the Technical Committee management team (Chair, Vice Chair, Secretary, Standards Sub. Chair, Program Sub. Chair, Handbook Sub. Chair, and Webmaster) is posted on the ASHRAE website www.ashrae.org/TCs under the heading *Procedures, Forms & Information for TCs/TGs/MTGs and TRGs.*

3. **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>

4. **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/>
5. **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.
6. **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

7. **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. 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.

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 Mark Owen for review and approval (mowen@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) within 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/technical-resources/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 schedule to maintain the new websites.

8. **TC 2018-2019 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. 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 Austin 2020 Annual 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.

2. 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.

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

The Professional Development Committee (PDC) is actively seeking ideas for new ASHRAE Learning Institute (ALI) courses. We need 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 include courses with a focus on new technologies that need to be shared, fundamentals for engineers new to the discipline, standard applications that need explanation, and courses based on new design guides. Does your TC have a potential course idea? Contact Karen Murray (ASHRAE staff) kmurray@ashre.org or Charles Henck (2018-19 PDC chair) PDCchair@ashrae.net with your course ideas.

F. CURRENT & UPCOMING ASHRAE CONFERENCE PROGRAMS

1. **Atlanta Winter Conference – Jan. 12 – Jan. 16, 2019**

Conference Website: <https://www.ashrae.org/conferences/winter-conference>

Conference Program Chair: Corey Metzger

Program Focus at Chicago Winter Conference

- i. Track 1: Systems and Equipment
- ii. Track 2: HVAC&R Fundamentals and Applications
- iii. Track 3: Refrigeration
- iv. Track 4: Construction, Operation, and Maintenance of High Performance Systems
- v. Track 5: Common System Issues and Misapplications
- vi. Track 6: The Convergence of Comfort, Indoor Air Quality, and Energy Efficiency
- vii. Track 7: Building Integrated Renewables and Natural Systems
- viii. Track 8: The Engineer's Role in Architecture

2. **Kansas City Annual Conference - June 22 – June 26, 2019**

Seminar and Forum proposals for Houston are due by **Friday, February 8th, 2019**. Conference Website: <https://www.ashrae.org/conferences/annual-conference>

Conference Program Chair: Carrie Anne Monplaisir Email: cindym@tmmechanical.com

Program Focus at Kansas City Annual Conference

- i. Track 1: Systems & Equipment in the Built Environment
- ii. Track 2: Fundamentals & Applications
- iii. Track 3: Optimization in HVAC&R
- iv. Track 4: Commissioning New & Existing Buildings
- v. Track 5: Occupant Health & Safety
- vi. Track 6: Modeling Throughout the Building Life Cycle
- vii. Track 7: Professional Development
- viii. Track 8: Research Summit
- ix. Track 9: Radiant Heating & Cooling Mini-Track

G. OTHER UPCOMING WORKSHOPS, CONFERENCES AND EVENTS

1. 2019

- i. **Airvent - Indoor Air Quality, Ventilation and Energy Conservation in Buildings**– Feb. 13, 2019 – Moscow, RUSSIA - <http://events.abok.ru>

- ii. **51st AiCARR International Conference - The Human Dimension Of Building Energy Performance** – Feb. 20 to 22, 2019, Venice, ITALY -
<http://www.aicarr.org/Pages/Convegni/CallForPapers.aspx>
- iii. **13th REHVA World Congress CLIMA 2019** – May 26 to 29, Bucharest, ROMANIA -
<https://www.clima2019.org/congress>
- iv. **ICR 2019** – Aug. 24 to 30 – Montréal, CANADA
<http://icr2019.org/registration/>
- v. **5th International HVAC/R Congress** – Aug. 28 to 29 – Puerta de Oro, COLUMBIA
<https://acaire.org/congreso/>
- vi. **2019 ASHRAE Building Performance Analysis Conference** – Sep. 25 to 27, Denver, Colorado, USA
<https://www.ashrae.org/conferences/topical-conferences/2019-ashrae-building-performance-analysis-conference>
- vii. **ASHRAE 2019 Webcast** – The Future of Refrigerants: Unitary and VRF Systems – Apr. 17 & 18 – Register at <https://www.ashrae.org/professional-development/ashrae-webcast>



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January 13, 2019

TC/ TG/ MTG/ TRG Chairs & Vice Chairs,

We have heard from our membership that the current Functional Groups (FG - includes TCs, TGs, MTGs, and TRGs) structure is not working as efficiently or effectively as in the past. We need to determine how to be contributors and the driving force in our industry. From our recent membership survey, we identified the following issues:

- We are working in silos; too specific; need more global perspective
- Management of stagnant TCs and membership is lacking
- Takes too long to change things in TCs- members are getting discouraged
- We are not maintaining industry leadership
- We need to do a better job of sharing best practices

TAC owns these issues and we are working to address them. We have started to invest time and funds in technology/ forms, including BaseCamp, a new electronic roster tool, and a revised activity tracking form. In addition, a committee was formed a few months ago to look at reorganizing the FG structure. By taking on this reorganization, we hope to:

- Decrease the silo effect
- Increase collaboration for programs, research & handbook
- Increase meeting efficiency & increase the effectiveness of members' volunteer time

PROPOSED PLAN

There are over 110 FG meetings and 180 subcommittee meetings at every conference. Many of these meetings overlap each other, and/or run concurrently to the technical program, limiting the number of attendees that could attend and participate in the discussion & exchange of ideas.

We propose to re-form the existing FGs into about 30 new technical working groups (TWGs) based on similar scope & function, with merged attendance of between 75-125 members. The meetings would take place during a block schedule (see attachment), moving meetings into afternoon timeslots and utilizing technical program rooms (large rooms with AV). In these 2-hour slots, TWGs could present topical programs (to be included in the technical program), some business of interest to the group and subcommittee breakouts within their slot.

We now have an opportunity to direct the technical vision of the society as we will soon celebrate our 125th anniversary. We have presented a draft proposal to you and now we want your input and suggestions- talk amongst yourselves and feel free to talk to us. We are looking for your input on potential synergies with other functional groups, for example, if your FG were to reform with 1 or 2 other groups, which ones do you think most align with your current scope? Our goal is to discuss your questions and concerns in Atlanta and propose a working model for consideration in Kansas City and a rollout in Orlando (2020). Please direct your answers or inquiries to TAC through your individual Section Head or to Sarah Maston, the TWG Reorganization Chair. Thanks for all you do for your membership and ASHRAE!

Best Regards,

Sarah Maston, Chair (sarah@greenfootprintscx.com)

Victor Goldschmidt, TAC (creating2@earthlink.net)

Thom Justice, TAC Chair (justfilter@yahoo.com)

Tom Lawrence, TAC BOD ExO (lawrence@enr.uga.edu)

Barbara Minor, TAC (Barbara.H.Minor@chemours.com)

Larry Smith, TAC (LarryS@li-hvac.com)

Bill McQuade, Planning (William.F.Mcquade@jci.com)



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**TC/ TG/ MTG/ TRG Reorganization
Feedback Form**

We now have an opportunity to direct the technical vision of the society
as we will soon celebrate our 125th anniversary.

We have presented a draft proposal to you and now we want your input and suggestions:

Name _____ TC _____

We are looking for your input on potential synergies with other functional groups, for example, if your FG were to reform with 1 or 2 other groups, which ones do you think most align with your current scope?

I am excited about

I would like to propose

I think we will have difficulty with

Other

Please direct your answers or inquires to TAC through your individual Section Head or to Sarah Maston, the TWG Reorganization Chair, at sarah@greenfootprints.com

Thanks for all you do for your membership and ASHRAE!

Workgroup Notes from Workshop 3, 2019 ASHRAE Winter Conference

TC 4.1 designed Workshop 3 to gather feedback from young engineers and senior engineers about what guidance or resources would help in engineers learning how to bridge the gap from room load calculations to equipment sizing requirements. After a presentation of the issue, the audience was divided into discussion groups who considered two topics: (1) How do engineers deal with the challenge of deriving sizing requirements from room load?, and (2) what guidance or resources would help deal with these challenges, and specifically what can ASHRAE do? At the end of the workshop each group summarized their conclusions. Material below is a transcription of the discussion group notes and of the group summary section of the workshop. The final two pages reproduce the handout sheet given to discussion groups in the workshop.

A. Discussion Group #1 Notes

1. Group Member Introductions
 - 2 university students, 4 mid-career engineers, 2 senior engineers.
 - Design experience in all climate zones.

2. Topic #1 - How Engineers Deal with Challenge of Deriving Equipment Requirements from Room Loads
 - a. Mid-career engineer:
 - Sums room loads and applies a diversity factor like 70%
 - Question of what diversity value to use needs specific research to provide a more specific diversity level.
 - Question of what dew point is needed to meet space level dehumidification requirements. How much do I need to dehumidify versus the cooling load. Does separate calculations for the worst case cooling coil load.
 - Uses Trane TRACE 700 to calculate loads and then does summation with diversity.
 - b. Mid-career engineer:
 - Works on animal facility projects.
 - Gap exists. Animal care facilities have dehumidification concerns. Internal latent loads are high due to continual cage washes. Filtration / air changes is a key factor for specialty spaces. How to transfer that knowledge?
 - High airflow rates required for animal facilities. How to reasonably choose equipment based on the airflow requirements? How to “share” energy rates.
 - Uses Trane TRACE 700.
 - c. Mid-career engineer:
 - Works on research facilities.
 - Uses Trane TRACE 700 to calculate room loads. Then does spreadsheet calculations to get system loads.
 - Works for government clients who require extra reports.
 - Young engineers don’t necessarily know when to:
 - (i) Use one system type versus another.
 - (ii) Size cooling for comfort versus custom design.
 - (iii) Pick equipment based on cost.
 - (iv) Apply many single zone systems to zones versus apply fewer multiple-zone systems to groups of zones.
 - d. Senior-career engineer:
 - Uses Trane TRACE 700 to calculate room loads and then spreadsheet.
 - Outdoor air calculations are based on spreadsheet calculations.
 - Selection of the system is step #1. Needs to address building functions / requirements.
 - Concerns: Which system is appropriate? Control methodology?

3. Topic #2 – What Technical Guidance Would Help?
 - a. How to select a system based on different types of loads.
 - Transient latent loads. Need to condition to avoid bacterial growth. Examples: Marijuana growing facilities, animal care facilities
 - High internal loads
 - b. Non-industry applications – not specific to very specific chapters. (*JP: Does this refer to applications not covered in ASHRAE Fundamentals, Systems, or Applications Handbooks?*)
 - c. Senior engineer knew of tables that used to exist in the ASHRAE Handbook – Fundamentals. Young engineers don’t know this anymore.
 - d. Energy use consumption profiles for different types of system types: heating, cooling, plug loads, ventilation fans, VRF, heat pumps
 - e. Provide a 2-3 page checklist for how you evaluate prescriptive system types:
 - First cost
 - Maintenance

- Control methodology
 - Energy efficiency
 - Specialty loads (latent, internal)
- f. Provide a flow diagram for the process of selecting systems.

B. Discussion Group #2 Notes

1. Topic #1 - How Engineers Deal with Challenge of Deriving Equipment Requirements from Room Loads
 - a. Load calculations aren't the problem, but being familiar or becoming familiar with equipment can be the issue.
 - b. Not having access to resources is also a problem.
 - c. Knowing which component of the system does what in load conditioning is an issue. For example: (i) What would doubling the size of the compressor do? (ii) Reverse engineering: What needs to be modified in a system to most effectively condition load.
2. Topic #2 – What Technical Guidance Would Help?
 - a. Likes the load calculation spreadsheet in Chapter 18 (*JP: I think this refers to Tables 34-39*). Can a similar kind of spreadsheet be provided for equipment sizing?
 - b. Each region sizes and selects by their largest concern. Maybe a sheet where you start with a specific concern and work through the choices that best fit.
 - c. Having a better understanding of the systems. Clients and design engineers have a bottom line and care about price so custom units don't appeal to them based on price. But, if manufacturer's reps help design engineers better understand equipment and what each component affects, this can help engineers make better cases to their clients regarding system selection.
 - d. A lot of design firms just give load calculation results to manufacturers, and manufacturers do the equipment selections.

C. Discussion Group #3 Notes

1. Topic #1 - How Engineers Deal with Challenge of Deriving Equipment Requirements from Room Loads
 - a. Challenges: its a very manual process to plug data into equipment selection software: Calculate room loads => design airflows => mixed load calculations => psychrometric conditions => equipment capacity => sizing requirements.
 - b. How you do it depends on the type of dominant load, i.e., heating or cooling.
 - c. Room loads calculated exactly as needed. There was no oversizing factored in.
 - d. Take "outside the box" factors into consideration that might not be factored into the load calculations.
 - e. Need to oversize heating for morning startup (~40%-50% higher).
 - f. Sizing should factor in oversizing.
 - g. Look at peak humidity conditions.
 - h. Oversizing cooling equipment can lead to humidity control problems.
 - i. Challenge: Understanding sizing for latent vs sensible.
 - j. Check with the "rule of thumb" manual.
 - k. Equipment has a hard time accommodating sensible and latent together. Conditions are cooling/humidity/heating driven.
2. Topic #2 – What Technical Guidance Would Help?
 - a. Provide rules of thumb dependent on region.
 - b. Equipment sales people who know their components and equipment.
 - c. A training course on sizing offered by ASHRAE.
 - d. Ask a lot of questions.

D. Summary Presentation Notes

1. Group #1 Summary
 - a. Gap exists in “how do you pick the system?”.
 - b. Standard vs custom (vendor selected) systems.
 - c. Need to understand out of the ordinary conditions.
 - d. A checklist would help validate the process, considering cost, efficiency, etc...
 - e. Classify systems by system characteristics

2. Group #2 Summary
 - a. Mostly students in this group.
 - b. There is a culture within engineering firms of sending room load calcs to equipment vendors, and equipment vendors derive selections from the room requirements.
 - c. Need better understanding of equipment.
 - d. Could use a spreadsheet for the process – like the room load spreadsheets in HOF Chapter 18.
 - e. Need understanding of regional differences.
 - f. Flow chart idea. Need to know the end to know the beginning.

3. Group #3 Summary
 - a. Diverse young group
 - b. Good equipment level guidance on mixed air.
 - c. Oversize and undersize plants.
 - d. Could use regional guidelines for equipment selection.
 - e. Could use better training courses from ASHRAE.

Workshop 3 – Load Calculations Missing Link

Step 1: Form Discussion Groups

Make sure to mix young engineers and mid-career/senior engineers in same group for diverse perspectives
University students split equally among the discussion groups

Step 2: Introduce Yourself

Explain what you do, whether you're early-, mid-, or senior-career.

Step 3: Choose a Spokesperson

Duties: Provide a 2-minute summary of your group's feedback to the audience at end of workshop.
Choose a young engineer if possible

Step 4: Choose a Scribe

Duties: Jot notes summarizing group's discussion.
Turn in notes at end of workshop to a TC 4.1 member (Larry, Rachel, or Jim)

Step 5: Discussion Topic #1

What challenges are faced by young engineers to become proficient in deriving equipment sizing requirements from room loads?

Consider the young engineer perspective.
Consider the senior engineer perspective.

Notes:

Step 6: Discussion Topic #2

*What kinds of technical guidance or training resources would help overcome those challenges?
How can ASHRAE help?*

Notes:

Reference Material: Missing Link Example

During the prior Workshop at the June 2018 ASHRAE Annual Conference in Houston groups were given a design problem (shown below for reference). The purpose of the exercise was to foster group discussion about the different approaches engineers use to go from peak room cooling and heating loads to equipment sizing requirements. Out of that discussion came recognition that this is a complex problem, there is no “right” way to do it, approaches vary by local climate, application and experience, and that industry guidance in some form could help young engineers become more proficient in this work.

Example Problem from Houston ASHRAE Workshop

Scenario:

1. You're designing HVAC systems for the top floor of an office building (see Figure 1)
2. The floor will have a VAV RTU with 100% recirculation for space conditioning (see Figure 2)
3. The floor will have a Dedicated Outdoor Air System (DOAS) RTU for ventilation (see Figure 3)
4. The RTUs are air-cooled electric DX cooling with natural gas heating.
5. The space conditioning system uses VAV/RH boxes with electric terminal reheat.
6. Your team has already calculated peak room cooling and heating loads.

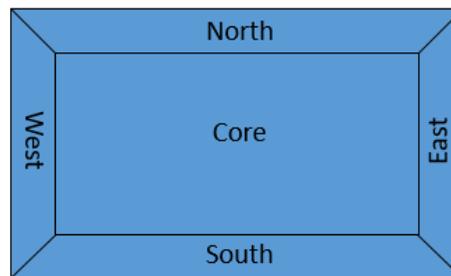


Figure 1. Office Building Floor Plan

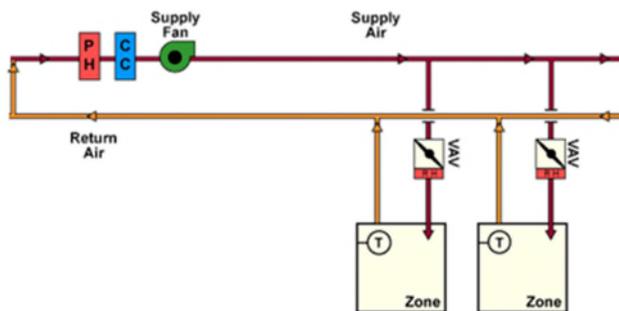


Figure 2. Recirculating VAV/RH System

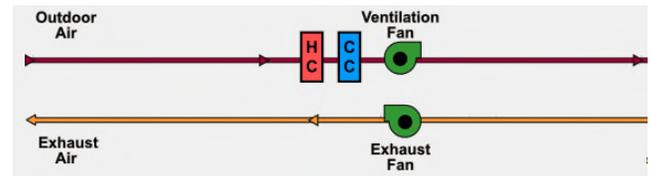


Figure 3. DOAS

Example Problem Output – Describe your Workflow:

1. Describe workflow for sizing the components of each system.

Note: Provide only qualitative descriptions of work process. No calculations needed.