

ASHRAE Technical Committee 4.3: Ventilation Requirements & Infiltration

2016 Summer Meeting

MINUTES

Monday June 27, 2016, 4:15 pm-6:30 pm
America's Center Room 274

1. COMMITTEE AND MEETING INFORMATION

Subcommittee Meetings:

Research: During Main Meeting
Program: During Main Meeting
Handbook: During Main Meeting

Scope: *TC 4.3 is concerned with ventilation requirements and the analysis of infiltration, airflow around buildings, and exhaust re-entry, including their integration with indoor air quality and energy calculations for building and HVAC system design and operation.*

TC Web Site: <https://tc0403.ashraetcs.org/>

2. CALL TO ORDER

Voting Members					
	Name	Position	Company	Roll Off June 30	Present?
1	Steve Taylor	Chair/Research	Taylor Engineering	2016	x
2	Steve Emmerich	Standards	NIST	2016	x
3	Diane Griffiths	Member	Steven Winter Associates	2016	
4	John Carter	Secretary	CPP	2017	x
5	Brian Rock	Handbook	The University of Kansas	2017	x
6	Martin Stangl	Member	RWDI	2019	x
7	Ed Light	Member	Building Dynamics	2019	x
8	Mini Malhotra	Membership	Oak Ridge National Laboratory	2019	x
Non-Voting Officers					
	Steve Duda	Honors	Ross & Baruzzini, Inc.	-	x
	Josephine Lau	Vice-Chair	Univ of Nebraska-Lincoln	-	x
	Anil Parekh	Program	HBC – CanmetENERGY	-	
	Xia Fang	Webmaster	McKinstry	-	

Quorum > 1/2 all VM, excluding NQM; super majority $\geq 2/3$ VM present; simple majority > 1/2 VM present

3. APPROVE AGENDA

a. [Rock/Lau - 7/0/0]

4. APPROVE MINUTES FROM PREVIOUS MEETING

a. [Emmerich/Rock - 7/0/0]

5. ANNOUNCEMENTS (TC Chair)

a. MTG.OBB – Occupant Behavior in Buildings

- 1) Occupant behavior in buildings refers to occupants' comfort preference, presence and movement, and interactions with building systems that have impact on performance (thermal, visual, acoustic, and IAQ) of buildings. The interactions include adjusting the thermostat settings, opening or closing windows, dimming or

turning on/off lights, pulling up or down window blinds, switching on or off plug-loads, and consuming domestic hot water.

- 2) Any interest? Contact MORTS@ashrae.net.
 - a) No volunteers at the meeting
- b. MTG.ACR - Air Change Rate (pending)
 - 1) Evaluate the technical basis and adoption of airflow rate specifications in terms of Air Change Rate (ACR) or Air Changes per Hour (ACH) for spaces such as cleanrooms, laboratories, patient rooms, operating rooms, and other similar spaces.
 - 2) TC 4.3 will have a seat if this MTG is approved.
 - a) Lau and Taylor expressed interest
- c. Technical Bulletins (White Papers)
 - 1) TCs are allowed to develop Technical Bulletins - A Technical Bulletin does not result from a technical meeting and is a brief 1-2 page statement on a special interest HVAC&R topic that has been developed by either a technical or grassroots committee of ASHRAE.
 - 2) After the TC approves the Technical Bulletin, TAC is responsible for coordinating a peer review by a minimum of three persons with expertise in the field of the bulletin before it can be posted.
 - 3) ASHRAE policy for websites: “4 (3) f. Statements and presentations may not appear on web sites that state, purport, or imply that they present ASHRAE positions, policy, or opinions.”
- d. CEC Ongoing Issues with Program Presentation Submissions
 - 1) Presentations for St. Louis were due in early June. At the close of Confex (6/21), 11 sessions had not been uploaded.
 - 2) Starting in Las Vegas, presenters with presentations not uploaded by the published due date, will incur a “strike”. Once three strikes have accrued, the speaker will not be allowed to speak for a period of time that could be up to one calendar year or more.
- e. Free WIFI
 - 1) Marriott: “Marriott Conference” PW= ashrae16
 - 2) Convention Center: “ASHRAE”, PW= ashrae16
- f. TC/TG/TRG Manual of Procedures (MOP)
 - 1) New version to be approved at this meeting
- g. RAC Prioritizing Research Topics Related to the Residential Sector
- h. CEC’s Standing Request for Future Society Meeting Program Track Suggestions
 - 1) Submit suggestions to Tony Giometti Giometti@ashrae.org.
- i. Professional Development Committee (PDC)
 - 1) Seeking ideas for new ASHRAE Learning Institute (ALI) courses
 - 2) Contact Karen Murray kmurray@ashre.org

6. LIAISON REPORTS

- a. Technical Activities Committee (TAC) (Dennis Wessel)
 - 1) ASHRAE hardware is available to conduct electronic meeting during the conferences
 - 2) Also has available GoToMeeting for subcommittee meetings
- b. Standards (Cecily Grzywacz).
- c. Conferences and Expositions Committee (CEC).
- d. Handbook Committee (Harris Sheinman).
 - 1) Also discussed CTTC (Technology Transfer)
 - a) Register for distinguished lecturer program
 - b) Chapters may ask for sponsored 15 minutes lectures and handbook topics]
- e. Professional Development Committee (PDC) – (Donald Brandt).
- f. Special Publications (Francis Mills).
- g. Environmental Health Committee (Josephine Lau).

7. SUBCOMMITTEE REPORTS

- a. Research (Steve Taylor)
 - 1) Research Subcommittee Meeting Chair Report
 - 2) Active Research Project Status

Name	Project	PMS	Status
RP-1450	Transport of Contaminants from Garages Attached or Integral to Low-Rise Residential Buildings	Mike Moore (chair) Steve Emmerich	Research is done, report is being written
RP-1747	Implementation of RP-1547 CO ₂ -based Demand Controlled Ventilation for Multiple Zone HVAC Systems in Direct Digital Control Systems	Dennis Stanke (chair), John Murphy Raj Daswani Heejin Cho	PIs: U. of Alabama with Iowa State and Taylor Engineering. Task 1 and 2: completed initial work; approved by PMS in conference call 6/3/2016

3) Pending Research Project Status

Name	Project	Champion	Status
WS-1730	Pressure Coefficients and Pressure Drop for Standard Venting Strategies and Components in Residential Attic Spaces	TC 4.4 Anthony Fontanini Mike Ratcliff	Still pending WS. No progress has been made. Anthony will take up again after he graduates in September
1776-RTAR	Characterizing the Air Flow at the Top of Exhaust Stacks for Improved Dispersion Modeling	Brad Cochran	Rejected by RAC 4-0. They recommend against resubmitting. Brad no longer interested in re-submitting. Project is closed.
Pending	Is CO ₂ a pollutant or an indicator?	Steve Taylor	On hold. Will let existing research mature/evolve
RTAR in Progress	RP-1547 follow-up for systems with multiple recirculation paths	Josephine Lau	No update. Taylor to work with Lau when she is back from sabbatical.
New	Improve Dispersion equation around Hc crit	Ron Petersen	Need to convert URP to RTAR. Ron still waiting to hear from ASHRAE on URP, Mike Vaughn has not said they are dead.
New	Prove/disprove effect of wind band for entrained air flow exhaust stack	Ron Petersen	See research from Amit Gupta at Concordia
New	Residential Energy Recovery Ventilator Cross Contamination	Iain Walker	Iain recommends dropping.
New	Moisture Generation Rates in homes	Iain Walker	RTAR in progress

Name	Project	Champion	Status
New	Infiltration vs. Pressurization impact with ERVs		Tradeoff of reduced infiltration due to reduced exfiltration vs. energy recovery from exhaust air needs champion
New	What is the right ventilation rate for x?		Work to be moved to new ACH MTG discussed above - this will drop for now.
New	Cost effectiveness of sealing between floors in multistory buildings to reduce stack effect	Gren Yuill	
New	Cost effectiveness of code requirements to reduce multi-family internal partition leakage	Gren Yuill	both pollutant transport and energy conservation
New	Idea of MTG around VOCs and VOC mixtures and what constitutes air quality	Ed Light	

4) Regular deadlines: March 1 (for spring RAC meeting), May 15 (for June meeting), August 15 (for fall RAC meeting), December 15 (for January meeting)

b. Program (Anil Parekh)

1) Program statistics for St. Louis

Conferences Papers

- o 130 conference paper abstracts submitted, 124 approved
- o 84 conference papers received
- o 71 conference papers presented
- o 22 Conference Paper Sessions

Technical Papers

- o 60 conference papers received
- o 28 conference papers presented
- o 9 Technical Paper Sessions

Seminars

- o 116 submitted
- o 64 presented

Workshops

- o 10 submitted
- o 8 presented

Forums

- o 12 submitted
- o 4 presented

2) TC 4.3 St. Louis program

City	Title	Type	Chair/Speakers
St. Louis	none		

3) Program types

- a) Seminar: These sessions features presentations on subjects of current interest. There are not papers attached to seminars.
- b) Workshop: These sessions enable technical committees and other ASHRAE committees to provide a series of short presentations on a topic requiring specific expertise. These short presentations are provided with an increased emphasis on audience participation and training in a specific set of skills. There are not papers attached to workshops.
- c) Forum: The sessions are “off-the-record” discussed held to promote a free exchange of ideas. Reporting of forums in limited to allow individuals to speak confidentially without concern of criticism. There are not papers attached to forums.
- d) (New) Panel Discussion: Panel discussions can feature a broad range of subjects and explore different perspectives on industry related topics. This session format

includes a panel of 3-4 speakers each addressing a facet of the session topic, followed by an interactive discussion lead by the session chair. Panel Discussions may be 60 minutes or 90 minutes in length and will be posted online in the Virtual Conference.

- e) (New) Debate: Debates highlight hot-button issues commonly faced by our membership. Industry experts, either on teams or as individuals, argue opposing sides of an issue, concluding with position summaries and audience feedback. Debate sessions may be 60 minutes or 90 minutes in length and will be posted online in the Virtual Conference.

4) Las Vegas Tracks

a) Track 1: Fundamentals and Applications

(1) Track Chair: Chuck Curlin, ccurlin@shultzeg.com

(2) Engineering fundamentals are the foundation to understanding modeling, design, construction and operation of HVAC&R applications.

b) Track 2: HVAC&R Systems and Equipment

(1) Track Chair: Michael Collarin, Michael.Collarin@parsons.com

(2) Selection of equipment and design of systems is critical for effective HVAC&R operation, and for achieving building operators' goals.

c) Track 3: Water-Energy Nexus

(1) Track Chair: Gary C. Debes, gcdebes@verizon.net

(2) The interdependencies between our water and energy systems are clear and are becoming more prominent as development requires the use of more resources while over-use and climate change make some resources scarcer.

d) Track 4: Commercial and Industrial IAQ

(1) Track Chair: Kevin Marple, kmarple@benzco.com

(2) Indoor Air Quality is a vital consideration in the built environment.

e) Track 5: Mission Critical Design and Operation

(1) Track Chair: Carrie Anne Crawford, carriecrawford@eeace.com

(2) As societies become more dependent on mission critical facilities, the design and operation of these facilities has undergone rapid change.

f) Track 6: Effects of Climate Change on HVAC&R

(1) Track Chair: Rocky Alazazi, mralazazi@yahoo.com

g) Climate change will have an increasing effect on the design and operation of the built environment.

h) Track 7: Energy Efficient Industrial Buildings

(1) Track Chair: Corey Metzger, corey.metzger@resourcece.com

(2) Industrial facilities often have different HVAC&R requirements than do commercial and institutional facilities. Oftentimes these are a result of the processes that occur within industrial facilities as well as the life safety issues these processes create.

i) Track 8: Building Operation and Performance

(1) Track Chair: Cynthia Moreno, cindym@tmmechanical.com

(2) Modeling has become an essential factor in the design of all aspects of many buildings. Often the operational results of the building do not match the modeled outcome that the owner/operator expected.

5) New program ideas

City	Title	Type	Chair/Speakers
St. Louis	Where has my air been?	Seminar	John C, Martin/Ron/? will re-organize for IAQ track and include information about separation distances
St. Louis	62.2 update	Seminar	Iain Walker
??	Effectiveness of Kitchen Odor Control	Forum	Martin. Kitchen TC 5.10 cosponsor request
??	Garage contaminants (RP-1450 results)	Seminar	Steve Emmerich
??	Assessment of VOC mixtures	Workshop	Ed Light
??	Guiding Principles of Future Ventilation	?	Luke Leung
Las Vegas	Special track on residential ventilation Ed Light - ICC standard for residential ventilation (maybe Theresa Weston)	multiple sessions	Neil Leslie
Las Vegas	Best of Engineers Note book co-sponsor	Seminar	Steve Duda. Co-sponsor vote: (Emmerich/Rock 7/0/0)

1) Regular deadlines: August 8 (for winter meeting), February 9 (for June meeting)

c. Handbook (Brian Rock)

1) Chapter status

Volume	Chapter	Lead	Status
2017 Fundamentals	Chapter 16 Ventilation and Infiltration	Brian Rock	2017 Chapter approved last meeting. 2021 lead?
2017 Fundamentals	Chapter 24 Airflow Around Buildings	Ted Stathopoulos	Approved with editorial comments due by 1-July-2016 (Rock/Emmerich - 7/0/0)
2019 Applications	Chapter 45 Building Air Intake and Exhaust Design	Jason Urso	new process to edit collaboratively edit on line authoring.ashrae.org will include versioning and allow simultaneous editing editing is allowed by all TC members and others can be granted special permission

2) Base files: <https://www.ashrae.org/resources--publications/ashrae-handbook-central>

d. Standards (Steve Emmerich)

1) TC 4.3 Cognizant

a) 62.1 Ventilation for Acceptable Indoor Air Quality (Nathan Ho)

(1) Biggest topic is re-organization and formation of working groups around specific topics

(a) -Natural ventilation

(b) -Ventilation effectiveness

- (c) Personal ventilation
- (d) Area based rates
- (e) IAQ procedure
- (2) Issued two addenda - one normative and one informative
- (3) Approved to provide guideline on how to do better than code minimum - aka Best Practices
- b) 62.2 Ventilation for Acceptable IAQ in Low-Rise Residential Buildings (Iain Walker)
 - (1) 2016 version issued; includes high rise multi-family
 - (2) Addenda to include natural ventilation/infiltration tradeoff
 - (3) Formed task group for high-rise multifamily
 - (4) Writing user manual; should be done by end of fiscal year
 - (5) Upcoming issue: unvented heaters; likely to be addendum out for review in future
- 2) TC 4.3 Co-Cognizant
 - a) 161: TC 9.3: Air Quality within Commercial Aircraft (Byron Jones)
 - (1) Emmerich: nothing new that he is aware of
- 3) Others Standards of Interest
 - a) 170-2013: TC 9.6: Ventilation of Healthcare Facilities (Rick Hermans)
 - (1) Taylor requested change away from ACH metric
 - (2) Added a Natural Ventilation task group a few meetings ago
 - (3) Jordan Clark is active in both the 62.1 and 170 natural ventilation groups
- e. Honors (Steve Duda)
 - 1) See attached report
- a. Webmaster (Xia Fang)
- b. Membership (Mini Malhotra)

8. NEW BUSINESS

- a. Membership changes starting after this meeting

Voting Members				
	Name	Position	Company	Roll Off June 30
1	Josephine Lau	Chair	Univ of Nebraska-Lincoln	2018
2	Martin Stangl	Vice-chair	RWDI	2019
3	John Carter	Secretary	CPP	2017
4	Brian Rock	Handbook	The University of Kansas	2017
5	Ed Light	Member	Building Dynamics	2019
6	Mini Malhotra	Membership	Oak Ridge National Laboratory	2019
7	Nathan Ho	Member	P2S Engineering	2020

- b. Future Meetings
 - 1) Jan 28-Feb 1 2017 – Las Vegas

2) June 24-28, 2017 – Long Beach, CA

9. ATTENDANCE

Name	Position	Company
Voting Members		
Steve Taylor	Chair/Research	Taylor Engineering
Steve Emmerich	Standards	NIST
John Carter	Secretary	CPP
Brian Rock	Handbook	The University of Kansas
Martin Stangl	Member	RWDI
Ed Light	Member	Building Dynamics
Mini Malhotra	Membership	Oak Ridge National Laboratory
Non-Voting Officers		
Josephine Lau	Vice Chair	Univ of Nebraska-Lincoln
Steve Duda	Honors	Ross & Baruzzini, Inc.
Provisional Corresponding Members		
Corresponding Members		
Michael Blanford		U.S Dept. Of Housing & Urban Development
	CM	
Lance Brown	CM	Google
Brad Cochran	CM	CPP
Iain Walker	CM	Lawrence Berkeley Laboratory
Samir R Traboulsi	CM	Thermotrade/Ranec
Gren Yuill	CM	University of Nebraska
Guests		
Jordan Clark	Guest	CPP
Yuebin Yu	Guest	University of Nebraska
Dennis Wessel	Guest	Section Head
Harris Sheinman	Guest	Liaison
Nathan Ho	Guest	P2S Engineers
Carsen Banister	Guest	National Research Council Canada
Iain MacDonald	Guest	National Research Council Canada
Nicholas Harlow	Guest	Halton Co.
Stacie Suh	Guest	Stebbins Duffy
Jinchao Yuan	Guest	University of Idaho
Ryan Milcarek	Guest	Syracuse University
Gary Nelson	Guest	Energy Conservatory
Peter McKinney	Guest	Strion Air/Carrier
Bill Chadwick	Guest	UTC Advantec
Scott Griesheim	Guest	Aprilaire
Henry Harvey	Guest	Clearesult
Luke Leung	Guest	SOM

10. ADJOURN

a. Time: 5:58