



Shaping Tomorrow's
Built Environment Today

180 Technology Parkway ▪ Peachtree Corners, GA 30092 USA ▪ Tel 404-636-8400 ▪ Fax 404-321-5478 ▪ www.ashrae.org

DRAFT AGENDA

ASHRAE Technical Committee 4.3: Ventilation Requirements & Infiltration

2021 Winter Meeting

Tuesday January 19, 2021, 11:00 am-1:30 pm EST

<https://ashrae-org.zoom.us/j/95315184908?pwd=Q0V0VVM0RTRHbjc0K2d2NE8yK29jUT09>

1. INTRODUCTION

1.1. Call To Order

1.2. Online Meeting Etiquette

1.3. Committee and Meeting Information

Scope of TC 4.3

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.

ASHRAE Code of Ethics

Commitment to the ASHRAE Code of Ethics – (TC Chair): In this and all other ASHRAE meetings, we will act with honesty, fairness, courtesy, competence, integrity and respect for others, and we shall avoid all real or perceived conflicts of interests. (See full Code of Ethics: <https://www.ashrae.org/about-ashrae/ashrae-code-of-ethics>.)”

Subcommittee and Research Meetings

Research: During Main Meeting

Program: During Main Meeting

Handbook: During Main Meeting

Website

TC4.3 Homepage: <https://tc0403.ashraetcs.org/>

TC4.3 Basecamp: <https://3.basecamp.com/3106353/projects/10524322>



Shaping Tomorrow's
Built Environment Today

180 Technology Parkway ▪ Peachtree Corners, GA 30092 USA ▪ Tel 404-636-8400 ▪ Fax 404-321-5478 ▪ www.ashrae.org

1.3. Introductions

1.4. Attendance + Quorum

Voting Members					
	Name	Position	Company	Roll Off (June 30)	Present?
1	John Carter	Chair	CPP	2022	
2	Isaac Simpson	Secretary	DMG North	2024	
3	Jordan Clark	Research	Ohio State University	2021	
4	Steven Emmerich	Standards	NIST	2023	
5	Steve Taylor	Member	Taylor Engineering	2021	
6	Brian Rock	Handbook	University of Kansas	2022	
7	Iain Walker	Member	Lawrence Berkeley Lab	2024	
Non-Voting Officers					
	Meghan McNulty	Vice-Chair	Servidyne	-	
	Josephine Lau	Program	University of Nebraska	-	
	Steve Duda	Honors	SIUE	-	
	Ryan Parker	Webmaster	CPP	-	

Note: Quorum > 1/2 all VM, excluding NQM; super majority >= 2/3 VM present; simple majority > 1/2 VM present

1.5. Approve Agenda

1.6. Approve Minutes of Past Meeting (Virtual 2020)

1.7. Review of Committee Existence

- a) Continue as a TC, TG, MTG, or TRG
- b) Convert from a TG to a TC
- c) Convert from a TRG to a TG or TC
- d) Merge with a TC/TG/TRG and submit a revised scope for the merged committee
- e) Dissolve the TC, TG, MTG, or TRG.

1.8. Section Head Report (Jamie Bennet)

1.9. Liaison Reports

Commented [M1]: MTG.RES

1.9.1. Conferences and Expositions Committee (CEC) - None



Shaping Tomorrow's
Built Environment Today

180 Technology Parkway ▪ Peachtree Corners, GA 30092 USA ▪ Tel 404-636-8400 ▪ Fax 404-321-5478 ▪ www.ashrae.org

- 1.9.2. Handbook Committee – Kashif Nawaz
- 1.9.3. Professional Development Committee (PDC) – Donald Brandt
- 1.9.4. Technical Activities Committee (TAC) - Dennis Wessel
- 1.9.5. Special Publications - Francis Mills
- 1.9.6. Environmental Health Committee - Josephine Lau
- 1.9.7. Research (RAC) – David Claridge
- 1.9.8. Standards – (TBD/open?)
- 1.9.9. MTG.OBD – Mini Malhotra
- 1.9.10. Discussion of Other Liaisons Needed for TC
- 1.9.11. Epidemic Task Force – Max Sherman

2. SUBCOMMITTEE REPORTS

2.1. Research (Jordan Clarke)

2.1.1. Active Research Project Status

2.1.1.1. RP-1819: CO₂ Demand Controlled Ventilation in Multiple Zone VAV Systems with Multiple Recirculation Paths

- TC4.3 PMS is Steve Taylor, Josephine Lau
- TC4.3 Leadership voted 6-0-0-CNV in favour of approving a 6-month no-cost extension on February 7, 2020.

2.1.1.2. RP-1823: Improved Exhaust-to-Intake Dilution (Concentration) Calculations

- TC 4.3 PMS is Steve Taylor, Iain Walker, Brian Rock
- TC4.3 Leadership voted 5-0-1-CNV in favour of approving the final report on March 5, 2020.

2.1.1.3. RP-1835: Characterization of Induced Flow Fans

- TC 4.3 is cosponsoring TC 9.10
- PES Chair is Brad Cochrane

2.1.2. Work Statements (WS)

2.1.3. Research Topic Acceptance Request (RTAR)

2.1.3.1. RTAR-1878: Outdoor particulate matter penetration and indoor PM removal rates in naturally ventilated commercial buildings



Shaping Tomorrow's
Built Environment Today

180 Technology Parkway ▪ Peachtree Corners, GA 30092 USA ▪ Tel 404-636-8400 ▪ Fax 404-321-5478 ▪ www.ashrae.org

- TC4.3 (Jordan Clarke)

2.1.3.2. RTAR-IAQ Development of the First Global Indoor Air Quality Database

- TC4.3 is Co-sponsor for TC2.1 (Dusan Licina)
- TC4.3 Leadership voted 6-0-0-CNV in favour of co-sponsoring on April 24, 2020.

2.1.4. On Hold or Inactive

2.1.5. New Ideas

Name	Champions	Status/Actions
Infiltration vs. Pressurization impact with ERVs	Josephine Lau	
Electric Vehicle effects on Garage Exhaust Requirements	Steve Taylor	Jordan Clark will work on this with Steve over the summer.
Comparison Between Wind Tunnel and CFD for Different Applications		
Interaction of Air Tightening and Gas Appliance Venting	Craig Wray (?) + Iain Walker	Craig has no time, can someone else pick this up?
Transfer Air, etc. in multi-family Buildings	Iain Walker, Craig Wray	
UNSOLICITED RESEACH PROPOSAL about testing a "representative" sample of buildings for leakage		
TC2.6 Sound & Vibration as proxy for air leakage	Marianne Touchie	
Enhance the current Stack Height Reduction Factor Methodology for Plume Dispersion Calculations for stacks from screen height to 2.5 x screen height	Carter/Parker	
Evaluate effect of screenwalls or other large roof objects on previously evaluated plume rise enhancement of stack ganging	Carter/Parker	
Multi-family residential 10 ft separation distance requirement question Should there be better guidance	Iain Walker / John Carter	
COVID	Ed Light	



Shaping Tomorrow's
Built Environment Today

180 Technology Parkway ▪ Peachtree Corners, GA 30092 USA ▪ Tel 404-636-8400 ▪ Fax 404-321-5478 ▪ www.ashrae.org

2.1.7. Deadlines

- March 1 (for spring RAC meeting)
- May 15 (for June meeting)
- August 15 (for fall RAC meeting)
- December 15 (for January meeting)

2.1.8. Special Topics

2.2. Program (Josephine Lau)

2.2.1. Evaluation of Orlando 2020 Program (Winter Meeting 2020)

2.2.2. Virtual Conference 2020 (Annual Meeting 2020)

2.2.3. Chicago, IL (Winter Meeting 2021)

Track

1 HVAC&R Fundamentals and Applications:

2 Systems and Equipment: HVAC&R Systems and Equipment are constantly evolving to address the changing requirements of the built environment. Papers and programs in this track will focus on the development of new systems and equipment, improvements to existing systems and equipment and the proper application and operation of systems and equipment. (Dr. Marianna Vallejo: marianna.vallejo@jacobs.com)

3 Refrigeration and Refrigerants.

4 Environmental Health Through IEQ: HVAC&R systems play a significant role in maintaining indoor environmental conditions. As people spend increasingly more time in the built environment, health concerns are becoming paramount to design. This track will seek papers and programs on developing, evaluating and predicting optimal indoor environmental conditions, especially as they pertain to environmental health. (Stephen Idem sidem@tntech.edu)

5 Building Performance and Commissioning for Operation and Management: Modern HVAC&R systems are complicated and designed for high efficiencies. In order to optimize their use and provide proper operation, commissioning is recommended. This track provides an opportunity to provide papers and presentations surrounding building operation and commissioning practices as well as case studies in performance and commissioning. (Lee Ribbeck lee.ribbeck@gmail.com)

6 Energy Conservation:

7 International Design:



Shaping Tomorrow's
Built Environment Today

180 Technology Parkway ▪ Peachtree Corners, GA 30092 USA ▪ Tel 404-636-8400 ▪ Fax 404-321-5478 ▪ www.ashrae.org

8 Standards, Guidelines and Codes: ASHRAE is known for its standards and design guidelines – and they are constantly evolving with the intent on improving the built environment and its systems. Designers, Contractors, Architects and Owners must be able to keep up with the continuing changes in the current cycle but to also be prepared for the future changes. In addition, there is a large interaction of ASHRAE with the code authorities and government to incorporate these standards and guidelines. The series of sessions in this track highlight the changes to the standards and guidelines, their projected path and optimum design techniques to meet or exceed the standards. (Kyle Inge kinge@burns-group.com)

9 (Mini-Track – TDB based on Chuck Gulledge's Presidential Theme)

2.2.4. Future Program/New Ideas

City	Title	Type	Chair/Speakers
Chicago	Smart Residential Ventilation	Seminar	Emmerich/Walker
Chicago (?)	Comparison Between Wind Tunnel and CFD for Different Applications		
Chicago	Where has my air been?	Seminar	John Carter/Martin Stangl/Ryan Parker
Chicago (?)	62.2 update	Seminar	Iain Walker
Chicago?	Easier Said Than Done: Controlling Air Movement in High-Rise Multifamily Buildings	Seminar	Touchie/Wray/Philips/Dols
Austin	Sensors for control of ventilation and air cleaning	Seminar	Jordan Clark
??	Assessment of VOC mixtures	Workshop	Ed Light (with MTG)
??	Computational modeling of airflow around buildings	Seminar	John Carter, Ted Stathopoulos, Brad Cochran/Philipps
??	Computational modeling of airflow around buildings	Seminar	John Carter, Ted Stathopoulos, Brad Cochrane
??	Burning Questions around Wildfires and ventilation/IAQ	Forum	Isaac Simpson

2.2.5. Deadlines

- **Monday, August 3, 2020:** Website Closes for Seminar, Workshop, Forum, Debate, and Panel Proposals.



Shaping Tomorrow's
Built Environment Today

180 Technology Parkway ▪ Peachtree Corners, GA 30092 USA ▪ Tel 404-636-8400 ▪ Fax 404-321-5478 ▪ www.ashrae.org

- **Monday, October 5, 2020: Seminar, Workshop, Forum, Debate, and Panel Accept/Reject Notifications**

2.3. Handbook (Brian Rock)

2.3.1. Chapter Status

Volume	Chapter	Lead	Status
2021 Fundamentals	Chapter 16 Ventilation and Infiltration	Jordan Clark	Submitted.
2021 Fundamentals	Chapter 24 Airflow Around Buildings	Ted Stathopoulos	Submitted.
2023 Applications	Chapter 45 Building Air Intake and Exhaust Design	Ryan Parker	Needs Lead Revisor
2025 Fundamentals	Chapter 16 Ventilation and Infiltration		
2025 Fundamentals	Chapter 24 Airflow Around Buildings		

2.3.2. Revisor Information

Access files, for revision, via <https://authoring.ashrae.org/> (Internet Explorer use req'd)

Chapter reviews: If you have colleagues who are practicing in or otherwise interested in any of our topics, please ask them to review our as-published chapters. They can submit their reviews via http://xp20.ashrae.org/secure/handbook/chapter_review/

The website for our revisors is <https://www.ashrae.org/technical-resources/ashrae-handbook/ashrae-handbook-central>

2.3.3. Deadlines

The TC-approved revision of the 2023 Applications volume Building Air Intake and Exhaust Design chapter will likely be due in the spring of 2022, so in one year. Distribution of the completed revision a couple weeks before, and a TC vote to approve at the 2022 Winter Meeting (Las Vegas) are the typical goals.

2.4. Standards (Steven Emmerich)

2.4.1. TC 4.3 Cognizant



Shaping Tomorrow's
Built Environment Today

180 Technology Parkway ▪ Peachtree Corners, GA 30092 USA ▪ Tel 404-636-8400 ▪ Fax 404-321-5478 ▪ www.ashrae.org

- 2.4.1.1. 62.1 Ventilation and Acceptable Indoor Air Quality (Nathan Ho)
 - Full committee meeting today (1/19), 1 pm EST (until 4 pm EST)
<https://attendee.gotowebinar.com/register/8493147193316802064>
 - Subcommittee meetings: 1/26 (Admin), 1/27 (Research & Education), 1/29 (Ventilation); second full committee meeting on 2/2.

- 2.4.1.2. 62.2 Ventilation and Acceptable IAQ in Low-Rise Residential Buildings (Iain Walker)

2.4.2. Other Standards of Interest TC 4.3 Cognizant

- 2.4.2.1. 90.1 (Steve Emmerich)
- 2.4.2.2. 170-2013: TC 9.6: Ventilation of Healthcare Facilities (Rick Hermans)

2.5. Honors (Steve Duda)

2.6. WebMaster (Ryan Parker)

2.7. Membership (John Carter)

- **Welcome to YEAs**
- **Welcome to New Provisional Corresponding Members**
- **Welcome to New Corresponding Members**
 - Trevor Zeller of P2S Engineering
 - Colin Welburn of Welburn Consulting
 - Meghan McNulty of Servidyne
 - Paul Grahovac of Prosoco
 - Zheng O'Neill of The University of Alabama
 - Michael Craig of RWDI
 - Duncan Phillips of Rowan Williams Davies & Irwin
 - Ryan Parker of CPP Wind Engineering
 - Matt Mason of MAXAIR Mechanical, Inc
 - Christopher Ruch of National Energy Management Institute (NEMI)
 - Yang-Seon Kim of Wichita State University
 - Jason DeGraw of ORNL
- **Welcome to New Voting Members**
 - Isaac Simpson of DMG North, Inc.
 - Iain Walker of Lawrence Berkeley Laboratory



Shaping Tomorrow's
Built Environment Today

180 Technology Parkway ▪ Peachtree Corners, GA 30092 USA ▪ Tel 404-636-8400 ▪ Fax 404-321-5478 ▪ www.ashrae.org

- **Welcome to New Leadership**

- John Carter rolling on as TC Chair and Membership SC Chair
- Meghan McNulty rolling on as Vice-Chair
- Isaac Simpson rolling on as Secretary
- Jordan Clark remains as Research SC Chair
- Brian Rock remains as Handbook SC Chair
- Josephine Lau remains as Program SC Chair
- Steven Emmerich remains as Standards SC Chair
- Ryan Parker rolling on as Webmaster

3. Other Business

3.1. MTG.OBD (Occupant Behaviours) (Mini Malhotra)

3.2. Future Meetings

- June 26-30, 2021 – Phoenix, AZ
- January 29 – February 2, 2022 – Las Vegas, NV
- June 25-29, 2022 – Toronto, ON

4. ADJOURN

Time: