

**ASHRAE MTG – ACR  
Winter Web Meeting  
Monday, January 20, 2020  
Meeting Minutes**

**AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING  
ENGINEERS, INC.  
1791 TULLIE CIRCLE, N.E./ATLANTA, GA 30329  
404-636-8400**

**TC/TG/TRG MINUTES COVER SHEET**

TC/TG/TRG No	MTG.ACR	DATE	January 20, 2020
TC/TG/TRG TITLE	Multidisciplinary task group on air changes rates		
DATE OF MEETING	January 20, 2020	LOCATION	Web Meeting

<b>Members Present</b>		<b>Members Absent</b>		<b>Additional attendance</b>	
Kishor Khankari	Chair	Michael Baucom	TC-9.2	Ken Goodman	
Roland Charneux	Vice-chair	Henry Hay	TC-2.2	Cliff Cooper (ALT) AIHA	
Roger Lautz	TC-9.6	Gaylon Richardson	TC-5.3		
Jim Coogan	TC-9.10	Michael Locke	SSPC 170		
Bob Burkhead	TC-2.4	Daniel Doyle	I2SL		
Tom Smith	TC-5.3	Ken Mead	SSPC 170		
Erich Binder (ALT)	TC-9.02				
Phil Naughton	TC-9.11				
Joe Zulovich	TC-2.2				

**DISTRIBUTION**

<b><i>All Members of TC/TG/TRG plus the following:</i></b>	
TAC Section Head	
TAC Chair	
All Committee Liaisons As Shown On TC/TG/TRG Rosters	
Standards liaison : Manager of Research & Technical Services	
Research liaison	

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**1. Call to order 11:03 (EST) and Introduction**

Kishor Khankari called the meeting to order and established a quorum with 7 voting including chair on 13 voting members. There were 5 members plus 2 alternate and chair.

Kishor reminds every attendee to adhere to the ASHRAE code of ethics.

Two additional members joined the meeting at 11h35.

**2. Approval of the Agenda**

The agenda is approved as submitted by Kishor Khankari.

**3. Approval of Minutes**

A motion to approve the September 5, 2019, minutes, proposed by Bob Burkhead and seconded by Phil Naughton (7-0-0-CV). Approved.

**4. Meeting dates**

The next MTG.ACR Web Meeting date to be determined. It should be in May or June before the annual meeting.

**5. Report from Members**

No additional news from MTG-ACR Members.

**6. Program Update**

6.1 Upcoming Winter Meeting February 2020 in Orlando

a) Program

- Seminar 43: Ventilation Effectiveness Metrics, Part 1: Humans- Co-sponsored by MTG.ACR

Kishor is a speaker at this seminar.

- Seminar 57: The History of the Use of Air Changes per Hour in HVAC Codes, Standards and Guidelines-Sponsored by MTG.ACR

Speakers: Andrew Persily, Phil Naughton, Cliff Cooper and Travis English.

Chair: Roger Lautz

- Seminar 18: Brilliant Execution of Smart Labs: How to Employ Smart Labs to Improve Safety, Reduce Energy and Make Labs Sustainable

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Tom Smith is a speaker at this seminar which will cover the DOE (Department of Energy) Smart Lab program.

b) Monday Evening Meeting

Monday, February 3, 9:00 PM-10:00 PM

Location: Hilton Orlando, L, Lake Lucerne.

## **7. Research Update**

### **7.1 RP 1833-Literature Review for Evidence of the Basis for Specified Air Change Rates (ACR) for Cleanrooms, Laboratories, Laboratory Animal Facilities, and Health Care Facilities with medium to high ACR.**

TASK-1 “Definitions of Key Terms” is almost completed. 55 pages draft submitted January 6<sup>th</sup>, 2020. Consensus on 8 terms following literature review:

- Ventilation;
- Ventilation Effectiveness;
- Ventilation Rate;
- Ventilation Requirement;
- Ventilation Air;
- Ventilation Effectiveness Concentration;
- Air Change Rate (ACR);
- Air Change Effectiveness.

1,331 Publications were identified.

### **7.2 Volunteer internal research project-ACR and Space Volume (Tom, Cliff, Kishor)**

- Analysis of the effect of space volume on level of dilution, air flow pattern and contaminants distribution under constant generation rates at different ACR;
- This research is at no cost for ASHRAE;
- A shroud has been added to the isopropyl alcohol ejector to reduce the velocity from 300 FPM to 50 FPM at the outlet;
- Thanks to:
  - Tom who provided the lab and support;
  - Cliff supplied his ejector and measuring instruments;
  - Kishor has done CFD simulations.
- Also to Phil, Jim, Roger, Bob Burkhead, and Roland for their input;
- Next steps:
  - Further analysis of data;
  - Analyze data for other room sensor locations;
  - Comparison with CFD;

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- Evaluate ventilation effectiveness.

**8. ASHRAE Annual Meeting Austin, TX Program**

- Conference Paper:
  - CFD Analysis of Air Change Rate (ACR) and Space Volume on Contaminant Dilution-Khankari.
- Additional proposals are welcomed.

**9. New Research program**

A series of potential research were presented and should be developed in the near future.

**10. No old business**

**11. No new Business**

**11. The meeting adjourned at 12:50 pm.**