

**AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING  
ENGINEERS, INC.  
1791 Tullie Circle, N.E./Atlanta, GA 30329  
404-636-8400**

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

(Minutes of all Meetings are to be distributed to all persons listed below within 60 days following the meeting.)

TC/TG/MTG/TRG No. 2.4 DATE 06/25/2013

TC/TG/MTG/TRG TITLE Particulate Air Contaminants and Removal Equipment  
DATE OF MEETING June 25, 2013 LOCATION Denver

MEMBERS PRESENT	YEAR APPTD	MEMBERS ABSENT	YEAR APPTD	EX-OFFICIO MEMBERS AND ADDITIONAL ATTENDANCE
James Hanley	07/01/11	Stephen Nicholas	07/01/12	A total of 41 people were in attendance for this meeting.
Mike Corbat	07/01/11	Paolo Tronville	07/01/12	
Carolyn Kerr	07/01/12	Mark Renn	07/01/10	
Jeff Siegel	07/01/11	Chris Champion	07/01/12	
Al Veeck	07/01/11	Christine Sun	07/01/11	
Randy Haseman	07/01/12	Nader Barjesteh	07/01/11	
Zied Driss	07/01/11			
Tim Johnson	07/01/12			
Monroe Britt	07/01/10			
Robert Burkhead	07/01/10			
K.J. Choi	07/01/09			
Chris Peart	07/01/09			

**DISTRIBUTION**

<i>All Members of TC/TG/MTG/TRG plus the following:</i>	
TAC Chairman:	William F McQuade, PE, LEED AP <a href="mailto:william.f.maquade@jci.com">william.f.maquade@jci.com</a>
Section Head	J Thomas Sobieski ( <a href="mailto:jtsobieski@atlanticbb.net">jtsobieski@atlanticbb.net</a> )
All Committee Liaisons As Shown On TC/TG/MTG/TRG Rosters:	Standard – Ms Cecily M Grzywacz <a href="mailto:c-grzwacz@nga.gov">c-grzwacz@nga.gov</a>
	Technology Transfer - Jean-Gabriel Joannette ( <a href="mailto:jgjoannette@pageaumorel.com">jgjoannette@pageaumorel.com</a> )
	ALI/PDC – Mr Donald L Brandt ( <a href="mailto:dbrandtz@aol.com">dbrandtz@aol.com</a> )
	Research Mr. Harvey Sachs ( <a href="mailto:hsachs@aceee.org">hsachs@aceee.org</a> )
Manager Of Standards Staff Liaison	HB Systems & Equipment Mr Patrick C Marks, PE ( <a href="mailto:patrick.c.marks@jci.com">patrick.c.marks@jci.com</a> )
	<a href="mailto:Sreiniche@ashrae.org">Stephanie Reiniche (sreiniche@ashrae.org)</a> <a href="mailto:mvaughn@ashrae.org">Mike Vaughn (mvaughn@ashrae.org)</a>

**ASHRAE MEETING MINUTES – Denver**  
**TC 2.4 - Particulate Contaminants/Removal Equipment**  
**Main Committee Meeting**

**Tuesday, June 25, 2013 3:30 – 6:00 p.m. Sheraton Denver Downtown – Tower Court B (T2)**

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1. Call to order (Jim Hanley, Chair)
  - a. [Agenda Review – Attachment 1](#)

2. Introduction of guests and members
  - a. ~41 total attendance at meeting

3. Roll call (Tom Justice)

a.

Member	Pres	Abs	Member	Pres	Abs
Jim Hanley (Chair)	X		Robert Burkhead	X	
Mark Renn (Research)		X	KJ Choi	X	
Chris Campion		X	Christine Sun		X
Paolo Tronville		X	Nader Barjesteh		X
Stephen Nicholas (Programs)		X	Carolyn Kerr	X	
Al Veeck (Webmaster)	X		Mike Corbat	X	
Randy Haseaman	X		Jeff Siegel	X	
Zied Driss	X		Chris Peart	X	
Tim Johnson	X				
Monroe Britt	X				
			<b>Totals</b>	<b>12</b>	<b>6</b>
					<b>18</b>

**NV Members/Officers**

- Tom Justice (Secretary/Membership)
- Don Thornburg (Vice Chair)
- Marilyn Listvan (Publications)
- Eric Brodsky (Handbook)
- Bruce McDonald (Standards)
- H E Burroughs (ALI Coordinator)
- Ken Snider (Alt #1 MTG.EEC)

Present:           **12 voting members – We have a quorum**  
                           **29 Corresponding members/visitors/guests**  
                           **[Voting members Zied Driss, came in after the start of the meeting.](#)**

#### 4. Welcome and Opening Comments (Jim Hanley, chair)

- a. Chair Jim Hanley asked if everyone had had an opportunity to review the agenda and if there were any additions, corrections or comments. There was no response so the meeting continued.
- b. Introductions from committee members and visitors as well as those attending TC 2.4 for the first time.
- c. Discussion regarding the definition of an ASHRAE YEA member.
- d. Everyone was asked to update their BIO as soon as possible as ASHRAE uses this information to monitor the committee balance.
- e. Al Veeck was recognized as having recently received ASHRAE's Distinguished Service Award.
- f. Mr. Hanley announced that we have a new Research Liaison, Harvey Sachs who is replacing David Johns.
- g. The chair asked if there were any committee liaisons present. There was no response.
- h. The floor was turned over to Keith Chesson for the Particle Party Announcement.

#### 5. Particle Party Announcement (Keith Chesson)

- a. Where/When: Katie Mullens Irish Pub / 7:00 pm
- b. Keith Chesson mentioned that although the official time for the gathering was 7:00 pm, you may get there as early as 6:30 pm.
- c. Jim thanked Keith for taking on the Particle Party planning.

#### 6. Approval of Last Meeting Minutes (Dallas, January 29, 2013): (Tom Justice)

- a. **Motion by Chris Peart, 2<sup>nd</sup> by Carolyn Kerr**
- b. **Vote to approve: 11-0-1-6-18 (Yes-No-Abstain-Absent-Tot) Chair Not Voting (CNV)**
- c. **Minutes approved**

#### 7. Record of Votes and Actions since last meeting (Tom Justice)

- a. **By way of letter ballot between Dallas and Denver the committee voted 16-0-2-0-18 to approve WS 1649 based on the recommendation from the Research subcommittee.**
- b. Two non-substantive comments submitted during the vote were incorporated into the work statement.
- c. The approved work statement was submitted to RAC.

#### 8. Subcommittee Reports:

##### a. Planning Subcommittee (Tom Justice for Don Thornburg)

- i. The committee met on Monday June 25<sup>th</sup> from 8-10 am with 14 people in attendance. This was the 3<sup>rd</sup> Planning meeting for TC 2.4. Again it was emphasized that this is not intended as a forum for committee reports but rather to address the "Hows" and "Whys" of the various subcommittees, to improve participation and to establish a long-term direction for the committee.
- ii. It was noted that this meeting does provide a good opportunity on how to better target our programs, publications and resources to improve our acceptance rate.

- iii. Discussion at the meeting also focused on how to both strengthen the roster and improve member participation noting that since 2007 our group has been affected not only by the normal attrition due to retirements but also by a number of mid-career changes related to the economy.
- iv. Again it was pointed out that if you have an idea for improving the functioning of the committee or any subcommittees this is the place to bring it up.
- v. **Motion to accept the Planning Subcommittee report.**
  - 1. **Moved by Randy Haseman, 2<sup>nd</sup> by Carolyn Kerr**
  - 2. **Vote 11-0-1-6-18 (Yes-No-Abstain-Absent-Tot) CNV**

**vi. PLANNING SUBCOMMITTEE REPORT IS ATTACHED**

**b. Membership Subcommittee Report (Tom Justice)**

i. Committee Report:

- 1. Mr. Justice noted that currently TC 2.4 has a full roster of 18 voting members, one being non-quorum.
- 2. After the meeting here in Denver we have 4 voting members rolling off, Chris Peart, K.J. Choi, Stephen Nicholas and Jim Hanley.
- 3. Filling these open positions will be Eric Brodsky, Michael Waring, Kathleen Owen and Tom Justice.
- 4. Just as a reminder the roster, which you receive electronically is not to be shared outside of the committee without the permission of ASHRAE.
- 5. Everyone is reminded that you do not have to be a voting member to participate in the activities of the committee. Note that neither the vice chair nor secretary are currently voting members.
- 6. Anyone wishing to be added to the roster in order to receive committee correspondence please see Tom Justice after the meeting. As a reminder only the Chair and Vice Chair have to be ASHRAE members but as always we highly recommend that you become a part of the organization.
- 7. Several individuals recently added to the corresponding roster were recognized.
- 8. Mike Corbat and Michael Waring were recognized as new voting members who are chairing key subcommittees.
- 9. The committee was advised that long time committee member and past chair Charlie Kern was dealing with health issues.

ii. **Motion to accept Membership Report**

- 1. **Motion by Al Veeck, 2<sup>nd</sup> Carolyn Kerr**
- 2. **Vote: 11-0-1-6-18 (Yes-No-Abstain-Absent-Tot) CNV**

**iii. MEMBERSHIP SUBCOMMITTEE REPORT IS ATTACHED**

**c. Research Subcommittee Report (Michael Waring)**

- i. Mr. Waring said that we have a new Research Liaison, Harvey Sachs whom he met at the Research Chair's breakfast. Mr. Sachs stressed that he would like to get involved with the committees in the RTAR process.

- ii. It was noted that there is a new RTAR form, which will be released soon. This is in PDF format and asks for more background on the project in order to better categorize research.
  - iii. In ASHRAE overall there are currently 58 active projects. Since July 2012 there have been 14 projects completed, 11 new and 14 TRP's. There are no projects on hold for lack of funding. Of the 5 active RTAR's, 2 were conditionally accepted, 1 rejected and 2 returned. Of the 2 work statements, 1 was returned and one was conditionally accepted. There are 7 TRP's in the works.
  - iv. The TC 2.4 subcommittee met on Sunday. There were 39 people in attendance.
  - v. The committee has one Work Statement **WS 1649 : IAQ and Energy Implications of High Efficiency Filters in Residential Buildings** which was returned with questions and comments.
  - vi. The committee also has one **URP 1691 Modeling the impact of residential HVAC filtration on indoor particles of outdoor origin**. We feel that the one negative vote from the PES has been resolved and this will go out for a second vote before being forwarded to the main committee for vote (which will likely be an e-mail ballot). We are working on a more defined procedure for handling future URP's.
  - vii. Five new RTAR ideas were discussed at the Research subcommittee meeting.
  - viii. Motion to accept the Research subcommittee report**
    - 1. **Moved by Bob Burkhead, 2<sup>nd</sup> by Al Veeck**
    - 2. **Vote to accept report 11-0-1-6-18 (Yes-No-Abstain-Absent-Tot) CNV**
  - ix. RESEARCH SUBCOMMITTEE MEETING MINUTES ARE ATTACHED**
- d. **Standards Subcommittee Report** (Vice Chair Mike Corbat for Chair Bruce McDonald)
- i. It was noted that Mike Corbat will assume the chair of the committee immediately following the Denver meeting.
  - ii. John Simenson will become the new Vice Chair of the Standards subcommittee.
  - iii. Mr. Corbat reported on activity in **SSPC 52.2**: Mike Corbat has been appointed Vice Chair of **SSPC 52.2** and will move up to the Chair after 2 meetings. Keith Chesson was appointed Research Chair for **SSPC 52.2**. Addendum A, the new MERV table has been submitted and will go out for public review soon. An interpretation request has been published on the ASHRAE website. The group agreed to a new meeting format, which will be 2 hours of meeting and 2 hours of TG work. Under new business, Al Veeck has requested that the committee pursue a formal questionnaire addressing " Why is the Industry not using MERV."
  - iv. A report was made on the activities of the MTG, **Energy Efficiency Classification of general Ventilation Air-Cleaning Devices**, Christine Sun, chair. GPC approval was tabled and should be approved on Wednesday this week. An informal committee meeting was held on Tuesday.
  - v. Motion to accept Standards report**
    - 1. **Moved by Tim Johnson, 2<sup>nd</sup> by Jeff Siegel**
    - 2. **Vote to accept report 11-0-1-6-18 (Yes-No-Abstain-Absent-Tot) CNV**
  - vi. STANDARDS SUBCOMMITTEE MINUTES ARE ATTACHED**

**e. Program Subcommittee Report (Marilyn Listvan)**

- i. Ms. Listvan reported that 19 people attended the subcommittee meeting on Monday.
- ii. Looking at an overall summary; we submitted 4 programs for Dallas, none were accepted. We submitted 3 of these 4 for Denver and again none were accepted.
- iii. Forum 2 (TC 2.3), Charlene Beyer, champion was recognized.
- iv. It was noted that Track 3 for NYC Indoor Environmental Health/Indoor Environmental Quality will be headed up by Tom Kuehn so this is a good opportunity to have an inside track and support on some of our programs.
- v. For NYC we have submitted 3 seminars, 2 forums and 1 transactions talk. This is the 5<sup>th</sup> submittal for K.J. Choi's seminar of Costs of Filtration.
- vi. For Seattle we have a possible 4 seminars and 1 forum.
- vii. For Chicago we have a possible 2 symposiums.
- viii. The possibility of holding a forum during the Program Subcommittee's time slot was discussed and felt to be a good idea. ASHRAE will give the forum visibility in the program outline so we should draw people from outside the committee.

**ix. PROGRAM SUBCOMMITTEE MINUTES ARE ATTACHED.****x. Motion to accept Program report****1. Moved by Carolyn Kerr, 2<sup>nd</sup> by Zied Driss****2. Vote to accept report 11-0-1-6-18 (Yes-No-Abstain-Absent-Tot) CNV****f. Webmaster Report (Al Veeck)**

- i. Mr. Veeck brought to the committee's attention that the posting of TC 2.4 minutes and agenda went very smoothly last time. Pictures will be added soon, mostly from the particle party.
- ii. Marilyn Listvan asked if a link to LinkedIn could be added to the website. Al indicated that this would not be a problem.
- iii. Mr. Veeck also noted that links to ASHRAE and ISO were on the site.

**iv. Motion to accept Webmaster report****1. Moved by Randy Haseman, 2<sup>nd</sup> by Tim Johnson****2. Vote to accept 11-0-1-6-18 (Yes-No-Abstain-Absent-Tot) CNV****g. Handbook Subcommittee Report (Eric Brodsky)**

- i. Chair Eric Brodsky reported that the sub-committee met on Saturday, 1:00 – 2:30 pm. There were more attendees than usual.
- ii. Chapter 29 in the HVAC Systems and Equipment Handbook was published in 2012. Updates for the 2016 edition are due by April 2015. The committee will be identifying and reviewing additional topics that could be included in the next publication. Minutes of the committee activities are normally issued to those attending the subcommittee meeting.

**iii. Motion to accept Handbook subcommittee report****1. Moved by Al Veeck, 2<sup>nd</sup> by Carolyn Kerr****2. Vote to accept report 11-0-1-6-18 (Yes-No-Abstain-Absent-Tot) CNV****iv. HANDBOOK SUBCOMMITTEE MINUTES ARE ATTACHED**

**h. Publications Report (Marilyn Listvan)**

- i. Chair Marilyn Listvan informed the committee that **IAQ 2013** would be in October of this year in Vancouver.
- ii. The committee was updated on current efforts to establish a reference library of filtration related articles which will be posted on our website. Al Veeck to check with ASHRAE to see if this could be stored on the cloud.
- iii. Everyone was urged to submit articles.

**iv. Motion to accept Publications subcommittee report**

1. **Moved by Jeff Siegel , 2<sup>nd</sup> by Carolyn Kerr**
2. **Vote to accept report 11-0-1-6-18 (Yes-No-Abstain-Absent-Tot) CNV**

**9. Reports from other TC liaisons**

No TC liaisons present to report.

**10. Old Business****a. URP 1691**

- i. Michael Waring asked if TC 2.4 would allow the PES to negotiate with current URP vendors before making final submittals to the committee. Discussion followed.
- ii. Motion to allow PES to negotiate with vendors in the case of URP's, before final recommendations and submittal are made to the main TC.

1. **Vote to approve 11-0-1-6-18 (Yes-No-Abstain-Absent-Tot) CNV**

**11. New Business**

- a. Going back to an earlier discussion during the Standards Subcommittee report, Al Veeck asked if it would be appropriate for the TC to vote on giving formal approval for starting the process of putting together a survey aimed at the main question of "Why is the industry not using MERV." He reemphasized again that engineers he had spoken to within our industry are not using MERV. Once the final list of questions are compiled the questionnaire will be presented to TC 2.4 for vote and if approved will then go to ASHRAE for final approval and assistance in polling the ASHRAE membership. It was further agreed that the task would fall under the Research subcommittee for tracking purposes with Al Veeck taking the lead. Bob Burkhead responded that he had no problem from SSPC 52.2 standpoint of leaving this action item with TC 2.4.
  - i. The initial vote came in with one negative response. The negative vote indicated that he was not clear as to what was involved in the motion. After further discussion, he recanted his negative vote.
  - ii. **Vote to approve 11-0-1-6-18 (Yes-No-Abstain-Absent-Tot) CNV**
- b. Kathleen Owen informed the committee that the final report for **RP 1360** was now posted on the ASHRAE website and was available to members. The total report is 481 pages in length.

- c. Jim Hanley was presented with a gift from the committee a thank you from his peers for his work not only as chair, but for his commitment and quiet leadership over the years. Jim in response graciously thanked the subcommittee chairs for their own hard work and support.

**Motion to adjourn at 6:00pm**

**Moved by Al Veeck, 2<sup>nd</sup> by Carolyn Kerr**

**Vote Unanimous**

Respectfully submitted,

Tom Justice

TC 2.4 Secretary

Meeting date: June 25, 2013

Minutes submitted: September 29, 2013

DRAFT



# ATTACHMENTS

## Draft Agenda

### TC 2.4 Particulate Contaminants/Removal Equipment

#### Main Committee Meeting

Denver, Tuesday June 25, 2013

3:30-6:00p

Tower Building

Tower Court B, Second Level

- 1. Call to order..... Jim Hanley
- 2. Introductions
- 3. Roll call ..... Tom Justice
- 4. Welcome and opening comments ..... Jim Hanley
- 5. Particle Party..... Keith Chesson
- 6. Approval of Dallas Minutes..... Tom Justice
- 7. Record of votes taken since Dallas..... Tom Justice
  
- 8. Subcommittee Reports
  - a. Planning Subcommittee Report..... Don Thornburg
  - b. Membership Subcommittee Report..... Tom Justice
  - c. Research Subcommittee Report..... Michael Waring
  - d. Standards Subcommittee Report..... Bruce McDonald
  - e. Program Subcommittee Report..... Marilyn Listvan
  - f. Web Master..... Al Veeck
  - g. Handbook..... Eric Brodsky
  - h. Publications..... Marilyn Listvan
  
- 9. Reports from other TC liaisons
- 10. Old Business
- 11. New Business
  - a. Misc Announcements (Conferences, Awards, etc.)
  
- 12. Adjournment

**Particle Party** – Details announced at meeting. Typically at 7pm at a restaurant usually within walking distance of the main hotel. All are invited – just raise your hand when we take a head count during the meeting. Hope to see you there!

# ATTACHMENTS

## *TC 2.4 Planning Subcommittee Meeting – Denver*

### **Draft Agenda**

**Monday, June 24, 2013**

**8:00 – 10:00 am**

**Century (TZ)**

1) Call to order, Welcome and Introductions

2) Review draft agenda

3) Scope for the Planning Subcommittee

*a. Evaluate and propose methods for improving the operations of TC 2.4 and its subcommittees (herein referred to as committees). This would include recommendations to the committees on "How" and "Why" we are operating as committees, ways to improve participation in TC 2.4 activities, and future activities and direction of the committees. The focus of the planning committee is not intended to be "What" we have done in the committees.*

4) Committee Reports

- a. TC 2.4 Main Committee.....Jim Hanley
- b. Planning.....Tom Justice
- c. Handbook .....Eric Brodsky
- d. Program.....Marilyn Listvan
- e. Publications.....Marilyn Listvan
- f. Research.....Michael Waring
- g. Standards.....Bruce McDonald
- h. Website..... Al Veeck
- i. Membership.....Tom Justice

5) New Business

6) Adjorn

## TC 2.4 Planning Subcommittee Meeting – Denver Minutes

Monday, June 24, 2013

8:00 – 10:00 a.m.

Sheraton Denver Downtown, Century (TZ)

### **Welcome to the HOW and WHY meeting for TC 2.4**

1. Call to order, Welcome and Introductions
  - a. 14 attendees present
2. Review draft agenda
  - a. No issues
3. Proposed Scope for the Planning Committee
  - a. **Subcommittee Scope for the Planning Committee**

***Evaluate and propose methods for improving the operations of TC 2.4 and its subcommittees (herein referred to as committees). This would include recommendations to the committees on "How" and "Why" we are operating as committees, ways to improve participation in TC 2.4 activities, and future activities and direction of the committees. The focus of the planning committee is not intended to be "What" we have done in the committees.***

4. Committee discussions
  - a. TC 2.4 Main
    - i. New succession plan for the officers with Tom Justice rolling up as Chair (skipping over Don Thornburg due to other commitments by Don over the next 2 years), Gemma Kerr has agreed to step into the Secretary position for TC 2.4.
    - ii. We do need a person to organize the Particle Party (Contaminant Confab) at future ASHRAE meetings.
  - b. Handbook
    - i. No issues and on track.
  - c. Membership
    - i. In Dallas we discussed having a "Welcoming Group" to help encourage and bring on younger/new members into TC 2.4 activities. Tom Justice will start this at the main meeting on Tuesday.
    - ii. TC 2.4 does have four "first time" voting members rolling on the main committee.
  - d. Planning
    - i. This was the first time for this new "free form" agenda for the Planning committee and it seemed to work well. We will continue with this format.
  - e. Program
    - i. We need to get better participation by ASHRAE with our suggested Programs. None on the schedule for Dallas. How do we get our programs on to the schedule?
      1. Use the Symposium route. Generally, all proposed symposiums are accepted once all the details are covered.
        - a. Solicit papers from academia and research organizations
        - b. Case studies from manufacturers
        - c. Can we get a Symposium on the Retail Research work from Jeff Siegel?
      2. We need to use more appealing Program title names that have sizzle.
    - ii. Stephen Nicholas is stepping down from program Chair. Marilyn Listvan has agreed to step into this position on a temporary basis until someone else can be named to the position.

- f. Publications
    - i. Should we have a combined meeting for both Publications and Program?
      - 1. This makes sense while Marilyn is the combined Chair
      - 2. We will have to see and adjust for what is needed in the future
    - ii. Ideas for getting Publications
      - 1. Bringing sponsored studies into the ASHRAE world and publishing.
        - a. Could be negative or positive...
      - 2. Set up a Publications bibliography.
      - 3. Currently ASHRAE does not index their documents and thus, the university community does not want to publish with ASHRAE due to no recognition
        - a. Low impact factor of ASHRAE in the academic community
  - g. Research
    - i. Can people or organizations within the ASHRAE world use the data from a research project to analyze the data?
      - 1. The initial word from ASHRAE is YES.
      - 2. Some things will need to change at the PES/PMS level to show requested outputs (electronic and formatted).
      - 3. ASHRAE may be willing to fund someone to format data from a research project
    - ii. ASHRAE is very interested in URP's
      - 1. Michael reported that we currently have one URP being reviewed by sub-committee
      - 2. We need a procedure for pushing URP's through the committee in the future.
  - h. Standards
    - i. Bruce McDonald is stepping down as Chair with the exact timing to be determined. Mike Corbat is now the Vice Chair and will step up when needed.
  - i. Website
    - i. Al Veeck reported that we now have 2 LinkedIn groups set up; one for International and one for TC 2.4 interests.
5. New Business
6. Adjourn

# ATTACHMENTS

## TC 2.4 Membership Report

Denver 2013  
June 25, 2013

- Currently TC 2.4 have a full roster of 18 voting members with one member being non-quorem. This roster will remain in effect though this meeting here in Denver. After Denver a new roster goes into effect.
- We will have 4 voting members rolling off after this meeting; Jim Hanley, Stephen Nicholas, K.J. Choi, and Chris Peart.
- New members rolling on include Eric Brodsky, Michael Waring, Kathleen Owen and Tom Justice.
- Just as a reminder the roster, which you receive electronically is not to be shared outside of the committee without the permission of ASHRAE.
- Also, as Jim mentioned the ASHRAE Code of Ethics has been included in the minutes for your review.
- Everyone is reminded that you do not have to be a voting member to participate in the activities of the committee. Note that neither the vice chair nor secretary are currently voting members.
- Anyone wishing to be added to the roster in order to receive committee correspondence please see Tom Justice after the meeting. As a reminder only the Chair and Vice Chair have to be ASHRAE members but as always we highly recommend that you become a part of the organization.
- Thanks were given to Bob Burkhead and Al Veeck for serving as greeters.
- It was noted that long time member Charlie Kern has been dealing with health issues this year.

# ATTACHMENTS

## ASHRAE RESEARCH SUBCOMMITTEE MEETING AGENDA

Denver, CO

TC2.4 – Particulate Air Contaminants/Removal Equipment

Sunday, June 23, 2013

3:00 – 5:00 PM

Location: Silver (TZ)

Chaired by: Michael Waring

1. Call to Order (The meeting began at 3:05 PM.)
2. Introductions (39 people were in attendance according to the sign in sheet.)
3. Review of Agenda (Michael Waring discussed the agenda.)
4. Chair's Comments (No comments were made beyond the agenda outline.)
5. Work Statement activity in RAC between meetings
  - a. 1649-WS Impact of Higher Efficiency Filtration on IAQ in Residential Environments with Central HVAC – Champion: Tom Justice (Submitted 5/15, Returned with comments) (This is the first time this WS was submitted to RAC, and it was returned with comments. Tom Justice and Michael Waring discussed how they would brainstorm on how to best deal with the comments, then discuss their plan

with the new research liaison, Harvey Sachs, and then revise and resubmit.)

6. Unsolicited Research Proposal – Discussion

a. 1691-URP Modeling the impact of residential HVAC filtration on indoor particles of outdoor origin. (Brent Stephens is the URP author. Don Thornburg was the initial chair of PES, along with Bruce McDonald, Thad Ptak, Paolo Tronville, and Tom Justice. Don Thornburg stepped down from the PES before this Denver meeting, and Bruce McDonald is now the chair (but not present). Before this meeting, the PES voted 3 in favor, 1 not in favor to recommend the URP to RAC. The proposal was discussed to see what changes needed to be made so that the PES would be unanimously in favor. A consensus was reached in which the proposer, Brent Stephens, agreed to include a sensitivity analysis in the URP for a slight increase in the budget. This slightly modified version will be voted on during the main TC meeting on Tuesday. This discussion concluded with a general discussion on how the TC will handle URPs in the future. Michael Waring proposed that all URPs in the future are instigated by a 2-page summary on the proposal idea to be circulated to the entire TC for discussion before the full URP is written.)

7. Current Tentative Research Projects (TRP)

a. TRP-1603 Role of HVAC Systems in the Transmission of Agents in Buildings and Intermodal Transportation (TC2.4 co-sponsor with TC9.6 and EHC. TC 9.3 main committee) (This is a current research project w/ Shelley Miller from CU Boulder.)

8. Cosponsored Projects (for reference only)

a. RP-1603 Role of HVAC Systems in the Transmission of Agents in Buildings and Intermodal Transportation (TC2.4 co-sponsor with TC9.6 and EHC. TC 9.3 main committee) (See item number 7 above.)

b. TC 2.3 – 1625-RTAR Applicability of the IAQP to Achieve Healthy, Net Zero Energy Buildings (not listed in latest RAC report) (This RTAR was believed to be on hold from a work standpoint. However, in the TC 2.3 Research meeting later in the day, it was decided that no more work would occur on this RTAR.)

c. TC 2.1 – 1624-TRP Effective Energy Efficient School Classroom Ventilation (Conditionally Accepted at latest RAC meeting, should be up for bid soon) (This TRP should be up for bid in one of the upcoming bidding cycles.)

9. Work time on any RTAR, WS and other proposals for remainder of the meeting time

a. 1649-WS Impact of Higher Efficiency Filtration on IAQ in Residential Environments with Central HVAC – Champion: Tom Justice (Submitted 5/15, Returned with comments) (See item 5 above.)

b. 1626-RTAR Energy Implications of Air Filtration in Commercial Buildings (Jeff Siegel previously championed this RTAR, and it was rejected 2-3 times already. Jeff Siegel and Michael Waring plan to discuss this with the new research liaison, Harvey Sachs, to decide how to best attempt to resurface this RTAR and move it forward. Phil Winters was the RTAR champion, but he was not in attendance at this Denver meeting.)

c. Survey of Existing Commercial HVAC Systems and Potential Energy Savings Technologies. Champions: Zied Driss, Mike Corbat and Ken Snider (Previously in RTAR writing stage). (No progress has been made on this RTAR. It was decided that this RTAR did not really fit into the scope of TC 2.4 and it was dropped.)

d. Impact on performance (efficiency and pressure drop) of air filters in high humidity and free moisture conditions. Champions: Dave Matier and Christine Stanfel (Previously stated would work on RTAR with no firm commitment date). (No work was done on the RTAR between meetings. There was general consensus that this would be a lab test, though a few people saw merit in field testing. Kathleen will help work on the RTAR but will not champion it.)

e. Quantify particle shedding from loaded air filters in cycle flow conditions as found/

experienced in VAV systems and in shut down/start up applications. Champions: Dave Matier and Christine Stanfel (Previously stated would work on RTAR after completion of the above RTAR in d.) (This project was discussed at the 52.2 meeting as well, and Bob Burkhead and Monroe Britt offered assistance on this RTAR, but then Bob Burkhead suggested moving it to the newly formed research committee in the 52.2 SSPC. It was removed for consideration in TC 2.4.)

f. Discussion of new RTAR ideas (Between meetings, Tom Justice supplied five RTAR topics, and Paolo Tronville supplied one. These are listed below, along with the TC decision on how to move forward with them.)

i. Ageing procedures and materials suitable for assessing the energy performance of air filters (Paolo Tronville was not here, but others suggested that he is still interested.)

Champion: Paolo Tronville

ii. Myth Buster: Are fiberglass disposables the Rodney Dangerfield of the filter world? (The idea was to test the actual efficiencies of a lot of fiberglass filters since they dominate much of the filter market. Most thought that this did not advance the state of the science enough to warrant its own RP. Michael Waring suggested that this be included into the scope of the WS 1649 to some degree, and this was accepted. This will NOT be an RTAR for TC 2.4.)

iii. How do room air cleaners compare to HVAC filters for removal of PM in residences? Cost versus effectiveness. (The general consensus was that this study would mostly be a modeling study with some results validated by test-house measurements. This topic was well liked by the TC.)

Champions: Brent Stephens and Thad Ptak

iv. Develop a protocol for reporting the current ASHRAE 52.2-2012 data in a PM2.5 format (It was decided that this was a SSPC 52.2 issue and would potentially be taken up in that committee. This will NOT be an RTAR for TC 2.4.)

v. Develop a MOT for residential air-cleaning devices for removal efficiency by particle size (The discussion for this topic morphed into a discussion on the need to know why residential filter manufacturers do not like to use MERV to classify their filters. Brent Stephens suggested that this could turn into an RTAR on comparing the different residential filtration rating systems, whereby the ultimate goal may be to inform whether or not a new standard should be made. Al Veeck suggested that we need an email survey to ASHRAE members (mechanical engineers) asking about MERV and what people do and don't understand about it. Needs to be a scientifically valid survey. Al will first look to see if that's even possible with ASHRAE. Then if so, move forward with a survey design and solicitation. This is currently NOT an RTAR for TC 2.4.)

vi. Are conventional filtration designs compatible with VRF systems? (Tom Justice said that VRFs (mini splits) seem good way to add AC to a building, but where do the filters go? Nobody can tell you, and they use more like a screen than a filter. Their fans are too small for pressure drop of filter. The TC decided that if industry is going in this direction and it leads to poorer IAQ, we should be on it. But what is the clear research objective?)

Champions: Michael Waring, Jeff Siegel, and Brent Stephens agreed to form a group to brainstorm research objectives.

vii. Filtration of viruses for different MERV classified filters (This was brought up the chair after the meeting by Al Vantine, and the point is to quantify the rate of decay of viruses and the transfer of viruses into/in buildings for different MERV filters.)

Champion: Al Vantine

10. Liaison Report (The liaison was not in attendance.)

11. Adjournment (The meeting was adjourned at 4:59 PM.)

# ATTACHMENTS

## MEETING AGENDA TC 2.4 STANDARDS SUBCOMMITTEE

Monday, 28 January 2013

Lone Star Ballroom C2, Sheraton Conference Center, Level

2

4:15 p.m. – 6:00 p.m.

Dallas, TX

### Introductions

### Chair's comments

Review proposed agenda

### 1) Update on standards and MTGs within scope of TC 2.4:

#### a) SSPC 62.2 M.o.T. Air Cleaners for Particle Size Efficiency – Bob Burkhead.

i) 52.2-2012 published

ii) Four items that are addenda:

(1) MERV Table

(2) OPC Change

(3) RH range change

(4) Shedding issue.

iii) Interpretation request with B. McDonald to form official response.

iv) RTAR for new dust.

v) RTAR for reduction in variation.

vi) Write informative appendix for testing in series.

#### b) MTG Energy Efficiency Classification of General Ventilation Air-Cleaning Devices – Christine Sun.

i) Meeting from 8-10 Tues. Sep 12 web conference. Moving forward with GPC, however chair has resigned. New chair to be voted on.

### 2) ASHRAE Liaisons:

#### a) TC 2.3 – Gaseous Filtration – Kathleen Owen.

i) SSPC 145.1, 2, Test Methods for Assessing Performance of Gas Phase Air Clean. Equip - Working on full revision of 145.1. 145.2 is fully published. RTAR for round robin of 145.2

#### b) TC 2.9 – UV Air & Surface Treatment – Matt Middlebrooks.

i) SPC 185.1P Elimination of Microbial Contaminants in Air – Matt Middlebrooks. Was ready to be published. ASHRAE determined changes were substantive sent back to committee and will be resubmitted for public review.

ii) 185.2 Elimination of Microbial Contaminants on surface. Ready to go out for public review.

#### c) TC 5.4 – Industrial Air Cleaning – Bruce McDonald

i) SPC 199 – MOT for Rating the Performance of Industrial Pulse Cleaned Dust Collectors. Met Friday and Sunday. Agreed on sequence of tests. Got a lot of material mostly from 1284 RP into ASHRAE std. format. Have schedule for individual input and collation of changes.

#### d) TC 9.6 – Health Care Facilities – Zied Driss. Design guide ready to out in electronic format within weeks.

#### e) SSPC 62.1 – Commercial Ventilation – Charlie Seyffter. Significant improvement in understanding of filtration. Will move to MERV 8 from 6 for filtration for fan coil.

#### f) SSPC 62.2 – Residential Ventilation – Brent Stephens.

62.2 has been looking a improved requirements for filtration in their residential ventilation standard. Currently a minimum of MERV6; originally put in place for general concerns of protecting equipment, but now want to address human health. One way to do that is simply to say "use a MERV 10 or MERV 13 filter." They are interested in input on that, and Bruce McDonald presented on what that might mean for PM2.5 mass, if that's what the concern may be. But they are also concerned about other practical issues like upfront costs, installation and maintenance issues, and those homes that might not rely on central recirculating filtration.

The most movement so far has been accomplished by Max Sherman from LBNL proposed a few different paths that could work as trade-off options for achieving some average level of PM2.5 reductions in homes (using a bunch of assumptions and generally 'average' data for VO PM2.5 in residences from other studies). Those options included different combinations of increasing ventilation to dilute indoor generated particles, increasing filtration to reduce either indoor or outdoor-generated sources, and/or increasing system runtimes to increase recirculation through filters.

Where they stand is that there was a general consensus that they want to address filtration in a way that could impact human health in a substantive way, and are looking to get something in to the



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*2016 62.2 standard. That means they are looking for input on some of their proposed ways of achieving reduced indoor concentrations of PM, which includes filtration as a major method-so there is an opportunity for TC 2.4 to inform. And the timeline on that is within the next 6 months to get it in the 2016 pipeline.*

*Anyone interested in helping 62.2 with airfiltration should contact the TC2.4 liaison, Brent Stephens at [brent@iit.edu](mailto:brent@iit.edu)*

- g) **SSPC 90.1 Energy Eff. Design of New Bldg** – Christine Sun. 2013 version filtration minimum will be MERV 8 from 6.
  - h) **SSPC 90.2 Energy Eff. Design of New Low Rise Res. Bldg** –
  - i) **SSPC 161 – Air Quality in Commercial Aircraft** – Dave Matier. Filtration has not been brought up as a subject.
  - j) **SSPC 170 – Ventilation of Healthcare Facilities** – Zied Driss. 15 addenda published. At W now. Next publication Sept 2017.
  - k) **SPC 180 – Inspection & Maintenance of HVAC Systems** – Phil Maybe. No update (Phil not in attendance)
  - l) **SPC 189.1 ASHRAE/USGBC/IESNA Standard for the Design of High-Performance Green Buildings except Low-Rise Residential Buildings (?inclusion of IAQ)** – Charlie Seyffer. Will meet Tuesday. No critical updates. IAQP. Being pushed hard by US Green Building Council. Completed in 14 months on separate track and will be rolled back into ASHRAE. Search IAQ pilot program on US Green Building Council website for published document. Particulate side requires MERV 13.
  - m) **SPC 189.2 Design, Construction and Operation of High-Performance Green Healthcare Facilities (?inclusion of IAQ)** – See above regarding IAQP
  - n) **SGPC-10 Achieving Acceptable Indoor Environment** – David Matier. No update
  - o) **GPC 33P Guideline for Documenting Indoor Airflow and Contaminant Transport** – Barney Bomroughs. Published document regarding interactions of IAQ contaminants. Out about a year and is now a standing committee
  - p) **US TAG for ISO TC142** – Don Thornburg. See also TC 142 below. Met Sat. Will be 4 or 5 proposed votes going out soon for WG3. Next meeting will be in Denver. Next TC 142 Plenary meeting will be in Atlanta in September. (See attached spreadsheet for all TC142 work as provided by Paolo).
  - q) **GPC 23 Guideline for the Design/Application of HVAC Equip. for Rail Passenger Vehicles** – No update
  - r) **Environmental Health Committee** – Major tracks for presentations in New York regarding IAQ. Will end up with about 140 papers at IAQ series in Vancouver October 2013. Looking to build a handbook on filtration technologies. No direct literature to use filtration devices to affect health directly.
    - i) Developing a position document regarding “Environmental Health in Green Building Programs”.
    - ii) Developing a position document regarding “Air Filtration and Cleaning”.
  - s) ? GPC 2 – No report
  - t) ? GPC 29 Guideline for Risk Management of Public Health and Safety in Buildings – No report
- 3) **Old Business**
- a) **MoT for Filtration Efficiency on particles below 300nm**
    - i) Progress on committee formation – Kathleen Owen – Holding off pending ISO.
    - ii) Activity at ISO TC 142/WG 4 regarding nano partide testing – Kick off meeting in Brussels and being handled by. 20-500 nm and 3-30 nm as two standards. First proposals by 2014. Handled by GEN TC 195 for writing. Being pushed under Vienna agreement and will be moved to ISO. Four non-European members being consulted.
  - b) **Relationship between ISO TC 142/WG 3 and ASHRAE** from the perspective of TC 2.4. Within ASHRAE the topic affects several groups: SSPC 52.2, TC 2.4 (Standards Subcommittee), the US TAG to TC 142, and the US Advisory Panel for WG 3. – Don Thornburg.
  - c) **Report of Working Group Regarding: Proposal for new standard regarding testing HVAC filters installed in combination: prefilter/final filter combinations** – Monroe Britt, Chair. See

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*above report on SSPC 52.2 as will be rolled in as an Appendix. Remove from list of old business.*

- d) **Report of Working Group Regarding: Proposal for new standard regarding residential filter test method** – Tom Justice, Chair. *Questionnaire sent to unofficial working group. Data has not been tabulated yet.*
- e) **?Possible discussion of Initial MERV and other variations on 52.2** Should there be a separate standard for: Initial efficiency? Loading? Conditioning? Use of other test dusts? ??? shedding, variable air flow – *Issue is resolved.*
- 4) **New Business**
  - a) **New test dust for 52.2** Monroe Britt. *Note SSPC 52.2 regarding RTAP being written.*
  - b) **52.3** – *Should a new particulate filtration test method be pursued? What other particulate standards are needed (e.g. ESP, residential, other). Bob Burkhead to propose a forum.*

Adjourned.

Subcommittee did not get to information exchange. However some information was supplied by the responsible individuals. See Below.

5) **Information Exchange:**

- a) AFS – KJ Choi  
2013 Annual Conference: May 6 – 9, 2013, Bloomington (Minneapolis), MN.  
Fall Topical conference "Innovations in Filter Media and Membranes" Oct 14-16, 2013, Cincinnati
- b) AHRI – Eric Chen
- c) CENTC 195 – Air Filters for General Air Cleaning – Paolo Tronville
- d) Eurovent – Paolo Tronville
- e) IEST – Institute of Environmental Sciences and Technology – Andy Stillo or Vijay?
- f) INDA – International Nonwovens Development Association – Tom Justice
- g) ISO TC 142 – Cleaning Equipment for Air and Other Gases – Paolo Tronville
- h) CEN TC 144 – Environmental Air quality for Agricultural Cabs – Paolo Tronville
- i) NAFA – Al Veeck
- j) SAE Air Cleaner Test Code Standards Comm. – Bruce McDonald
- k) ISO TC 22/SC 7/WG 3 & WG 11 – Paolo Tronville or Bruce McDonald.
- l) UL 900 – Randy Haseman. There is nothing new for UL 900. The revisions to ULC-S111 have achieved consensus, but apparently there are some comments to resolve, so it has yet to be published.
- m) REHVA HVAC air filtration guidebook –
- 6) **Adjourn – 6:00 pm**

### **Liaison Report concerning SSPC 62.2 January 2013, Brent Stephens**

Summary (more detail below):

- 62.2 is looking to improve their minimum particle filtration required from MERV 6 to perhaps MERV 10 or MERV 13, and are doing so on the basis of health concerns for PM2.5.
- They are doing some rough analysis to estimate how various MERV filters (and also some other strategies such as increased recirculation or increased ventilation for indoor generated) would effectively halve indoor PM2.5 concentrations in average homes
- They could use some help from 2.4 membership informing their inputs and overall decisions in the process
- I think the path forward is that anyone interested in helping out here should provide their names and emails (can email me or start a list at the meeting). I can keep that group informed by passing along any info I get from 62.2. Timeline is over the next 6 months.

So there is some room for 2.4 membership to comment on this and guide their analysis.

Summary notes, 62.2 movements for TC 2.4:

62.2 has been looking at improved requirements for filtration in their residential ventilation standard. Currently a minimum of MERV 6; originally put in place for general concerns of protecting equipment, but now want to address human health. One way to do that is simply to say “use a MERV 10 or MERV 13 filter.” They are interested in input on that, and Bruce McDonald presented on what that might mean for PM<sub>2.5</sub> mass, if that’s what the concern may be. But they are also concerned about other practical issues like upfront costs, installation and maintenance issues, and those homes that might not rely on central recirculating filtration.

The most movement so far has been accomplished by Max Sherman from LBNL proposed a few different paths that could work as trade-off options for achieving some average level of PM<sub>2.5</sub> reductions in homes (using a bunch of assumptions and generally ‘average’ data for I/O PM<sub>2.5</sub> in residences from other studies). Those options included different combinations of increasing ventilation to dilute indoor generated particles, increasing filtration to reduce either indoor- or outdoor-generated sources, and/or increasing system runtimes to increase recirculation through filters.

Where they stand is that there was a general consensus that they want to address filtration in a way that could impact human health in a substantive way, and are looking to get something in to the 2016 62.2 standard. That means they are looking for input on some of their proposed ways of achieving reduced indoor concentrations of PM, which includes filtration as a major method – so there is an opportunity for TC 2.4 to inform. And the timeline on that is within the next 6 months to get it in the 2016 pipeline.

So, I can pass information as it comes in to all of 2.4 for comments/suggestions, or probably more appropriately, develop a list of interested people within this group to send that information to.

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Built Environment Research Group

<http://built-envi.com>



European Committee for Standardization  
Comité Européen de Normalisation  
Europäisches Komitee für Normung

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## Air filters for general air cleaning - Standards under development

	Project reference	Title	Candidate citation in OJEU*	Current status	DAV
00195017	prEN ISO 10121-1	Test method for assessing the performance of gas-phase air cleaning media and devices for general ventilation - Part 1: Gas-phase air cleaning media (ISO/DIS 10121-1:2012)	No (-)	Under Approval	2014-02
00195018	FprEN ISO 10121-2	Test methods for assessing the performance of gas-phase air cleaning media and devices for general ventilation - Part 2: Gas phase air cleaning devices (GPACD) (ISO/FDIS 10121-2:2012)	No (-)	Under Approval	2013-04
00195019	FprEN ISO 29462	Field testing of general ventilation filtration devices and systems for in situ removal efficiency by particle size and resistance to airflow (ISO/FDIS 29462:2012)	No (-)	Under Approval	2013-04
00195020	FprEN ISO 29461-1	Air intake filter systems for rotary machinery - Test methods - Part 1: Static filter elements (ISO/FDIS 29461-1:2012)	No (-)	Under Approval	2013-04
00195023	prEN ISO 12249-2	Particulate air filters for general ventilation - Part 2: Method of calculation for the energy performance of air cleaning devices and for the classification of the energy performance	No (-)	Under Drafting	2014-01
00195024	prEN ISO 16170	In situ test methods for very high efficiency filter systems in nuclear and related facilities	No (-)	Under Drafting	2014-12
00195025	prEN ISO 15858	UV-C Devices - Safety Information - Permissible human exposure (ISO/CD 15858:2012)	No (-)	Under Drafting	2014-06
00195026	prEN ISO 14086-1	Flat sheet filter media - Part 1: Fractional efficiency test for general ventilation applications	No (-)	Under Drafting	2014-03
00195027	prEN ISO 15957	Challenge contaminants for testing air cleaning equipment	No (-)	Under Drafting	2014-03
00195028	prEN ISO 12249-1	Sustainability of particulate air filters for general ventilation - Part 1: Method of life cycle cost calculation	No (-)	Under Drafting	2014-03

Alert	Reference	Document title	Reg. date	Cmt stage	Stage date	Limit date	VA	Time frame	Committee
	ISO/PWI 10121-3	Test method for assessing the performance of gas-phase air cleaning media and devices for general ventilation -- Part 1: Method of calculation for the life cycle cost for air cleaning devices		00.00	2011-10-03				ISO/TC 142/WG 8
	ISO/PWI 10121-4	Test method for assessing the performance of gas-phase air cleaning media and devices for general ventilation -- Part 2: Method of calculation for the life cycle cost for air cleaning devices		00.00	2011-10-03				ISO/TC 142/WG 8
	ISO/PWI 12249	Quality factor -- Life cycle cost -- Life cycle assessment -- Safety of the materials which		00.20	(Start date: 2008-02-20 2008-02-20)				ISO/TC 142/WG 3
	ISO/PWI 12249-2	Particulate air filters for general ventilation -- Part 2: Method of calculation for the life cycle cost for air cleaning devices		00.20	(Start date: 2012-09-11 2012-09-10)		ISO lead	36	ISO/TC 142/WG 3
	ISO/PWI 12249-3	Particulate air filters for general ventilation -- Part 3: Application of the life cycle assessment		00.00	2009-10-09			36	ISO/TC 142/WG 3
	ISO/NP 14086-2	Flat sheet filter media -- Part 2: Fractional efficiency test for high final pressure drop applications		10.00	2010-11-26				ISO/TC 142/WG 6
	ISO/PWI 15714	UV-C devices -- UV-C energy required to destroy 70%, 90%, 99% and 99.9% of the microorganisms		00.00	2009-10-09			36	ISO/TC 142/WG 2
	ISO/PWI 15727	UV-C devices -- Measurement of output of UV-C lamp		00.00	2009-10-09			36	ISO/TC 142/WG 2
	ISO/PWI 15820	UV-C Devices -- Measurement of UV-C Tube Energy Loss Over Time		00.00	2009-10-09			36	ISO/TC 142/WG 2
	ISO/PWI 15842	UV-C Devices -- Energy required at the surface of an evaporator-coil to destroy the typical microorganisms		00.00	2009-10-09			36	ISO/TC 142/WG 2
	ISO/PWI 15985	UV-C Devices -- Laboratory tests of pulse-cleaned industrial dust collection systems		00.00	2009-10-09			36	ISO/TC 142/WG 2
	ISO/PWI 16313	Laboratory tests of pulse-cleaned industrial dust collection systems		00.20	(Start date: 2010-02-26 2010-02-26)				ISO/TC 142/WG 5
	ISO/PWI TS 16941	Methodology to determine effectiveness of Filtration Media against Nanomaterials		00.99	2011-02-16			36	ISO/TC 142
	ISO/PWI 17970	Measurement of the performance of portable room air cleaners		00.00	2011-12-06				ISO/TC 142
	ISO/PWI 18524	Method of testing UVGI systems for use in air handling units or air ducts to inactivate airborne microorganisms		00.00	2012-09-10				ISO/TC 142/WG 2
D	ISO/NP 29461-2	Air intake filter systems for rotary machinery -- Part 2: Test methods and classification for cleanable dust control filter media		10.98	(Start date: 2012-06-01 2012-06-06)			Extended	ISO/TC 142/WG 9
	ISO/PWI 29461-2	Air intake filter systems for rotary machinery -- Part 2: Test methods and classification for cleanable dust control filter media		00.20	(Start date: 2012-06-01 2012-06-06)		ISO lead		ISO/TC 142
	ISO/PWI 29461-3	Air intake filter systems for rotary machinery -- Part 3: Test methods for mechanical integrity		00.00	2009-10-09			36	ISO/TC 142/WG 9
	ISO/PWI 29461-4	Air intake filter systems for rotary machinery -- Part 4: Test methods for in-situ testing of cleanable dust control filter media		00.00	2009-10-09			36	ISO/TC 142/WG 9
	ISO/PWI 29461-5	Air intake filter systems for rotary machinery -- Part 5: Test methods for static filter system		00.00	2009-10-09			36	ISO/TC 142/WG 9
	ISO/PWI 29461-6	Air filter intake systems for rotary machinery -- Test methods -- Part 6: Cleanable (Pulse) filter media		00.20	(Start date: 2010-11-2 2010-11-22)			36	ISO/TC 142/WG 9
	ISO/PWI 29464	Cleaning equipment for air and other gases -- Terminology		00.00	2012-09-10				ISO/TC 142/WG 1

Alert	Reference	Document title	Reg. date	Cmt stage	Stage date	Limit date	VA	Time frame	Committee
W	ISO/DIS 10121-1	Test method for assessing the performance of gas-phase air cleaning media and devices for general ventilation -- Part 1: Gas-phase air cleaning media	2008-10-01	40.60	2012-10-05				
	ISO/DIS 10121-2	Test methods for assessing the performance of gas-phase air cleaning media and devices for general ventilation -- Part 2: Gas-phase air cleaning devices (GPACD)	2008-10-01	50.20	(Start date: 2012-11-1 2012-11-29)				
C	ISO/CD 12249-1	Particulate air filters for general ventilation -- Part 1: Method of calculation for the life cycle cost for air cleaning devices	2011-05-30	30.20	(Start date: 2012-12-1 2012-12-03)				
W	ISO/AWI 14086-1	Flat sheet filter media -- Part 1: Fractional efficiency test for general ventilation applications	2011-05-30	20.00	2011-05-30				
C	ISO/CD 15858	UV-C Devices -- Safety information	2011-05-30	50.99	2012-10-02				
C	ISO/CD 15857	Challenge contaminants for testing air cleaning equipment	2011-05-30	50.60	2012-07-13				
C	ISO/CD 18170	In situ test methods for very high efficiency filter systems in industrial facilities	2011-05-30	50.60	2012-11-15				
	ISO/CD 16890-1	Air filters for general ventilation -- Part 1: Technical specifications, requirements and efficiency classification system based upon Particulate Matter (PM)	2012-03-21	30.20	(Start date: 2013-01-1 2013-01-09)				
	ISO/AWI 16890-2	Air filters for general ventilation -- Part 2: Measurement of fractional efficiency and air flow resistance	2012-07-19	20.00	2012-07-19				
	ISO/AWI 16890-3	Air filters for general ventilation -- Part 3: Determination of the gravimetric efficiency and the air flow resistance versus the mass of test dust captured	2013-01-11	20.00	2013-01-11				
	ISO/AWI 16890-4	Air filters for general ventilation -- Part 4: Conditioning method to determine the minimum fractional test efficiency	2012-07-19	20.00	2012-07-19				
	ISO/NP 16891	Test methods for evaluating the durability of the cleanable dust control filter media	2012-03-21	10.99	2012-03-21				
	ISO/FDIS 29461-1	Air intake filter systems for rotary machinery -- Test methods -- Part 1: Static filter elements	2008-10-01	50.20	(Start date: 2012-11-1 2012-11-29)				
	ISO/FDIS 29462	Field testing of general ventilation filtration devices and systems for in situ removal efficiency by particle size and resistance to airflow	2008-10-01	50.20	(Start date: 2012-11-1 2012-11-29)				

Alert	Reference	Document title	Cmt stage	Stage date	Target date	VA	Committee
	ISO 6584:1981	Cleaning equipment for air and other gases -- Classification of dust separators	90.93	2009-07-09	2014-07-15		ISO/TC 142
	ISO/TS 21220:2009	Particulate air filters for general ventilation -- Determination of filtration performance	60.60	2009-09-22			ISO/TC 142
	ISO 29463-1:2011	High-efficiency filters and filter media for removing particles in air -- Part 1: Classification and test methods	60.60	2011-10-07			ISO/TC 142
	ISO 29463-2:2011	High-efficiency filters and filter media for removing particles in air -- Part 2: Aerosol production and test methods	60.60	2011-10-07			ISO/TC 142
	ISO 29463-3:2011	High-efficiency filters and filter media for removing particles in air -- Part 3: Testing flat sheet filter media	60.60	2011-10-07			ISO/TC 142
	ISO 29463-4:2011	High-efficiency filters and filter media for removing particles in air -- Part 4: Test methods for cylindrical filter media	60.60	2011-10-07			ISO/TC 142
	ISO 29463-5:2011	High-efficiency filters and filter media for removing particles in air -- Part 5: Test methods for pleated filter media	60.60	2011-10-07			ISO/TC 142
	ISO 29464:2011	Cleaning equipment for air and other gases -- Terminology	90.92	2012-09-10			ISO/TC 142

# ATTACHMENTS

## TC 2.4 Program Subcommittee Meeting – Denver, CO

24-Jun-2013

Monday 10:00 – 11:00

Nineteen people attended; four programs were previously proposed for Dallas, none were accepted; three moved forward for Denver, again none accepted; **suggest writing clearer outcomes of expected discussion for Forums & Seminars & SEND Abstracts for feedback to ML**

NOTE: Charlene Bayer's Forum 2 was accepted (cospons'd with TC 2.3) "Should the VRP be Held Up to the same Performance/Monitoring Criteria as the IAQP?" TUES 9:45

Technical Program will focus on has a building-oriented theme and seeks papers on building information systems; environmental health; international design; HVAC&R applications and systems; and, featured for this conference, tall building performance.

The Environmental Health through Indoor Environmental Quality track seek papers on developing, evaluating and predicting optimal indoor environmental conditions, especially as they pertain to environmental health. A subsection of this track includes case histories, lessons learned and advice to operators and designers about IEQ and disaster recovery in buildings affected by hurricanes and floods.

\*\*\*\*\* Track 3: Indoor Environmental Health/Indoor Environmental Quality \*\*\*\*\*

Track Chair: Thomas H. Kuehn Email: kuehn001@umn.edu

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. A subsection of this track includes case histories, lessons learned and advice to operators and designers about IEQ and disaster recovery in buildings affected by hurricanes and floods.

New York  
seminar &  
forum  
proposals  
(abstracts)  
deadline =  
August 13th

Web site opens for Seminar and Forum proposals on June 1, 2013.  
Final Conference Papers Submitted for Review (Includes Bio, Learning Objectives and Methods of Assessment) July 2.  
Web site closes for Seminar and Forum proposals on August 13, 2013.

>>>>

**Learning Objectives:** The Learning Objectives should complete the statement, "After attending this session, the attendees will be able to..." Learning Objectives need to be addressed by the speakers and should use measurable verbs such as "Explain," "Describe," "Distinguish," "Design," "Apply," etc.:

Proposed for Future **Denver** New York = Jan 18-22, 2014

Type	Title	CoSponsor	Chair
Seminar	Real Co\$T of Filtration for IAQ	(5th resubmit)	KJ Choi
Forum	Should Filters be rated by their Particulate (EPA PM1, PM 2.5, PM 10, etc.) performance?	52.2 ?	Don Thornburg?
Transactions talk ?	Truth or Consequences; what does a Filter really catch? (RP 1360)		Kathleen Owen
Seminar	Life cycle Co\$T\$(LCC); Energy; Residential ??	2.3	Jeff Siegel
Forum	Sensors & Filtration; can you measure what can harm you?	2.3, 2.4	Brian Krafthefer
Seminar	Filtration at Hospitals; what makes you sick? (speakers Matt Middlebrooks, "Filterman", _____)	170?	Zied Driss

Proposed for Future Seattle =

June 28-July 2, 2014

Type	Title	CoSponsor	Chair
Seminar	Does Particulate Matter, matter? (possible health effects of ultrafines: autism (EPA= C Seyffer contact) or cardio-vascular= Al Veeck contacts) -what about ozone interest?	2.5?	Marilyn Listvan
Seminar	Expert's Advice on Saving Energy with Filters; What you don't know can Co\$T you. (Steve Nicholas' talk: "Hidden Energy co\$ts right before your eyes")	2.3, 52.2 ?	Brian Krafthefer
Forum	Do we Need a Separate Test Standard for Residential Filters?		Tom Justice
Seminar	Should Filters be rated by their Particulate (EPA PM1, PM 10, etc.) performance?	52.2 ?	Don Thornburg
Seminar talk	Truth or Consequences; what does a Filter really catch? (RP 1360)(if transactions talk is in NY)		Kathleen Owen

Proposed for Future Chicago =

Jan 24-28, 2015

Type	Title	CoSponsor	Chair
Symposium	Expert's Advice on Saving Energy with Filters; What you don't know can Co\$T you. (Steve Nicholas' talk/paper: "Hidden Energy co\$ts right before your eyes")	2.3, 52.2 ?	Brian Krafthefer
Symposium	Filtration for Hospitals (FGI?)		Zied Driss

Attendees:

Al Veeck  
 Tim Johnson  
 Jim Hanley  
 John Simenson  
 Kyung-Ju (K J) Choi  
 Jan Fretthold  
 Keith Chesson  
 Michael Corbat  
 Gemma Kerr  
 Sanjeev Hingorani  
 Kathleen Owen  
 Charles Seyffer  
 Zied Driss  
 Thed Ptek  
 Joel Davis  
 Tom Justice  
 Rahul Bharedwaj  
 Monroe Britt  
 Marilyn Listvan

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[mlistvan@yahoo.com](mailto:mlistvan@yahoo.com)

\*IAQ 2013  
 Conference,  
 Environmental Health  
 in Low-Energy  
 Buildings -  
 Vancouver, British  
 Columbia, Canada



# ATTACHMENTS

## ASHRAE MEETING MINUTES – Denver

### TC 2.4 - Particulate Contaminants/Removal Equipment

#### Handbook Subcommittee Meeting

**Sat. June 22, 2013 1:00 – 2:30**

1. Call to order 1:00 PM Eric Brodsky, Chair
2. Introductions
3. Attendees: Gemma Kerr, Pat Marks, Tom Justice, , Phil Maybee, Dan Hass, Jim Hanley, Bob Burkhead, Thad Ptak, R Vijayakimak, Peter Hoekstra, Sanjeev Hingorani, Jan Fretthold, John Simenson, Geoff Crosby, Ramul Bharadwaj, Keith Chesson, Grace Byfield, Kathleen Owen, Charles Lo, Kyung-Ju Choi ,Eric Brodsky

#### 4. Session Notes

Chapter 29 was published in 2012 and updates for 2016 need to be complete and submitted to ASHRAE by April 2015.

We conducted a working session and edited Fig. 3 Typical Filter Locations for HVAC System, to remove MERV 17-20 and correct the Arrestance Value descriptors.

We identified additional topics that could be covered in the next update or in the Online Handbook Plus. These include:

Bioaerosols control with input from Chapter 46, Applications ( Karin Forde will help update)

UV topics with input from Chapter 17 ,Systems

ISO 29462 guideline 26, in-situ testing of air cleaners

Develop a user guide for 52.2 applications

Hyperlink to ASHRAE Research projects or executive summaries such as:

1189 RP - Charged media results

909 RP - Antimicrobial treatments

1190 RP - Conditioning procedures

1088 RP - Round robin 52.2 testing from RTI study

1360 RP - Composition of dust

#### 5. Next Steps

E. Brodsky will distribute the most recent chapter with meeting updates. Reviewers will identify areas that need updating. Handbook committee members will bring written updates to New York meeting for review and discussion.

#### 6. Other Business- none

Meeting adjourned -2:00



Prepared by Eric Brodsky,  
Draft Minutes submitted: 6/25/13  
[justfilter@yahoo.com](mailto:justfilter@yahoo.com), [hanley@rti.org](mailto:hanley@rti.org)

# ATTACHMENTS

**ASHRAE Code Of Ethics** (Approved by ASHRAE Board of Directors January 30, 2013)

1.140.001.1 As members of ASHRAE or participants in ASHRAE committees, we pledge to act with honesty, fairness, courtesy, competence, integrity and respect for others in our conduct.

- A. Efforts of the Society, its members, and its bodies shall be directed at all times to enhancing the public health, safety and welfare.
- B. Members and organized bodies of the Society shall be good stewards of the world's resources including energy, natural, human and financial resources.
- C. Our products and services shall be offered only in areas where our competence and expertise can satisfy the public need.
- D. We shall act with care and competence in all activities, using and developing up-to-date knowledge and skills.
- E. We shall avoid real or perceived conflicts of interest whenever possible, and disclose them to affected parties when they do exist.
- F. The confidentiality of business affairs, proprietary information, intellectual property, procedures, and restricted Society discussions and materials shall be respected.
- G. Each member is expected and encouraged to be committed to the code of ethics of his or her own professional or trade association in their nation and area of work.
- H. Activities crossing national and cultural boundaries shall respect the ethical codes of the seat of the principal activity.