

**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 01/29/2013

TC/TG/MTG/TRG TITLE Particulate Air Contaminants and Removal Equipment  
DATE OF MEETING January 29, 2013 LOCATION Dallas

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 61 people were in attendance for this meeting.
Mark Renn	07/01/10	Mike Corbat	07/01/11	
Chris Campion	07/01/12			
Paolo Tronville	07/01/12			
Al Veeck	07/01/11			
Randy Haseman	07/01/12			
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			
Christine Sun	07/01/11			
Nader Barjesteh	07/01/11			
Carolyn Kerr	07/01/12			
Jeff Siegel	07/01/11			
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 David A John, PE ( <a href="mailto:djohn@metalindustriesinc.com">djohn@metalindustriesinc.com</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> )
	Stephanie Reiniche ( <a href="mailto:sreiniche@ashrae.org">sreiniche@ashrae.org</a> ) Mike Vaughn ( <a href="mailto:mvaughn@ashrae.org">mvaughn@ashrae.org</a> )

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

Tuesday, January 29, 2013 3:30 – 6:00 p.m. Sheraton Dallas – San Antonio Ballroom A

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

2. Introduction of guests and members
  - a. ~61 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>16</b>	<b>2</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:           **16 voting members – We have a quorum**  
                           **45 Corresponding members/visitors/guests**  
                           **[Voting members Zied Driss, Bob Burkhead and Chris Peart came in after the](#)**  
**[start of the meeting.](#)**

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

- a. Introductions from committee members and visitors as well as those attending TC 2.4 for the first time.
- b. Committee members were asked if there were any questions regarding the Draft Agenda, which was displayed on the overhead. There was no response so the meeting continued.
- c. Mr. Hanley reminded everyone to carefully review the ASHRAE Code of Ethics which can be found on-line but will also be included in the minutes. A key point highlighted in the Code of Ethics involves avoidance of any conflicts of interest by members.
- d. Mr. Hanley noted that ASHRAE is asking members to self-declare their employment discipline. And while you are on-line this is a good time to update your bio.
- e. The chair asked if there were any committee liaisons present. There was no response.

#### 5. Particle Party Announcement (Marilyn Listvan)

- a. Where/When: El Fenix / 7:00 pm
- b. Marilyn Listvan, Particle Party Coordinator, noted that this year's gathering might more accurately be called Contaminant Confab since we have included TC 2.3.
- c. Mr. Hanley announced that the next Particle Party would be in Denver and that Keith Chesson and Stephen Nicholas had agreed to take responsibility for the planning. Also noted; Stephen Nicholas had agreed to take the lead on future planning.
- d. Jim thanked Marilyn for her work in planning the Dallas event.

[Zied Driss arrives](#)

#### 6. Approval of Last Meeting Minutes (San Antonio, June 26, 2012): (Tom Justice)

- a. **Motion by Randy Haseman , 2<sup>nd</sup> by Al Veeck**
- b. **Vote to approve: 14-0-0-4-18 (Yes-No-Abstain-Absent-Tot) Chair Not Voting (CNV)**

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

- a. **The committee voted 0-12-3-3 against co-sponsorship of TC 2.01's work statement WS-1625 due to lack of applicability to TC 2.4's focus. On August 14, 2012, Jim Hanley informed Hui Zhang of the vote.**
- b. Mr. Hanley officially approved TC 2.4 Standards subcommittee's request to add Mike Corbat as their vice chair.
- c. Mr. Hanley officially approved Michael Waring as chair and Mark Renn as vice chair of TC 2.4's Research subcommittee through the Dallas meeting. After the Dallas meeting Zied Driss will take Mr. Renn's place as vice chair of the committee.
- d. Peter Shipp officially requested to be removed from PMS-1360. Mr. Hanley submitted his letter of resignation.

#### 8. Subcommittee Reports:

- a. **Planning Subcommittee (Don Thornburg)**
  - i. The committee met on Monday June 25<sup>th</sup> from 8-10am. Mr. Thornburg noted that the Planning subcommittee had met on Monday morning. There were 15 people in

attendance. He reminded everyone that as this was a fairly new group we were just finalizing our Scope and Purpose statement which reads as follows; **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.**

1. From the committee's discussion, Mr Thornburg noted that a welcoming group would be formed as part of the Membership subcommittee for the purpose of assisting new members and visitors in becoming familiar with the workings of the committee and how they might "plug-in."
2. It was pointed out that TC 2.4 does not have a program here at the Dallas meeting and the discussion centered on how to re-energize this effort.
3. As part of the Research subcommittee Brian Krafthefer is working with ASHRAE to find a way to access information from past research projects.

**ii. Motion to accept the Planning Subcommittee report**

1. **Moved by Chris Campion, 2<sup>nd</sup> by Carolyn Kerr**
2. **Vote 15-0-0-3-18 (Yes-No-Abstain-Absent-Tot)**

**iii. 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 total of 18 voting members on the roster. This roster will remain in effect though the upcoming summer meeting in Denver. After Denver the roster, which we submit today will go into effect.
2. We will have 4 voting members rolling off after the Denver meeting; Jim Hanley, Stephen Nicholas, K.J. Choi, and Chris Peart.
3. Just as a reminder the roster, which you receive electronically is not to be shared outside of the committee without the permission of ASHRAE.
4. Also, as Jim mentioned the ASHRAE Code of Ethics has been included in the minutes for your review.
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. Volunteers were asked to come forward as part of the WELCOME group within the committee. Michael Waring had suggested during the Planning subcommittee that we include some of our younger members who make some visitors to the committee feel welcome.

**Bob Burkhead arrives**

- ii. **Motion to accept Membership Report**
  - 1. **Motion by Christine Sun, 2<sup>nd</sup> Bob Burkhead**
  - 2. **Vote: 14-0-1-3-18 (Yes-No-Abstain-Absent-Tot) CNV**
  
- iii. Jim Hanley, adding to the report on Membership informed and or reinforced to the committee;
  - 1. Due to current business workload, Don Thornburg has asked to continue as vice chair for the next term. As such Tom Justice will leapfrog from Secretary to Chair after the Denver meeting. And Gemma Kerr will become our new secretary. This succession plan has been blessed by ASHRAE.
  - 2. Recapping again for Standards subcommittee, Bruce McDonald will continue as chair and Mike Corbat as vice chair. Bruce interjected that he would like to step down as chair after the Denver meeting and that Mike had agreed to assume the role of chair. Mr Hanley agreed and noted that this left an open spot for vice chair and a good opportunity for someone to get involved.
  - 3. For the Research subcommittee, Michael Waring will take over from Mark Renn as chair and Zied Driss has agreed to serve as vice chair.
  - 4. Stephen Nicholas has asked to step down as chair of Programs. Marilyn Listvan has agreed to take over.
  - 5. Marilyn Listvan will also continue as chair of Publications. Marilyn asked that Chris Champion be added as the vice chair of the subcommittee.
  - 6. For Handbook, Eric Brodsky will continue as chair.
  - 7. Tom Justice will continue over Membership.
  - 8. Since Don Thornburg is remaining as vice chair, he will automatically retain the position of Planning subcommittee chair.
  - 9. And Al Veeck will continue as our Webmaster.
  
- iv. Under membership, Mr. Hanley also informed the committee that MTG-EEC would very likely transition into a GPC and as such they were asking for TC 2.4 to become one of the cognizant committees. This is required in order to launch the GPC but also once the GPC has completed it's tasks and dissolves and questions regarding the GPC's scope would come to the cognizant TC. Also on this subject, Monroe is currently our primary liaison to MTG-EEC and Ken Snider is alternate. The two have asked that we approve Ken Snider as the Primary liaison and Monroe Britt as the alternate to the MTG and later the GPC.
  
- v. Christine Sun asked that anyone interested in participating in the new GPC should contact her with any questions. She also recognized Geoff Crosby as chair of the new group.
  
- vi. **Motion for TC 2.4 to become one of the cognizant TC's for the GPC on "Method for Determining the Energy Consumption of General Air-Cleaning Devices."**
  - 1. **Moved by Al Veeck, 2<sup>nd</sup> Jeff Siegel**
  - 2. **Vote 15-0-0-3-18 (Yes-No-Abstain-Absent-Tot)**
  
- vii. **Motion to accept Ken Snider as primary liaison and Monroe Britt as alternate liaison to MTG-EEC and the associated GPC.**
  - 1. **Moved Al Veeck, 2<sup>nd</sup> Nader Barjesteh**
  - 2. **Vote 14-0-1-3-18 (Yes-No-Abstain-Absent-Tot) CNV**
  
- viii. **MEMBERSHIP SUBCOMMITTEE REPORT IS ATTACHED.**

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

- i. Mr. Waring noted that the subcommittee met Sunday from 3-5
- ii. Reporting on the status of key research projects within the committee he noted one recently completed project 1360-RP “How do filters change through their life: pressures drop, efficiency, weight gain and dust composition.” *Principal Investigator, Kathleen Owen*
- iii. We did have one Unsolicited Research Project 1691-URP “Modeling the impact of residential HVAC filtration on indoor particles of outdoor origin.” The subcommittee saw this as fitting ASHRAE’s mission, that it did not overlapped any other current projects, that it complemented well the 1649-WS, and that it was a high priority for the subcommittee as a project. The subcommittee recommended that a vote be taken by the main committee on whether to form a PES to formally recommend (or not) the URP to RAC. The tentative PES is;

Don Thornburg (chair)  
Tom Justice  
Paolo Tronville  
Bruce McDonald  
Thad Ptak

iv. Status on other key RTAR’s, WS’s, TRP’s:

1. 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 has been out for bid, and RAC is considering it this meeting)**
  2. Cosponsored Projects
    - a. TC 2.3 – 1625-RTAR Applicability of the IAQP to Achieve Healthy, Net Zero Energy Buildings
    - b. TC 2.1 – 1624-WS Effective Energy School Classroom Ventilation
  3. 1626-RTAR Energy Implications of Air Filtration in Commercial Buildings ( There was some push back from RAC. *Chair will discuss with new RL (Dave John) to see if the impasse with RAC concerning duplication of research can be overcome).*
  4. 1649-WS Impact of Higher Efficiency Filtration on IAQ in Residential Environments with Central HVAC – Champion: Tom Justice *(Previously in WS writing stage)* **The WS is ready to go to David John and then to the committee for a vote, so that it can be submitted to Mike Vaughn by Feb. 15<sup>th</sup> for consideration at the next RAC meeting.**
  5. Survey of Existing Commercial HVAC Systems and Potential Energy Savings Technologies. Champions: Zied Driss, Mike Corbat and Ken Snider *(Previously in RTAR writing stage).*
  6. Two additional RTAR’s are in the draft stage however no firm commitment has been made for the completion date.
- v. Currently there are 3 RTAR’s and 4 WS’s being considered by RAC. Seven TRP’s are currently ready for bid. Nine URP’s were submitted and of these 6 were rejected outright. ASHRAE has a definite need for more research projects.

vi. **At this Point in the meeting Chair Jim Hanley turned the meeting over to Vice Chair Don Thornburg in order to avoid any potential conflict of interest.** Mr. Thornburg then asked for the final report on 1360-RP from PMS chair K.J. Choi. Mr. Choi noted that the project was recently accepted by the PMS with a few minor changes. The report contains a lot of information which you should be able to read within a few months.

vii. **Motion to accept the report from the PMS on 1360-RP.**

1. **Moved by Zied Driss, 2<sup>nd</sup> by Christine Sun**
2. **Vote to accept report 14-0-2-2-18 (Yes-No-Abstain-Absent-Tot) CNV**

**Chris Peart arrived after the discussion therefore he abstained.**

viii. **Motion to accept the Research subcommittees recommendation on forming a PES to review 1691-URP and make recommendations to the TC. Members of the committee to be Don Thornburg (chair), Tom Justice, Paolo Tronville, Bruce McDonald and Thad Ptak.**

1. **Moved by Al Veeck, 2<sup>nd</sup> by Chris Campion**
2. **Vote to accept recommendation 14-0-2-2-18 (Yes-No-Abstain-Absent-Tot) CNV**

ix. **Motion to accept the Research subcommittee report**

1. **Moved by Bob Burkhead, 2<sup>nd</sup> by Christine Sun**
2. **Vote to accept report 15-0-1-2-18 (Yes-No-Abstain-Absent-Tot) CNV**

x. **RESEARCH SUBCOMMITTEE MEETING MINUTES ARE ATTACHED.**

**AT THIS TIME VICE CHAIR DON THORNBURG TURNED THE MEETING BACK OVER TO CHAIR JIM HANLEY**

**d. Standards Subcommittee Report (Bruce McDonald)**

- i. Sub-committee chair Bruce McDonald gave the highlights of the earlier Standards subcommittee meeting noting that ASHRAE standard 52.2-2012 had recently been published a week before this meeting and had been announced in the standards action notice by ASHRAE. Moving forward Mr. McDonald noted that there were 4 items of addenda that would be submitted for public review in the very near future. These include changes to;
  1. The MERV table.
  2. The OPC requirements.
  3. The relative humidity range.
  4. To resolve issues in the shedding procedure.
- ii. Mr. McDonald also noted that relating to standard 52.2-2012 there were two RTAR's in the works. One will be looking at a new test dust and the other aimed at reduction in test variations.
- iii. Also noted in 52.2-2012 the committee is in the process of writing an informative appendix for testing filters in series.
- iv. SSPC 62.2 had asked for assistance from TC 2.4 as they were currently looking at ways to improve IAQ in residential buildings with the goal to reduce PM 2.5 levels by half. Bruce noted that Brent Stevens was our official liaison and if you would like to get involved in this area you should contact him.
- v. Also noted was a possible forum for Denver on the topic "Do we need a totally different method for testing particulate filters?"

- vi. A final discussion was held regarding the issue of loading of filters during efficiency measurements and the fact that this was not addressed in the proposed OPC addenda. It was generally agreed that concentration of the challenge was not an OPC specification issue but rather a procedural one. Bob Burkhead noted that this was really a task for SSPC 52.2 however he agreed that he would solicit input on a 5<sup>th</sup> addenda to address this issue.

- vii. **Motion to accept Standards report**

1. **Moved by Tim Johnson, 2<sup>nd</sup> by Bruce Renn**
2. **Vote to accept report 15-0-1-2-18 (Yes-No-Abstain-Absent-Tot) CNV**

- viii. **STANDARDS SUBCOMMITTEE MINUTES ARE ATTACHED.**

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

- i. Ms. Listvan reported that the Program subcommittee had met this week with 15 in attendance. Our TC had proposed 4 programs for Dallas however none were accepted. Several were co-sponsored by TC 2.3.
- ii. There are 7 potential programs, which we have listed for Denver. Some are recycled from those rejected for Dallas. In addition we are looking at a possible Seminar from Jeff Siegel on RP 1596 results and possibly a seminar from Kathleen Owen on RP 1360 findings. Jeff Siegel also noted an interest in a second residential focused seminar on "LIFE CYCLE COSTS." Brian Krafthefer is championing a forum on "SENSORS and FILTRATION..." however this may be re-slotted for NYC. He does have sponsorship from TC 2.3.
- iii. Looking further out, we have 3 seminars slotted for New York, a seminar for Seattle, and a symposium for Chicago.
- iv. Ms. Listvan also mentioned that the best way to get on the program agenda is to submit a symposium, which involves writing a paper.

- v. **Motion to accept Program report**

1. **Moved by Al Veeck, 2<sup>nd</sup> by Christine Sun**
2. **Vote to accept report 15-0-1-2-18 (Yes-No-Abstain-Absent-Tot) CNV**

- f. **Webmaster Report (Al Veeck)**

- i. Mr. Veeck brought to the committees attention that the NAFA website contains a collection of information of interest to the committee. This can be accessed at [www.NAFA.HQ.org](http://www.NAFA.HQ.org), then going to the TC 2.4 link.
- ii. Included in the website are TC 2.4 minutes which were pulled from the ASHRAE archives along with as many of the pertinent research projects which were available going back to RP 183.
- iii. Also under the link titled TC2.4 meetings are posted upcoming ASHRAE meetings, along with TC 2.4 agendas and minutes.
- iv. Photographs are being posted on the website going back to 2004 and include pictures of the host city, TC 2.4 meeting and the Particle Party. Photos can be run as a slide show.
- v. It was noted that the ISO link was also included.

- vi. **Motion to accept Webmaster report**

1. **Moved by Paolo Tronville, 2<sup>nd</sup> by Christine Sun**
2. **Vote to accept 15-0-1-2-18 (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. The meeting was well attended with 15 or 16 people.
- ii. Mr. Brodsky stated that the committee was in good shape regarding our current tasks associated with Chapter 29 with the latest revision published in 2012 and the next publication not due until due 2016.
- iii. Since the committee is at beginning of a revision cycle it seemed an appropriate time to look at both current and additional topics, which might need more extensive information. Examples were given as bio-aerosols, the UV topic, Guideline 26, charged medias, antimicrobials and others.
- iv. There was also discussion by the committee regarding the ability to access research projects through On-line-Plus.

**v. Motion to accept Handbook subcommittee report**

1. **Moved by Gemma Kerr, 2<sup>nd</sup> by Jeff Siegel**
2. **Vote to accept report 15-0-1-2-18 (Yes-No-Abstain-Absent-Tot) CNV**

**vi. HANDBOOK SUBCOMMITTEE MINUTES ARE ATTACHED****h. Publications Report (Marilyn Listvan)**

- i. Chair Marilyn Listvan informed the committee that IAQ 2013 would be this year in October therefore any submittals had to be in by September 1<sup>st</sup>. Mention was made that Charlene Bayer had located the 2 missing volumes so now all that remained to be done was scanning.
- ii. Marilyn also mentioned for those who might be interested that standards 62.1 and 62.2 were in the process of being revised.
- iii. TC 8.10 is heading up RP 1565 Dedicated Outdoor Air Systems Design Guide and ask that we consider getting involved from the air filtration side.
- iv. Marilyn again asked for any publications or references on air filtration for our website.

**v. Motion to accept Publications subcommittee report****Monroe Britt left the room.**

1. **Moved by Al Veeck , 2<sup>nd</sup> by Randy Haseman**
2. **Vote to accept report 14-0-1-3-18 (Yes-No-Abstain-Absent-Tot) CNV**

**9. Reports from other TC liaisons**

No other TC liaisons present to report.

**10. Old Business**

No old business to report.

**11. New Business**

- a. **Discussion on the change in meeting days for the NYC show and how this might affect our committee.**
- b. **Marilyn mentioned that our very own Tom Kuehn would be running one of the tracks in New York.**

- c. Michael Waring again asked for everyone to send him any research ideas prior to the next meeting to prevent having to generate ideas during the short time span of the subcommittee meeting.

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

**Moved by Al Veeck, 2<sup>nd</sup> by Randy Haseman**

**Vote Unanimous**

Respectively submitted,

Tom Justice

TC 2.4 Secretary

Meeting date: January 29, 2013

Minutes submitted: April 4, 2013

# ATTACHMENTS

## Draft Agenda

**TC 2.4 Particulate Contaminants/Removal Equipment  
Main Committee Meeting  
Dallas, Tuesday January 29, 2013  
3:30-6:00p**

**Sheraton Conference Center  
San Antonio Ballroom A (CC3)**

- 1. Call to order..... Jim Hanley
- 2. Introductions
- 3. Roll call ..... Tom Justice
- 4. Welcome and opening comments ..... Jim Hanley
- 5. Particle Party..... Marilyn Listvan
- 6. Approval of San Antonio Minutes..... Tom Justice
- 7. Record of votes taken since San Antonio..... 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..... Stephen Nicholas
  - 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

# ATTACHMENTS

## TC 2.4 Planning Subcommittee Meeting – Dallas Minutes

Monday, January 28, 2013

8:00 – 10:00 a.m.

Sheraton, City View 8 (4<sup>th</sup> floor)

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

1. Call to order, Welcome and Introductions
  - a. 15 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. Stephen Nicholas has volunteered to do this.
  - b. Handbook
    - i. No issues and on track.
  - c. Membership
    - i. We would like to have a "Welcoming Group" to help encourage and bring on younger/new members into TC 2.4 activities. Tom Justice will recruit some people for this roll.
    - 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 Marylyn 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
    - iii. Need the IAQ Proceedings for 1989 & 1998
  - 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. Need newer way of generating RTAR's (Bank of ideas ready to go)
      - 1. Use the TC 2.4 email list between meetings for ideas
      - 2. Ideas
        - a. Impact of filtration on society
        - b. Filtration and Energy savings and how it affects society
        - c. Renewable Energy Research (Denver)
  - 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
5. New Business
6. Adjourn

# ATTACHMENTS

## TC 2.4 Membership Report

Dallas 2013  
January 29, 2013

- Currently TC 2.4 has a total of 18 voting members on the roster. This roster will remain in effect through the upcoming summer meeting in Denver. After Denver the roster, which we submit today will go into effect.
- We will have 4 voting members rolling off after the Denver meeting; Jim Hanley, Stephen Nicholas, K.J. Choi, and Chris Peart.
- 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.
- Volunteers were asked to come forward as part of the WELCOME group within the committee. Michael Waring had suggested during the Planning subcommittee that we include some of our younger members who make make some visitors to the committee feel more welcome.

# ATTACHMENTS

## ASHRAE RESEARCH SUBCOMMITTEE MEETING MINUTES

Dallas, TX

### TC2.4 – Particulate Air Contaminants/Removal Equipment

Sunday, January 27, 2013  
3:00 – 5:00 PM  
Lone Star Ballroom A2 (CC2)

1. Call to Order (**Meeting began at 3:02pm**)

2. Introductions (**Verbal introductions were made; 51 people included their name, email and organizational affiliation on the sign up sheets**)
3. Review of Agenda (**The chair discussed the agenda for the meeting**)
4. Chair's Comments (**The chair discussed that he assumed the position from Mark Renn, who is acting as Vice Chair until the end of the Dallas Meeting, after which Zied Driss will assume the Vice Chair role**)
5. Recently Completed Projects (brief overview)

1360-RP How do filters change through their life: pressures drop, efficiency, weight gain and dust composition.

*Principal Investigator, Kathleen Owen*

PMS Chair, KJ Choi

**(Kathleen discussed how the last PMS member approved her final report pending a few revisions, and she thanked everyone for their help in providing filters so she could complete the project)**

6. Unsolicited Research Proposal

1691-URP Modeling the impact of residential HVAC filtration on indoor particles of outdoor origin.

*Proposer, Brent Stephens*

**(Brent discussed his recently submitted URP. After a lengthy discussion of about 1.25 hrs, the subcommittee concluded that his proposal fit the ASHRAE mission, that it did not have overlap with other research projects, that it complemented well the 1649-WS, and that it was a high priority for the subcommittee as a project. The URP will be discussed at the main meeting and a vote will occur on whether to form a PES to formally recommend (or not) the URP to RAC. The tentative PES is:**

**Don Thornburg (chair)**

**Tom Justice**

**Paolo Tronville**

**Bruce McDonald**

**Thad Ptak**

7. Current Tentative Research Projects (TRP)

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 has been out for bid, and RAC is considering it this meeting)**

8. Cosponsored Projects (for reference only)

TC 2.3 – 1625-RTAR Applicability of the IAQP to Achieve Healthy, Net Zero Energy Buildings

TC 2.1 – 1624-WS Effective Energy School Classroom Ventilation

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

- a. 1626-RTAR Energy Implications of Air Filtration in Commercial Buildings (*Chair will discuss with new RL (Dave John) to see if the impasse with RAC concerning duplication of research can be overcome*).

**(Jeff Siegel has agreed to champion this RTAR and resubmit it to RAC for consideration)**

- b. 1649-WS Impact of Higher Efficiency Filtration on IAQ in Residential Environments with Central HVAC – Champion: Tom Justice (*Previously in WS writing stage*)  
**(The WS is ready to go to David John and then to the committee for a vote, so that it can be submitted to Mike Vaughn by Feb. 15<sup>th</sup> for consideration at the next RAC 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*).  
**(This RTAR is still in the writing stage and will not be ready for the Feb. 15<sup>th</sup> deadline)**
- 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*)  
**(No writing been accomplished on this RTAR, and a firm date of commitment to having a draft was not set)**
- e. Quantity 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.*)  
**(No writing been accomplished on this RTAR, and a firm date of commitment to having a draft was not set)**
- f. New ideas?  
**(Jim Hanley remembered a previous topic, “Predicting the life of in service filters”. This idea was discussed and then dismissed as too large of an issue for one RTAR. Also, Paolo Tronville discussed initially championing an RTAR called, “Procedures and materials suitable for assessing the energy performance of air filters”. He and the chair will communicate about this after the meeting by email.**

10. Liaison Report (David John arrived about 45 minutes into the meeting, and he introduced himself and then relayed his intent to help us move research ideas through the RTAR/WS process.

11. Adjournment (The meeting was adjourned at 4:48pm)



# 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 52.2 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 Seyfler. 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

**MEETING AGENDA  
TC 2.4 STANDARDS SUBCOMMITTEE**

Monday, 28 January 2013

Lone Star Ballroom C2, Sheraton Conference Center, Level

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4:15 p.m. – 6:00 p.m.

Dallas, TX

*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 air filtration 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 Seyffter. 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 Borroughs. Pubished 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 CEN 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

**MEETING AGENDA  
TC 2.4 STANDARDS SUBCOMMITTEE**

Monday, 28 January 2013

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Dallas, TX

*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 RTAF 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) CEN/TC 195 – Air Filters for General Air Cleaning – Paolo Tronville
- d) Eurovent – Paolo Tronville
- e) IEST – Institute of Environmental Sciences and Technology – Andy Sijlo 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.

Brent Stephens, Ph.D.

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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	Crnt 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: 2008-02-2	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: 2012-09-1	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 15965	UV-C devices Energy required to destroy bacteria and viruses on surfaces	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: 2010-02-2	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 rotary machinery	10.98	(Start date: 2012-06-0	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 rotary machinery	00.20	(Start date: 2012-06-0	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 rotary machinery	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 systems	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 systems	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	Crnt stage	Stage date	Limit date	VA	Time frame	Committee
W	ISODIS 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			
	ISODIS 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	ISOC/D 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	ISOC/D 15858	UV-C Devices -- Safety information	2011-05-30	50.99		2012-10-02			
C	ISOC/D 15957	Challenge contaminants for testing air cleaning equipment	2011-05-30	50.60		2012-07-13			
C	ISOC/D 16170	In situ test methods for very high efficiency filter systems in industrial facilities	2011-05-30	50.60		2012-11-15			
	ISOC/D 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			
	ISOFDIS 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			
	ISOFDIS 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	Crnt 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 rotary machinery	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 static filter systems	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 – Dallas, TX  
28-Jan-2013 Monday 10:00 – 11:00**

Fifteen people attended; four programs were previously proposed for Dallas, none were accepted; three are moving forward for Denver.

Design, Energy Modeling and Building Efficiency Performance.

The Research track has an emphasis on Renewable Energy Research and its role in the industry's movement toward a clean energy economy.

- Core HVAC&R Systems and Equipment, and Fundamentals and Applications advances and practices.
- Integrated Project Delivery (IPD) track addresses the evolving method of managing a design project --with focus on success and lessons learned with IPD, as well as individual roles in IPD collaboration.
- Building Energy Modeling vs. Measurement & Verification track includes papers discussing the accuracy of building energy modeling programs compared to utility usage -- such as systemic construction issues that lead to long term non-performance and training staff to operate a building as it was designed to perform.
- Mile-High Efficiency & Equipment Track presents papers highlighting new breakthroughs in equipment and building systems that contribute to a building's overall high-efficiency performance.

**DENVER  
seminar &  
forum  
proposals  
(abstracts)  
deadline =  
February  
11th**

**Proposed for Future**

**Denver =** June 22-26, 2013

Type	Title	CoSponsor	Chair
Seminar	Real Co\$ of Filtration		KJ Choi
Forum	Do we Need a Separate Test Standard for Residential Filters?		Tom Justice
Forum	Should Filters be rated by their Particulate (EPA PM1, PM 2.5, PM 10, etc.) performance?	52.2 ?	Don Thornberg
Seminar	Retail project / Contaminants (Jeff Siegel RP 1596 results, multiple talks, want Target guy= Scott Williams)	?	Charlie Seyffer
Seminar talk, research track	Truth or Consequences; what does a Filter really catch? (RP 1360)		Kathleen Owen
Seminar	Life cycle Co\$\$(LCC); Energy; Residential	2.3	Jeff Siegel
Forum	Sensors & Filtration; can you measure what can harm you?	2.3, 2.4	Brian Krafthefer

**New York =** Jan, 2014

Type	Title	CoSponsor	Chair
Seminar	Should Filters be rated by their Particulate (EPA PM1, PM 10, etc.) performance?	52.2 ?	Don Thornberg
Seminar	Filtration at Hospitals; what makes you sick?		Zied Driss
Seminar	Does Particulate Matter, matter?	?	Marilyn Listvan

**Seattle =** June, 2014

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

**Chicago =** Jan, 2015

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

**Attendees:**

Stephen Nicholas Tim Johnson Jim Hanley Don Thornburg Kyung-Ju (K J) Choi David Christopher Dan Hass Brian Krafthefer Gemma Kerr Sanjeev Hingorami Kathleen Owen Charles Seyffer Zied Driss Monroe Britt Marilyn Listvan	<a href="mailto:snicholas@airinds.com">snicholas@airinds.com</a> <a href="mailto:tim.johnson@tsi.com">tim.johnson@tsi.com</a> <a href="mailto:hanley@rti.org">hanley@rti.org</a> <a href="mailto:thornburgd@camfilfarr.com">thornburgd@camfilfarr.com</a> <a href="mailto:kchoi28@gmail.com">kchoi28@gmail.com</a> <a href="mailto:davidc@hdkind.com">davidc@hdkind.com</a> <a href="mailto:dhass@clcair.com">dhass@clcair.com</a> <a href="mailto:krafthefer@aol.com">krafthefer@aol.com</a> <a href="mailto:akashrae@magma.ca">akashrae@magma.ca</a> <a href="mailto:sanjeev.hingorami@lennoxind.com">sanjeev.hingorami@lennoxind.com</a> <a href="mailto:mko@rti.org">mko@rti.org</a> <a href="mailto:sevffer@camfilfarr.com">sevffer@camfilfarr.com</a> <a href="mailto:drissz@camfilfarr.com">drissz@camfilfarr.com</a> <a href="mailto:MonroeBritt@Bellsouth.net">MonroeBritt@Bellsouth.net</a> <a href="mailto:milstvan@yahoo.com">milstvan@yahoo.com</a>
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• IAQ 2013 Conference, Environmental Health in Low-Energy Buildings - Vancouver, British Columbia, Canada

**Winter**  
 Jan 26-30, 2013 - Dallas  
 Jan 18-22, 2014 - New York

**Annual**  
 Jun 22-26, 2013 - Denver  
 Jun 28-July 2, 2014 - Seattle

# ATTACHMENTS

## ASHRAE MEETING MINUTES – Dallas

### TC 2.4 - Particulate Contaminants/Removal Equipment

#### Handbook Subcommittee Meeting

Sat. Jan 26, 2013 1:00 – 2:30

1. Call to order 1:15 PM Eric Brodsky, Chair
2. Introductions
3. Attendees: Zied Driss, Phil Maybee, Jim Hanley, Dan Hass, Gemma Kerr, Tom Justice, Kartik Potukuchi, David Christopher, Don Thornburg, Stephen Nicholas, Christine Stanfel, Melvina Nyoto Setiadi, Volker Haendler, Monroe Britt, Paul Bryant, Eric Brodsky
4. Notes:

Chapter 29. Air Cleaners for Particulate Contaminants was published in 2012. We discussed the following additional topics that could be covered in more detail in either the next full revision, to be published in 2016 or in the Online Handbook Plus.

  - Bioaerosols control with input from Chapter 46
  - UV topics with input from Chapter 17, HVAC Systems and Equipment
  - ISO 29462 guideline 26, in-situ testing of air cleaners
  - Additional user information for standard 52.2 applications
  - Links to ASHRAE Research projects or executive summaries
    - RP-1189 Charged media results
    - RP- 909 Antimicrobial treatments
    - Round robin 52.2 testing from RTI study
  - Other appropriate references including:
    - USP 797 – Pharmaceutical Compounding – Sterile Preparations
    - Books on health care facilities
- 5 E. Brodsky will distribute a copy of the most recent chapter with directions to highlight areas that need updating. The highlighting will be completed by May 15, with a reminder in April. This is the 1<sup>st</sup> step for the next update, the highlighted topics will be reviewed and discussed at the next meeting.

Prepared by Eric Brodsky,  
Draft Minutes submitted: 1/29/2013  
[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.