

DRAFT Minutes

ASHRAE SSPC 52.2

MOT - General Ventilation Air-Cleaning Devices for Removal Eff. by Particle Size

June 14, 2021 9:00:00 AM– 12:00:00 PM EDT

<https://ashrae-org.zoom.us/j/99512256151?pwd=OE1xZGxUQ25paTNXYmUwZEVrWmRZdz09>

Votes: Font is Bold, Black
Task Groups: Font is Bold, Blue
Action Items: Font is Bold, Red

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Code of Ethics Commitment

In this and all other ASHRAE meetings, we will act with honesty, fairness, courtesy, competence, inclusiveness and respect for others, which exemplify our core values of excellence, commitment, integrity, collaboration, volunteerism and diversity, and we shall avoid all real or perceived conflicts of interests.

- 1) Call to Order – 9:03 am
- 2) Chair Remarks – Welcome. Please enter name/company/email in chat to serve as our attendance list. This is my last meeting as chair. Incoming leadership is Todd, Mark and Jenny. 52.2 will be in good hands.
- 3) Roll call for voting committee members - 5 min

| | Present (for Quorum) | App E removal | Bio |
|---------------------------------|--|---------------|-----|
| | 16 present at quorum call, then 17, 18, 19 | | |
| Kathleen Owen | Y | CNV | CNV |
| Mark Tucker | Y | Y | Y |
| Tim Ahn | Y, came in late | - | Y |
| Jenny Berens | Y | Y | Y |
| Rahul Bharadwaj | Y | Y | Abs |
| Randy Brannen | N | - | - |
| Michael Corbat | Y | Y | Y |
| Zied Driss | Y (came in after minutes) | Y | Y |
| Leonard Duello | Y | Y | Y |
| Michael Flom | Y | Y | Y |
| Marisa Jimenez-Segovia | Y | Y | Y |
| Chrystal Jolliffe | Y | Y | Abs |
| Gemma Kerr | Y | Y | Y |
| Kevin Kwong | Y | Y | Y |
| Bruce McDonald | Y | Y | Y |
| Jonathan Rajala | Y | Y | Y |
| Jim Rosenthal | Y | Y | Y |
| Christine Sun | Y, arrived later | - | Y |
| Donald Thornburg | Y | Y | Y |
| Nathan Wittman | Y | Y | Y |
| Roberta MacGillivray – NAFA alt | | | |

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- 4) Review of this agenda – no objections
- 5) Review of “Draft” January 2021 Minutes – no changes noted. Motion from Gemma to accept, seconded Nathan. Asked for No – 0, abstain CNV Thus **16-0-1-3-20** (Y-N-Abstain-Absent-Total) Zied joined late, decides to abstain due to missing meeting.
 - a) <http://sspc522.ashraepcs.org/> to find minutes, agendas
- 6) Membership – see attachment below. Please remember to turn in applications. We can not add you, keep you when you roll off, or change your status without an application. It’s easy.
<https://www.ashrae.org/technical-resources/standards-and-guidelines/apply-to-a-project-committee>
- 7) Website – Todd McGrath – is absolutely great and fantastic. Is updated. See minutes and agendas there.
- 8) Liaison Report – Jerry Kettler gikettler@air-engineer.com – not present
- 9) 62.2 Liaison report – Vijay – Nothing to do with filtration happening now. They meet next on the 23rd 11 am – 2 pm.
- 10) 62.1 Liaison report – Wane Baker – not much going on with regard to filtration. Working on IAQ procedure and the electronic air cleaning issues. Looking at design contaminants.
- 11) Open Action Items
 - a) Revisions to Normative Appendices: **Vijay, Jon, Mike**
 - i) Mike motions to remove Appendix E, Don seconds
 - (1) Informative appendix, info elsewhere, not needed now, not a PPR issue.
 - (2) Vote passed **16-0-1-3-20** (Y-N-Abstain[CNV]- Absent -Total)
 - ii) Discussions of options
 - (1) WGB to review all of 52.2: **Gemma, Brian, Don, Zied**. After meeting
 - (2) WGA already reviewed – will work with WGB after their review: **Vijay, Mike, Jon**
 - (3) Example report in appendix – **Todd and Jon**
 - (4) Review of entire (**KO to check to see if we can get a bit of delay in next publication date**, Don says we should be able to get up to an extra 5 years) document for consistency and other stuff: consider later Kathleen checked on whether we can delay our publication date. Mark Weber responded “Since 52.2 was last published in 2017 it would likely be republished in 2022 by incorporating the published addenda (on a 5 year cycle). We could publish in the summer but there is no hard schedule. I suggest getting all your changes out for public review soon so they can be in the 2022 edition.” Thus, he would like us to get everything in for the 2022 edition, but there is some wiggle room.
 - b) Youtube videos. 1) Explain MERV table, 2) MERV 17-20 don’t exist **WG: Zied, Marissa**, Zied started working on this, will contact Marissa by September.
 - i) Discussion of basecamp issues for TC2.4 – Matt fixed Zied’s issue. **Gemma will look at it.**

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- c) Aerosol Particle Index (API) WG: Jim, Vijay showed presentation (attached), flat sheet discussion, they want feedback from 52.2 on what we should do. Eventually to go to full filter, but they might want to put flat sheet idea as optional appendix. Bruce says most media folks should have test system that can do this. Might need RTAR/WS/RP. WG: Jim, Vijay, Tim J, Ashish, Christine, Mark Tucker, Jenny, Jon, Russ Baldinger (added after meeting), Mick Flom (added after meeting).
- d) SSPC 170 (related) – Todd MERV 17 issues. Todd followed up. Will keep working to get this fixed.

12) New Business – 90 min

- a) Definitions – Jeff S – ASHRAE Definitions for filters and filtrations are horrible, missing, wrong. He discussed this with Glossary of Terms committee. They get definitions from standards. 52.2 does not define filter. We need to do something to fix this.
 - i) ASHRAE definitions (<https://xp20.ashrae.org/terminology/>) Filtration: process of passing a liquid through a porous material in such a manner as to remove suspended matter from the liquid. Jeff's proposed changes Filtration: process of passing a fluid through a porous material in such a manner as to remove suspended matter from the fluid. Filter: (1) capacitor and/or inductor placed in a series/parallel combination across a DC line to remove the effects of the AC signal or to decrease the ripple voltage in a DC power supply. (2) device to remove gases from a mixture of gases. (3) device to remove solid material from a fluid. Jeff's proposed changes Filter: (1) capacitor and/or inductor placed in a series/parallel combination across a DC line to remove the effects of the AC signal or to decrease the ripple voltage in a DC power supply. (2) device to remove gases, liquids, or particles from a mixture of gases. (3) device to remove solid material from a liquid.
 - ii) Gemma is member of 1.6 in charge of filter definitions, she is working on this.
 - iii) We should all look at the definitions to be sure they cover our terminology well.
- b) Bioaerosol Efficiency Testing - Matt M
 - i) Introduced this.
 - ii) Don said we can't do it this way, but Kathleen did ask Mark (can check again)
 - iii) Could this move to a separate method – perhaps best future would be as part of 185.3
 - iv) Motion to send out for public review – Gemma, 2nd Zied
 - (1) Discussion – liquid to aerosolize from, is it best? Possibly not but it is consistent with 185.1
 - (2) Vote: passed see table above **16-0-3-1-20** (Y-N-Abstain [CNV, 2 hadn't read the file]-Absent-Total)
- c) Overload Test Revisions – Kathleen – add this to the Gemma/Vijay endeavor
- d) Any other new business – Bruce warns us about international action, we should consider 16890 again. Just a comment
- e) Gemma – thanked me.

13) Adjourn 52.2 Main meeting adjourn at 11:28 motion to adjourn Jon, Gemma

14) SSPC 52.2 Research – Jon R – 30 min

- a) IPA Vapor changes – impact on different fibers. RTAR **Champion: Chrystal Jolliffe with Phil Winters, Jon Rajala, Marquita Beard, Keith.** RTAR sent to WG shortly before meeting. WG to review, then send to 52.2 for comments. Then on to 2.4 research.

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- b) Charge Neutralization – RTAR Champion: **Bruce with Keith, Don, Vijay**. Jon talked to these folks. Vijay recommends dropping this. Bruce said he put the info together. Can drop due to lack of action. Could be revived later.
- c) PMS update on 1784-RP update at 1. Come to meeting. Matt reports we got our extension to March 2022. Need another commercial lab to send in data!!
- d) Any other ideas – none came forward, contact Jon with any ideas you think of.

15) Adjourn Research at 11:45 am

Attendees who signed in:

| | | |
|-------------------|---------------------------|-------------------|
| Andi Seeberger | Jennifer Wong | Michael Corbat |
| Ashish Gadhav | Jenny Berens | Michael Silva |
| Aswin Gajjala | Jim Rosenthal | Mick Flom |
| Brian Krafthefer | Joel Davis | Mike Harriman |
| Bruce McDonald | John Zhang | Nathan Wittman |
| Caitlin Naske | Jonathan Rajala | Paolo Tronville |
| Chris Hsieh | Kathleen Owen, Chair | Rahul Bharadwaj |
| Christine Sun | Keith Chesson | Ray Rite |
| Chrystal Jolliffe | Kevin Kwong | Russ Baldinger |
| Dan Haas | Kyung-Ju Choi | Sanjeev Hingorami |
| Dan Love | Len Duello | Randy Brannen |
| Dara Feddersen | Lu Song | Sunyoung Moon |
| Don Thornburg | Marisa Jimenez de Segovia | Tim Johnson |
| Donna Kasper | Mark Davidson | Timothy Ahn |
| Eric Reno | Mark Tucker, Secretary | Todd McGrath |
| Gemma Kerr | Mark Mino | Tom Justice |
| Geoff Crosby | Matt Ball | Vijay |
| Henry Greist | Matt Middlebrooks | Wane Baker |
| Himanshu Jasuja | Jeff Siegel | Zied Driss |

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Membership Attachment (2 pages)

| Full Name | Position | Category | Current | | After 7/1/21 |
|----------------------------|--------------|------------|------------|------------|----------------------|
| | | | Start Date | End Date | |
| Kathleen Owen | Ch PCVM | General | 07/01/2017 | 06/30/2021 | PSVM |
| Todd A McGrath | VC PSVM | Man filter | 07/01/2017 | 06/30/2021 | Chair PCVM – 6/30/25 |
| Mark A Tucker | Sec PCVM | Man media | 07/01/2019 | 06/30/2023 | VC – 6/30/25 |
| Tim Ahn | PCVM | Man filter | 07/01/2019 | 06/30/2023 | |
| Jenny M Berens | PCVM | Man filter | 07/01/2019 | 06/30/2023 | Secretary – 6/30/25 |
| Rahul Bharadwaj | PCVM | Man media | 10/17/2019 | 06/30/2021 | PCVM – 6/30/25 |
| Randy Brannen | PCVM | Man filter | 07/02/2020 | 06/30/2024 | |
| Michael D Corbat | PCVM | Man filter | 07/01/2019 | 06/30/2023 | |
| Zied Driss | PCVM | Man filter | 07/01/2017 | 06/30/2021 | Rolled off |
| Leonard E Duello | PCVM | User | 07/02/2020 | 06/30/2022 | |
| Michael C Flom | PCVM | Man filter | 07/02/2020 | 06/30/2024 | |
| Mrs Marisa Jimenez-Segovia | PCVM | General | 07/01/2018 | 06/30/2022 | |
| Chrystal Jolliffe | PCVM | Man filter | 07/01/2019 | 06/30/2023 | |
| Carolyn M L Kerr | PCVM | General | 07/01/2017 | 06/30/2021 | PSVM – 6/30/25 |
| Kevin Kwong | PCVM | General | 07/01/2018 | 06/30/2022 | |
| Bruce N. McDonald | PCVM | General | 07/02/2020 | 06/30/2024 | |
| Jonathan Rajala | PCVM | Man filter | 10/17/2019 | 06/30/2022 | |
| Jim Rosenthal | PCVM | Man filter | 10/17/2019 | 06/30/2022 | |
| Christine Sun | PCVM | General | 07/02/2020 | 06/30/2024 | |
| Donald D Thornburg | PCVM | Man filter | 07/02/2020 | 06/30/2024 | |
| Nathan Wittman | NAFA PCVM | General | 02/06/2020 | 06/30/2021 | NAFA Rep 6/30/23 |
| Roberta MacGillivray | NAFA alt | General | 02/06/2020 | 06/30/2021 | |

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| | | | Current | | After 7/1/21 |
|-----------------------|----------|------------|------------|------------|----------------|
| Full Name | Position | Category | Start Date | End Date | |
| Wane Baker | PSVM | User | 2/1/21 | 7/1/25 | |
| Oludamilola Adesanya | PSVM | Man filter | 2/1/21 | 7/1/25 | |
| Brandon Boor | PSVM | General | 09/07/2018 | 06/30/2022 | |
| Keith Chesson | PSVM | Man filter | 09/07/2018 | 06/30/2022 | |
| Kyung-Ju Choi | PSVM | Man filter | 07/01/2018 | 06/30/2022 | |
| Randall L Cooper | PSVM | General | 07/01/2019 | 06/30/2023 | |
| Mark Davidson | PSVM | Man filter | 07/02/2020 | 06/30/2024 | |
| Joel Davis | PSVM | Man filter | 07/01/2018 | 06/30/2022 | |
| Sama Fakhimi | PSVM | Man filter | 10/17/2019 | 06/30/2023 | |
| Dara Marina Feddersen | PSVM | Man media | 07/01/2019 | 06/30/2023 | PSVM – 6/30/25 |
| Henry T Geist | PSVM | Man filter | 09/07/2018 | 06/30/2022 | |
| Richard L Hall | PSVM | General | 02/06/2020 | 06/30/2024 | |
| Himanshu Jasuja | PSVM | General | 02/06/2020 | 06/30/2024 | |
| Michael D Orcutt | PSVM | Man filter | 10/17/2019 | 06/30/2023 | |
| James S Parris | PSVM | Man filter | 07/01/2018 | 06/30/2022 | |
| Kartik Potukuchi | PSVM | Man media | 07/01/2018 | 06/30/2022 | |
| John Jay Reese | PSVM | General | 09/07/2018 | 06/30/2022 | |
| Raymond W Rite | PSVM | Man filter | 07/01/2018 | 06/30/2022 | |
| Andrew J Untz | PSVM | Man filter | 07/02/2020 | 06/30/2024 | |
| R Vijayakumar | PSVM | General | 07/02/2020 | 06/30/2024 | |
| John Zhiqun Zhang | PSVM | Man filter | 07/02/2020 | 06/30/2024 | |
| Vincent Hwang | PSVM | General | 7/1/2021 | 6/30/25 | |
| Matt Middlebrooks | PSVM | General | 7/1/2021 | 6/30/25 | |
| Joel Swann | PSVM | Man filter | 7/1/2021 | 6/30/25 | |

Aerosol Particle Index for MERV Filters

Jim Rosenthal & Vijay

52.2 Web Meeting

14 June 2021

Why API?

Charged media extensively used in HVAC

Charge decays over time

Rate of decay differs widely

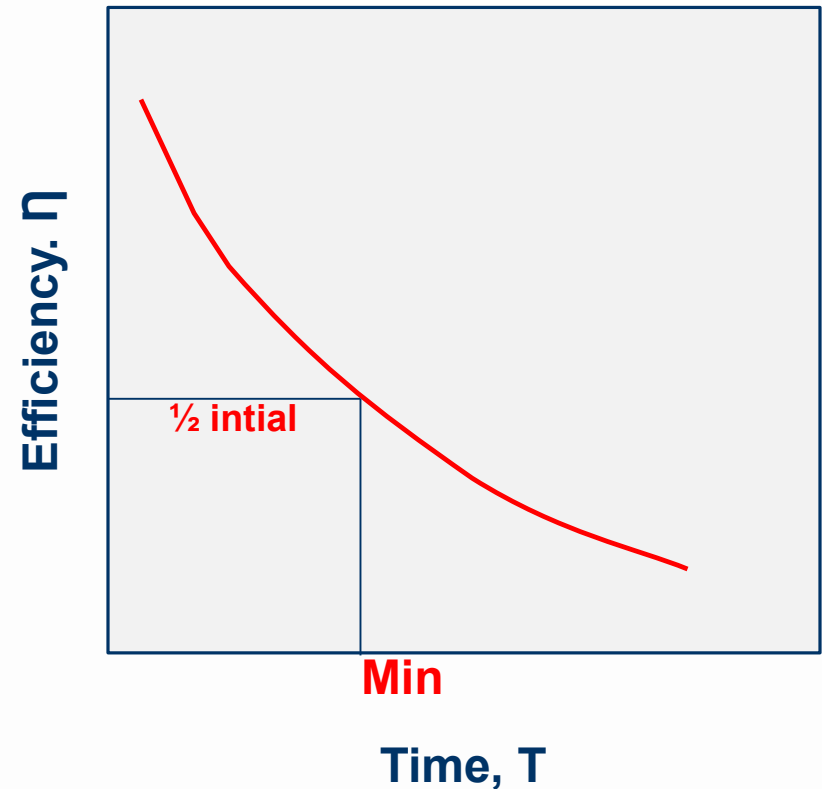
Slow decay may not be problem in use

No standard to show this difference

52.2 is perfect vehicle to drive this to consumer

Suggested test

- Use flat sheet(s)
- Use oil as challenge aerosol
- Measure initial efficiency
- Load media with aerosol
- Measure efficiency every X min for Y mins
- Stop test when efficiency declines to half initial value



API

Define API as the time it takes for the efficiency to decay to half original value,

$$D\eta_{50} \text{ (Min)}$$

Where,

D is media designator, say MERV

Min is the time for efficiency to decrease to half initial value

e.g MERV8 η_{50} (32)

Commentary

- **Decay method used by NIOSH**
- **Flat sheet test easier to replicate**
- **Restrict test to 0.3 μm particle size since this is the most sensitive size of charge effects.**
- **Oil aerosol of known size easy to generate**
- **API can be a media specification and will be a relative performance indicator**

Other items to consider

- Decay test duration, suggest six 10 min interval tests until efficiency reaches 50% initial value
- Decay aerosol size – suggest 0.3 Median with $\sigma_g \leq 2.0$ or from Laskin Nozzle
- Min replicate samples
- If full test results include reporting incremental efficiency, we could extend API to full filters. See RP coming.