



Shaping Tomorrow's  
Built Environment Today

## ASHRAE TC 9.2 – Industrial Air Conditioning and Ventilation Committee meeting minutes

### Meeting Minutes for January 23, 2024 Winter ASHRAE meeting in Chicago, Illinois:

- 1) The meeting was called to order at 1:00PM central time and Chair Duncan Phyfe gave the Opening Remarks.
- 2) Erich Binder read the ASHRAE Code of Ethics:

*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.*

- 3) Information was provided on how to join the hybrid meeting.
- 4) Duncan provided a review of the agenda.
- 5) Instructions for sign in sheet were provided by Duncan. Self-introductions were made by all present and online. Below is the sign-in sheet:

First Name	Last Name	Email Address	Affiliation	Membership	YEA Member	International Participation?	Main Committee Meeting: 2-4 PM, Jan 22
Example	Example	example@xx.edu	xx University	TC Voting Member	No	No	Yes
Duncan	Phyfe	<a href="mailto:dphyfe@verdantas.com">dphyfe@verdantas.com</a>	Verdantas Labs	TC Voting Member	No	No	No
Erich	Binder	<a href="mailto:ebcl@shaw.ca">ebcl@shaw.ca</a>	EBCL	TC Corresponding Member	No	No	No
Mark	Miller	<a href="mailto:mfmiller55@gmail.com">mfmiller55@gmail.com</a>	TCS Basys.com	TC Corresponding Member	No	No	No
Eileen	Jensen	<a href="mailto:nesneien@gmail.com">nesneien@gmail.com</a>	N/A	TC Corresponding Member	No	No	Yes
John	Martin	<a href="mailto:jmartin@verdantas.com">jmartin@verdantas.com</a>	Verdantas Labs	TC Guest	No	No	No
Duane	Hammond	<a href="mailto:ahz0@cdc.gov">ahz0@cdc.gov</a>	NIOSH	TC Voting Member	No	No	No
Scott	MacMurray	<a href="mailto:scott.macmurray@srs.gov">scott.macmurray@srs.gov</a>	Savannah River Nuclear Solutions	TC Corresponding Member	No	No	Yes
Evan	Reese	<a href="mailto:emreese@burnsmcd.com">emreese@burnsmcd.com</a>	Burns & McDonnell Engineering Company, Inc.	TC Voting Member	Yes	No	Yes
John	McKernan	<a href="mailto:McKernan.John@epa.gov">McKernan.John@epa.gov</a>	US EPA	TC Corresponding Member	No	No	Yes
Shaun	Nienhueser	<a href="mailto:shaun.nienhueser@hdrinc.com">shaun.nienhueser@hdrinc.com</a>	HDR	TC Provisional Corresponding Member	No	No	Yes
Dylan	Menezes	<a href="mailto:dylan.menezes@wsp.com">dylan.menezes@wsp.com</a>	WSP	TC Provisional Corresponding Member	No	No	No
Bill	Lampkin	<a href="mailto:bill.lampkin@greenheck.com">bill.lampkin@greenheck.com</a>	Greenheck Fan Corp - Industrial Damper Group	TC Corresponding Member	No	No	Yes
Ehab	Abu-Ramadan	<a href="mailto:ehab.abu-ramadan@rwdi.com">ehab.abu-ramadan@rwdi.com</a>	RWDI	TC Provisional Corresponding Member	No	No	No
Ghosh	Deep	<a href="mailto:dghosh@southernco.com">dghosh@southernco.com</a>	Southern Nuclear	TC Voting Member	No	No	Yes
erik	Ostberg	<a href="mailto:erik.ostberg@bp.com">erik.ostberg@bp.com</a>	bp	TC Voting Member	No	No	No
Kevin	Marple	<a href="mailto:kmarple@benzco.com">kmarple@benzco.com</a>	Benz Co	TC Voting Member	No	No	No
Brian	Mathews	<a href="mailto:bmathews@scientificdust.com">bmathews@scientificdust.com</a>	Scientific Dust Collectors / TC 5.4 Chair	TC Guest	No	No	No
Kai	Han	<a href="mailto:kai.han@srs.gov">kai.han@srs.gov</a>	Savannah River Nuclear Solutions	TC Provisional Corresponding Member	No	No	No
Garret	Lawler	<a href="mailto:garret.lawler@jacobs.com">garret.lawler@jacobs.com</a>	Jacobs Engineering	TC Guest	No	No	No

Additional attendees that did not sign in using the sign in sheet include:

Doug Cage  
Jacob Nelson, true engineering out of Springfield  
Fraser Campbell

6) Passing of John Riley

My name is Cara Riley, I am John Riley's daughter-in-law. I am writing today to notify you of John's recent passing. On Friday, January 19, John was rushed to the ER with a massive heart attack, and unfortunately, he passed that afternoon.

Deep remembrance:

John was involved with TC 9.2 since the mid-1990s and in 2000 he was the chair of this committee. He has been involved with the TC for quite some time and in the process he was one of the co-authors for the chapter on powerplants. He also had input on the nuclear chapter. He has been involved with ASHRAE for a long time. He was involved with Guideline 21 that has been going on for the past decade or so. John even in retirement supported this group and was heavily involved in standards. John was a good friend of the TC and Deep knew him very well. We will miss John. A moment of silence was held to honor John Riley.

7) Quorum

Quorum was established.

TC Voting Member	SC 23 / Attendance
Duncan Phyfe	Teams
Duane Hammond	Chicago
Ghosh, Deep	Teams
Steven C Sill	
Evan Reese	Teams
Kevin Marple	Chicago
Ostberg, Erik	Chicago
Kampen, Mak A	Teams

8) Approval of winter meeting minutes from Tampa.

Deep made a motion and Erik Ostberg second the approval of the Tampa minutes. Approved unanimously for all voting members present.

9) Membership by Marple/Phyfe

Roster upgrades:

Voting members are rolling off in 2024: If you are currently a corresponding member and would like to bump up to a role as voting member please vocalize now or

contact Duncan after the meeting. Duncan will roll off as chair in June, Eileen will become chair and Duane will be vice-chair. Becomes effective in July 2024.  
YEA members outreach: YEA had a social event.

10) Chairs breakfast:

Decarb is the way to go. It is the main focus and reflects in the research focus. If you have research in mind, anything that touches on decarb will be looked at favorably. Getting a better handle on international standards and the overlap with ASHRAE and other organizations. 130 seminar sessions were put in. Only two tech papers accepted. Reminder for the summer that there is the extended abstract that is a short paper with short presentation associated with it.

Eric made a comment. On the decarb, conversations are around outside air reduction and it is a slight different angle for industrial. If TC9.2 wants to think about how we contribute to decarb, it would be a different twist from the typical ASHRAE approach to decarb.

Deep agreed with Eric and the primary objective of TC9.2 is safety since industrial ventilation really emphasizes safety and how do we cut back on outdoor air and maintain safety.

Eric asked if TC9.2 has a charter. The answer is that yes we do on our website. Go to ASHRAE, go to TC and it lists the websites which has the charter.

SCOPE of ASHRAE TC9.2: is ... Brad read the Scope: Duane to paste scope in minutes: [Index | ASHRAE 9.2 Industrial Air Conditioning and Ventilation](#)

### Committee Scope

Technical Committee 9.2 is concerned the environment that supports reliable operation of manufacturing and industrial processes and equipment, and strives to ensure the safety of personnel working in industrial facilities. It provides guidance and recommendations regarding the design, installation, operation and maintenance of heating, air conditioning, supply and exhaust ventilation, pressurization and air filtration systems where harmful chemical, physical, nuclear, biological contaminants or hazardous atmospheres have an increased potential to exist.

In the next meeting we should talk about mission of the TC.

11) Section Head Report from Brad Cochran

Update from Brad: Submit activity form before 9pm tonight. Roster updates are due by the end of February. There will be a link coming out in the next week or two. Don't wait until the link comes out to have it ready to go. By the end of the meeting, know what your roster is going to look like on July 1, 2024. Quick question: First off, did the Hightower award get handed out? Erich Binder has the distinction of receiving the Hightower Award. Brad also has a certificate for Erich for his leadership of TC 9.2. Question to the group: How many of you are regular participating in chapter or regional events? What we have discovered is that there are about 1,000 people active on TCs and attending on a regular basis. There are 54,000 members which means that less than 2% are actually getting involved in TCs. About

10% of people involved in TCs are only involved at the chapter level and therefore we have sort of engaged two originations that are not communicating very well. We are looking for ways we can get the 98% or 53,000 that are not participating to get them involved. We want to break down those barriers to that. Brad is looking for feedback on what we can do in TAC to make it more accessible. The events are hybrid and people can call in. Maybe we need to do more marketing on that. Mark Miller recommended giving TCs an opportunity to speak at chapters. There are opportunities for chapters to reach out. It is the "this is ASHRAE" presentation. Brad continued: within section 9 we have a new TC. That is TG9space has become TC9.13space. Deep space and extra-terrestrial locations. They have been out for two years and have research projects in the works. They have some standards they are developing and are putting together a handbook chapter. If you have any interest in space, there are opportunities to get involved. There is a new MTG.genAI. They coordinate activities to adopt generative AI. They have three tasks, the first one is to look at ASHRAE publications to see how AI is properly referencing ASHRAE documents, the second is to set up standards for how ASHRAE as a community uses AI, and the third is setting standards and guidance on how we can use AI for standards and guidance. If you have interest at the TC level, consider assigning a liaison to that group. Another query for anyone, Do we have any fellows in here? They did little research and out of the 54,000 ASHRAE members only 1% are fellows compared to similar organizations that are at 3-5%. So we are way behind in recognizing fellows in ASHRAE. One requirement of a fellow that you have to be nominated by a fellow. Fellows is different than the Hightower award which is your participation in ASHRAE compared to fellow which is your participation in industry. A member that has had distinction and made significant developments in the industry which have made a notable and significant impact in HVAC&R and the built environment. [SH9@ASHRAE.net](mailto:SH9@ASHRAE.net) is the best way to reach Brad or [ASKTAC@ASHRAE.net](mailto:ASKTAC@ASHRAE.net) if you have questions for TAC.

12) Status of TC 9.2 Events and activities:

Deep: Finished up the DOE design guide. ASME code committee deals with all of the HVAC related content on the nuclear filtration side which affects the powerplants and nuclear facilities. There is a meeting coming up next week ASME code committee meeting dealing with Nuclear ASME code committee. HVAC utility group which is all the nuclear plants in this country normally meet once a year and discuss the operating issues and the meeting lasts 2.5 days. The last meeting was in Cincinnati and was attended by 100 folks and attended by those outside the US such as France and the next meeting will either be in DC or somewhere else but hasn't been decided but if you have anything to do with ventilation in nuclear plants, you are encouraged to attend the meeting.

Deep update on Standards: For the standard 128 is to do with room cooling. Method of rating portable air conditioners is an ANSI/ASHRAE standard 128, there is a 2001 version which has been replaced by 2011. Deep also talked about IEEE/ASHRAE guideline 21-2022 about hydrogen generation from batteries. This standard is based on stationary batteries. Those are the only two things that Deep wanted to mention. Comment was made that there will be more battery charging in the built environment and standards have not kept up with the technology. Thermal protection, off gassing hazardous explosive gas etc. Lithium-Ion batteries shouldn't off gas unless overload.

Activities and events cont.: Erich presentation of students and ventilation conference: As far as the presentation to students Erich reached out and they were not too open to it. Erich asked if there was a way to get a sponsor and have a special event. 14<sup>th</sup> industrial ventilation had the conference in Toronto last year and looking at doing one in 2025 somewhere in the US so we thought we might see if we can

have a track just for Industrial in Phoenix in 2025. Maybe take the industrial courses and provide two or three during Phoenix, maybe one or two per day and make sure we some available and encourage some of the other industrial TCs do the same. Put together a DL talk on industrial which Erich has but maybe doing the training session on industrial ventilation in the afternoon and follow up with another talk at the dinner meeting. Erich will coordinate with the DL program to make some inroads. Erich is still working on Scanvac. If you want to get involved there, Erich will link you in. The intent is to have something in the hopper and we have one planned and one in the hopper for two or three years down the road, maybe in Asia or North America, or Erich could host in Calgary but doesn't want to have two back to back in Canada. Maybe in Phoenix, or South America, or Asia, or Columbia or Brazil since we have some good contacts down there. If anyone else has ideas, let Erich know. Student activities vice-chair mentioned getting Erich engaged in the student program but still wants to engage in that conversation and take it offline to find a need up there. They are also doing virtual DL opportunities and Sean will send Erich an e-mail to keep that conversation going. Erich mentioned a two-hour course in Toronto and Kevin has one on dust collection that he did in Toronto as well and there are few more out there that we could end up doing every three months or six months and get a different speaker and topic. Kevin met with TC5.4 yesterday and they are extremely interested in the Phoenix track but if we have 80 programs and there are seven tracks there are close to 10 programs and we are generating some interest in that regard. Reach out to the other industrial TCs to see who wants to get involved and get to those 10 presentations eventually. If we have a bit of kick-off event and find a sponsor and do a course for lunch might have an opportunity.

### 13) Honors and Awards:

Erich Binder was presented with the George B. Hightower Technical Achievement Award:

I am writing to nominate Erich Binder for the George B. Hightower Technical Achievement Award. As this award is to recognize excellence in volunteer service technical committee activities, I feel that Erich more than meets that criterion. Erich is a leader in the field of industrial HVAC and has made significant contributions to the dissemination of knowledge and best practices in the industrial HVAC&R community.

Erich has been actively involved in ASHRAE activities for over 36 years. In particular, his activities have included the following in the last four years (many concurrently):

- One of Erich's most notable achievements was chairing the ASHRAE/SCANVAC International Cold Climate Conference, both in 2012 (in Calgary, Canada) and again in 2023 (in Anchorage, Alaska) and sponsored by TC9.2. This latest conference attracted nearly 200 participants from around the world and featured more than 100 papers and presentations on various topics related to the unique challenges of designing in cold climates. Erich successfully managed the organization and execution of this conference, ensuring its high scientific quality and relevance to ASHRAE's mission and vision.
- Erich has also been actively involved in the steering committees of two other technical conferences: the ASHRAE Industrial HVAC Conference (in Toronto, Canada in 2022 and sponsored by TC 9.2) and the ASHRAE International Building Decarbonization Conference (in Athens, Greece in 2022). In both cases, he provided valuable input and guidance on the conference themes,

topics, keynote speakers, reviewers and sponsors. He also helped to promote the conferences among ASHRAE members and other stakeholders in the HVAC&R community.

- Erich actively participates in the activities associated with TC 9.2 – Industrial Ventilation and Air Conditioning. Serving as vice-chair from 2018 – 2020, and as chair from 2020-2022, he guided the committee towards greater participation in conferences beyond the usual Winter and Annual meetings. He also provided key coordination with other technical committees through his participation with both the ACR (2018-present) and RAC (2019-present) MTGs. Additionally, he has been instrumental in the dissemination of information through his chairmanship of the TRG9.CCD – Cold Climate Design Guide (2<sup>nd</sup> edition) development (2020-2023), co-author of the ASHRAE Guide for HVAC in Hazardous Spaces (Jan 2022), and through his review of seven handbook chapters in the Applications Handbook in the most recent 2023 publication. To further his work on disseminating information, he has been a presenter on Industrial Ventilation 101 at the Industrial Ventilation conference (June 2022), Net Zero Industrial HVAC at the International Decarbonization conference (October 2022), and Industrial HVAC Challenges in Cold Climates at the Cold Climate conference (March 2023).

Erich's leadership and service in these technical conferences, handbook chapter reviewing, TC leadership positions, and MTG participation demonstrate his excellence and dedication to the advancement of ASHRAE's technical goals and objectives. His activities have supported ASHRAE's strategic objectives by positioning Society as an essential knowledge resource for sustainable, high-performance industrial HVAC&R applications. He would be a worthy recipient of the George B. Hightower Technical Achievement Award, and I strongly recommend him for this prestigious recognition.

Other awards updates: Long-term ASHRAE members have gaps in ASHRAE bios.

- 14) Handbook (Evan) – Quick update on the ASHRAE handbook committee, the 2023 applications is now available as a paper copy or online. Pretty significant effort and thanked all of the contributors. TC 9.2 is responsible for 11 chapters within the ASHRAE applications handbooks. Evan has a list of seven additional topics that could be turned into their own chapters. Maybe get into one of the existing chapters. Looking at 2027 for the next handbook. Between now and the summer meeting Evan will be reaching out to the leads of the handbook for continuing that effort and will start finding the right person to take that place if he gets any “no” responses. Hopefully will get some support for reviewers or additional offers which would be very helpful. Evan will send this list out to the TC at large to get feelers out for who might be a contributor for an existing chapter. We are going to start a few years earlier for this go-around. Duncan recommended throwing together a Teams meeting to get it started. Here is a list of the 7 new chapters: semiconductor and nanotechnology facilities with Mike Connor. 3D printing facilities with a lead of Duane Hammond, Oil and gas facilities Erik Ostberg and Mak Kampen, Shelter in place facilities with Ken Goodman leading that. Hazardous spaces facilities Mike Baucom, epidemic prevention in industrial facilities with John McKernan, large battery storage facilities with Deep Ghosh. As we continue to add topics and expertise of these new handbooks make sure the information isn't covered elsewhere in the handbook. Evan will do a little bit of sifting through current chapters and comparing against other places that may be applicable and the direction is to get at new information the best as we can without creating duplication and referencing properly to cut down on the total number of pages that these handbooks take.

- 15) Research Projects - Erich Binder – research – There hasn't been too much done on the research side. Are there areas that we need to address in research? Are there any projects where it would be worthy of us putting our efforts behind? We have been involved with the air change rate group. Erich is involved with Purdue which has a conference twice a year on the loss prevention side and there may be an opportunity to get something like that where we link in some loss prevention people to do some research. Fraser brought up projects that require blast protection in the airstream and we are not aware of standards that exist for blast prevention in ductwork.

- 16) Standards:

TC 6.5 (Radiant Heating and Cooling) is looking for subject matter experts, if you consider yourself an SME for their subject matter consider getting involved with that.

Erik sits on TC 6.7 which is oil and gas industries including low carbon energies. Working group 11 is what Erik sits on. ISO 15138 HVAC for offshore oil and gas which is being expanded to include offshore and onshore and revised to be more international. It is a four to five year process for this to happen but there will be guidance in places in the US for design for oil and gas in hazardous areas. If we are talking about handbook chapters there are some direct correlations. There is discussion of a new ISO standard for blast damper testing and it is up to the individual manufacturers currently but there is a group working on that and it is in play. Erik wants to bring it up because there is a link to what they are doing and there will be a point where we will be looking for reviewers of folks to help out. There are probably 10 people on the ISO committee covering a lot of countries on multiple continents and has a good international aspect for oil and gas and new energy. New energy is aimed at hydrogen generation and off shore wind etc. Deep suggested that Erik could give a 10-minute presentation at the next meeting to present where they are going with it and how TC 9.2 can help. Erik did say they are early days in what they are doing but he can outline what the topics are what the changes are they are looking at and the timeline and how TC 9.2 can help. You can find ISO 1513 online and you can read it and get an idea about what it is about.

- 17) For Indianapolis, the only thing we have time left to put in are seminars/panels by Feb 26<sup>th</sup> and the tracks are most applicable to us are building lifecycle etc. Duncan has some seminar type things he has to work on and if you have something you would like to present in a seminar session, send Duncan an e-mail and he will set up a call in early February to hash out what we could put together. Safety and general operations would be great or anything that you think would benefit the greater ASHRAE community just send Duncan an e-mail.

- 18) Webmaster

Mark's website update is that the website is up to date and appreciates the updated meeting minutes. Mark took a few minutes and presented the website to our TC 9.2. meeting. Action item on the website: Photographic materials is still on the website but it should have been sunsetted.

- 19) New Business

Kevin brought up new business... yesterday Kevin was in 5.6 which is fire and smoke control and they talked about a research topic on lithium ion batteries but it sounds a little all-encompassing and we might want to talk to them about what their focus will be whether it is battery storage or automotive

batteries just an informational item at this point and their chair is going to send Kevin some more information and he will let him know.

TC 4.10 has a battery modeling storage seminar that we are going to submit for Indy but Duncan will reach out to Deep for some feedback to bolster a presentation for that as well.

Erich for the ACR they are putting out a research proposal and Erich sent out for comments but didn't receive anything back. Trying to get the third cold climate design guide going. The unit assessing RAC plants sustainability guide. Chapter Technology Transfer Committee (CTTC) - Erich will approach about putting a TC volunteerisms blurb and use our TC 9.2 as a sample.

20) Adjournment: Meeting adjourned at 3:00pm central time.