



Shaping Tomorrow's  
Built Environment Today

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

June 24, 2025, 1:00 – 3:00 pm MST

Sheraton Phoenix Downtown, Camelback A Room, Level 2

### Minutes - Approved

1) Call to Order and Opening Remarks 1:05 pm MST Jensen

2) ASHRAE Value Statement Jensen

*In 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 shall avoid all real or perceived conflicts of interest. Our culture is one of inclusiveness, acknowledging the inherent value and dignity of each individual. We celebrate diverse and inclusive communities, understanding that doing so fuels better, more creative and more thoughtful ideas, solutions and strategies for the Society and the communities our Society serves. We respect and welcome all.*

3) Hybrid Meeting: [Join the meeting now](#) All

| TEAMS Hybrid Meeting                                                                      | Meeting Sign-in Sheet                                                                                                                                                             |
|-------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <a href="#">Join the meeting now</a><br>Meeting ID: 239 767 508 724<br>Passcode: bL3nV925 | <a href="https://forms.office.com/r/PjWD9h5GXd">https://forms.office.com/r/PjWD9h5GXd</a><br> |

4) Review of Agenda Jensen

5) Self-Introduction of Members and Guests 16 in-person/13 virtual All

| Attendees |       |                       |
|-----------|-------|-----------------------|
| Tao       | Zhang | tomchang6622@live.com |
| Mark      | Renn  | mrenn@aafintl.com     |



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|                |              |                                                            |
|----------------|--------------|------------------------------------------------------------|
| Chris          | Windley      | cwindley@aafintl.com                                       |
| Erich          | Binder       | Ebcl@shaw.ca                                               |
| Deep           | Ghosh        | DEEP@KUMAONGROUP.COM                                       |
| Jaimie         | Handscomb    | Jrhandscomb@bell.net                                       |
| Geoff          | Raifsnider   | graifsnider@globalfinishing.com                            |
| Garret         | Lawler       | garret.lawler20@gmail.com                                  |
| Erik           | Ostberg      | erik.ostberg@bp.com                                        |
| Zara           | Sardooee     | Sardooee1@llnl.gov                                         |
| Tom            | Axley        | thomas.axley@gmail.com                                     |
| Mark           | Miller       | mfmiller55@gmail.com                                       |
| Shaun          | Nienhueser   | shaun.nienhueser@hdrinc.com                                |
| Vimaldoss      | Jesudhas     | vimaldoss.jesudhas@rwdi.com                                |
| Kai            | Han          | kai.dh.han@gmail.com                                       |
| Duncan         | Phyfe        | dphyfe@verdantas.com                                       |
| George         | Gruetzmacher | George.gruetzmacher@slh.wisc.edu                           |
| John           | Martin       | martin@verdantas.com                                       |
| Baalaganapathy | Manohar      | baalaganapathymanohar@gmail.com                            |
| Joy            | Altwies      |                                                            |
| Eileen         | Jensen       | <a href="mailto:nesnejen@gmail.com">nesnejen@gmail.com</a> |
| Kevin          | Marple       | kmarple@benzco.com                                         |

#### 6) Quorum Status/Determination of Meeting Quorum

Jensen

| TC Voting Member | Attendance |
|------------------|------------|
| Eileen Jensen    | Yes        |
| Duane Hammond    | No         |
| Evan Reese       | No         |
| Kevin Marple     | Yes        |
| Ostberg, Erik    | Yes        |

#### 7) Approval Winter Meeting Minutes for Orlando

Jensen/Hammond



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- 8) Moved to approve Kevin M, Seconded by Erik O. (3-0-0-2)  
Membership Marple/Jensen
- Roster Upgrades:
- Voting members rolling off July 1, 2025 Erik O, Evan R
  - Voting members rolling in July 1, 2025 – Eric B, Duncan P., Deep G., Shaun N., Les Pereira
  - Provisional Member Status upgraded to corresponding members
    - Kevin has reached out to the Provisionals and received 95% return to determine if they want to become corresponding members
  - Corresponding members upgraded to voting members – as noted in bullet above
- YEA members outreach - [ASHRAE Connect](#)
- 9) TC Chair Breakfast Meeting Jensen
- Strategic Plan: Global Leder, Impact engagement, Increase Accessibility.
  - Center of Excellence of Decarbonization 2 publications; 2 more to be introduced this year. See the website: 10 projects out for bid. Engineering guidance; 2025 Road Map, AI Integration.
  - CEC Data and programs for Austin
  - MTG for AI presentation: AI is becoming a significant impact on the industry. Baalaganapathy Manohar is a member of the Tools Sub-committee
  - ASHRAE Organizational Chart visible below.
- 10) Section Head Report Altwies
- TAC Meeting
  - Strategic Plan
  - GTIC: Global Technical Interaction Committee coordinates activities with other technical/standards organization globally
  - CEBD Center for Excellence for Building Decarbonization.
  - Roster in July 1<sup>st</sup>, 2025; Contact for updates
  - Asked the BOD for money to update the Activity Form for more automation
  - Programs; submissions due August 1<sup>st</sup> for Las Vegas
  - New TAC Liaison as Joy Altwies is rolling off. Kevin Muldoon will be the Section Head.
- 11) Status of TC 9.2 Events & Activities



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- ASME CONAGT Design Guide and NHUG Ghosh
    - i. CBRN Defense Meeting in Baltimore Aug 6-8 2025; Presentations in nuclear plants. Concentration on chiller plants. NHUG;
    - ii. CONAGT; Aug 18 Santa Fe, NM; Tom Axley and Scott MacMurray commented on the conference programs; Looking into HEPA filters
  - Industrial Presentation to Students at this mtg. Binder
    - i. Eric B. was not able to present. Consider making contact with the chapters and offer to do sessions locally/regionally. The interest through the DL was limited. Students during summer are few participating. NSPE has local chapters with regional meetings. Contact the local chapter.
  - 14th Industrial Ventilation conference Binder
    - i. (noted in the Program item of the agenda)
  - Cold Climate Design Guide (3<sup>rd</sup> edition) Binder
    - i. Cailin MacPherson, Co-Chair of the guide. Third edition editing wrapping up with plans to send to Society by end of July. Goal is to have available for the Winter Conference in Las Vegas. Updated with new information from the Alaska Conference.
- 12) ASHRAE Handbook – Applications (2027) Reese
- Status of chapters under review: Need updates of 11 chapter. See list below:
    - i. Eileen will work on Power Plants.
    - ii. Nuclear on the Deep G.
    - iii. Kevin M. has corresponded with his contact on the pulp and wood.
    - iv. Engine Test facilities – Eileen working with Tony Arens. The Mining Chapter is with Eric B.
    - v. Shelter In Place: Garret Lawler.
    - vi. Baalaganapathy Manohar will join Eric B on the chapter reviews.
  - Any additions

| Type     | Number | Title                       |
|----------|--------|-----------------------------|
| Existing | 15     | Industrial Air Conditioning |
| Existing | 18     | Engine Test Facilities      |
| Existing | 21     | Printing Plants             |
| Existing | 22     | Textile Processing Plants   |



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|          |     |                                               |
|----------|-----|-----------------------------------------------|
| Existing | 27  | Air Conditioning of Wood and Paper Facilities |
| Existing | 28  | Power Plants                                  |
| Existing | 29  | Nuclear Facilities                            |
| Existing | 30  | Mine AC and Ventilation                       |
| Existing | 31  | Industrial Drying Systems                     |
| Existing | 32  | Ventilation of the Industrial Environment     |
| Existing | 33  | Industrial Local Exhaust Systems              |
| New      | TBD | Oil and Gas Facilities                        |
| New      | TBD | HVAC in Hazardous Environments                |

#### 13) Research Projects

Binder

- Outside air intake study: This has not developed as yet. May need to be more specific interest.
- TC 5.4: Rating on Filter Banks: Kevin mentioned the discussion of dust collection. Possibly 5.4 will not go further with the topic. They are working on a RTAR for mist collection. Scott MacMurray is going to track it and Dan Russo is heading up with the sub-committee.
- MTG.ACR / CO-RP-8: This meeting on who is doing the evaluation of the air change rate. A ~\$400,000 research



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- TC 5.6: lithium ion batteries: Have not had any advancements. Consider Guideline 21. Jamie H. is interested in testing for Lithium batteries. The IEEE calls it Std. 1635. Look for gaps and share them with Deep G.
- 14) Standards Ghosh/Ostberg
  - Update on Standard 128: Methods of portable air conditioners. Ghosh
    - A 5-year cycle. Looking for contacts;
    - Canadian standard referenced currently and now looking at keeping as alone.
  - IEEE 1635/ASHRAE Guideline 21 Update Ghosh
  - ISO 15138: Ostberg
  - Petroleum HVAC production: being updated for oil and gas and hydrogen. Will be updated for on-shore. Very active. Tom Axley would be interested.
- 15) Program Sub Committee Phyfe/Binder
  - Vent 2022 Special Publication Industrial HVAC Binder
    - i. Missed the timeframe. What will be the plan for the next conference?
    - ii. An option would be to join with International Occupational Hygiene Association (IOHA) at their Montreal conference, September 17<sup>th</sup> 2027. The ISO committee 15138 might also be a good collaboration option.
  - Phoenix Program
    - i. Phoenix Sunday session had nine attended. Feedback was excellent.
    - ii. Dust collection was good as a panel discussion.
    - iii. Panel 6 was good with a number of questions.
    - iv. Paper discussion was also held on Tuesday. Another session on Wednesday.
  - Co-sponsor program w/TC9.1 on “Equipment requirements Jensen for specific applications” for Las Vegas 2026. Dennis Wessel (TC9.1 chair) asked about co-sponsoring for this program. Possible examples would be “Procedure rooms and Operating rooms” and “Mechanic shops and Industrial shops”. The agreement was in favor of joining as co-sponsor.
  - Las Vegas Proposal Due August 1<sup>st</sup>. Tracks: Future Proofing the Built Environment, Indoor Environment Quality For Healthy Buildings; there are nine tracks, so there may be more options.
  - Data for Phoenix technical program:



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#### Phoenix Conference Annual 2025

| Program                          | Proposals Submitted | Proposals Scheduled |
|----------------------------------|---------------------|---------------------|
| Panel Sessions                   | 16                  | 7                   |
| Forum Sessions                   | 7                   | 2                   |
| Seminar Sessions:                | 93                  | 72                  |
| Workshop Sessions                | 11                  | 4                   |
| Debate Sessions                  | 2                   | 1                   |
| <b>Total</b>                     | <b>129</b>          | <b>86</b>           |
| <b>Total with Paper Sessions</b> |                     | <b>108</b>          |

- TC9.2 submission not accepted “Forensics” (Seminar)

#### Industrial Ventilation Track: 10 programs

- Seminar 3: Demand Based Ventilation in Cleanrooms: Energy Savings, Set-up and Commissioning
  - Seminar 9: Laboratory Plug Loads: What’s Real and What’s Not?
  - Seminar 13: Improving Workplace Safety Risk Mitigation Through Collaboration between Ventilation and Industrial Hygiene | **TC 9.2 Submission**
  - Debate 1: Dust Collection Data and Analytics for Decarbonization Through Energy Efficiency
  - Panel 3: Harmonization of ASHRAE Standards Approach to Infectious Aerosols
  - Seminar 33: Two Real World Application Case Studies of Novel HVAC&D Systems in Controlled Environmental Agriculture
  - Panel 4: Faster, Better, Stronger: Resiliency in the Design, Construction and Operations of High Intensity Facilities
  - Panel 6: IAQ of Industrial Facilities: Protecting Human Assets (TC9.2 cosponsor)
  - Paper 5: Industrial IAQ | **TC 9.2 Submission**
  - Seminar 54: Is Your Ventilation System Effective? How Do You Know?
  - Forum 2: Computational Fluid Dynamics, Building Envelope, COVID-19 and Reality
- Wednesday, June 25, 2025, 9:45 AM – 10:45 AM MST  
Phoenix Convention Center North Building , Level 2, 226BC



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**Minutes - Approved**

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#### Las Vegas Winter Conference

##### Key Dates:

- Thursday, June 19, 2025 | Website Opens for Extended Abstracts and Seminar, Workshop, Forum, Debate, and Panel Proposals
- Friday, August 1, 2025 | Debate, Panel, Seminar, Forum, Workshop, and Debate Proposals Due
- Friday, October 3, 2025 | Debate, Panel, Seminar, Forum, Workshop Scheduling Notifications

##### Tracks:

- Fundamentals and Applications | Track Chair: Kevin Brown | [kevin@kbsquared.net](mailto:kevin@kbsquared.net)
- HVAC&R Systems and Equipment | Track Chair: Ng Yong Kong | [nyk@nyk.com.my](mailto:nyk@nyk.com.my)
- Refrigeration and | Track Chair: Haotian Liu | [sjtulht@hotmail.com](mailto:sjtulht@hotmail.com)
- Research Summit | Track Chair: Li Song | [lsong@ou.edu](mailto:lsong@ou.edu)
- Energy Storage and Grid Resiliency | Track Chair: Jon Cohen | [jonjcohen1@gmail.com](mailto:jonjcohen1@gmail.com)
- Pathways to Building Decarbonization | Track Chair: Ehab Mamdouh | [ehab.mamdouh@ipec-eg.net](mailto:ehab.mamdouh@ipec-eg.net)
- Artificial Intelligence | Track Chair: Joshua Vasudevan | [joshuavasudevan2011@gmail.com](mailto:joshuavasudevan2011@gmail.com)
- Indoor Environmental Quality for Healthy Buildings. | Track Chair: Joe Chow | [joe.ashrae@gmail.com](mailto:joe.ashrae@gmail.com)
- Future-Proofing the Built Environment | Track Chair: Robin Bryant | [rbryant@bandiflorida.com](mailto:rbryant@bandiflorida.com)

#### Vegas Programs:

| Type    | Title                                                                             | Chair        | Speakers                                 |
|---------|-----------------------------------------------------------------------------------|--------------|------------------------------------------|
| Seminar | Industrial Forensics<br>Track: Indoor Environmental Quality for Healthy Buildings | Kevin Marple | Tom Axley<br>Erich Binder<br>John Martin |
|         |                                                                                   |              |                                          |



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Co-Sponsor:

- Co-sponsor program w/TC9.1 on “Equipment requirements (Jensen) for specific applications” for Las Vegas 2026

#### **Austin Summer 2026 | Tentative Tracks:**

- Fundamentals and Applications
- HVAC&R Systems and Equipment
- Research Summit
- Workforce Development
- Ground Source Heat Pumps
- Hot Climate Building System Design, Operation and Resilience
- AI in Building Design and Construction
- Building Decarbonization

Workshop: Deep – Guideline 21

16) New Business

17) Honors & Awards

Jensen

- Was due this year by May 1<sup>st</sup>, so time is available for next year.
- Looking for distinction in the industry and at any time. Eileen will help if willing to pursue the recognition.
- Distinguished Service is a ASHRAE involvement recognition.

18) Webmaster

Nienhueser

- The website is current. We are missing a few minutes, so we are seeking anyone who may have it.

19) Liaisons Reports

|                    |               |
|--------------------|---------------|
| MTG Hot Climate    | Duane Hammond |
| TC 2.10 Resilience | Steven Still  |
| MTG Cold Climate   | Erich Binder  |
| MTG ACR            | Erich Binder  |
| CTTC               | Erich Binder  |
| MTG-UNEP - RAC     | Erich Binder  |



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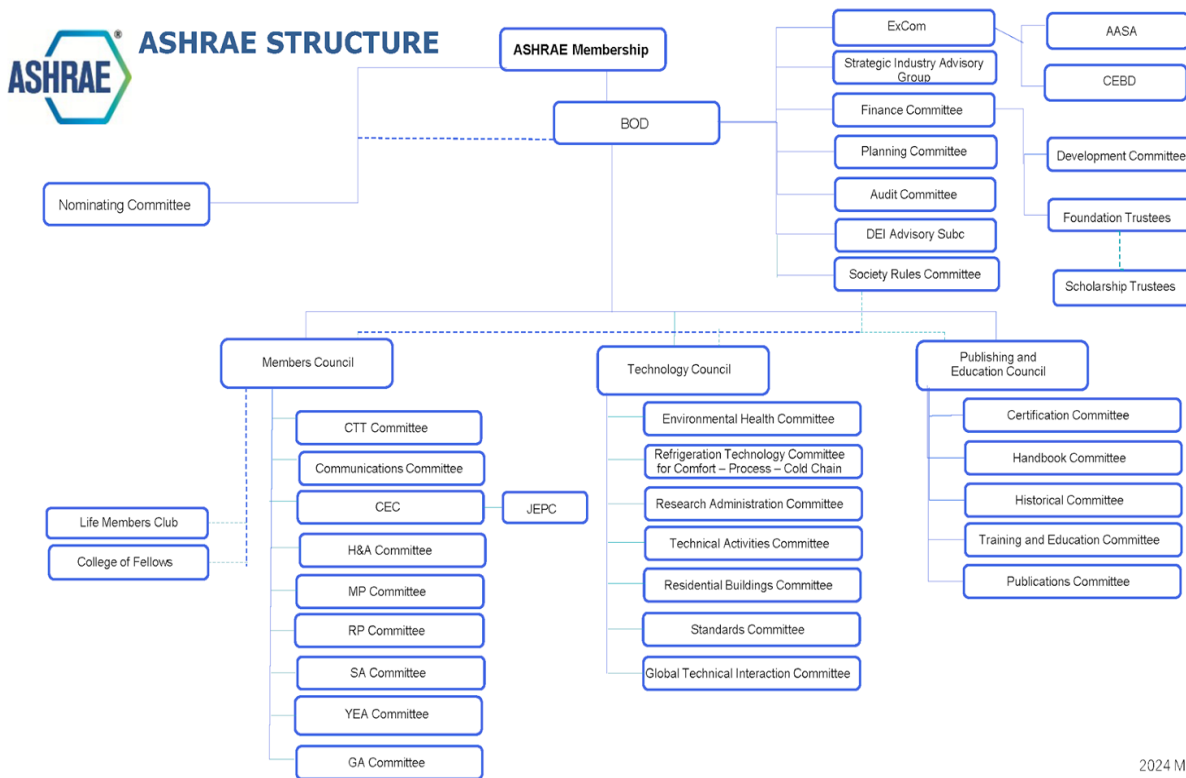
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|                                  |                            |
|----------------------------------|----------------------------|
| Standard 90.1                    | Mike Baucom                |
| Decarbonization Task Force       | Need to establish liaisons |
| MTG.GAI / AI Focused             | <i>Open position</i>       |
| MTG OBB                          | <i>Open position</i>       |
| MTG Cyber Security               | <i>Open position</i>       |
| MTG Effective Building Operation | <i>Open position</i>       |
| MTG for Infection Control        | <i>Open position</i>       |
| Journal/Insights Liaison         | <i>Open position</i>       |

- 20) Next Meeting – 2026 Winter Meeting, Las Vegas, NV Jan 31- Feb 4, 2026
- 21) Adjournment Moved by Kevin M. and Erik O. seconded. Unanimously approved at 2:57 pm.



2024 March 1