ASHRAE TC 5.5 Air-to-Air Energy Recovery

ASHRAE 2025 Winter Conference, Orlando, FL

February 11, 2025

Meeting Minutes

- Kristin Rice Sullivan called the meeting to order at 3:30pm
- She read the ASHRAE Value Statement and TC Scope
- Roll Call of the Voting Members
    - Kristin Rice Sullivan, Paul Pieper, Matthew Friedlander, Marcus Darcy, Drake Erbe (online), Eric Erdman, Mohamed Rafati, Carey Simonson were all present
    - 8 Voting Members were present - quorum achieved (8 out of 10)
- Eric moved to approve the agenda; Carey seconded - [7-0-0-CNV]
- Paul moved to approve the meeting minutes from the last two meetings; Eric seconded - [7-0-0-CNV]
- Rolland Charneux (Guest) requested TC 5.5 to co-sponsor a new RTAR being proposed by TC 9.10 and requested a response from the TC following the meeting – Marc Tardiff will present this further for discussion during the research portion of the meeting
- Kristin asked if anyone would be willing to step into the Secretary position (which is now open due to Tam's departure from the committee), Eric volunteered, and Kristin will update the roster accordingly following the meeting
- Paul attended the Chair's Breakfast and provided a brief summary:
    - YEA will be looking for members to mentor new attendees (https://www.ashrae.org/communities/young-engineers-in-ashrae-yea/yea-events-and-programs/ashraeconnect)
    - ASHRAE is looking to streamline with a semi-automated the Activity Forms Project
    - There was a high demand on Proposals with only 75 accepted from 198 submitted
    - There has been a lot of activity with Government affairs: ASHRAE is pivoting on some verbiage related to climate change and decarbonization
    - There is a risk of losing a portion of funding under the current administration
    - ASHRAE members can apply to be a subject matter expert to help legislators make better decisions (https://www.ashrae.org/communities/committees/standing-committees/government-affairs-committee)
    - ISO TAG Activities (Note: The equivalent to TC 5.5 with ISO is ISO/TC86/SC6/WG10, Energy Recovery) if you are interested you can join a US TAG and attend meetings as a US Expert, international travel is not required
    - There is a new Roster Update Form and it should make things easier to manager for TCs
- Paul provided the ALI Liaison Report **per the PPT** and added that he was asked to present the Best Practices Short Course in-person in Pheonix at the Annual Meeting – the Short

Course was attended by ~25 people from across the US and Canada: Consultants, manufacturers representatives, contractors, and manufacturers

- SSPC 90.1
  - Marc Tardiff identified as Liaison
  - Marc presented the details **per the PPT**
- Alkis not present, **no 62.1 update**
- Kristin provided an update **per the PPT**
- Esteban Baccini (Section 5 and CTTC) was present at the very beginning of the meeting, but left very quickly and we did not receive an update – Note: Esteban was also not present at the Chair's breakfast
- **HANDBOOK:** GD Mathur provided an update **per the attached PPT** he is reaching out to committee members for support and will begin monthly meetings for the next Handbook update
- **PROGRAM:** Paul provided and update **per the attached PPT** and Seminar 42 was very well attended by over 200+ people in attendance, Eric, Chris, and Jordan provided an excellent presentation that was well coordinated and received
- **RESEARCH:** Marc presented an update **per the attached PPT,**
  - Carey, Matthew, Marc and others discussed potential research into Frost Control – Matthew moves to request the research sub-committee proceed with and RTAR on the "Onset of Frost", Marcus [7-0-0-CNV]
  - RP-1780, TC-9.10 would TC 5.5 to be willing to sponsor research about cross-contamination with total energy recovery wheels – Drake opposes this research due to the irresponsible nature of the research that should only have been limited to laboratory exhaust
  - Matthew feels that we should be present in the RTAR this will be a bad look for us, we should potentially include plates also, Paul agrees that we should participate and influence some of the draft RTAR, Mo (from a healthcare perspective) thinks that the Air-to-air TC should be present
  - As an aside, Marc feels we need stronger representation on 62.1 as there are people on that standard that want to lean towards filtration vs. energy recovery
  - Drake: ERV in laboratories should be the first statement – they need to be focused on that rather than the industry
  - Matthew moves that TC 5.5 participate and co-sponsor the RTAR from TC 9.10 about cross contamination of gaseous contaminants and total energy wheels, Mo seconds. [7-0-0-CNV]
    - Kristin asks who is qualified and willing to help, Matthew volunteers with Eric to support and Marc will contact Roland to give him the results
- **STANDARDS:**
  - Marc T. has indicated that we need a permanent 62.1 Liaison – Matthew will speak to Scott Forest (who already attends 62.1 to be our official and permanent Liaison to TC 5.5.)
  - Matthew presented **per the attached PPT**
    - There was a discussion on adding a Normative section on Field Testing for Standard 84 – Marc feels that this would be beneficial, Matthew will drill down to SSPC 300
    - There was a discussion on pressure drop variation as a function of static pressure differential – no interest on developing a metric for this from the

industry – manufacturers are aware of this phenomena and AHRI does have access to this data – and investigation is pending – Bezad feels that this an important topic to investigate
        - Mathew is asking for more contributors on the Guideline for Frost Control, Mo has offered to review - Paul, Carey and GD might have additional information that could be useful
        - Discussion from Chris and Bruce Harley CSA SPE-18: 2024 (based on C439) is working for NEEA and evaluating the process (at Purdue) for larger unitary equipment and the goal is to provide a seasonal COP
- **WEBSITE:** Melanie Fauchoux is now the webmaster.
- **MEMBERSHIP:**
    - Kristin called out for a membership chair
    - YEA recommendations
    - Andy Kebernik and Chris Wolgamott to roll on
    - New members to Roll on
- Paul moves to Adjourn, Matthew seconded

ASHRAE TC 5.5 Air-to-Air Energy Recovery
ASHRAE 2025 Winter Conference, Orlando, FL
February 11, 2025

Events	Time	Location
TC 5.5 Air-to-Air Energy Recovery Subcommittees Meeting	Tuesday, January 7, 4:00 – 5:30 PM Eastern Time	Virtual **Join the meeting now**
TC 5.5 Air-to-Air Energy Recovery	Tuesday, February 11 3:30 PM - 6 PM Eastern Time	Orlando **Join the meeting now**

Agenda TC 5.5 Full Meeting

Hybrid Meeting

1. If you are unable to attend in person you can join virtually by using the links above.

Launch [20 minutes total]

2. Call to Order / Welcome

ASHRAE Value Statement – *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. TC Scope

   TC 5.5 is concerned with air-to-air heat exchangers, their application and cost benefit relationship. It includes consideration of the needs and procedures for standardization and testing, rating and terminology applicable to air-to-air energy recovery.

4. Introduction & Sign up (current email & updates)
5. Roll Call of Voting Members (exhibit 2)
6. Agenda Review and Adoption
7. Approval of Minutes
   a. Annual Conference, Hybrid, June 25, 2024
8. Chair's Report
9. Guest Topic: TC 9.10 Research, Roland Charneaux

Liaison Reports [45 minutes total]

10. ASHRAE Learning Institute (Paul Pieper)
    a.
11. SSPC 90.1 (identify liaison)
    a. SSPC 90.1 Activities –
    b. Compliance path for HVI certified ERVs in 90.1

12. Standard 62.1 (Alkis)
    a.
13. Standard 205 Working Group (Kristin Sullivan)
14. Technical Activities Council (TAC) Liaison Presentation [30 minutes]

Subcommittee Reports [45 min total]

15. Handbook (G.D. Mathur)
16. Program (Paul Pieper)
17. Research (Marc Tardif):
18. Standards (Matthew Friedlander)
    a. Standard 84
    b. Proposal for Best Practices for Frost Control
    c. ASHRAE 227P (Passive House) – Need Liaison (Alkis)
    d. CSA SPE18 (Test procedure) (Chris Wolgamott)
19. Website http://tc0505.ashraetcs.org/ (Brandon Damas/Melanie Fauchoux)
20. Membership (Chair)
    a. Onieluan Tamunobere has resigned as secretary – committee will need to find a replacement
    b. Melanie Fauchoux is replacing Brandon Damas as Webmaster
    c. Moh Rafati will roll off as voting member in June.
    d. Discuss having a dedicated membership chair
        i. Ensure balance
        ii. Seek out members to take on chair roles
        iii. Help keep up with succession plan
        iv. Does not need to be in person at every meeting

New Business

Discussion should be after a motion and second.

Next Meeting

Next face-to-face meetings will be at the 2025 Annual Conference in Phoenix

- Kristin Sullivan, Chair TC 5.5
  11 February 2025

Exhibit 1:

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.

Exhibit 2: Voting Members and Officers as of January 2025

Full Name	Company	Position	Start Date	End Date
Ms Kristin Rice Sullivan	Trane Technologies	Chair	07/01/2023	06/30/2025
Mr Paul L Pieper, Eng, PE	The Master Group	Vice Chair	07/01/2024	06/30/2026
Dr Onieluan Tamunobere	Coilmaster Corporation	Secretary	07/01/2024	06/30/2028
Dr Gursaran D Mathur, PE	Ford Motor Company	Hndbk Subcom Chair	07/01/2020	
Mr Marc Tardif	Innergytech Inc	Resrch Subcom Chair	07/01/2024	
Matthew Friedlander	Renewaire LLC	Stds Subcom Chair	07/01/2024	06/30/2026
Mr Brandon Damas	Texas AirSystems	Webmaster	07/01/2019	
Mr Marcus D'Arcy	Desert Aire	Member	07/01/2022	06/30/2026

Mr Drake H Erbe	Airxchange Inc	Member	07/01/2022	06/30/2026
Mr Eric Erdman	Greenheck Fan Corporation	Member	07/01/2024	06/30/2028
Dr Mohammad Rafati		Member	07/01/2021	06/30/2025
Dr Carey J Simonson	University of Saskatchewan	Member	07/01/2024	06/30/2028
Mr Triantafyllos Andreas Triantafyllopoulos		Member	07/01/2022	06/30/2026

TC 5.05 Committee Meeting

February 2025 Orlando

Introductions

- Sign-in / introduction
  - Sheet going around room
  - Online – drop your name, affiliation, and email in the chat
- ASHRAE Values Statement

Chair’s Report

- Chair’s Breakfast
  - Chair didn’t go

ASHRAE Learning Institute Liaison Report :: Paul Pieper

- ***Air-to-Air Energy Recovery Applications: Best Practices*** *was scheduled for an in-Person presentation on Monday, February 10, 2025 (8:30am to 11:30am EDT) at the Orange County Convention Center at the Annual Meeting*
- *Additionally, with continued interest in the topics* ***Air-to-Air Energy Recovery Applications: Best Practices*** *the course has also been scheduled for March 5th, 2025*
- *Instructor-led training: https://www.ashrae.org/professional-development/all-instructor-led-training*

90.1 Report

- Addendum y ASHRAE 90.1-2022: Change of requirements for non-transient building to include CSA-C439 rating
  - Publish this fall
- Addendum ag ASHRAE 90.1-2022: Series Energy Recovery Update
  - Publish this fall
- Addendum aj ASHRAE 90.1-2022: Indoor Pool Dehumidification Energy Recovery and Exhaust Air Energy Recovery
  - Ready for staff publication

90.1 Report

- Addendum bk ASHRAE 90.1-2022: Space Heating Heat pump Primary
  - Secondary Space heating allow to compensate primary space heating not able to reach required thermostat setting. (6.5.12.2)
  - Exception for outside and return air pre-heat. (Exception 4 & 5)
  - In limbo because of possible litigation.

- CMP To add an exception at section 6.5.6.1.2
  - No ERV necessary when gas phase air cleaning is used as it reduce the ventilation rate by 50% according the IAQP.
  - No discussion at committee yet

90.1 Report

- Addendum bx ASHRAE 90.1-2022: Laboratory Systems
  - The addendum essentially expands the VAV and/or heat recovery options to require both VAV and heat recovery (with some exceptions).
  - Minimum 10000 cfm
  - Strike 2022-6.5.7.3 and replace it with requirements of 45% SERR sensible energy recovery in heating season except in zone 0-1-2 and 35% SERR cooling season except zones 3C, 4C, 5B, 5C, 6B, 7, and 8
  - Intension is to use technologies like run-around loop, but no restriction
  - Letter ballot for 1st PPR

SSPC 205 Working Group – Kristin Sullivan

- Goal to share addendum for review by SSPC 205 at ~~Indianapolis~~ ~~Orlando~~ Las Vegas Meeting
- Remaining work includes:
  - Enumerate frost protection strategies (Moh Rafati)
  - Update equations to match current version of AHRI 1060
  - Check for consistency within addendum and with other addenda (Kristin Sullivan)

TAC – Kevin Marple

- New roster platform
- Strategic plan for technical activities
- Electronic Communications Committee is creating an electronic form platform

•ASHRAE 2024 Handbook – Systems & Equipment
•Chapter 26 – Air-to-Air Energy Recovery Equipment

- 2024 ASHRAE Handbook – HVAC Systems & Equipment:
  - Published in June 2024 (before Indianapolis meeting).
- Request to members: Need feedback from the members
  - Currently have 39 pages in handbook for the energy recovery systems currently in production
  - Good basics of heat and moisture transfer equations including fan power with 8 examples,

  •Frost control strategies, Performance rating – based on ASHRAE standards, Economics
  - Review the chapter and see what can be added or deleted or updated
  - For electronic version:
    - Can we add excel files that can be used by practicing engineers?
    - Animated system operation as energy transfers form one point to the other including psychrometric process?
    - A brief section on emerging technologies

- **The updated chapter will be published in June 2028.**
- **However, for important updates we can request ASHRAE to update the electronic version at any time.**

ASHRAE CELEBRATING 125 YEARS

•ASHRAE 2024 Handbook – Systems & Equipment
•Chapter 26 – Air-to-Air Energy Recovery Equipment

•Request to members: Please review Chapter 26 and provide feedback

i. Complete review and provide feedback to me by the end of Phoenix meeting (June 2025)

ii. Finalize chapter by Las Vegas meeting (June 2026) iii.I want to complete the chapter end of 2026 with approvals.

•iv.Submission to ASHRAE with approvals by 7/4/2027 (right after Austin •Meeting)

•We have over 2 years for review, approval and submission. However, time will fly by quickly! Hence, I will schedule monthly meetings with the TC members interested in supporting to accomplish the above activity.

ASHRAE CELEBRATING 125 YEARS

•TC 5.5 ASHRAE Handbook Sub Committee Meeting
•ASHRAE Summer Annual Meeting, Orlando, February 11th, 2025

- Handbook SC Chair: G.D. Mathur
- Liaison to 2024 ASHRAE Handbook Committee: Prakash Damshala
- SC members:
  - Prakash Damshala
  - Paul Pieper
  - Marcus D'Arcy
  - Mo Afshin
  - Mike Scofield
  - Jessica Dewitt
  - Charles-Antoine Caron
  - Alkis Triantafyllopoulos

Please contact me if you wish to help in updating the handbook chapter.

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Program Discussion and Updates :: Accepted Seminar

Our Program was accepted as: **Seminar 42** (co-sponsored with TC 7.4 Exergy Analysis for Sustainable Buildings), ***The Wonderful World of Dedicated Outdoor Air Systems (DOAS) and Energy Recovery Equipment*** *and presented on* Tuesday, February 11, 2025, at 9:45am to 10:45am, EDT

Upcoming Conferences

Future Winter Conferences	Future AHR Expos	Future Annual Conferences
~~Feb. 8-12, 2025 – Orlando, FL~~	~~Feb. 10-12, 2025 – Orlando, FL~~	~~June 22-26, 2024 – Indianapolis, IN~~
Jan. 31-Feb. 4, 2026 – Las Vegas, NV	Feb. 2-4, 2026 – Las Vegas, NV	June 21-25, 2025 – Phoenix, AZ
		June 27-July 1, 2026 – Austin, TX

- **Next Conference:** 2025 ASHRAE Annual Conference, June 21-25, 2025 | Phoenix, AZ
- **Upcoming Deadlines and Conference Tracks:** https://www.ashrae.org/conferences/2025-annual-conference-phoenix/2025-annual-conference-technical-program
  - Friday, January 3, 2025 | Website Opens for Extended Abstracts and Seminar, Workshop, Forum, Debate and Panel Proposals
  - Wednesday, February 26, 2025 | Debate, Panel, Seminar, Forum, Workshop, and Debate Proposals Due

Upcoming Deadlines

>> Upcoming Deadlines

- **Wednesday, November 20, 2024** | Conference Paper Abstracts and Paper Session Requests Due
- **Friday, December 13, 2024** | Conference Paper Abstract Accept/Reject Notifications
- **Friday, January 3, 2025** | Website Opens for Extended Abstracts and Seminar, Workshop, Forum, Debate and Panel Proposals
- **Wednesday, February 26, 2025** | Debate, Panel, Seminar, Forum, Workshop, and Debate Proposals Due
- **Wednesday, March 5, 2025** | Conference Papers and Extended Abstracts Due
- **Wednesday, April 2, 2025** | Conference Paper Accept/Revise/Reject Notifications
- **Wednesday, April 2, 2025** | Extended Abstract Accept/Reject Notifications
- **Wednesday, April 9, 2024** | Revised Conference Papers Due
- **Friday, April 11, 2025** | Debate, Panel, Seminar, Forum, Workshop Scheduling Notifications
- **Wednesday, April 23, 2025** | Conference Paper Final Accept/Reject Notifications

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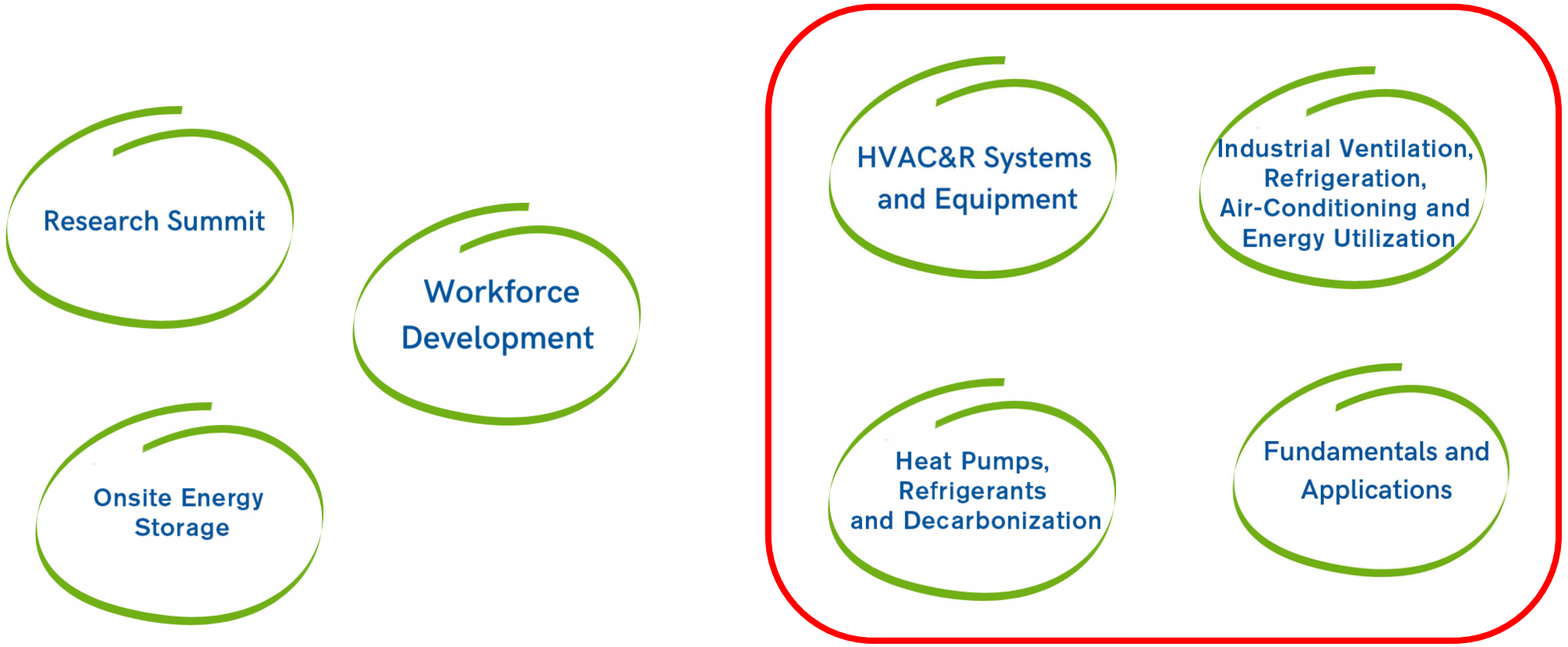
Potential Topic Discussion :: Available Tracks



PROGRAM POTENTIAL TOPICS

1. **HEAT PUMPS, REFRIGERANTS, AND DECARBONIZATION:**
   - Combining ERV/HRV and Heat Pump Systems – we need ERV/HRV manufacturer support
   - What other ways can we use AAERV to meet decarbonization goals
2. **HVAC&R SYSTEMS AND EQUIPMENT**
   - MURB Designs and Strategies – ideally, we would like consulting engineering perspective
3. **FUNDAMENTALS AND APPLICATIONS**
   - Frost Control – How does it work and how do you maximize performance?
   - Other control topics (reach out to GPC 36 and/or similar)
   - Healthcare applications and the use of AAERV (see Mo, Carey)
   - See Research for new topics
4. **INDUSTRIAL VENTILATION, REFRIGERATION, AIR-CONDITIONING AND ENERGY UTILIZATION**
   - Highlight recent updates to ~~Standard 84?~~ Expand on new technologies introduced? Any other key updates (new definitions)?
   - 241 (i.e. COVID Pandemic Standard)?
   - What metrics are various codes / standards using?
   - Passive House -> need liaison, lead to potential seminar?
   - Overview of H/ERV (AHRI-1060, ERR and RER definitions, etc.)
   - ASHRAE Standards 55, 62 and 90 require many things – some of which seem to be in conflict with each other

Research Report

- **RTAR**
  - Sub-committee met January 22nd to review a list of possible projects and new suggestions. After discussion of all the projects a survey was send to participant to evaluate the interest and feasibility of the projects.
  - Four projects stand out with a clear leader:
    - When frosting starts occurring?
    - Research into measurement of performance under frosting conditions
    - Effect of airflow distribution within the unit on effectiveness and pressure drop
    - Testing and Modeling of HRV/ERV Frost Control Techniques
  - Does the TC want Research sub-committee to proceed with development of the RTAR?

Research Report

- **FOLLOWING RP-1780, TC-9.10 want to answer more questions about cross-contamination of gaseous contaminants within total energy recovery wheels**
  - How does varying the velocity of the air in the wheels affect the contaminants transfer and at the same time how does it affect the energy recovery efficiency?
  - Does a sensible only wheel could also transfer contaminants when there is condensation (water) on the wheel during heat recovery at low exterior temperature?
  - Does the concentration of contaminants at the entry influences the transfer. Does the transfer is the same at low contaminants concentration?
  - Is it possible to test more than one chemical at the same time instead of only one? This would reduce the testing costs.
  - Does human bio-effluent are also transferred by the adsorption/desorption process, and how this would affect the required amount of outside air needed?
  - How could we test some gas contaminants that are captured in the wheel and not released till the wheel is saturated?

Research Report

- **FOLLOWING RP-1780, TC-9.10 want to answer more questions about cross-contamination of gaseous contaminants within total energy recovery wheels**
  - Does TC-5.05 would be willing to co-sponsor this Research?
  - Is somebody from TC-5.05 be interested in reviewing/improving the RTAR during its redaction?

Standards SC

- Standards SC:
  - Alkis Triantafyllopoulos
  - Andy Kebernik
  - Carey Simonson
  - Drake Erbe
  - Jaime Yeh
  - Matthew Friedlander (Chair)
  - Ronnie Moffitt

- Responsible for a single Standard:
  Standard 84-2020 Method of Testing Air-to-Air Heat/Energy Exchangers

- Working on proposal for:
  Guideline for Best Practices in Frost Control

Standard 84-2024 Method of Testing Air-to-Air Heat/Energy Exchangers - Dependency

- AHRI Standard 1060-2023 refers to ASHRAE 84 as the test method
  - 1060 is AHRI's certification program for ERV exchangers and packaged units (typically non-residential) using those exchangers

Standard 84-2024 Method of Testing Air-to-Air Heat/Energy Exchangers – Revision Cycle

- Published April 30, 2024
  - Essentially a re-affirmation of the 2020 edition
  - Added a forward and updated Normative References

- Available in the bookstore
  - NOT yet available in the free previews – still shows the 2020 version, but content virtually the same
  - Unavailable in Belarus and Russia!

- No active plan for next revision cycle

Topics Identified for possible inclusion in next edition of Standard 84 Method of Testing Air-to-Air Heat/Energy Exchangers

Normative section on Field testing

This section of 84 is not normative, we see this as a gap.
Both lab experts and field-testing experts would be needed.
Large energy performance contractors have been suggested as a source for expertise.
EN308 has some material.

Pressure Drop Variation as a function of Static Pressure Differential

Does development of a metric serve market needs? Would such a metric belong in ASHRAE 84?

➔ SC recommends TC request AHRI to determine if there are of market needs

➔ AHRI-1060 participants did not display any initial interest

Global Standards with Similar Scope

- ISO 21773:2021
  - Patterned on ASHRAE 84, method of laboratory test for exchangers (not ventilators)
- ISO 16494-1: 2022 Second edition
  - Method of laboratory test for complete ventilators with heat/energy recovery
  - Minor updates and clarification published 2022-06-14
  - 16494-2:2019 Guidance on uncertainty analysis

Global Standards with Similar Scope (cont.)

- EN308:2022 Heat exchangers — Test procedures for establishing performance of air to air heat recovery components
  - Method of test for exchangers (not industrial heat recovery):
    - in labs
    - in units
    - in the field
  - Structured for use in the European system of Energy Performance of Building Directive
  - Partially aligned with ASHRAE 84 and ISO 21773
  - Requires tracer gas tests for wheels and for plates when static leakage test result is >3%
  - “Available” as of 2022-03-30

Standards SC Project in progress

Guideline on best practices for frost prevention or recovery

We believe the state of the art allows for a guideline to be written today (see RP 543, RP 544, ALI Courses and manufacturer recommendations).

➔TC recommended the SC draft a Title, Purpose and Scope (TPS) and then form a Guideline Project Committee

➔SC has generated a draft TPS and is working on the Guideline Proposal form

➔ SC needs to propose a GBC roster → *Looking for volunteers!*

CSA C439 Laboratory methods of test for rating the performance of heat/energy-recovery ventilators

- Basis of test used by HVI and NRCan for whole-unit performance testing and rating
  - Testing and certification is theoretically applicable to stand-alone HRVs or ERVs.
  - However, the third-party lab used for HVI certification is functionally limited to residential-size heat or energy recovery ventilating units (i.e. <400 cfm).
  - The C439 metrics are referenced by a number of codes and standards.
  - The standard includes the world's most stringent extreme cold weather testing.
  - First published in 1985.
- 2018 version included significant changes and errors
  - NRCan's insistence that all residential units sold in Canada be tested strictly per the standard caused consternation and a significant re-testing initiative by the industry.
  - An HVI member working group reviewed the standard deeply and issued detailed recommendations for changes to the standards, primarily corrections and clarifications.
- 2024 version was published in November and resolves problems

CSA SPE-18:2024

- Title: Load-based and climate-specific testing and rating procedures for seasonal performance of heat recovery and energy recovery ventilators (HRVs and ERVs)
  - Not a standard and not formally reviewed by a CSA Technical Committee
  - Supported by Canadian utilities, NEEA, and Quebec Ministry of Environment
- Intended to determine seasonal efficiency of HERVs
  - Incorporates C439 methods and metrics
  - Requires testing at three airflows
  - Requires testing at (2) heating and (2) cooling conditions, and at (1) or (2) below freezing temperatures if needed for the climate
  - Results of tests are interpolated for application to annual weather data in (16 to 31) bins
- Laboratory work is now underway to validate the procedures

ISO Standards in Progress

- ISO 5222-1, Part 1: Sensible heating recovery seasonal performance factors of HRV 40.20
  - Published 2023-08, but now under revision and in DIS stage
- ISO FDIS 5222-2, Part 2: Sensible cooling recovery seasonal performance factors of HRV
  - In progress
- ISO FDIS 5222-3, Part 3: Annual sensible heating and cooling recovery performance factor of HRV
  - In progress
- All of these are very similar in purpose and method to CSA SPE-18, but are based instead on ISO 16494 Heat recovery ventilators and energy recovery ventilators — Method of test for performance — Part 1: Development of metrics for evaluation of energy related performance
- Next steps: Parallel standards for Annual Sensible and Latent recovery performance

ASHRAE and Global Standards Harmonization

- Global Technical Interface Standing Committee has been formed
- Includes Vice-chairs of ASHRAE Technical Advisory Committee and Standards Committees
- Monitors ISO and other global Standards Development Organizations and can recommend harmonization when opportunities arise

BSR/ASHRAE Standard 227P, Passive Building Design Standard

Revised TPS approved June 22, 2021

PURPOSE: This standard provides requirements for the design of buildings that have exceptionally low energy usage and that are durable, resilient, comfortable, and healthy.

SCOPE: 2.1 This standard is applicable to all new and existing buildings intended for human occupancy.

2.2 This standard provides requirements for the design and construction of the: building envelope, heating and cooling equipment and systems, ventilation systems, service hot water systems, interior and exterior lighting systems, and plug and appliance loads.

2.3 This standard does not provide requirements for the operation, maintenance, or use of buildings.

2.4 This standard does not apply to process related systems or equipment.

2.5 This standard shall not be used to circumvent any safety, health, or environmental requirements.

227P PPR coming soon

- The issues of concern for TC5.5 are:
  - ERV MEPs are proposed in a standard that is intended for adoption in codes or incentive programs.
  - At this time it is proposed that AHRI 1060, HVI, PHI, Eurovent and other certification or rating programs be allowed to provide ratings to show compliance with the MEPs.
  - Ratings of the same product under different programs may not be equivalent.
- SPC 227P needs specific responses to the PPR to correct any disparities between defined metrics and the rated minimum performance values.
- Recommended actions:
  - Members are alerted to pay attention to the PPR;
  - TC5.5 could appoint a liaison to 227P (Matthew Friedlander is a non-voting member of the PPR)

Membership

- Membership discussion
  - Need a membership chair?
  - Focused YEA recruiting