TC 5.5 Meeting Atlanta and Virtual 2/7/2023

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.

  (Code of Ethics: https://www.ashrae.org/about/governance/code-of-ethics)

  (Core Values: https://www.ashrae.org/about/ashrae-s-core-values)”

- **Recent CHANGES to the TC MOP requiring BALANCE for the voting membership removes the appearance of bias and conflict of interest.** The most recent MOP can be found here: https://www.ashrae.org/technical-resources/technical-committees in the Procedures, Forms & Information for TCs/TGs/MTGs and TRGs section about half way down the page.

ASHRAE Commitment to Care

- The health and safety of all ASHRAE conference attendees is a top priority. Out of respect for our fellow attendees, we commit to wear masks indoors, monitor our health, seek medical attention if symptoms development and adhere to all ASHRAE Commitment to Care protocols. We are committed to the well-being of one another.

Introduction and Sign-up Sheet

- Call to Order (Chair)
- Introductions

Roll Call of Voting Members

Name	Voting Status	Position
Mo Afshin	Voting (6/30/2023)	Chair (6/30/2023)
Kristin Sullivan	Non-Voting (6/30/2022)	Secretary (6/30/2023) SSPC 205 Liaison
Prakash Dhamshala	Non-Voting (6/30/2022)	Subcommittee Chair (6/30/2022)
John Dieckmann	Non-Voting (6/30/2022)	Research Subcommittee Chair (6/30/2022)
Mark Tardif	Voting (6/30/2023)	Program Subcommittee Chair (6/30/2023)
John Bade	Voting (6/30/2023)	SSPC 90.1 Liaison (6/30/2023
Carey Simonson	Voting (6/30/2023)	Member
Brandon Damas	Non-voting	Webmaster
Mohammad Rafati	Voting (6/30/2025)	Member
Matthew Friedlander	Voting (until 6/30/2026)	Standards Chair
Alkis Triantafyllos	Voting (until 6/30/2026)	62.1 Liaison
GD Mathur	Non-Voting	Handbook Subcommittee Chair
Paul Pieper	Voting (until 6/30/2026)	ALI Coordinator
Marcus D'arcy	Voting (until 6/30/2026)	Member

Agenda/Minutes

1. Agenda Review and Adoption
2. Approval of Minutes
    a. Annual Meeting, Hybrid-Toronto June 28, 2022

Chair Report - Membership

- Kristin Sullivan, Prakash Dhamshala, and John Dieckman rolled off as voting members. Matthew Friedlander, Drake Erbe, Paul Pieper, and Marcus D'Arcy are new voting members
- Chair will roll off 6/30/2023. Need succession planning
- Secretary (John Bade) has resigned from his position. Need a replacement
- Research sub-committee chair rolled off June 2022. Will stay as Need a replacement
  - Chair to put together a group to find suitable replacement – Volunteers so far: John D./Drake E./Matthew F./Moh R./Kristin S./Jaime Y./Marc T./Carey S./Alexy U.
  - Chair to announce at main meeting for all interested to join
- Handbook sub-committee chair rolled off June 2022. Need a replacement
  - G.D. Mathur
  - Drake just appointed to refrigeration handbook committee

Chair Report - Membership

a. New column added to the sign in sheet. If you are international member, please indicate

Canada is not considered international

Chair Report - Update

- Renewed ASHRAE Strategic Plan
  - Current strategic plan is valid until 2025
  - Planning for future will start soon and they are looking for TC input
- Building Decarbonization Taskforce:
  - Current focus is embodied carbon
  - Plan is to transfer work from the task force to TC's
  - Important for TC 5.5 to have a liaison: Paul P./Mo A./Alexy
- Residential Buildings Committee
  - Purpose is to extend the residential sector
  - Potential for TC 5.5 involvement as a large portion of energy recovery products go to residential buildings
  - Potential to develop standards related to residential products

Liaison Reports

TAC Liaison: Kevin Marple

ASHRAE Learning Institute Liaison Report : Paul Pieper

- As previously mentioned, both ALI short courses were presented to the CUNY School of Professional Studies, DCAS Energy Management Institute on 2022-06-01 and -02 for 25 to 30 people (for each session)
- Based on the positive feedback from both of those previous sessions, CUNY requested additional presentations of ***Air-to-Air Energy Recovery: Fundamentals*** and the ***Air-to-Air Energy Recovery Applications: Best Practices*** *on 2022-11-09 & -16* approximately 25 to 30 people – the attendees were similarly a mixture of mechanical engineers, and facilities engineers and different types of building directors
- Met with the NEEA (Northwest Energy Efficiency Alliance), an alliance of utilities and energy efficiency organizations and have incorporated their feedback to update the short courses to include more information on rebate programs, DOAS and Case Studies

ASHRAE Learning Institute Liaison Report : Paul Pieper

Air-to-Air Energy Recovery Applications: Best Practices (code 64)

Saturday, February 4 | 12:00 p.m. – 3:00 p.m., Georgia World Congress Center

Air-to-air energy recovery provides one of the most cost-effective and efficient ways to recycle waste energy and create superior indoor environments. This course will review real-world examples of where and how air-to-air energy recovery technologies are integrated into some of the most common, commercially available systems. Particular configurations that are most commonly used in high performance buildings and how they can best be used to meet stretch goals for IEQ, energy efficiency, and thermal comfort will be examined with respect to established performance metrics, peak performance results, and annual energy savings.

Instructor: Paul Pieper, Eng., Member ASHRAE

ASHRAE Learning Institute Liaison Report : Paul Pieper

Seminar 47: Air-to-Air Energy Recovery: Dealing with High CFM Applications | Fixed Plate in High CFM Applications

Tuesday, February 7 | 11:00 am to 12:30pm, Omni CNN Center Atlanta, Grand Ballroom B (M4-North)

ASHRAE 90.1: John Bade

- Reduce energy usage while reducing carbon footprint
- Evaluate operational carbon footprint
- 2022 rev was just published
- Fan power allowance addendum (formula to table) published. Addendum bo. Converts the old bhp requirement to w/cfm

62.1 Liaison: Alkis Triantafyllopoulos

- Requested input/feedback about indirect evaporative cooling in DOAS systems and its impact on reducing carbon footprint
- Subhrjat volunteers to help

SPC 205

- Published January 2023
- SSPC will be formed to support continuing development of addenda ("rep specs") to represent more equipment types
- Rep Spec for ERV is not yet included
  - Working Group functioning!
  - Draft in progress
  - Meeting monthly
  - Some requirements for ERVs will require changes to how Standard 205 works – e.g. different required field for different device types (tilt angle is only for heat pipes, purge is only for wheels)

Sub-Committee Reports

ASHRAE Handbook Sub Committee (June 14th, 2022)

- Handbook SC Chair: P. Damshala, G.D. Mathur
- Liaison to 2024 ASHRAE Handbook Committee: Prakash Damshala
- SC members:
  - Prakash Damshala
  - Paul Pieper
  - Marcus D'Arcy
  - Mo Afshin
  - Mike Scofield
  - Lisa Rosenow

ASHRAE 2020 Handbook – Systems & Equipment (Chapter 26)

- We have been meeting on a monthly basis to review the chapter (until April 2022)
- Focus is mainly on the technologies that are currently available in the market
- We need to add a section on the emerging or new technologies in the area of energy recovery/conservation
- Decision has been made by the members to keep only one chapter (this chapter in Systems & Equipment)

ASHRAE 2020 Handbook – Systems & Equipment (Chapter 26)

- The workload has been divided as follows:
  - Controls: Paul
  - Fixed Plates: Alkis
  - Rotary air to air – Mo
  - Heat Pipes, Runaround, Thermosiphon – Marcus
  - Liquid Desiccants – Mo
  - Twin tower – GD
  - Fixed bed regenerators – Alkis
  - Performance ratings – GD
  - Frost control: Mo/Paul
  - New Technologies - Prakash

Work is in progress for the above sections

ASHRAE Handbook Strategic Plan – Next Steps

Tentative Schedule:

- Planning to continue to have meetings for next 4 months
- Edit current chapter based on the TC revisions: Nov 2022
- Initial draft to the committee: 2023 January Atlanta meeting
- Final chapter based on TC feedback: May 2023 (Before Tampa meeting)
- Due date to ASHRAE: July 6th, 2023

Programs: Marc Tardif

2023 ASHRAE Winter Conference
February 4th to 8th , 2023 | Atlanta, GA, USA

- **Tuesday February 7th, 9:45 AM – 10:45AM , Georgia World Congress Center A407, Seminar 45:** Results of 1799-RP, Applying Performance Test Results for Small Enthalpy Exchangers to Very Large Exchanger

  Speakers: Krishnan Gowri, Ph.D. & Weimin Wang, Ph.D.

- **Tuesday February 7th, 11:00 AM – 12:30AM, Georgia World Congress Center A405, Seminar 48:** Air-to-Air Energy Recovery Dealing with High CFM

  Speakers: Stefan Belev, Charles-Antoine Caron, P Eng & Paul Pipier P Eng

2023 ASHRAE Annual Conference
June 24-28 , 2023 | Tampa, FL, USA

- Deadline:
  - **Monday, February 27, 2023:** Debate, Panel, Seminar Form, Workshop Proposals Due
  - **Friday, April 14, 2023** | Debate, Panel, Seminar, Forum Workshop Accept / Reject Notifications

- Track 1 : **HVAC&R Systems and Equipment**
  - HVAC&R Systems and Equipment are constantly evolving to address the changing requirements of the built environment. Papers and programs in this track focus on the development of new systems and equipment, novel applications of existing systems and equipment, improvements to existing systems and equipment and the proper application and operation of systems and equipment.

2023 ASHRAE Annual Conference
June 24-28 , 2023 | Tampa, FL, USA

- Track 4 : **Pathways to Net Zero Energy and Decarbonization**
  - Decarbonization is urgently needed to slow climate change that is affecting the wellbeing of our planet. Whether it is new construction, renovation or routine maintenance, ASHRAE and its members are leading in the advancement of carbon neutral, net zero energy and decarbonization strategies in building and HVAC&R design.

- Track 5 : **Future-Proofing the Built Environment**
  - In the face of climate change and weather extremes (hotter, colder, wetter, drier, wilder winds, wildfires, seawater rise, etc.) and energy supply disruptions and shortages, methods of designing, constructing and operating buildings and HVAC&R systems for resilience and sustainability are paramount to long-term success.

2024 ASHRAE Winter Conference
Jan 20th to 24th , 2024 | Chicago, IL, USA

- **June 14, 2023**: Website Opens for Program Proposals
- **June 28, 2023**: Conference Paper Abstracts Due
- **July 19, 2023:** Conference Paper Abstract Accept/Reject Notifications
- **August 2, 2023:** Program Proposals Due
- **October 16, 2023:** Conference Papers Due
- **November 8, 2023:** Conference Paper Accept / Revise / Reject Notifications

Research: John Dieckmann

- Research Project 1799-RP, was published.
- Was presented at the winter conference. Research Paper published
- RP 1780 update

Standards SC: Matthew Friedlander

- Standards SC:
  - TJ Farrell
  - Andy Kebernik
  - Ronnie Moffitt
  - Carey Simonson
  - Alkis Triantafyllopoulos
  - Matthew Friedlander (Chair)

- Responsible for a single Standard:

  Standard 84-2020 Method of Testing Air-to-Air Heat/Energy Exchangers

Standard 84-2020 Method of Testing Air-to-Air Heat/Energy Exchangers - Dependency

- AHRI Standard 1060 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 1060 refers to 84 as the test method
- AHRI Standard 1060 is under revision
  - Very close to publication
  - Revision does not expand scope of 1060 program, only harmonizes to changes in the 2020 version; fixed-bed regenerators remain outside scope of 1060
  - Possible that two items uncovered in revision of 1060 could lead to updates of 84:
    - Mass flow inequality limits based on c_{min} can be difficult to achieve at extreme supply flow ration and/or high pressure differentials
    - Consider referencing ASHRAE 37 with regards to determination of viscosity

Standard 84-2020 Method of Testing Air-to-Air Heat/Energy Exchangers – Revision Cycle

- ASHRAE requires a TC vote by winter meeting 2023, to either:
  - Reaffirm
  - Revise
  - Withdraw
- Staff recommends revision even if no editorial changes are needed, mostly in order to update publication dates of referenced documents.

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
  - Update of 1991 standard
  - Method of test for exchangers (not industrial heat recovery):
    - in labs
    - in units
    - in the field
  - Intended 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 when static leakage test result is >3%
  - “Available” as of 2022-03-30

ISO Standards in Progress

- DIS 5222-1, Part 1: Sensible heating recovery seasonal performance factors of HRV 40.20
  - Draft International Standard Ballot closes this July 13
  - Must be completed by 2023-09-10
- NP ISO 5222-2, Part 2: Sensible cooling recovery seasonal performance factors of HRV
  - New Work Implementation Proposal ballot closes 2022-06-21
- 5222-3, Part 3: Annual sensible heating and cooling recovery performance factor of HRV
  - To be filed as a New Work Implementation Proposal this year

Standard 84 requires a recommendation by TC5.5 at this meeting

- Options are “revise”, “reaffirm” or “withdraw”. Staff recommends “revise”.
- SC has not met to develop a recommendation to the TC. ← FAILURE BY CHAIR
- Nonetheless the Chair recommends “revise”. We do not require a detailed plan for the revision at this time, more discussion next slide.

Proposed Motion for Vote:
“Recommend to the Standards Reaffirmation Subcommittee that Standard 84-2020 be revised.”

- Required to pass: an affirmative vote of the majority of the voting membership of the committee and of at least two-thirds of those voting, excluding abstentions. (Per 13.1.8 of Standards Committee Reference Manual June 2021)

Standards Options/Actions for TC 5.5

- Standard 84: Assuming TC5.5 votes to recommend revision, and ASHRAE staff accepts:
  - TC then proposes volunteers for an SPC and a scope for the revision; see range of potential scopes below.
  - Proposed scope of revision is subject to TC5.5 vote and ASHRAE approval.
    - Limited scope: update references, incorporate the errata. ← Staff has provided specific guidance
    - Expanded scope: Might include some of the following:
      - Consider development of a pressure withstand metric.
      - Consider whether the current informative annex on Field Testing can be developed to the point that it can be made normative.
      - Methods of scaling, based on RP 1799? Maybe an informative app?
      - Any new market demands?
      - Incorporate learnings from 1060 Standard update

- Possible New Standard: test and rating method related to frosting formation and/or prevention
  - Formation: the conditions at which steady-state operation of the exchanger cannot be maintained due to formation of frost.
  - Prevention: the capacity of specific defrost systems to prevent or recover from frosting.

- Monitor changing conditions and emerging technologies requiring new or modified Standards:
  - Research Project 1780 “Test method to evaluate cross-contamination of gaseous contaminant within total energy recovery wheels” (for laboratory ventilation) to see whether this brings to light new information that might be relevant to a new or existing Standard. ← Expected to be approved for publication at the Atlanta meeting
  - Global standards relating to ERV.

Website: Brandan Damas

- http://tc0505.ashraetcs.org/
- Draft minutes must be updated to the approved ones. Chair to send

New Business

Next Meeting

Next meeting will be at the 2024 Annual Conference, Tampa Florida