

ASHRAE TC 2.6 Sound and Vibration Control

Main Committee Meeting Agenda

2:15-4:15 PM Monday, June 25, 2018

Hilton Americas-Houston Hotel, Houston, Texas

NOTE: All Task Group Chairs and Subcommittee Chairs are asked to submit written report to the Secretary (Karina Saenz-Acosta) before Friday June 29, 2018

1. **Call to order** (Miller-Klein) [3 minutes]
 - 1.1. Read scope of TC 2.6: TC 2.6 is concerned with the fundamental scientific and engineering principles of sound and vibration, particularly as applied to the design and performance of the built environment.
 - 1.2. ASHRAE Code of Ethics statement: "The ASHRAE Code of Ethics is to be adhered to by those doing ASHRAE business whether or not they are an ASHRAE member (www.ashrae.org/about-code-of-ethics)."
 - 1.3. Additions and/or modifications to the agenda
2. **Introduction of those present** (Miller-Klein) [5 minutes]
 - 2.1. Welcome new members and visitors
 - 2.2. Welcome Remote Attendees (via Go-To-Meeting)
3. **Confirmation of current voting members** (Wowk) [3 minutes]
 - 3.1. 11 members
4. **Review and approval of the minutes** (Saenz-Acosta) [3 minutes]
 - 4.1. **Pat Marks (1st), Jason Swan (2nd)**
5. **Secretary's report** (Saenz-Acosta) [3 minutes]
 - 5.1. Update website and add a section with action items
 - 5.2. Rolling up to Base Camp
6. **TC Chair's meeting report** (Miller-Klein) [5 minutes]
 - 6.1. New online Roster changes, if you are not a member of TC 2.6 please go to our website: <https://tc0206.ashraetcs.org/membership.php>
 - 6.2. 125th Anniversary Conference papers
7. **Chair's announcements and correspondence** (Miller-Klein) [3 minutes]
8. **Subcommittee reports (written reports to be provided to Secretary)**
 - 8.1. **Research Subcommittee** (Meeuwssen) [20 minutes]
 - 8.1.1. Research Chair's meeting report
 - 8.1.2. Work Statements/RTAR's/URP's
 - 8.1.2.1. RP-1408 The Effect of Lining Length on the Insertion Loss of Acoustical Duct Liner in Sheet Metal Ductwork – Report has been published
 - 8.1.2.2. TRP-1707 – Annoyance Threshold of Tones in Noise as Related to Building Services Equipment – Released for bids and four bids received
 - 8.1.2.2.1. Motion to approve the PES recommendation to award the contract to Purdue University and Patricia Davies as PI, Erik Miller-Klein (1st), Pat Marks (2nd) 6-0-0-0
 - 8.1.2.3. RTAR-1754 Developing the Standard Test Method for Dynamic Characteristics of Large Vibration Isolators – Roman Wowk is taking over as technical contact and lead author

- 8.1.3. Topics for future research
- 8.1.4. Additional Topics: Validating sound insulation requirements, plumbing systems
- 8.2. **Programs Subcommittee** (Miller-Klein) [15 minutes]
 - 8.2.1. Program Chair's meeting report
(8-9am) 371AB-Convention Center, 9:45-Wed Roman
 - 8.2.1.1. Looking for a new Programs Subcommittee Chair
 - 8.2.1.1.1. Jason Swan is the new Subcommittee Chair
 - 8.2.2. Programs this meeting
 - 8.2.2.1. Hot topics this meeting
 - 8.2.2.1.1. Invite outside special topic speaker to meetings
 - 8.2.3. Programs at Houston 2018
 - 8.2.3.1. Track 4: Safeguarding your HVAC&R System: Generators / Seismic + Vibration Isolation / OSHPD (co-sponsor: TC 2.7)
- 8.3. **Publications Subcommittee** (Wise) [10 minutes]
 - 8.3.1. Handbook chapters
 - 8.3.1.1. Handbook Applications 2019 (Wise)
 - 8.3.1.1.1. Revision went out in March
 - 8.3.1.1.2. Jerry Lilly and Steve Wise will work on a duct attenuation calculator version to see if it stands up to hacks
 - 8.3.1.1.3. Currently working on the online extended version of the vibration isolation Table 47
 - 8.3.1.1.4. Still need volunteers to add specs and footnotes on Table 47 for transformers, fan arrays, direct drive plenum fans and VFDs
 - 8.3.1.2. Handbook Fundamentals 2017 (Wise)
 - 8.3.1.2.1. Still good
 - 8.3.2. Other publications
 - 8.3.2.1. Application of Manufacturers' Sound Data
 - 8.3.2.1.1. Important info from this book will be incorporated into the online edition
 - 8.3.3. Web page (Saenz-Acosta)
 - 8.3.3.1. Adding Things to Do Section in Website, so people can go there and check what we're working on
- 8.4. **Standards Subcommittee** (Bridger) [20 minutes]
 - 8.4.1. SPC 189.1 – Design for High Performance Green Buildings (Miller-Klein)
 - 8.4.2. SPC 200 – Method of Test for Chilled Beams (Bulookbashi)
 - 8.4.2.1. Open for public comments, closing tonight at midnight (osr.ashrae.org)
 - 8.4.3. Updates from Other Standards Organizations
 - 8.4.3.1. AHRI (Bulookbashi)
 - 8.4.3.1.1. AHRI 370 is currently undergoing a significant update
 - 8.4.3.1.2. AHRI 885 is being updated
 - 8.4.3.2. AMCA (Brooks)
 - 8.4.3.2.1. Within a year starting to review AMCA 300 Reverberant Room Methods for Sound Testing of Fans
 - 8.4.3.2.2. Revising AMCA 211
 - 8.4.3.2.3. Revising AMCA 204
 - 8.4.3.3. ANSI (Lilly)
 - 8.4.3.4. ASTM E33 (Lilly)

- 8.4.3.5. ASTM
- 8.4.3.6. ISO (Swan)

8.5. Standing Subcommittees [10 minutes]

- 8.5.1. Vibration Isolation (M Hooti)
 - 8.5.1.1. Adding new material to handbook
 - 8.5.1.2. Reformat the table in Chapter 48. This will be discussed during monthly meetings

8.6. Operations Subcommittee (Miller-Klein) [15 minutes]

- 8.6.1. Honors and awards (Miller-Klein)
- 8.6.2. Long range planning (Miller-Klein)
 - 8.6.2.1. Base Camp
 - 8.6.2.2. Continue monthly phone calls
 - 8.6.2.3. Engage more people
- 8.6.3. Membership (Miller-Klein)
 - 8.6.3.1. New voting member will be official July 1st
- 8.6.4. Liaisons (Miller-Klein)
 - 8.6.4.1. ASHRAE TC 2.1 Physiology and Human Environment (Eichelberger)
 - 8.6.4.1.1. Corresponding RTAR in Speech Privacy
 - 8.6.4.2. ASHRAE TC 2.7 Seismic and Wind Resistant Design (Marks)
 - 8.6.4.2.1. Corresponding a seminar tomorrow
 - 8.6.4.3. ASHRAE TC 5.1 Fan Design and Application (Osborn)
 - 8.6.4.3.1. Corresponding Seminar 37
 - 8.6.4.4. ASHRAE TC 5.2 Duct Design (Hassler)
 - 8.6.4.5. ASHRAE TC 5.3 Room Air Distribution (Zimmerman)
 - 8.6.4.5.1. Kevin G will be new Chair
 - 8.6.4.5.2. Updating Standard 70
 - 8.6.4.5.3. Reopening Standard 140 to correct how to sound test VAV diffusers
 - 8.6.4.5.4. Standard 200 is up for public review
 - 8.6.4.5.5. Presenting 189.1
 - 8.6.4.6. VISCMA (Meisel)
 - 8.6.4.6.1. Developing seminars
 - 8.6.4.6.2. Revising website to make it more searchable
 - 8.6.4.7. Others: CTI (Miller-Klein), INCE (Herrin), NCAC (Bridger), EGSA (Simmons), etc...
 - 8.6.4.7.1. Updating ATC 128 - Trying to improve it so it is close to AHRI 270

9. New business/Old business [5 minutes]

- 9.1. ASHRAE Learning Institute Course – due for major update

10. Next meeting date and location – Atlanta, GA January 12-16, 2019

11. Adjournment

- Matthew Hoti (1st), Pat Marks (2nd)

Attendees:

Approximately 20 people

- 11.1. Research Chair's meeting report
 - 11.1.1.1. RAC considered 3 RTAR's, 1 accepted, 1 conditionally accepted, 1 rejected. 3 work statements considered, all conditionally accepted. One Innovative Research Grant (IRG) proposal approved.
 - 11.1.1.2. Due dates for RTAR's and WS's to RAC are August 15 and December 3.
- 11.2. Work Statements/RTAR's/URP's
 - 11.2.1.1. RP-1408 – The Effect of Lining Length on the Insertion Loss of Acoustical Duct Liner in Sheet Metal Ductwork. The report has been published. Two conference papers have been submitted and peer reviewed. Presentation expected in Atlanta
 - 11.2.1.2. TRP-1707 - Annoyance Thresholds of Tones in Noise as Related to Building Services Equipment. Released for bid, and four bids received. PES met yesterday, and has a recommendation for TC vote.
 - 11.2.1.2.1. TC voted 6-0-0-0 to approve the PES recommendation to award the contract to Purdue University and Patricia Davies as PI. Total 10 voting members, 6 present.**
 - 11.2.1.3. RTAR-1852 - Develop performance metric, criteria, and process to measure and predict of speech privacy in High Performance Buildings. RAC approved with comments to address. Will start developing the work statement.
 - 11.2.1.4. RTAR-1754 - Developing the Standard Test Method for Dynamic Characteristics of Large Vibration Isolators. Roman Wowk has taken over as technical contact and lead author.
 - 11.2.1.5. RTAR draft - Procedure for Estimating Occupied Space Sound Levels in the Application of UFAD Air Terminals and Air Outlets. Co-sponsor, led by TC 5.3. Will make some revisions to the RTAR before submittal.
- 11.3. Topics for future research
 - 11.3.1.1. Follow up project to extend 1529, considering 1408 – Dave Herrin UK. RAC liaison recommends a URP is the best way to go. Volunteers to develop scope are Erik Miller-Klein, Joe Bridger, Steve Wise.
 - 11.3.1.2. Four phase plan for vibration isolation was proposed: 1. Modeling approach with validation for predicting roof or floor vibration. 2. Characterization of vibration isolators (RTAR-1754). 3. Characterization of floor and roof structural dynamics. 4. Characterization of equipment dynamic forces. Not everyone liked the idea of shelving 1754 in favor of starting the modeling method first. Some felt that the original intent of 1754 was to create the modeling method as well, but it has morphed over time. We will have further discussions.
 - 11.3.1.3. Update publication "Application of Manufacturers Acoustical Data". There will soon be a new process coming from RAC to fund

development of publications, this is an obvious candidate, as we have not been able to pull it off with volunteers.

ASHRAE TC 2.6 Programs Subcommittee Meeting Minutes

Meeting Date: June 24, 2018

Programs Subcommittee Meeting Overview:

- Plan TC 2.6 program submissions for next meeting
 - Atlanta 2019 (January 12 – 16, 2019)
- Discuss tentative TC 2.6 program ideas for future meetings
 - Kansas City, MO 2019 (June 22 – 26, 2019)

Definitions:

- **Technical Papers**
 - Submitted directly by author
 - More involved papers usually detailing research or similar activities
 - Maximum of 30 pages
 - Rigorous double-blind review process; subject to commercialism review
 - Longer timeline for development and approval
 - Published in *Transactions*
 - Due Completed 1 month after conference for review and presentation, for conference 1 year from current conference.
 - Example: March 2018 for January 2019 Conference
- **Conference Papers**
 - Submitted directly by author
 - Less rigorous than technical papers
 - May highlight case studies or ongoing research
 - Maximum of 8 pages
 - Single blind review process; subject to commercialism review
 - Shorter timeline for development and approval
 - Abstract Due 1 month after conference, approval/rejection within 1 month, full paper due in 6 months, for conference 1 year from current conference.
- **Seminars/Workshops/Forums**
 - Session chairs and speakers selected by TCs
 - Program submitted by session chair
 - Submissions must include selected speakers, bios, abstract, learning objectives, Q&A
 - Speakers must submit presentations 1 month prior to meeting for commercialism review
 - Seminars
 - 60 minutes: 1 – 2 presentations
 - 90 minutes: 3 – 4 presentations
 - Workshops (new in Summer 2014)
 - One chair and two presenters (maximum)
 - 60-minute length only: 30 minutes for presentations + 30 minutes for discussion
 - **Forums**
 - One moderator
 - 60-minute length only: no presentations

Presented Programs

Houston 2018 (June 23-27, 2018)

June 26 @ 8:00 AM, 371AB - Convention Center

Track 4: Safeguarding your HVAC&R System

With TC 2.7

- Generator Noise Control (LaForgia)
- Vibration Control of HVAC&R Systems that Require Seismic, Wind or Thermal Restraint (Wowk)
- Seismic Source International (Carlson) – TC2.7

9:45 AM - Roman Wowk: Designing for Variable Speed Systems
(Conference Paper presentation)

Upcoming Conference Program Tracks:

Atlanta 2019

Abstracts Due: August 3rd

Tracks

| | |
|--|--|
| 1. HVAC&R Systems and Equipment | Track Chair: Joseph Firrantello j.firrantello@gmail.com |
| 2. Fundamentals and Applications | Track Chair: Rick Hermans herma015@umn.edu |
| 3. Refrigeration | Track Chair: Sonya Pouncy sonya.pouncy@gmail.com |
| 4. Construction, Operation, and Maintenance of High Performance Systems | Track Chair: Leticia De Oliveira Neves, leneves@gmail.com |
| 5. Common System Issues and Misapplications | Track Chair: Lee Riback. lee.riback@gmail.com |
| 6. The Convergence of Comfort, Indoor Air Quality, and Energy Efficiency | Track Chair: Ashish Rakheja ashish.rakheja@aeonconsultants.in |
| 7. Building Integrated Renewables and Natural Systems | Track Chair: Maggie Moninski maggie.moninski@gmail.com |
| 8. The Engineer's Role in Architecture | Track Chair: Ashu Gupta |

Program Topics

Suggested Options:

5. Common System Issues and Misapplications

- Silencer Application & System Effects, Rooftop Equipment (LaForgia)
- Spring Isolation - Surge Frequency (Miller-Klein/Lilly)
- Offices, Mechanical Systems, Natural Light (Miller-Klein)
 - Open Office, Speech Privacy/Distracted

8. The Engineer's Role in Architecture

- Acoustic Design vs. Noise Remediation
- Outdoor Noise + HVAC Noise = Occupant's Perception
- Additional Topic?

| Conference | Subject | Type | Status | Session Organizer |
|--------------|---|------|--------|-------------------|
| Atlanta 2019 | Up for discussion at monthly TC 2.6 meeting (July) | | | |
| | | | | TBD |
| | | | | TBD |

Future:

Track 2: Fundamental and Applications

- Plumbing Noise & Vibration
 - American Society of Plumbing Engineers?
 - TC 6.1 & 6.6 -
 - Plumbing Engineer (Contact Jim Tauby)
 - Manufacturer: Hubbard Holdrite

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Hot Topic – Subcommittee Presentation

Invite outside special topic speaker to meetings, listed in the ASHRAE schedule and available to both TC 2.6 and larger organization.

- Speakers can be video-conferenced for this special session

If you want a special seminar in the program, it must be scheduled during main meeting time, and not subcommittee time.

Future (not discussed)

Track 1:

- Sound Traps/Silencers – When are they necessary; E477 round robin (Jerry Lilly)
- End Correction, setting the record straight on AHRI 880 (Alex Michaud or Greg M)
- Sound attenuators and acoustical louvers (how they actually perform vs. how they are designed to perform) (Papadimos)
 - Testing Standard and Acoustical Louvers per E477 compared to current published NR and TL data

- Elevator Noise Control (Lilly)
- Electrical Noise: transformers, electrical motors (Papadimos)
- Sound attenuators and acoustical louvers (how they actually perform vs. how they are designed to perform) (Papadimos)
- Discussion of Classroom Acoustics Standard ANSI S12.60 that has been adopted by the ICC as code (Bridger)
- Predictions vs. Laboratory vs. Field Testing (Papadimos & Marks)
- Plumbing Noise
 - American Society of Plumbing Engineers?
 - TC 6.1 & 6.6 -
 - Plumbing Engineer (Contact Jim Tauby)
 - Manufacturer: Hubbard Holdrite
- ECM Motors

- **Other Notes**
- Session organizer should focus on content of abstracts (especially the abstract for the session) to make sure abstracts are good. Track chairs look at abstracts to determine if session will be accepted or not.
- Session organizers should compile all information for submitted sessions in word document, so that the sessions can be easily resubmitted for future conferences if session is rejected.
- It is now mandatory for speakers to use an ASHRAE-developed template for all presentations at meetings (choices of templates are available on ASHRAE website).

For information on the technical program, special events, special sessions and general conference inquiries; Tiffany D. Cox, Assistant Manager of Conference Programs, Email: tcox@ashrae.org