



MINUTES

DRAFT

TECHNICAL COMMITTEE 5.1

2021 Annual Meeting

June 21st, 2021

Note: These draft minutes have not been approved and not the official, approved record until approved by the Technical Committee.



Fans
ASHRAE Technical Committee 5.1

DRAFT
TC/TG/MTG/TRG MINUTES COVER SHEET

TC/TG/MTG/TRG No. TC 5.1 November 24th, 2021

TC/TG/MTG/TRG TITLE Fans

DATE OF MEETING June 21st, 2021 LOCATION Virtual Zoom Meeting

Attendees				
Name	Affiliation	Status	YEA	Notes, subcommittee interest
Wang, Zhiping	Morrison Products, Inc.	Voting		Chair
Mathson, Tim	AMCA International Inc.	Voting		Vice-Chair
Stauter, Rich	Carrier	Voting		Program S/C Chair
Chinoda, Z. Patrick	Revcor, Inc.	Voting		Handbook S/C Chair
Dubensky, Harold	JCI	Voting		Webmaster
Fullerton, Brent	Loren Cook Company	Voting		
Osborn, Kim	Nortek Air Solutions	Voting		
Bade, John	2050 Partners	Voting		
Sterne, Adam	Acme Engineering & Mfg Corp	Voting		
Raychaudhuri, Aresh	Veterans Affairs	Voting		
Ganesh, Rad	Twin City Fan	Voting		MNQ
Hauer, Armin	ebm-papst Inc.	CM		Secretary
Reynolds, Brian	Trane	CM		Research S/C chair
Bauch, Paul	JCI	CM	yes	
Brooks, Joe	AMCA International Inc.	CM		Standards S/C Chair
Buddrus, Lee	ACME Engr. and Mfg. Corp	CM		
Cincotti, Franco	Comefri USA	CM		
Fizer, Jay	Big Ass Fans	CM		
Gebke, Kevin	DuctSox	CM		Interest in Standards
Gunzner, Aaron	AMCA International	CM	yes	
Kuntz, Ken	Greenheck	CM		
Lyda, Michael	Advanced Energy	CM	yes	
Sanchez, Greg	NJ Transit	CM		
Shoemaker, Nathan	Revcor Inc	CM		Interest in Handbook
Tinglof, Eric	Loren Cook Company	CM		
Valbracht, Bob	Loren Cook Company	CM		

VanderKooy, Mark	Greenheck	CM	yes	Standards S/C member
Wray, Craig	Consulting Engineer	CM		
Yeh, Jaime	AHRI	CM	yes	
Afshin, Mo	Q-PAC Systems	PCM		TC 5.5 Vice Chair, interest in Research
Hamamcioglu, Sarp	AHRI	PCM	yes	
Iyama, Sanaee	LBNL	PCM		
Shaikh, Shams	Infinitum Electric	PCM	yes	
Volker, Olivia	Twin City Fan Clarage	PCM	yes	
Baker, Stephen	Revcor Inc	Guest		
Baral, Madan	Revcor Inc	Guest		
Diaz, Brandon	JCI	Guest		
Dorgan, Charles	Univ of Wisconsin	Guest		
Rudy, Steve	Fandrich	Guest		
Scheele, Jason	Revcor Inc	Guest		
Taber, Christian	Big Ass Fans	Guest		
Wang, Shaojie		Guest		
Marple, Kevin	Benz Air Engineering	Ex Officio		Section 5 Head
Absent voting members				
Wolf, Mike	Greenheck	Voting		
Johar, Chaitanya	Aaon	Voting	yes	MNQ

CM: Corresponding Member; PCM: Provisional Corresponding Member; MNQ: Member Non-Quorum.

DISTRIBUTION: All Members of TC plus the following:	
TAC Section Head:	SH5@ashrae.net
All Committee Liaisons, such as Research, Standards, Handbook, Staff, etc.	See ASHRAE email alias list for needed addresses.
Mike Vaughn, Manager Of Research & Technical Services	MORTS@ashrae.net

Note: These draft minutes have not been approved and not the official, approved record until approved by the TC.

ASHRAE TC 5.1 Fans
Minutes for the Virtual Zoom Meeting
Monday June 21st, 2021

1. Call to Order at 3:00 EDT

This meeting was called to order at 3:02 pm EDT.

2. Roll Call

TC 5.1 voting members:

Zhiping Wang – Chair
Tim Mathson – Vice chair
Z. Patrick Chinoda – Handbook S/C
Dr. Rad Ganesh - MNQ
Dr. Rich Stauter – Program S/C Chair
Harold Dubensky – Webmaster
John Bade
Brent Fullerton
Kim Osborn
Asesh Raychaudhuri
Adam Sterne

Non-Voting S/C Chairs:

Armin Hauer – Secretary
Brian Reynolds – Research S/C Chair
Joseph Brooks – Standards S/C chair

11 (out of 13 total) voting members were present and a quorum was established. All attendees were asked to fill out an online sign-in sheet.

3. Adoption of Agenda

The draft agenda previously posted on the TC 5.1 basecamp (<https://3.basecamp.com/3106353/projects/8415694>) and website (<http://tc0501.ashraetcs.org/>) was approved unanimously.

4. Approval of the Previous Meeting Minutes

The last meeting of this committee was held on January 25th 2021 virtually. The draft minutes that were posted on March 15th 2021 on the TC 5.1 basecamp and website were approved unanimously.

5. Items of Business

5.1. ASHRAE Code of Ethics

In this and all other ASHRAE meetings, the ASHRAE Code of Conduct requires us to act with honesty, fairness, courtesy, competence, integrity and respect for others, and that we avoid all real or perceived conflicts of interests. (See full Code of Ethics: <https://www.ashrae.org/about/governance/code-of-ethics>.)

5.2. Chair's Report - Zhiping Wang

5.2.1. TC Membership Report

We currently have a total of 86 members with (11) Voting Members, (2) Non-quorum Voting Members, (59) Corresponding Members, and (14) Provisional Corresponding Members. Among the members, (24) are YEA members. Since our last meeting, we had (1) new member. For the next society year (07/01/2021-06/30/2022), no Voting Members will be rolling off but we will have two CM members rolling on as the voting member (Armin Hauer and Brian Reynolds).

UPDATE: On 07/27/2021, TAC approved a TC MOP change that created a conflict with several of the current voting members of TC 5.1. The change reads:

3.1 TC/TG/TRG Voting Members

- b) A person who has a fiduciary duty to an external organization (e.g., a member of the Board of Directors of the external organization or an Executive Officer of the external organization) is considered to be an employee of that organization for the purposes of determining voting status on the TC/TG/TRG, even if the position with that external organization is in a volunteer capacity. Examples of Executive Officer roles include Chairman, President, Vice-President, Treasurer, and Secretary. This provision does not extend to a member of an external organization that does not have a fiduciary duty to that organization.**

Since Mike Wolf and Armin Hauer are current BOD of AMCA and Tim Mathson is an AMCA employee, the new TC MOP would only allow one voting membership representing AMCA in our TC. As such, Mike Wolf and Armin Hauer are no longer voting members of TC 5.1 for the current society year, but they both will remain as the corresponding members. Tim Mathson will continue to serve as a voting member of TC 5.1. As a result of this membership change, we now have (11) voting members and (2) non-quorum voting members for the current society year.

5.2.2. Other Topics

No other topics were discussed in this meeting.

5.3. Liaison Reports

Our section head Kevin Marple joined the meeting and mentioned a few things, such as TAC's Open Mic Policy, new FG Motions, etc., to the general membership.

5.4. Old Business

5.4.1. Mentoring Program for YEA Members

The chair reached out to all YEA members in April and tried to gauge YEA members' interest about this program, but received no response back from the members. We may reach out again before our next TC meeting.

5.4.2. TC Review (Continue as a TC, Merge with another TC/TG/TRG, or Dissolve the TC?)

From now on, this item, along with the FG evaluation form, will be an annual activity and agenda item for Winter Meeting only.

5.5. New Business

5.5.1. DOE Rulemaking Updates (Commercial and Industrial Fans and Blowers and Ceiling Fans)

Christian Taber (from Big Ass Fans) is the chair of AMCA's Air Movement Code Action and Review Committee (AMCARC). Christian provided latest updates on the DOE rulemaking on CIBF and Ceiling fans and answered member's questions. His slide is included as Attachment #1.

6. Subcommittee Reports

The combined subcommittee (Handbook, Research, Standards, Program, and Long Range Planning) virtual meeting was held on June 17th 2021.

6.1. Website Report – Harold Dubensky

Harold reported the TC website is up to date. He also reported the website analytics (see Attachment #2).

6.2. Standards Development Subcommittee – Joe Brooks

Joe provided a quick update on the Standards S/C activities since our last meeting and a spreadsheet for the "Standards of Interest" which will be uploaded to our basecamp later. Joe's report is attached as Attachment #3.

6.3. Handbook Content Development Subcommittee – Patrick Chinoda

Patrick reported on the Handbook S/C activities and his report is attached as Attachment #4.

6.4. Program Development Subcommittee – Rich Stauter

Rich reported on the program activities and plans for upcoming meetings. His written report is attached as Attachment #5.

6.5. Research Subcommittee – Brian Reynolds

Brian reported the current active research project RP-1769 is still on-going and we may need to have another no cost extension for this research project. Brian also reported that there is no new RTAR or WS under development for TC5.1. As always, Brian welcomes any potential research ideas/topics, and more importantly, he needs volunteers to be the RTAR authors. Please contact Brian if you believe you can help.

Update: On 08/09/2021, at PMS's request, TC 5.1 approved a 6-month no cost extension for research project RP-1769 with a new completion date on 03/01/2022.

Received Votes: For – 12; Against – 0; Abstain – 1 (AMCA BOD); Didn't Vote – 2 (PI and AMCA BOD)

6.6. Long Range Planning Subcommittee – Zhiping Wang

The long range plan was reviewed and commented during the subcommittee meeting and the updated plan will be uploaded to the TC website and posted on basecamp as well. See Attachment #6.

7. Time and Place of Next Meeting

Coinciding with the 2022 ASHRAE Winter Conference/Meeting on 01/31/2022 in Las Vegas, NV.

8. Adjournment – The committee adjourned at 5:33 pm EDT

U.S. Dept. of Energy – Regulation Update

- Request for Information (RFI), May 10, 2021:
 - Use of AMCA 214 and definition of ‘fan’
 - Signals DOE is going to re-start commercial and industrial fans and [blowers](#) regulation
 - Prompted AMCA to withdraw petition to re-start test-procedure (ONLY) rulemaking
- RFI, May 5, 2021: Early Review of ceiling fan energy standard; includes Large-Diameter Ceiling Fans
 - Comments being developed by energy advocates, AMCA, ALA, utilities, etc.
 - Deadline for comments is June 28, 2021
- Final Rule, May 27, 2021: Ceiling Fan Energy Index became enforceable May 27, 2021
 - LDCF manufacturers/importers need to update ratings and determine compliance
- Notice of Proposed Rule, April 12, 2021:
 - DOE seeking to change “rules” by which they develop and administer efficiency regulations
 - Last updated in Feb. 2020; Biden Admin seeking to [make revisions to](#) previous admin changes

Attachment #2

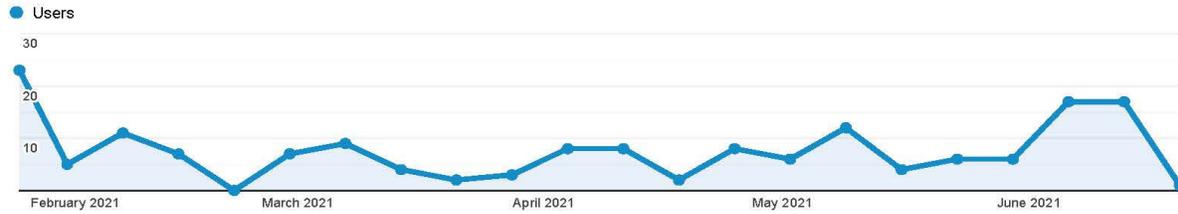
TC 5.1 Website Analytics

Audience Overview

All Users
100.00% Users

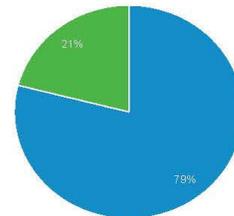
Jan 25, 2021 - Jun 20, 2021

Overview



Users 145	New Users 128	Sessions 196
Number of Sessions per User 1.35	Pageviews 372	Pages / Session 1.90
Avg. Session Duration 00:01:30	Bounce Rate 63.78%	

■ New Visitor ■ Returning Visitor



Country	Users	% Users
1. United States	101	69.66%
2. India	5	3.45%
3. Canada	4	2.76%
4. Egypt	3	2.07%
5. Ireland	3	2.07%
6. Philippines	3	2.07%
7. Albania	2	1.38%
8. Brazil	2	1.38%
9. Germany	2	1.38%
10. United Kingdom	2	1.38%



1

Update since Winter meeting

Draft Purpose and Scope:

Purpose – Advise the TC on standards activity that may affect or influence its activities

Scope:

- Advise and recommend new standards, chair, members.
- Advise status of current standards that affect or influence
- Submit review comments on standards in public review
- Propose changes to standards on continuous maintenance
- Be aware of changes and revision in progress
- Report to TC

2

Update since Winter meeting

Status

TC 5.1, Fans has only one standard: ASHRAE 51 (it is a joint standard with AMCA)

AMCA update:

- Five standards being revised:
 - 240 – PPV MoT
 - 250 – Jet Fan MoT
 - 300 – Reverberant Room MoT for sound power determinations
 - 301 – Calculating Fan Sound Ratings
 - 320 – Sound Intensity MoT for sound power determinations

3

Update since Winter meeting

AMCA Update (cont'd) – New Standard

- AMCA 270 – Fan Array MoT
- AMCA 280 – Wind Resistance for Rooftop Fans – MoT
- AMCA 340 – Circulating Fans Sound Power – MoT

ISO Update (New)

- ISO 12759-5 – Jet Fan – Efficiency Grade Calculation
- ISO 12759-6 – Fan Energy Index – Efficiency Index Calculation

4

Update since Winter meeting

ISO Update (Revising)

- 13347-2, -3, and -4 – Sound Measurement (RR, ESM, and SI)
- 13348 – Method of Conversion and Technical Data Presentation
- 13349 – Vocabulary and Definitions
- 13350 – Jet Fan MoT
- 24660 – Positive Pressure Ventilators (PPV) MoT (new)

5

Update since Winter meeting

Remember

You can see a list of standards that may affect or influence fans in a spreadsheet in BaseCamp

The list will be growing!

6

Attachment #4

TC 5.1 Handbook Agenda: 6/17/2021

1. WG Roster:
Craig Wray, Armin Hauer, Zhiping Wang, Tim Mathson, Kim Osborn, Jay Fizer, Joe Brooks, Greg Sanchez, Nathan Shoemaker, Patrick Chinoda
2. Today's objectives are:
 - i. Go over the project timeline and assignments
 - ii. Go over items covered in last meeting of WG, 5/03/21.
3. Topics – being worked on to add to the Handbook:
 - i. **ASHRAE Fan Terminology:** An Index establishing key fan definitions for the Handbook rather than reliance on TC 1.6 and other sources. (Joe Brooks - champion), Nathan & Zhiping to work with him
 - ii. Add **Example of FEI Fan Labeling and Selection** in the Handbook. (Tim Mathson - champion), Jay & Armin to work with him.
 - o Note: item (ii) and (iv) will be addressed together, with Tim focusing on FEI and Armin focusing on Isometric Curve, etc.
 - o Jay to work with this group since his topic covers the same info but for large ceiling fans.
 - iii. Add **Fan Efficiency Variations During Part-load Operation.** (Craig Wray - champion), Nathan S to support him.
 - o Main point is to show that fan efficiency changes with operating points, e.g. VAV
 - iv. **Isometric Curves of Fan Power, FEI, SFP, Efficiency.** (Armin Hauer - champion)
 - o This is to be addressed along side item (ii) above.
 - v. **CFEI (Ceiling Fan FEI) Example for Large Diameter Fans** (Jay Fizer - champion), Armin to work with him.
 - o It is important to differentiate FEI from CFEI
 - vi. **Review/revise Fan Chapter content as needed (All)**
 - o Patrick to champion. Entire WG to help.
4. **FAQs Topic:** (Kim Osborn – champion) Greg to work with him
 - i. We are soliciting potential FAQs that we can upload onto our website to help the community at large. If you can send your questions and answers, that would be very much appreciated. The Handbook S/C will review these questions and recommend to the TC to approve before they are put on the website. Note: FAQs should only address questions in generalities and people should refer to the Handbook for guidance.
 - ii. **46 questions** were provided to Kim by Armin. Some could be covered under definitions as well.

Disclaimer: ASHRAE Technical FAQs are provided as a service to ASHRAE members, users of ASHRAE publications, and the general public. While every effort has been made to ensure their accuracy and reliability, they are advisory and provided for information purposes only, and in many cases represent only a few peoples' view. They are not intended and should not be relied on as an official statement of ASHRAE. Technical questions not addressed may be submitted to the ASHRAE Technical Services department at tse@ashrae.net.

zpchinoda@revcor.com or my handbook email: TC0501.HBK@ashrae.net

Attachment #5

TC 5.1 Program S/C Report

June 2021

Seminar: Summer 2021 Virtual Meeting

Track - HVAC&R Systems and Equipment

- Sponsor
 - 1.11 Electric Motors and Motor Control
 - SC Program Chair: Nicolas S. Rosner, P.E., Member, Eaton, City of Industry, CA
 - 5.1 Fans
 - Fan Array Technology: Efficiency, Basics, Inductions Motors with VFDs and ECMs
 - Tom A. Bise, Associate Member, Johnson Controls, York, PA
 - Custom Air Handlers
 - George Paich, Associate Member, Alliance Air Products, San Diego, CA
 - Data Center Mechanical Equipment Design, Redundancy and Variable Speed Applications
 - Tim Chadwick, P.E., Member, AlfaTech, San Jose, CA
-

Winter Meeting 2022 (Las Vegas)

- Communication from
 - Jason Swan, TC 2.6 Programs Chair
- Our TC 2.6 had its programs subcommittee meeting yesterday, and after a poll of members decided we wanted to put a couple acoustics seminars forward for the Las Vegas meeting, both of which are related to fans, so I am writing to see if TC 5.1 would be agreeable to cosponsoring them.
- The first seminar is part of our ongoing series on **equipment noise, where we focus on a particular equipment type, this time fans**, going into the mechanical elements that create noise, how these are dealt with in the design, manufacturing, selection and installation. We then discuss the standards used to measure noise from the equipment, how these are used in the design process, and any pitfalls in using the data. We then usually have someone run through interesting case studies where the equipment was installed, and noise issues were resolved. Jerry Lilly of JGL Acoustics is planning to chair this one; planned for Track 1.
- The other seminar is more specialized to **large scale air movement and silencing needed in underground ventilation** such as for subway or vehicle tunnels. Dan Laforgia of Vibro-Acoustics is planning to chair this one; planned for Track 7.
- To start, we just need to know if TC 5.1 is interested in cosponsoring, but if when you discuss this in your meeting, **if there are those in your TC who might be able to add to these seminars, please could you put them in touch with Jerry, Dan and me?**
 - jerry@jglacoustics.com, dlaforgia@vibro-acoustics.com, jason.swan@sandybrown.com

Other Potential Future Seminar and/or Forum Submissions

- Fan Basics, Sound Basics
- Balance & Vibrations (Rad Ganesh has expressed possible interest)

- Fan Metrics Panel Discussion – (Lee Buddrus has expressed interest in organizing)

Winter Meeting 2022 (Las Vegas) Seminar and Forum proposals are due by Monday, July 12, 2021.

Potential Seminar for Summer 2022

Presentation/Report on TC5.1 Research Project (Belt Efficiency)

Possibly paired with other fan-related mechanical efficiency topics

Attachment #6

TC5.1 Long Range Planning

The Long Range Planning Subcommittee is charged with setting long range goals for our TC. It regularly solicits opinions from all concerning the future needs of fan designers and users. Presently pending ideas are (not in the order of priority/importance):

1. Monitoring the development of CFD technology and/or other computational methods for aero-acoustic and evaluating their suitability for fan sound prediction in ASHRAE.
2. Creating a list of FAQs related to fans and maintaining and expanding the list regularly.
3. Development of short course(s) or seminars/webinars on fan fundamentals that can be taught at the ASHRAE conferences/meetings or at local chapter meeting(s). This will be done collaboratively with AMCA and other strategic partners.
4. Periodic publications in concert with ASHRAE Journal and other strategic partnerships, such as other section 5 TCs and TC 1.11 (Motors and motor controls), etc.
5. Supporting or endorsing external conferences and training courses on fans, and co-development or sponsorship of new or revised standards or guidelines that directly relate to fans, based on strategic partnerships.