1791 Tullie Circle, N.E./Atlanta, GA 30329
404-636-8400

DRAFT

TC/TG/MTG/TRG MINUTES COVER SHEET

(Minutes of all Meetings are to be distributed to all persons listed below within 60 days following the meeting.)

TC/TG/MTG/TRG No. 5.1 DATE March 2, 2020

TC/TG/MTG/TRG TITLE Fans

DATE OF MEETING February 3, 2020 LOCATION Hilton Orlando, FL, Lake Mizell A Room

MEMBERS PRESENT	YEAR APPTD	MEMBERS ABSENT	YEAR APPTD	EX-OFFICIO MEMBERS AND ADDITIONAL ATTENDANCE
Armin Hauer		Akshay Bhargava		Rich Stauter
Zhiping Wang		Jay Fizer		Chaitanya Johar
Joseph Brooks		Brent Fullerton		Kim Osborn
Brian Reynolds				Mark Fly
Z. Patrick Chinoda				Matt Kauffman
Harold Dubensky				Michael Keaton
Jay Eldridge				Rad Ganesh
Michael Feuser				Jay Baggett
Asesh Raychaudhuri				Tim Mathson
Adam Sterne				Nathan Shoemaker
				Paul Bauch

DISTRIBUTION: ***All Members of TC/TG/MTG/TRG plus the following:***	
TAC Section Head: Larry Smith	SH5@ashrae.net Where x is the section number
All Committee Liaisons As Shown On TC/TG/MTG/TRG Rosters (Research, Standards, ALI, 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.

Additional Attendance at Winter 2020 Meeting of ASHRAE TC5.1, Fans

Tom Bise
Kevin Gildea
Doug Ross
Nathan Fetting
Mike Wolf
Ken Kuntz
Mark VanderKooy
Chris Auth
Joe Fiegen
Matthew Boss
Larry Hopkins
Lee Buddrus
Greg Wagner
Sanaee Iyama
Olivia Volker
Larry Smith
Dennis Loveday
Greg Wagner
Jeremy Dommu
Kezhen Shen

Draft Minutes **Monday, 02/03/2020**
Hilton Orlando, FL
Room: L, Lake Mizell A

1. Call to Order

The meeting was called to order by the chair at 4:30 pm

2. Roll Call

The following voting members were present:
Armin Hauer –Chair
Zhiping Wang – Vice Chair & Handbook S/C Chair
Joseph Brooks - Secretary
Brian Reynolds – Research S/C Chair
Akshay Bhargava – Standards + Membership S/C chair
Z. Patrick Chinoda
Harold Dubensky – Webmaster
Jay Eldridge
Michael Feuser
Asesh Raychaudhuri
Adam Sterne

The following voting members were not present:
Jay Fizer
Brent Fullerton

The following Non-voting Subcommittee chair was present:
Rich Stauter – Program S/C Chair

A quorum was present.

3. Adoption of Agenda

Motion ASHRAE TC 5.1 -01-2020 Moved by: Jay Eldridge
Seconded: Michael Feuser

"To approve the agendas as presented."

Passed unanimously (10-0-0 CNV)

4. Approval of the Previous Meeting Minutes

The last meeting of this committee was held on 24 June 2019 in Kansas City. Draft minutes were available through basecamp.

Motion ASHRAE TC 5.1 -02-2020 Moved by: Adam Sterne
Seconded: Michael Feuser

"To approve the minutes of the previous meeting held on June 24, 2019."

Passed unanimously (10-0-0 CNV)

5. Items of business

5.1. ASHRAE Code of Ethics

All attendees were reminded that they must abide by the ASHRAE Code of Ethics and that the Code of Ethics requires all attendees to act with honesty, fairness, courtesy, competence, integrity and respect for others, and that all avoid real or perceived conflicts of interests. (The full Code of Ethics can be found at: https://www.ashrae.org/about-ashrae/ashrae-code-of-ethics.)
Members verbally disclosed whether their employer is associated with AMCA or AHRI.

5.2. Chairman's report

The chair reported that the ASHRAE reorganization resulted in the meetings footprint being reduced. It was noted that several TCs have used web-based meetings effectively and reduced the amount of the Subcommittee meetings. This committee discussed if they wanted to change the time of its subcommittee meetings and the main meeting. There was no interest shown for a change.

5.3. Liaison Reports

TC liaisons and the section head reported as they arrived. It was reported that an update to the ASHRAE reorganization is saved on the basecamp here .

Dennis Loveday (TC 5.1 RAC liaison) announced his job at ASHRAE is to help the TC and is the TC's champion at RAC. He reported that the PTAR process is being finalized, but RAC would accept a PTAR (Publication Topic Acceptance Request).

Larry Smith (ASHRAE Section Head for Section 5) reported that the ASHRAE TC committee footprint is about 25% less than previous meetings. He conducted a few straw polls of those in attendance at this meeting (how many had; 4 year degrees, PEs, work for universities, government, contractors, trade organizations).
He reported that he is available for assistance at Sh5@ashrae.net .

It was noted that those who may be interested in California fan limits, may want to consider subscribing to CASE studies at Title24stakeholders.com.

5.4. Old business

5.4.1. TC Scope

The scope of this TC is "TC 5.is concerned with the selection, application and testing-for-rating of fans, including recommended installation practices and field test procedures." At the last meeting it was suggested that commissioning, maintenance and recommissioning (CMR) should be added to the scope.

The following motion was made by Asesh Raychaudhuri but not seconded: "Move to recommend that commissioning, maintenance, operation and retro-commissioning, be added to the scope of TC 5.1". A discussion clarified that this would apply to fans and fan systems. The committee did not move forward on this motion because there was no second.

Michael Feuser and Olivia Volker volunteered to liaise with TC 7.3, Operation and Maintenance Management, TC 5.9, and TC 7.9, Building Commissioning.

5.4.2. Use of Web Meetings for Subcommittees

It was suggested that Technical Committees may want to hold web meetings to reduce conference room logistics at the ASHRAE Winter and Annual meetings. It was reported that several TC 5.1 subcommittee web meetings have been held since the Annual Conference.

5.5. New Business

5.5.1. Vote on recommendation to section head.

The question on whether to dissolve this TC , merge with another TC, or continue as TC was discussed.

Motion ASHRAE TC 5.1 -03-2020

Moved by: Asesh Raychaudhuri
Seconded: Michael Feuser

"To maintain this TC as a separate TC."

Passed unanimously (10-0-0 CNV)

6. Subcommittee reports

6.1 Website Report – Harold Dubensky

The TC 5.1 webmaster provided the attached analytics.

6.2 Standards Development subcommittee – Akshay Bhargava

Akshay Bhargava resigned as S/C chair to focus on TC membership development rather than standards. Joe Brooks assumes standards chairmanship now with volunteer members Tom Bise, Matthew Kaufmann and Armin Hauer.

Joe reported that ASHRAE 51 will undergo its periodic review this year. He presented status of other standards of interest.

6.3 Handbook Content Development subcommittee – Zhiping Wang

The revised and approved chapter was submitted in June 2019 and still waiting for the galley proof. According to the handbook staff, it may come out later in February.
Patrick Chinoda will be the new chair of the Handbook committee once the current revision is completed.

This subcommittee's list of actionable items is attached.

20200114 actionable items1 - Zhiping.xlsx

6.4. Program Development Subcommittee – Jaime Yeh / Rich Stauter

Rich Stauter is the new chair of this S/C (Jamie resigned). Rich is looking for program ideas for the Chicago Winter meeting (in 2001).

See the attached program subcommittee information

6.5. Research Subcommittee – Brian Reynolds

Brian R. reported on the activities of the Research S/C. His report is attached and included status of:

- S/C interim web meeting
- RP 1835, Characterizing the Performance of Induced Flow Stacks,
- RP-1769, Experimental Evaluation of the Efficiency of Belt Drives for Fans
- WS-1829, Inlet and Outlet System Effects on Multiple Plenum Fans
- Update on pending research that we co-sponsored previously.

6.6 Long Range Planning Subcommittee (Postpone until, possibly, an interim meeting).

Report from web meeting on Nov/18/2019.

The long range plan requires periodic review. The plan on the website presently says:

> … concerning the future needs of fan designers and users.
> 1. To establish a far better model for fan sound prediction based on detailed test results. One test would be on Axial flow fans and another based on Centrifugal fan design.
> 2. A program of introducing some form of interaction to our chapter of the ASHRAE Handbook.
> 3. Adding fan interactive application education to our website.
> 4. To launch a program to promote fan efficiency as a significant factor for power reduction.
> 5. To build a network with local chapters to promote better fan applications using Power Point and other aides.

Actionable items should reflect a combination of ASHRAE's Mission and Vision statements as well as the Strategic Plan.

Presentation of draft language for long range plan.

20191119draft Long range planning TC 5.1

7. Five year plan (Postpone until, possibly, an interim meeting).

8. Time and Place of Next Meeting

- Interim TC or S/C meetings via web / phone at the call of the chairs.
- Main (maybe) meeting in April for the main meeting to discuss long range planning.
- Annual (summer) conference in Austin, TX.

9. Adjournment

Motion ASHRAE TC 5.1 – 04 - 2020 Moved by: Michael Feuser

Seconded: Zhiping Wang

"Move to adjourn"

Passed unanimously (10-0-0 CNV)

Adjourned at 6:35 pm without completing all agenda items.

Attachments:
1) Website analytics
2) Program subcommittee report
3) Research subcommittee report

Attachment 1 – Website Analytics

Adobe Acrobat Document

Attachment 2
Program Report

TC 5.1 Fans Programs Report
2020 Winter Conference (Orlando)
Rev 2020-Feb-03 AH

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1. **Programs at Current Conference**
2. Two seminar proposals were submitted for Orlando 2020, 1 accepted

Tuesday 2/4 - 9:45 AM – 10:45 AM

Room: Orange F

9:45 AM - 10:45 AM

Seminar 51 (Basic)

Why Isn't My Fan Working? The Complex World of Fan/System Interactions

Track: Ventilation, IAQ and Air Distribution Systems

Room: Orange F

Sponsor: 5.1 Fans, 5.9 Enclosed Vehicular Facilities

Chair: Jaime Yeh, P.E., Associate Member, Twin City Fan Companies, Ltd., Minneapolis, MN

Fans sometimes get blamed for the underperformance of a system, but what if it is actually the other way around? This session discusses how fans and fan systems interact and impact the performance of one another. System effect is defined and discussed with real world examples. Recommendations for how to minimize or account for system effect are provided. The impact of changes in system resistance is discussed. The concepts of stability, stall and surge are reviewed, along with selection guidelines to help minimize risk.

1. Fan and System Curve Basics and Intro to System Effects
***Brent Fullerton**, Loren Cook Company, Springfield, MO*

2. A Note to My Younger Self: What a New Engineer Should Know about System Effects
***Jay Eldridge, Member**, Daikin Applied, Minneapolis, MN*

3. Stability and System Interactions with Axial Fans
***Michael Feuser, P.E., Member**, Twin City Clarage, Inc., Pulaski, TN*

Cosponsored seminar:

Wednesday 2/5 - 8:00 AM – 9:30 AM
Room: Orlando V

8:00 AM - 9:30 AM

Seminar 58 (Intermediate)

Best Practices for Ceiling Fan Comfort Cooling

Track: High Efficiency Design and Operation
Room: Orlando V
Sponsor: 2.1 Physiology and Human Environment, 5.1 Fans , SPC-216P, SSPC-55
Chair: Gwelen Paliaga, P.E., Member, TRC Advanced Energy Services, Oakland, CA

Ceiling fan use for comfort cooling is growing in popularity as part of low energy HVAC solutions in commercial and industrial applications. While ceiling fans are a well-known technology, there has been very little design guidance or performance data to support engineered solutions, especially in commercial buildings. This seminar covers recent advances in ceiling fan research and design guidance, as well as industry practice, including results from field studies, case studies and design guides.

1. Publicly Available Ceiling Fan Design Guide and Tool
***Paul Raftery, Ph.D., Member**, University of California, Berkeley, CA*

2. Staging Ceiling Fans and Air Conditioning for Energy Savings and Comfort
***Dana Miller, Student Member**, Center for the Built Environment, Berkeley, CA*

3. Human Interactions with Ceiling Fans and Smart Thermostats: Learnings from Case Studies in Office Buildings
***Sonja Salo**, UC Berkeley Center for the Built Environment, Berkeley, CA*

4. Selecting Ceiling Fans Based on ASHRAE Standard 216 Performance Metrics
***Christian Taber, Member**, Big Ass Fans, Lexington, KY*

5. Application and Design Consideration for Ceiling Fan and HVAC Integration
***Stet Sanborn, AIA**, Smith Group, San Francisco, CA*

3. Upcoming Conferences & Deadlines

2020 Annual Conference, Austin, TX June 27-July 1, 2020

Monday, February 10, 2020 Program (Seminar, Forum, Workshop, Debate and Panel) and Extended Abstract Paper Due

Austin Downloaded on 20200202.docx

2021 Winter Conference, Chicago, Illinois

The deadline for submitting a conference paper abstract and or technical paper is March 18, 2020. Decisions on conference paper abstracts will be sent by April 22. Conference Papers for accepted abstracts will be due July 8, 2020.

Tracks

Track 1: Fundamentals and Applications

Track 2: HVAC&R Systems and Equipment

Track 3: Refrigeration and Refrigerants

Track 4: Environmental Health Through IEQ

Track 5: Building Performance and Commissioning for Operation and Management

Track 6: Energy Conservation

Track 7: International Design

Track 8: Standards, Guidelines and Codes

Expect seminar submission deadline is 1st week of July 2021.

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4. Potential Programs List

1. Panel or Seminar – Fan Efficiency metrics in codes and regulations around the world.

	Session	Region	Proposed speakers
A	GB fan regulation	China	
B	Fan Energy Grade (FEG)	90.1-2013	
C	Fan Energy Index (FEI)	90.1-2019	
D	Grades per EU 327/2011, similar to ISO 12759:2010	Europe	
E	Efficacy CFM/Watt (circulation fans, ceiling fans, bathroom fans)	NAR	
F	Specific Fan Power (SFP) for ventilation units	Europe	

2. Forum or Panel
   Embedded fans; Pros & Cons of component efficiency regulations

3. Forum
   EC motors vs. induction motors for fan applications

4. Seminar
   Fan selection & control / operation for various applications

5. Report on RP 1769 (efficiency of belt drives for fans)

5. Other Notes

1. See program subcommittee chair Rich Stauter for any contributions (ideas, abstracts, or proposed speakers)
   Contact info is in basecamp
2. Rejected programs will be considered for presenting during future TC 5.1 “Hot Topics” session.
3. May consider TC sponsored ALI course in the future.
   a. Potential topics: FEI, System Effects

Program Options:

from https://www.ashrae.org/conferences/conference-resources/papers-and-programs

Conference Paper Sessions. These sessions present papers on current applications or procedures, as well as papers reporting on research in process. These papers differ from technical papers in that they are shorter in length and undergo a much less stringent peer review.

Debates. Debates highlight hot-button issues. Experts, either on teams or as individuals, present different sides of an issue in debate format. Each participant presents evidence for or against a specific statement or question such as 'Is Sustainability Really Sustainable?"

Extended Abstract Sessions. These sessions present extended abstracts on research in progress, applications, case studies, and other topics in HVAC&R technical areas. They are intended to be preliminary research results that will eventually be expanded into full papers. Extended abstracts may be presented in Conference Paper Sessions with papers on a similar topic.

Forums. Forums are "off-the-record" discussions held to promote a free exchange of ideas. Reporting of forums is limited to allow individuals to speak confidentially without concern of criticism. There are no papers attached to these forums.

Panels. Panel discussions can feature a broad range of subjects and explore different perspectives on issues in the industry. A panel may feature discussions about integrated project delivery among designers, builders and facility management professionals.

Seminars. Seminars feature presentations on subjects of current interest. Papers are not available from the Society; however, seminar PowerPoint presentations with audio descriptions of the presentations are posted online.

Technical Paper Sessions. These sessions present papers on current applications or procedures, as well as papers resulting from research on fundamental concepts and basic theory.

Workshops. Workshops enable technical committees and other ASHRAE committees to provide a series of short presentations on a topic requiring specific expertise. These short presentations are provided with an increased emphasis on audience participation and training in a specific set of skills.

Attachment 3

Research Subcommittee report

TC 5.1 (Fans) Research Sub-Committee Report
February 3, 2020 (Orlando)

Notes from the Research Subcommittee Chair Meeting

1. Research Liaison – Dennis Loveday
2. Selected ppt slides
3. Co-funding & bidder – Co-funding proposals should be separate from the bid process. Or build co-funding into the bid.
4. URP –a high bar for staff approval. There would need to be a compelling reason to use URP instead of working through the TC. If staff approves a URP, it gets sent to the cognizant TC for approval (but not editing). URP bypasses the RTAR and WS process.
5. RTAR's not required, can go directly to a WS.
6. RAC still not ready to start processing PTAR's. (But we can submit a PTAR.)

WS & RTAR's in progress

7. 1769-RP (Experimental Evaluation of the Efficiency of Belt Drives for Fans)
   - PMS members are Craig Wray, Zhiping Wang, Eric Tinglof, and Brian Reynolds (Chair)
   - First interim report has been approved.
   - Tim Mathson is now the Principal Investigator. Tim presented an updated test plan and schedule that is being reviewed by the PMS and to approve test equipment purchases.
   - Testing to begin this spring.
   - Next PMS meeting later in February.
8. WS-1829 (Parallel fans)
   - Authors – Kim Osborn , Patrick Chinoda
   - Several conference calls since Kansas City
   - RAC request to identify co-funding sources. AHRI is reviewing, Kim will meet with the AMCA fan committee.
9. New proposed PTAR (EC motor and fan)
   - Output will be a guideline for comparing EC fan & motor technology vs traditional centrifugal plenum fan with induction motor & controller.
   - Authors Tim Mathson, Rad Ganesh. Armin (representing TC 1.11) also contributing.
   - Several meetings since KC including liaison review.
   - Subcommittee review in Kansas City. Need another liaison review before ready for a TC ballot.
10. WS 1835 (Brad Cochran) - Characterizing the Performance of Entrained Flow Stacks from TC 9.1, PES has volunteers from TC 5.1. Craig Wray will be on PMS.
    - Motion to recommend to the main committee to approve the changes to the WS. Unanimous vote by the subcommittee (19)
11. Co-sponsoring of RTAR-1626 with TC2.4 (Particulate Air Contaminants and Particulate Contaminant Removal Equipment), Energy Implications of Air Filtration in Commercial Buildings –
    - In Atlanta requested help to rework the RTAR
    - Co-sponsorship requires someone from TC 5.1 needs to be on the PMS.
    - Did not have time for discussion in Orlando.
    - No recent contact, may withdraw support.
    - If it comes up again, John Bade may be interested in being a co-sponsor.
12. **Are there any ideas, suggestions for Fan Research topics?**

- A call for Fan Research suggestions and RTAR authors went out before Kansas City and also posted in Basecamp.
- Fan Research topics generated in 2 subcommittee meetings since Kansas City.
- Any interest in being the next Research Chair? Succession & mentoring ideas.

Draft Minutes **Monday, 02/03/2020**
Hilton Orlando, FL
Room: L, Lake Mizell A

6. Call to Order

The meeting was called to order by the chair at 4:30 pm

7. Roll Call

The following voting members were present:
Armin Hauer –Chair
Zhiping Wang – Vice Chair & Handbook S/C Chair
Joseph Brooks - Secretary
Brian Reynolds – Research S/C Chair
Akshay Bhargava – Standards + Membership S/C chair
Z. Patrick Chinoda
Harold Dubensky – Webmaster
Jay Eldridge
Michael Feuser
Asesh Raychaudhuri
Adam Sterne

The following voting members were not present:
Jay Fizer
Brent Fullerton

The following Non-voting Subcommittee chair was present:
Rich Stauter – Program S/C Chair

A quorum was present.

8. Adoption of Agenda

Motion ASHRAE TC 5.1 -01-2020 Moved by: Jay Eldridge
Seconded: Michael Feuser

"To approve the agendas as presented."

Passed unanimously (10-0-0 CNV)

9. Approval of the Previous Meeting Minutes

The last meeting of this committee was held on 24 June 2019 in Kansas City. Draft minutes were available through basecamp.

Motion ASHRAE TC 5.1 -02-2020 Moved by: Adam Sterne
Seconded: Michael Feuser

"To approve the minutes of the previous meeting held on June 24, 2019."

Passed unanimously (10-0-0 CNV)

10. Items of business

10.1. ASHRAE Code of Ethics

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6.6. Old business

6.6.1. TC Scope

The scope of this TC is "TC 5.is concerned with the selection, application and testing-for-rating of fans, including recommended installation practices and field test procedures." At the last meeting it was suggested that commissioning, maintenance and recommissioning (CMR) should be added to the scope.

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Michael Feuser and Olivia Volker volunteered to liaise with TC 7.3, Operation and Maintenance Management, TC 5.9, and TC 7.9, Building Commissioning.

6.6.2. Use of Web Meetings for Subcommittees

It was suggested that Technical Committees may want to hold web meetings to reduce conference room logistics at the ASHRAE Winter and Annual meetings. It was reported that several TC 5.1 subcommittee web meetings have been held since the Annual Conference.

6.7. New Business

6.7.1. Vote on recommendation to section head.

The question on whether to dissolve this TC , merge with another TC, or continue as TC was discussed.

Motion ASHRAE TC 5.1 -03-2020

Moved by: Asesh Raychaudhuri
Seconded: Michael Feuser

"To maintain this TC as a separate TC."

Passed unanimously (10-0-0 CNV)

7. Subcommittee reports

6.1 Website Report – Harold Dubensky

The TC 5.1 webmaster provided the attached analytics.

6.2 Standards Development subcommittee – Akshay Bhargava

Akshay Bhargava resigned as S/C chair to focus on TC membership development rather than standards. Joe Brooks assumes standards chairmanship now with volunteer members Tom Bise, Matthew Kaufmann and Armin Hauer.

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Patrick Chinoda will be the new chair of the Handbook committee once the current revision is completed.

This subcommittee's list of actionable items is attached.

20200114 actionable items1 - Zhiping.xlsx

7.4. Program Development Subcommittee – Jaime Yeh / Rich Stauter

Rich Stauter is the new chair of this S/C (Jamie resigned). Rich is looking for program ideas for the Chicago Winter meeting (in 2001).

See the attached program subcommittee information

7.5. Research Subcommittee – Brian Reynolds

Brian R. reported on the activities of the Research S/C. His report is attached and included status of:

- S/C interim web meeting
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- Update on pending research that we co-sponsored previously.

6.6 Long Range Planning Subcommittee (Postpone until, possibly, an interim meeting).

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Actionable items should reflect a combination of ASHRAE's Mission and Vision statements as well as the Strategic Plan.

Presentation of draft language for long range plan.

20191119draft Long range planning TC 5.

7. Five year plan (Postpone until, possibly, an interim meeting).

8. Time and Place of Next Meeting

- Interim TC or S/C meetings via web / phone at the call of the chairs.
- Main (maybe) meeting in April for the main meeting to discuss long range planning.
- Annual (summer) conference in Austin, TX.

9. Adjournment

Motion ASHRAE TC 5.1 – 04 - 2020 Moved by: Michael Feuser

Seconded: Zhiping Wang

"Move to adjourn"

Passed unanimously (10-0-0 CNV)

Adjourned at 6:35 pm without completing all agenda items.

Attachments:
1) Website analytics
2) Program subcommittee report
3) Research subcommittee report

Attachment 1 – Website Analytics

Adobe Acrobat Document

Attachment 2
Program Report

TC 5.1 Fans Programs Report
2020 Winter Conference (Orlando)
Rev 2020-Feb-03 AH

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6. **Programs at Current Conference**
7. Two seminar proposals were submitted for Orlando 2020, 1 accepted

Tuesday 2/4 - 9:45 AM – 10:45 AM
Room: Orange F

9:45 AM - 10:45 AM
Seminar 51 (Basic)

Why Isn't My Fan Working? The Complex World of Fan/System Interactions

Track: Ventilation, IAQ and Air Distribution Systems
Room: Orange F
Sponsor: 5.1 Fans, 5.9 Enclosed Vehicular Facilities
Chair: Jaime Yeh, P.E., Associate Member, Twin City Fan Companies, Ltd., Minneapolis, MN

Fans sometimes get blamed for the underperformance of a system, but what if it is actually the other way around? This session discusses how fans and fan systems interact and impact the performance of one another. System effect is defined and discussed with real world examples. Recommendations for how to minimize or account for system effect are provided. The impact of changes in system resistance is discussed. The concepts of stability, stall and surge are reviewed, along with selection guidelines to help minimize risk.

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***Michael Feuser, P.E., Member**, Twin City Clarage, Inc., Pulaski, TN*

Cosponsored seminar:

Wednesday 2/5 - 8:00 AM – 9:30 AM
Room: Orlando V

8:00 AM - 9:30 AM

Seminar 58 (Intermediate)

Best Practices for Ceiling Fan Comfort Cooling

Track: High Efficiency Design and Operation
Room: Orlando V
Sponsor: 2.1 Physiology and Human Environment, 5.1 Fans , SPC-216P, SSPC-55
Chair: Gwelen Paliaga, P.E., Member, TRC Advanced Energy Services, Oakland, CA

Ceiling fan use for comfort cooling is growing in popularity as part of low energy HVAC solutions in commercial and industrial applications. While ceiling fans are a well-known technology, there has been very little design guidance or performance data to support engineered solutions, especially in commercial buildings. This seminar covers recent advances in ceiling fan research and design guidance, as well as industry practice, including results from field studies, case studies and design guides.

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***Paul Raftery, Ph.D., Member**, University of California, Berkeley, CA*

2. Staging Ceiling Fans and Air Conditioning for Energy Savings and Comfort
***Dana Miller, Student Member**, Center for the Built Environment, Berkeley, CA*

3. Human Interactions with Ceiling Fans and Smart Thermostats: Learnings from Case Studies in Office Buildings
***Sonja Salo**, UC Berkeley Center for the Built Environment, Berkeley, CA*

4. Selecting Ceiling Fans Based on ASHRAE Standard 216 Performance Metrics
***Christian Taber, Member**, Big Ass Fans, Lexington, KY*

5. Application and Design Consideration for Ceiling Fan and HVAC Integration
***Stet Sanborn, AIA**, Smith Group, San Francisco, CA*

8. Upcoming Conferences & Deadlines

2020 Annual Conference, Austin, TX June 27-July 1, 2020

Monday, February 10, 2020 Program (Seminar, Forum, Workshop, Debate and Panel) and Extended Abstract Paper Due

Austin Downloaded on 20200202.docx

2021 Winter Conference, Chicago, Illinois

The deadline for submitting a conference paper abstract and or technical paper is March 18, 2020. Decisions on conference paper abstracts will be sent by April 22. Conference Papers for accepted abstracts will be due July 8, 2020.

Tracks

Track 1: Fundamentals and Applications

Track 2: HVAC&R Systems and Equipment

Track 3: Refrigeration and Refrigerants

Track 4: Environmental Health Through IEQ

Track 5: Building Performance and Commissioning for Operation and Management

Track 6: Energy Conservation

Track 7: International Design

Track 8: Standards, Guidelines and Codes

Expect seminar submission deadline is 1st week of July 2021.

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9. Potential Programs List

6. Panel or Seminar – Fan Efficiency metrics in codes and regulations around the world.

	Session	Region	Proposed speakers
A	GB fan regulation	China	
B	Fan Energy Grade (FEG)	90.1-2013	
C	Fan Energy Index (FEI)	90.1-2019	
D	Grades per EU 327/2011, similar to ISO 12759:2010	Europe	
E	Efficacy CFM/Watt (circulation fans, ceiling fans, bathroom fans)	NAR	
F	Specific Fan Power (SFP) for ventilation units	Europe	

7. Forum or Panel
   Embedded fans; Pros & Cons of component efficiency regulations

8. Forum
   EC motors vs. induction motors for fan applications

9. Seminar
   Fan selection & control / operation for various applications

10. Report on RP 1769 (efficiency of belt drives for fans)

10. Other Notes

4. See program subcommittee chair Rich Stauter for any contributions (ideas, abstracts, or proposed speakers)
   Contact info is in basecamp
5. Rejected programs will be considered for presenting during future TC 5.1 “Hot Topics” session.
6. May consider TC sponsored ALI course in the future.
   a. Potential topics: FEI, System Effects

Program Options:

from https://www.ashrae.org/conferences/conference-resources/papers-and-programs

Conference Paper Sessions. These sessions present papers on current applications or procedures, as well as papers reporting on research in process. These papers differ from technical papers in that they are shorter in length and undergo a much less stringent peer review.

Debates. Debates highlight hot-button issues. Experts, either on teams or as individuals, present different sides of an issue in debate format. Each participant presents evidence for or against a specific statement or question such as 'Is Sustainability Really Sustainable?"

Extended Abstract Sessions. These sessions present extended abstracts on research in progress, applications, case studies, and other topics in HVAC&R technical areas. They are intended to be preliminary research results that will eventually be expanded into full papers. Extended abstracts may be presented in Conference Paper Sessions with papers on a similar topic.

Forums. Forums are "off-the-record" discussions held to promote a free exchange of ideas. Reporting of forums is limited to allow individuals to speak confidentially without concern of criticism. There are no papers attached to these forums.

Panels. Panel discussions can feature a broad range of subjects and explore different perspectives on issues in the industry. A panel may feature discussions about integrated project delivery among designers, builders and facility management professionals.

Seminars. Seminars feature presentations on subjects of current interest. Papers are not available from the Society; however, seminar PowerPoint presentations with audio descriptions of the presentations are posted online.

Technical Paper Sessions. These sessions present papers on current applications or procedures, as well as papers resulting from research on fundamental concepts and basic theory.

Workshops. Workshops enable technical committees and other ASHRAE committees to provide a series of short presentations on a topic requiring specific expertise. These short presentations are provided with an increased emphasis on audience participation and training in a specific set of skills.

Attachment 3

Research Subcommittee report

TC 5.1 (Fans) Research Sub-Committee Report
February 3, 2020 (Orlando)

Notes from the Research Subcommittee Chair Meeting

13. Research Liaison – Dennis Loveday
14. Selected ppt slides
15. Co-funding & bidder – Co-funding proposals should be separate from the bid process. Or build co-funding into the bid.
16. URP –a high bar for staff approval. There would need to be a compelling reason to use URP instead of working through the TC. If staff approves a URP, it gets sent to the cognizant TC for approval (but not editing). URP bypasses the RTAR and WS process.
17. RTAR's not required, can go directly to a WS.
18. RAC still not ready to start processing PTAR's. (But we can submit a PTAR.)

WS & RTAR's in progress

19. 1769-RP (Experimental Evaluation of the Efficiency of Belt Drives for Fans)
    - PMS members are Craig Wray, Zhiping Wang, Eric Tinglof, and Brian Reynolds (Chair)
    - First interim report has been approved.
    - Tim Mathson is now the Principal Investigator. Tim presented an updated test plan and schedule that is being reviewed by the PMS and to approve test equipment purchases.
    - Testing to begin this spring.
    - Next PMS meeting later in February.
20. WS-1829 (Parallel fans)
    - Authors – Kim Osborn , Patrick Chinoda
    - Several conference calls since Kansas City
    - RAC request to identify co-funding sources. AHRI is reviewing, Kim will meet with the AMCA fan committee.
21. New proposed PTAR (EC motor and fan)
    - Output will be a guideline for comparing EC fan & motor technology vs traditional centrifugal plenum fan with induction motor & controller.
    - Authors Tim Mathson, Rad Ganesh. Armin (representing TC 1.11) also contributing.
    - Several meetings since KC including liaison review.
    - Subcommittee review in Kansas City. Need another liaison review before ready for a TC ballot.
22. WS 1835 (Brad Cochran) - Characterizing the Performance of Entrained Flow Stacks from TC 9.1, PES has volunteers from TC 5.1. Craig Wray will be on PMS.
    - Motion to recommend to the main committee to approve the changes to the WS. Unanimous vote by the subcommittee (19)
23. Co-sponsoring of RTAR-1626 with TC2.4 (Particulate Air Contaminants and Particulate Contaminant Removal Equipment), Energy Implications of Air Filtration in Commercial Buildings –
    - In Atlanta requested help to rework the RTAR
    - Co-sponsorship requires someone from TC 5.1 needs to be on the PMS.
    - Did not have time for discussion in Orlando.
    - No recent contact, may withdraw support.
    - If it comes up again, John Bade may be interested in being a co-sponsor.
24. **Are there any ideas, suggestions for Fan Research topics?**

- A call for Fan Research suggestions and RTAR authors went out before Kansas City and also posted in Basecamp.
- Fan Research topics generated in 2 subcommittee meetings since Kansas City.
- Any interest in being the next Research Chair? Succession & mentoring ideas.