

**AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING
ENGINEERS, INC.
1791 Tullie Circle, N.E./Atlanta, GA 30329
404-636-8400**

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, Fans DATE 2/12/2015

TC/TG/MTG/TRG TITLE Fans
DATE OF MEETING 26 Jan 2015 LOCATION Dearborn Room

MEMBERS PRESENT	YEAR APPTD	MEMBERS ABSENT	YEAR APPTD	EX-OFFICIO MEMBERS AND ADDITIONAL ATTENDANCE
See Attached Sheet		See Attached Sheet		See Attached Sheet

DISTRIBUTION

All Members of TC/TG/MTG/TRG plus the following:

TAC Section Head:	<u>Kenneth Peet</u>
TAC Chair:	Eric Adams
All Committee Liaisons As Shown On TC/TG/MTG/TRG Rosters:	Research – Ricardo Esbri Standards – Rick Larson Hand Book – Annette Dwyer
Manager Of Standards Manager Of Research & Technical Services	Stephanie Reiniche Mike Vaughn

TC 5.1, Voting Members Present

YEAR APPTD

Patrick Chinoda – Chair	2014
Franco Cincotti – Vice Chair	2014
Asesh Raychaudhuri – Program S/C Chair	2012
John Murphy – Standard S/C Chair	2012
Mike Brendel	2012
John Cermak	2014
Chuck Coward	2014
Harold Dubensky	2014
Rad Ganesh	2011
Tim Kuski	2014
Eric Tingloff	2014
Greg Wagner	2012
Craig Wray	2014

TC 5.1, Voting Member Absent

David Rasmussen	2012
-----------------	------

Additional Attendance

Joseph Brooks -- Secretary
Brent Fullerton – Webmaster
Brian Reynolds – Research S/C chair
Zhiping Wang – Handbook S/C Chair
Peter Bushnell
David Carroll
Jay Eldridge
Michael Feuser
Jay Fizer
Armin Hauer
Sanaee Iyama
Sam Jasinski
Igor Maerski
Tim Mathson
Dustin Meredith
Nazme Mohsina
Robert Smith
Wade Smith
Mark Stevens
James Sweeney
Bob Valbracht
Curt Wenger
Mike Wolf

**ASHRAE TC 5.1 Meeting
Monday, 26 Jan 2015**

Palmer House Hilton, Chicago, IL

Room: Dearborn 2

Minutes

1. Call to Order – 4:23 pm

The Chair, Patrick Chinoda, called the meeting to order at 4:23 pm.

2. Roll Call

The following voting members were present:

Patrick Chinoda – Chair
Franco Cincotti – Vice Chair
Ashesh Raychaudhuri – Program S/C Chair
John Murphy – Standard S/C Chair
Mike Brendel
John Cermak
Chuck Coward
Harold Dubensky
Rad Ganesh
Tim Kuski
Eric Tingloff
Greg Wagner
Craig Wray

David Rasmussen was not present.

A quorum was present (13/14)

3. Adoption of Agenda

Motion TC5.1-01-2015

Moved by: John Cermak
Seconded: Franco Cincotti

“To approve the agenda with section renumbering.”

Passed unanimously

4. Approval of the Minutes

Motion TC5.1-02-2015

Moved by: John Cermak
Seconded: Ashesh Raychaudhuri

“To approve the minutes from the 30 June 2014 meeting held in Seattle Washington as previously transmitted.”

Passed unanimously

5. Items of business

5.1 TC 5.0 Section Head/Liaison Reports

The Section 5 section head, Ken Peet, briefed the committee on several items of interest. He described a new initiative that would encourage the presentation of topics of interest to the committee during the TC committee meeting. ASHRAE would provide a room large enough to handle the expected attendance, and would include the announcement of the topic with the other technical session announcements. Other information from the Sunday morning section meeting were reported by the chair in his report.

5.2 Chairman's report

The chair reported on activities noted from the section head meeting. Winners of several ASHRAE awards were announced. For next year, Hightower award nominations are due on 5 Sep 2015. The ASRHAE Code of Ethics was also reviewed.

The chair also described the desire of ASHRAE for Technical Committees to hold seminars or webinars at its TC meetings and the Continuing Education Credit may also be available for those participating.

Waiving the fees for speakers was also presented as a future possibility.

The chair asked committee members to update their bio's on the ASHRAE website, with special emphasis on their discipline. Members were also encouraged to volunteer as reviewers for technical papers. The chair also passed on a request from TC 2.6 asking for some members of TC 5.1 to review some guidelines sections.

Solicitation for ASHRAE Learning Institute (ALI) were made. A suggestion of a course on fan selection was noted.

Action Item: The ASHRAE Code of Ethics will accompany the agenda for future meeting.

5.3 Old business

5.3.1 Multi Disciplinary Group – High Performance Air-Handling Systems for Buildings Except Low-Rise Residential Buildings (MTG-HPAS) (TC liaison – John Murphy)

This MTG was disbanded. Craig Wray, vice chair of this MTG, discussed some of the successes of the MTG over its lifetime.

6. Subcommittee reports

6.1 Standards subcommittee – John Murphy

6.1.1 ASHRAE Standard 87.3-2001 (RA 2010)

This standard was recommended for withdrawal and, previously, the committee decided that they would like to see the material in a documents other than a standard.

6.1.2 ASHRAE Standard 149

This standard was reaffirmed without change.

6.1.3 ASHRAE 68/AMCA 330

Tim Mathson, chair of this joint standard review committee, reported that the standard was withdrawn and AMCA may pursue identical adoption of ISO 5136.

6.1.4 ASHRAE 51/AMCA 210

Tim Mathson, chair of this joint standard review committee, reviewed the two major changes and reported that a small amount of work is needed and will be complete soon and then the committee will be balloted for its approval.

6.2 Handbook subcommittee – Zhiping Wang

Zhiping Wang reviewed the history of revisions to the Handbook made by this committee. He summarized the four major changes of the current revision were:

- Rewording in Table 1
- FEG/FMEG section
- Field testing section
- Parallel and serial fan operation.

New content for the draft should be back to Zhiping by 1 March 2015. The subcommittee will meet in March and it is hoped that a letter ballot will be sent to the Technical Committee in early April.

6.3 Research subcommittee – Brian Reynolds

See attached report.

6.4. Program subcommittee – Asesh Raychaudhuri

Deadline for seminar and forum submittals is 9 Feb. for Atlanta.

Action: Tim Mathson will contact Steve Idem and possibly put together a program for Orlando on fan selection and system interfaces.

Rad suggested a seminar for Orlando.

A DOE/FER/Efficiency forum for Atlanta was suggested.

May also consider a DOE fan regulation status type of presentation in Orlando.

It was also noted that ASHRAE would sponsor a webinar in between meetings.

7. FAQ -- John Murphy

No questions received. It was suggested that this agenda item be removed from future agendas.

8. Website Report – Brent Fullerton

The webmaster, Brent Fullerton, presented TC 5.1 Web Analytics. Brent has been the webmaster for over ten years and asked if there were any volunteers to take this position.

9. New Business

Franco Cincotti suggested that this committee hold presentation similar to what TC 2.6, Sound and Vibration, does for “Hot Topics.”

10. US DOE Fan Regulation and Fan Efficiency Ratio

Wade Smith, AMCA International Executive Director, reported on the status of negotiations with the US Department of Energy (US DOE) to regulate fans. In the same presentation, Tim Mathson described a new metric that could be used by the DOE in its regulation.

11. Time and Place of Next Meeting

The next meeting will be held in conjunction with the summer Annual Meeting of ASHRAE held in Atlanta, GA. [On Monday afternoon at 4:15 pm.] It was noted that we will request a larger room.

12. Adjournment

Motion TC5.1-03-2015

Moved by: Tim Kuski
 Seconded: Franco Cincotti

“To adjourn.”

Passed unanimously

The meeting was adjourned at 6:46 pm.

Minutes recorded by:

Joseph A. Brooks, PE

Attachments: 1.) Research Subcommittee Report

**TC 5.1 (Fans) Research Committee Meeting
January 25, 26, 2015 (Chicago)**

Notes from Research Subcommittee Chairs Meeting

- New Section 5 Research Liaison – David John djohn@adehvac.com
 - Will change later to using a ‘drop box’ for email
- RL status sheet – P.I. still needs to provide TP draft to earn final payment. Contract payments 5 of 6.
- 4 RTARS evaluated, 3 conditionally accepted
- 8 WS’s evaluated, 5 conditionally accepted
- 6 TRP’s were approved for bid
- 59 active Research projects
- TC Research voting
 - Quorum needed to conduct business
 - 2/3 of voting members needed for approval of RTAR’s, WS,s, and Research Reports
- The liaison is our advocate at RAC. It is important for the liaison to understand the RTAR (or WS).

RP’s

- RP 1420, RP 1216 – Seminar 28, System Effects from Inlet of Centrifugal and Plenum Fans
- No active Work Statements

RTAR’s in progress or proposed

1. Experimental Evaluation of the Efficiency of V-Belt Drives used on Fans
 - Received some liaison comments, updated for Chicago
 - Reviewed in subcommittee meeting
 - Is the TC ready to vote to approve the RTAR? Or distribute for review & letter ballot (or Atlanta).
 - What about review by SME’s outside of ASHRAE?
 - Then send for liaison review
2. Series & Parallel fans system effects (Patrick Chinoda) – Will approach TC 5.2 (Duct design). Could be a joint proposal.

Possible Research Topics

Suggest ranking (H, M, L)
RTAR Author?

1. Fan load profile data (Tim Kuski, Michael Ivanovich, Craig Wray). Would help DOE. Discussed in NYC.
 - Tim met with David Wiggins (Newcomb & Boyd) to discuss the database
 - Tim to review the database & report to TC.
 - Then decide about an RTAR.

Ranking	H
RTAR Author?	Tim Kuski

2. 019-10 Develop Method of Test (MOT) for Large Circulating Fans – coordinate with TC 5.3 and AMCA 230.
 - SPC 216 is working on MOT for determining application data of overhead fans.
 - DOE is looking at it.

Ranking	participation
RTAR Author?	NA

3. Develop criteria for improving the design of flow settling means utilized in multi-nozzle chamber performance testing defined in AMCA standard 210/ASHRAE standard 51.
 - Research would be to help people design better airflow measuring chambers.
 - See what happens in a future revision of AMCA 210. Not ready for an RTAR.
 - Limited audience, manufacturer specific.

Ranking	L
RTAR Author?	

4. Round robin test program to establish the accuracy of AMCA 300 tests.
 - Might remove from list pending round robin conclusions from AMCA
 - Staff has almost completed analysis for presenting to AMCA Fan committee.
 - Data needs to be analyzed outside of staff, sanitized
 - AMCA members have already paid for the cost.

Ranking	AMCA EC
RTAR Author?	NA

5. Fan outlet discharge effects would be the next logical step for future research projects?
 - RP 1420 (plenum) includes discharge effects.
 - ‘Discharge effects are not fans business’. This is a connections issue.
 - Mark Stevens (& Alan Guedel) have some information. Joint.

Ranking	On hold, L
RTAR Author?	NA

6. Develop practical process to determine velocity pressure. Accurately determine the energy flux leaving the fan.
 - Project should measure outlet velocity profile. But that is difficult to measure.
 - Possible program to predict the outlet velocity profile of a fan. Obtain data for validation. Need an estimate for cost of the analysis. Could lead to a prediction tool.
 - Could improve how fans are designed or applied.
 - CFD may be able to do this for axial fans (without research)
 - Centrifugal – joint experimental (for validation) & CFD
 - Target audience would be the fan designer.
 - Axial is predictable today.

Ranking	M
RTAR Author?	John Murphy

7. Develop method for testing/rating/comparing air curtains (on MTG list)
 - Coordinate with TC 5.3 and AMCA.

- Air curtain companies hired an expert CFD consultant at university to write a report by end of 2015. Then decide next step. It is a code issue. TC 5.3 (Room Air Distribution) is the sponsor.
- Check back later in the year. Could be a good joint project.
- WG 9 is developing a technical report on energy effectiveness of air curtains impact on other AC.
- An RTAR will be presented to TC 5.3 for Atlanta. TC 5.1 could be joint sponsor.

Ranking	H, joint
RTAR Author?	TC 5.3

8. Fan stall research (on MTG list)

Ranking	
RTAR Author?	

9. Fan efficiency effects and/or fan predictability effects at low-flow/low-speed operation?

- MTG list

Ranking	
RTAR Author?	

10. Effect of impeller tip clearance on performance (added in NYC)

Ranking	
RTAR Author?	

11. Improved fan noise predictions (added in NYC). AMCA 301? Needs better definition.

Ranking	
RTAR Author?	

12. Fan Curve Fitting Development-Technique and curve models for axial and centrifugal fans. (Greg Sanchez)
 This research will evaluate a selective number and sizes of fans using data collected from manufacturers to develop the fan performance curve, which may include stalling. Then curve fit the performance curve and develop a model (equation) that would represent this measured data. I find this information to be supplemental to the ideal graphical representation shown in Figure 1 of the handbook. We will of course need to disclose the detail information of the fan in regards to dimensions, layout, power, pressure, airflow.

Ranking	
RTAR Author?	

14. Parallel/series jet fans (Greg Sanchez)

Ranking	
RTAR Author?	

Added in Chicago

12. Plenum fan wall research

- from the AMCA plenum fan array committee
- Damper inlet and outlet system effect on fan arrays.

13. Fan performance & efficiency with VFD at low turn down ratio

15. VFD and motor efficiency (came from MTG list)

- Supports AMCA 207

16. Effect of inlet system effects on piezo ring accuracy

17. Fan Sound & vibration topics

- Tone prominence
- Tools to predict off peak efficiency

Other Fan research ideas? Or send ideas to TC 5.1 Research Chair (Brian Reynolds)

TC 5.1 Research

January 26, 2015

Chicago

Research Subcommittee Chairs Breakfast meeting (notes) 6:30 AM

- New section 5 liaison (Ricardo Esbri), 4 year term
- Liaison can attend TC meeting or subcommittee meeting on request