

**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. TC 5.1 DATE 14 March 2014

TC/TG/MTG/TRG TITLE Fans

DATE OF MEETING 20 January 2014

LOCATION New York City, NY

MEMBERS PRESENT	YEAR APPTD	MEMBERS ABSENT	YEAR APPTD	EX-OFFICIO MEMBERS AND ADDITIONAL ATTENDANCE
Greg Sanchez	7/1/2012	David Rasmussen	7/1/2012	John Cermak
Joe Brooks	7/1/2010			Harold Dubensky
Brian Reynolds	7/1/2013			Zhiping Wang
Asesh Raychuadhuri	7/1/2012			Chuck Coward
John Murphy	7/1/2012			Janme Miller
Brent Fullerton	7/1/2010			Andrew Jenkins
Mike Brendel	7/1/2012			Eric Tinglof
Franco Cincotti	7/1/2012			David Carroll
Rad Ganesh	7/1/2011			Zachary Minear
Tim Mathson	7/1/2010			Laura Petrillo –Gray
Kim Osborn	7/1/2010			Armin Hauer
Greg Wagner	7/1/2012			Jay Fizer

DISTRIBUTION

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

TAC Section Head:	Mr. Kenneth Peet
TAC Chair:	<u>Mr. Walter Grondzik</u>
All Committee Liaisons As Shown On TC/TG/MTG/TRG Rosters:	Dr. Piotr Domanski, Mr. Rick Larson, Ms. Annette Dwyer
Manager Of Standards Manager Of Research & Technical Services	Stephanie Reiniche Mike Vaughn

Continuation of TC/TG/MTG/TRG MINTUES COVER SHEET

For

ASHRAE TC 5.1, Fans Mtg. held on 20 January 2014

Additional Attendance

Christain Taber

Peter bushnell

Michael Feuser

David Gerlach

Jay Eldridge

Michael Ivanovich

Tim Kuski

Jared Koch

David Mayer

Igor Mauski

Sam Jasinski

George Gamble

Craig Wray

Ross Dillon

John Murphy

**ASHRAE TC 5.1 Meeting
Monday, 20 Jan 2014**

New York Hilton, New York City, NY

Concourse F

Minutes

1. Call to Order – 4:15 pm

The chair, Greg Sanchez, called the meeting to order at 4:15 pm EST.

2. Roll Call

Voting members of this committee that were present:

- Greg Sanchez -- Chair
- Joe Brooks -- Secretary
- Brian Reynolds – Research S/C Chair
- Ashesh Raychaudhuri – Program S/C Chair
- John Murphy – Standards S/C Chair
- Brent Fullerton, Webmaster
- Mike Brendel
- Franco Cincotti
- Rad Ganesh
- Tim Mathson
- Kim Osborn
- Greg Wagner

The following voting member could not attend:

David Rasmussen

A quorum was present.

3. Adoption of Agenda

Motion TC5.1-01-2014

Moved by:	John Cermak
Seconded:	Brent Fullerton

“To approve the agenda;”

Passed unanimously

4. Approval of the Minutes

The last meeting of this TC was 21 Jun 2014.

Motion TC5.1-02-2014

Moved by:	John Cermak
Seconded:	Franco Cincotti

“That the minutes of the 21 Jun 2013 meeting be approved as distributed.”

Passed unanimously

5. Items of business

5.1 TC 5.0 Section Head/Liaison Reports

5.2 Chairman's report

Hightower Award winner announced
Urged all members to update their ASHRAE bio online
New TC Activity Form in use.

5.3 Old business

5.3.1 Review of action items from last minutes

Discuss action items status and resolve outstanding action items.

1.) Action Item: All to review and comment on the TC 5.2 draft Duct Design Guide and send comments to John Murphy.

Status: No comments received by John Murphy. It was reported that the fan selection guide was being drafted.

2.) Action Item: Zhiping Wang to contact Annette Dwyer for more information on the one free subscription for the Handbook.

Status: Zhiping will have access for one year so the handbook sub-committee will have access.

3.) Action Item: Mike Brendel volunteered to send an abstract to Asesh (on Fan-System Integration for the New York City meeting).

Status: Abstract was submitted and declined for this meeting and will be resubmitted.

4.) Action Item: Brent to talk with Jocelyn about getting web statistics.

Status: Done, see webmaster's report.

5.3.2 Multi Disciplinary Group – Energy-Efficient Air-Handling Systems for non- Residential Buildings (MTG-EAS) (TC liaison – John Murphy)

Over forty possible work items collected – discussed under new business.

6. Selection of Vice Chair

The current TC Vice Chair, Patrick Chinoda, has been appointed TC Chair. Franco Cincotti was appointed as the TC Vice Chair, and Joe Brooks was appointed as the Secretary for the term 2014-2016.

The following voting members will roll off after the Annual meeting 2014:

Greg Sanchez (Greg will check)
Joe Brooks
Brian Reynolds
Brent Fullerton
Kim Osborn
Tim Mathson

The following members have been appointed voting members after the Annual meeting 2014:

Patrick Chinoda (as chair)
John Cermak

Chuck Coward
Harold Dubenski
Armin Hauer
Tim Kuski
Eric Tinglof
Craig Wray

7. Subcommittee reports

7.1 Standards subcommittee – John Murphy

7.1.1 ASHRAE Standard 87.3-2001 (RA 2010)

ASHRAE staff had requested a recommendation from TC 5.1 on whether to reaffirm, revise, or withdraw this standard. At the Winter meeting of TC 5.1, the TC recommended withdrawal of ASHRAE 87.3. At that meeting, the only two choices for the committee were that the standard be revised or withdrawn (it could not be reaffirmed because it was not in code language). No one was willing to work on a revision, therefore the justification provided for the withdrawal recommendation was that no one was willing to work on the standard.

7.1.2 ASHRAE Standard 149

History of this standard was provided. TC 5.1 had previously recommended reaffirmation.

7.1.3 ASHRAE 68/AMCA 330

Tim Mathson is chair of this joint standard review committee.

It was reported that ASHRAE 68 is still in committee and that they may recommend withdrawal.

7.1.4 ASHRAE 51/AMCA 210

Tim Mathson is chair of this joint standard review committee.

Review is close to completion and a draft is almost ready for public review.

7.2 Handbook subcommittee – Zhiping Wang

On-line Handbook now includes the features of Handbook Plus and will now be offered to all members when dues are paid. H/B sub-committee met yesterday. Reviewed and discussed ideas. Report will be attached to minutes. It was noted that by the Seattle meeting, some content should be available for review.

7.3 Research subcommittee – Brian Reynolds

Brian reported on the Research Committee morning meeting and the TC 5.1 Research Sub-committee meeting held yesterday. See attached report. Tim Mathson will develop RTAR for V-belt drives with assistance of Craig Wray and Michael Ivanovich. Discussed development of a RTAR for Air Curtain Units. It was noted that TC 5.3 is taking the lead and that they assigned a person to write a work statement.

7.4. Program subcommittee – Aresh Raychaudhuri

Armin Hauer discussed co-sponsorship with TC 1.11 on a seminar on VSDs. Armin would like to include someone to discuss VSD/VFD use in fans. This seminar would be for the Chicago meeting. Other possible programs from this subcommittee were: Fan and System Integration (declined from this meeting), RP 1420/1215 seminar by Mark Stevens, and the program that Tim Mathson and Rad Ganesh submitted for New York City regarding Matching Fan System Requirements. Craig Wray discussed a new seminar program for Seattle that could be co-sponsored by MTG.EAS and 90.1 MSC/ Fan WG. Craig Wray would chair and Jeff Boldt, Michael Ivanovich, Tim Kuski and Jeff Stein are possible speakers.

8. FAQ -- John Murphy

No new frequently asked questions were submitted.

9. Website Report – Brent Fullerton

Brent reported on Google analytics that were added to web. The reports that were discussed are attached.

10. New Business

Tim Kuski asked if ASHRAE would have any information on the duty cycle for fan usage. It was thought that a VSD may be able to record this information, but it was generally believed that ASHRAE does not have it. One opinion was that we do not know where that information exists, it certainly does not exist in TC 5.1. It was thought that maybe 90.1 has the info or that the MTG.EAS may be able to coordinate an Research Project to determine a duty cycle for fans.

11. Time and Place of Next Meeting

The next meeting will be held in conjunction with Annual Meeting to be held in Seattle, Washington.

12. Adjournment – 6:30 pm

Motion TC5.1-03-2014

Moved by: Asesh Raychaudhuri
Seconded: Kim Osborn

“To adjourn.”

Passed unanimously

The meeting adjourned at 6:10 pm EST.

Minutes recorded by:

Joe Brooks

Attachments: 1.) Handbook Subcommittee Report
2.) Research Subcommittee Report
3.) Website analytics

TC 5.1 Handbook Subcommittee Report (New York, 01/20/2014)

Zhiping Wang

- ASHRAE Handbook Online now includes all four handbook volumes, plus all the extra features that formerly were in the “Online+” version.
- Starting with the 2015 HVAC Applications year, ASHRAE Handbook Online will be offered as a free member benefit option.
- The due date for the fully revised and TC-approved fan chapter has been set at May 30, 2015.
- TC 5.1 Handbook Subcommittee met yesterday afternoon and we reviewed and discussed a few ideas resulted from our last meeting in Denver. Action items were also assigned to a few members/volunteers to compose or rewrite the content. See attached list for details. New ideas/thoughts/comments are always welcome.
- Handbook Comments Database – No comments received through this communication platform about our chapter. But we did receive one comment back through other communication channels. The comment will be addressed by the HB committee.
- One hour meeting time and room for the TC 5.1 handbook subcommittee will be requested for the Seattle meeting. Also, web-based subcommittee meetings will be scheduled as needed.

List of Ideas/Topics for Fan Chapter Revision – 2016 Version

- Dustin’s comment about FC Fan in Table 1 – Mike Brendel will reword this portion and HB committee will review the content in our next mtg. Also, the total efficiency curve needs to be corrected.
- Fan Efficiency – New section to define and discuss total efficiency vs. static efficiency
- Examples of proper fan selection to save energy
- Fan Selection (Total pressure based vs. Static pressure based)
 - John Murphy, John Cermak, and Mike Brendel will put together some content for the committee to review and decide how to put into our chapter.
- FEG/FMEG Section – Bring in more info from AMCA 205 and provide a good understanding for the users
 - Rad Ganesh and Tim Mathson volunteer to draft up some content about this topic.
- Under current “Testing and Rating” section, only lab testing per ASHRAE 51/AMCA 210 is covered. Should we add something to cover the field testing part (Reference AMCA Pub. 203)?
 - Committee agreed to include the field testing part in our chapter. Craig Wray, Joe Brooks, Patrick Chinoda, and Chuck Coward will draft the content.

- Fan Drive System – Direct Drive vs. Belt Drive, VFD, VSD, etc.
- Fan Part Load?
- Airflow measurement by means of instrumented fan inlet rings (Armin Hauer)
- Fan Stall (Greg Sanchez wrote some content during our last revision cycle and will investigate further)?
- Parallel Fan Operation in the chapter, how about Series Fan Operation? (Patrick Chinoda)
- Fan Noise (Greg S., predicting fan noise – AMCA 301, or aerodynamic noise?)

TC 5.1 (Fans) Research Committee January 20, 2014 (New York)

Research Chair Breakfast Presentation (notes)

- There are 62 active RP's (total value \$10.8M)

Since June 2013

- 6 projects were completed
- 10 new projects were approved for funding
- 8 TRP's released for bid

In NYC, RAC evaluated 6 RTARS's and 4 WS.

There is a new RTAR submittal form (shorter, more concise)

RTAR's are due on 5-15, 8-15, and 12-15.

There was a report on the process for doing Contractor selection.

- There are two options (for proposals that are scored 'responsive')
 - Lowest cost
 - Best value

RL reminders for RP 1420

TC and PI need to discuss and provide new contract end date or draft final report to MORTS. Current contract end date of 9-30-2013 is now past. Last progress report received through March 2013. Contract payments made 4 of 6.

TC 5.1 RP's

- RP 1420 – Plenum fan inlet and discharge system effect
 - Final technical report reviewed at this meeting with the PI.
 - There were a few comments from PMS.
 - PI will make recommended changes. Then redistribute report to the PMS. Franco to schedule a conference call for final review with PI.
- RP 1216 – AF fan inlet system effects
 - All research requirements have been met.
 - Develop a seminar (or technical paper). Technical report (not paper) has been submitted. No comments from staff.
 - Seminar to present 1420 and 1216 results can be planned for Seattle (Asesh).

ASHRAE Multidisciplinary Task Group (MTG)

Energy-Efficient Air-Handling Systems for Non-Residential Buildings

- Roughly 40 ideas, several from TC 5.1
- Request to recommend actions

The following ideas were discussed:

- 019-10 Develop Method of Test (MOT) for Large Circulating Fans – coordinate with TC 5.3.
- 020-10 Investigate Fan Stall - Greg Sanchez will review handbook. Make recommendation. Update HB or RTAR?
- 021-10 Fan Efficiency at Low Flow and Low Speed Operation - No action from 5.1

Suggestion to combine the next three MTG ideas:

- 023-00 Overall Fan System Efficiency with VFD
- 024-10 Fan Belt Drive Efficiency
- 025-10 Motor and Variable Speed Drive (VSD) Efficiency
 - Wire to gas AMCA 207 committee to address. Start with currently available information to provide a tool. (shaft power, v-belt, motor, VFD)

- Coordinate with TC 1.11 (Armin)
- AMCA committee may identify research to improve tool (i.e. belt efficiency)
- 026-10 Energy Impacts from Air Handler Casing Leakage – AHRI is developing a new standard (1350) for Mechanical Performance of Central Station Air Handler Unit Casings. It includes a MOT for casing leakage.

TC RTAR's in progress

1. Inlet Installation Effects on Fans (Air and Sound) – Summary of Previous Research Projects
 - An ISO WG (Alain Guedel) has a similar (unfunded) project including using the results of the ASHRAE RP's as well as other research from Europe labs. May not be addressing sound?. There is not a timetable.
2. Parallel Fans, Series fans (industrial) – (Patrick Chinoda). Check with liaison.

Possible Research Topics (some are also on MTG list) (in search of RTAR authors)

1. 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.
 - See what happens in the next revision of AMCA 210. Not ready for an RTAR.
 - Limited audience, manufacturer specific.
 - Maybe remove from list?
2. Round robin test program to establish the accuracy of AMCA 300 tests.
 - Might remove from list pending round robin conclusions from AMCA (almost complete).
 - Staff has almost completed analysis for presenting to AMCA Fan committee.
3. Fan outlet discharge effects would be the next logical step for future research projects?
 - RP 1420 (plenum) includes discharge effects.
4. 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.
 - **John Murphy** will draft an RTAR (centrifugal). (Axial is predictable today)
5. Develop method for testing/rating/comparing air curtains (on MTG list)
 - Air curtain companies hired an expert CFD consultant to write a report. 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.
6. Develop method for testing/rating/comparing large circulating fans (on MTG list)
 - Mike Brendel paper describing issue.
 - The space these fans are applied in is significantly smaller than the space needed to test them.
 - Need to have a representative from a large circulating manufacturer report and author an RTAR.
 - Modifications are being made to AMCA 230 which may address the subject.
7. Fan stall research (on MTG list)
8. Fan efficiency effects and/or fan predictability effects at low-flow/low-speed operation?
 - MTG list
9. Fan efficiency related RTAR's on MTG idea list.

- a. Overall fan system efficiency when used with VFD.
- b. Belt drive efficiency
- c. Motor & inverter efficiency, predict bhp from kW

Summary

- Fan discharge system effect best candidate for a new RTAR.

New ideas for research (Greg Sanchez)

1. Effect of impeller tip clearance on performance (added in NYC)
2. Improved fan noise predictions (added in NYC)
3. Fan Curve Fitting Development-Technique and curve models for axial and centrifugal fans.
 - 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.
4. Parallel/series jet fans

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

Audience Overview

Nov 16, 2013 - Jan 5, 2014

All Visits
100.00%

Overview

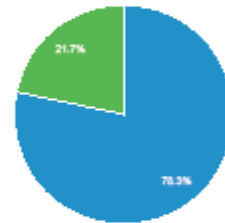
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