



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. 8.2 DATE October 4, 2018

TC/TG/MTG/TRG TITLE Centrifugal Machines

DATE OF MEETING June 25, 2018 LOCATION Houston, TX

MEMBERS PRESENT	YEAR APPTD	MEMBERS ABSENT	YEAR APPTD	EX-OFFICIO MEMBERS AND ADDITIONAL ATTENDANCE
Forrest Yount (VM), Chair	7/01/2017	Laurent Abbas (VM)	7/01/2015	Dustin Meredith
Raymond Good	7/01/2017			Walter Mecozzi
Dwayne Johnson (VM)	7/01/2016			Nick Zupp
Mark Rogan (VM)	7/01/2015			Eric Albrecht
Lindsey King (VM)	7/01/2017			Chris Lesnar
Mark Adams	7/01/2010			Barbara Minor
Rupal Choksi (VM)	7/01/2017			Tom Watson
Phil Johnson (VM)	7/01/2017			Rick Heiden
John Vucci (VM)	7/01/2016			Scott MacBain
Trent Hunt (VM)	7/01/2017			Cole Eraserly
				Meagan Gibbs
				Drew Turner
				Neal Lawrence
				Billy Rhinehart
				Justin Prosser
				Narc Neufcourt
				Kezhen Shen
				Orkan Kurtulus
				David Halbrooks
				Joe Heger
				Karine Leblanc
				Esteban Baccini
				Guillermo Massucco
				Margaret Mathison
				Dan Kemper
				Fred Betz
				Michael Perovoxchikov
				Antoine Bov Abroud
				Ahmad Abu-Heiba



---

1791 Tullie Circle, NE • Atlanta, Georgia 30329-2305 ☎404-636-8400 • Fax 404-321-5478

TECHNICAL COMMITTEE MEETING      T.C. 8.2 CENTRIFUGAL MACHINES

Date/Time:      Monday, June 25<sup>th</sup>, 2018 at 2:15 PM – 4:15 PM

Location:      335B, 3rd Floor, Hilton, Houston, TX

**MINUTES**

**1) Call to Order**

Meeting called to order at 2:17 PM by Chair, Forrest Yount.

Sign-in sheet going around, members and guests to fill out attendance.

**2) Introduction of Attendees, Liaisons, Officers and Guests**

Lindsey King will be taking minutes, and is rolling on as secretary. Laurent Abbas has taken a new job and will be rolling off as secretary and voting member.

Roll Call: 8 Voting Members Present. Quorum achieved, Laurant absent.

Forrest to provide roster emergency change info to section head and ASHRAE staff.

**3) ASHRAE Code of Ethics Commitment Review**

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

**4) Review of the Agenda – Chair**

**5) TC 8.2 Mission Statement & Scope (Appendix A)**

**6) Review/Approval of Chicago Minutes (meeting date – January 2018)-**

Due to lack of response from the secretary, minutes have been put together based on subcommittee reports. Seeking feedback on both Minutes and Attendance from Chicago meeting. No feedback provided.

Ray Good moved to approve, Trent Hunt seconded. Approved 8-0-0.

**7) Reports:**

**Full Subcommittee Reports will be included in Appendices. Items below are what were discussed in the meeting.**

**a) Program (Appendix B)**

**L. King**

- Three seminars submitted and accepted. Times and topics in Appendix B. Seeking New Ideas.

Possible Research Update for YEA members Idea – Rick Heiden to send Lindsey King contact info for speaker to come to YEA committee. Not really an 8.2 topic.

- Idea for Atlanta: SPC 184 Update.

Justin Prosser sought co-sponsorship with TC 8.1 since 8.2 could only find one speaker for seminar. Justin Prosser to chair session.

**b) Handbook (Appendix C)**

**D. Turner**

- Handbook progress going well
- Goal by this (Annual, Houston) meeting was to have the initial revisions proposed and the secondary review done. Compressor section is complete. Chiller section is behind.
- Revisions to be finalized by winter (Atlanta, 2019) meeting. Then chapter will go out for Committee Review.
- Hard deadline for revisions is next June meeting. Will vote on revisions at Winter (Atlanta, 2019) meeting.
- Thanks handbook Subcommittee for your effort in the Handbook Progress!

**c) Standards**

**S. Hanson**

Susanna not present, standards updates given by respective standard liasons.

i) SPC 184P Update

J. Vucci

184P has been published, working on exemption to complete uncertainty workbook. Current status is “under review”.

ii) SPC 30 Update

R. Choksi

Working on Revisions to Addendum, Rupal Choksi is moving out of SPC 30 Liason position. Thank you Rupal for your time.

iii) SPC 90.1 Update

S. Hanson

No current TC 8.2 activity related to 90.1.

iv) Guideline 22 update

J. Vucci

Published in 2008, Reaffirmed in 2012. GPC 22 was formed 3 years ago; currently making progress now to getting document out for public review. January 2020 release to include different types of chillers.

v) Justin Prosser proposed New Standard: Methods for performance testing centrifugal refrigerant compressors and condensing units.

TC Comments: Asked about committee to create standard.

Response: If proposal is accepted, then we can form the committee. Orkan Kurtulus and Nicholas Zupp provided their names as interested in being on committee for this MOT.

Discussion on what the standard would look like and who would submit. Justin will submit, but support is needed from the TC. Standard brought up and reviewed for committee.

J Vucchi motions to support/approve new standard. Mark Hogan seconded. Approved 8-0-0.

**d) Research (Appendix D)**

**M. Adams**

- WS1716: Returned with Comments - need to get resubmitted by August 15<sup>th</sup>: Work Statement comments have been reviewed by Research Subcommittee, needs vote from TC in order to move forward and to resubmit by August 15th.
- Revisions to Work Statement Include:  
To address RAC concern about scope: removing Screw Chillers from scope. Included as possible future work. Added number of chillers to be tested.

Meeting Discussion before voting:

Discussion on what manufacturers are capable of in terms of getting researcher data, Manufacturers to provide list of possible chillers where data can come from. Researcher can use DOE and list provided by Manufacturer, but Manufacturer won't be providing any recommendation on which site to use.

Concern about manufacturer's commitment to providing data per the list that they come up with.

Response: Commitment to provide this data from manufacturer's: 4 letters of intent at original time of Work Statement

Question from previous work statement review on applicability to the ASHRAE strategic plan: Confirmed with research strategic plan.

- Phil Johnson moved to submit revised work statement with editorial, grammatical, and format comments. Mark Rogan seconded. Approved 8-0-0.

Additional Logistic Questions after the vote:

Who is going on PMS and PES committee to review project? Research committee has volunteers, but you can still be added if you're interested.

Researched proposal to PMS and PES can review locations if that is desired.

RTAR 1793- Came back with heavy comments, RAC heavily opposed  
Not precompetitive research.

Didn't see a way how this research would result in higher efficiency motors.

This TC feels that there are really two benefits to this research, but Sub-Committee resolved to wait for a little while to resubmit when some RAC people roll off.

1.11 Motors and controls TC sought co-funding for organizations outside of ASHRAE, is this possible here? Justin brought up AHRI support but we think it's been addressed. Barb to take back to AHRI. Keep on hold until AHRI feedback received.

**e) MTG Low GWP Liaison**

**P. Johnson**

MTG update: Phil to send report

- Seeking programs related to GWP.
- Main focus on lower flammability research
- Encouraging lifetime cycle performance LTCCP, currently behind in priority than other two.
- 2<sup>nd</sup> largest ASHRAE project in history in dollar value.
- AHRI mini conference in January
- This MTG meets 2x every meeting

**f) MTG O&MEE Update**

**J. Vucci**

- Developing guideline for chiller plants United Nations and ASHRAE-this MTG as potential research for help on this guideline.
- Continually Seeking other ideas

**g) Membership**

**R. Good**

- Lindsey moves to secretary, Seeking Program Subcommittee Chair
- Seeking Quorum of 9
- Nominating Megan Gibbs for Voting Member.

- J. Vucci rolling off, Justin from AHRI rolling on.
- Dan Kemper has been active on SPC30, can roll in on Trane's behalf.
- Karine LeBlanc asked about timing of being a voting member. Lindsey and Trent to follow up with Karine.
- Membership going to convert all PCM to CMs on July 1<sup>st</sup>

**h) Web Master** **D. Johnson**

- Continue to post minutes and agenda to website.
- Send Presentations to Webmaster for posting.

**i) Honors and Awards** **F. Betz**

- None in process.
- Steve Duda from Honors and Awards stopped by. Seeking Nominations.
- Congratulations to Fred Betz for ESA.
- ESA and DSA are objective nominations for ASHRAE service
- Fellow nominations due 12/1, subjectively evaluated, Based on Technical Value to the industry, those who are truly moving forward arts and sciences of HVAC.

**j) Section 8 Chair's Breakfast** **R. Good**

- 125<sup>th</sup> anniversary of ASHRAE; Seeking programs and papers on historical topics.
- Seeking topics for Centrifugal Machines History
- Letterhead of ASHRAE TCs can't be used as public review

**Dustin (Section Head) visited meeting:**

Asked Basic Questions about health of TC.

Send questions to Dustin on Corresponding Members, double check roster by July 1<sup>st</sup>

TC Activity Form due Tuesday evening

- 8) Old Business
- 9) New Business
- 10) For the Good and Wellbeing ....
- 11) Adjourn

## **Appendix A: Title, Purpose, and Scope**

**Title:** Centrifugal Machines

**Scope:** TC 8.2 is concerned with packaged equipment which involves centrifugal compressors, including those heat exchangers, drivers, controls and accessories, which are specific to packaged centrifugal equipment. TC 8.2 is also concerned with the design and performance of centrifugal compressors, steam turbines and gas turbines for use in refrigerating applications.

### **Mission**

The mission of Technical Committee 8.2, Centrifugal Machines, is to provide world class technical expertise on all aspects of centrifugal refrigeration machines. This committee is a resource to industry, academia, and others following society protocols through seminars, standards, technical papers/articles and other presentations.

## **Appendix B: Program Subcommittee Report**

**For Houston: 3 Programs Submitted/3 Accepted: Attend if you can!**

**Advances in Compressor Bearing Technology** (Cosponsored with Positive Displacement TC):

Tuesday 1:30 PM-3:00 PM George Brown 3<sup>rd</sup> Floor, 372BE

**Centrifugal machines in Unusual/Niche Applications:**

Tuesday 3:15 PM-4:45 PM George Brown 3<sup>rd</sup> Floor, 372BE

**Fundamentals of Centrifugal Chillers:**

Wednesday 11:00 AM-12:30PM; George Brown 3<sup>rd</sup> Floor, 372 BE

**For Atlanta:**

**Friday, August 3, 2018 – Seminar, Workshop, Forum, Debate and Panel submissions due**

**Ideas:**

New work from SPC 184; Factory Testing Chillers Cont.

Lower GWP Alternative Refrigerant for Centrifugal Machines: Previously Submitted; Rejected Series vs Parallel/Common YEA Questions

**Tracks:**

1. Systems and Equipment:
2. HVAC&R Fundamentals and Applications:
3. Refrigeration:
4. Construction, Operation, and Maintenance of High Performance Systems:
5. Common System Issues and Misapplications:
7. Building Integrated Renewables and Natural Systems
8. The Engineer's Role in Architecture:

**Research S/C Chair Breakfast notes of interest**

- RAC evaluated 3 RTAR's – 1 Accepted; 1 conditionally accepted with comments; 1 rejected.
- RAC reviewed 3 work statements – Both conditionally accepted with comments.
- 1 Innovative Research Grant (IRG) was approved.
- RTAR's & WS must be submitted by August 15<sup>th</sup> or December 3<sup>rd</sup> this year to get into RAC's review cycle.

**Current Activities**

Research Subcommittee online meeting was held with Handbook & Program on June 18, 2018.

Attendees: M. Adams, F. Yount, A. Abuheiba, D. Turner, F. Betz, J. Watts, L.King, M. Gibbs, N. Zupp, P. Johnson, R. Good, R. Choksi, S. Macbain.

**Project Status**

- **1677 - Measurement and Prediction of Waterside Fouling Performance of Internally Enhanced Tubes in Cooling Tower Applications**
  - We are cosponsoring a study being undertaken by TC 8.5 on fouling of enhanced tubes. Looking at a smooth bore tube and multiple enhanced surface tubes. Scope includes testing, providing a model of the results, and a simulation calculation methodology. Testing is continuing and collecting data. Medium fouling potential testing at medium velocity is complete. The next testing is low fouling potential, medium velocity test. Testing will conclude in December 2019.
- **1716 - Oil concentration of field-installed liquid chillers with flooded type evaporators.**
  - WS was submitted to RAC and was returned with comments. These comments are being addressed and will return to the TC for approval. The deadline for re-submittal for the fall RAC meeting is August 15.
- **1793 - Development of Method of Test for Motor Component Thermal Conductivity**
  - We submitted, with co-sponsorship from TC8.1 and TC1.11, an RTAR for research of heat transfer of motor components for hermetic motors in refrigerant. This would develop correlations for motor manufactures to use for motor design.
  - The WS was returned with comments. TC will need to decide if we should proceed or drop.

**Future Activities**

- We discussed possible new ideas for research at the on line meeting but no new ideas were generated. We will continue to solicit additional ideas.

Respectfully submitted,  
Mark Adams  
Research Subcommittee Chair  
June 25, 2018



## **Appendix D Handbook Subcommittee Report**

Full Progress discussed in Houston full TC meeting. New Handbook Subcommittee chair resulted in handbook minutes not being taken at subcommittee conference call.