

**AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING  
ENGINEERS, INC.**

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

TC/TG/TRG MINUTES COVER SHEET

**(Minutes of all TC/TG/TRG Meetings are to be distributed to all persons listed below within 30  
days following the meeting.)**

**Rev 1**

**"These draft minutes have not been approved and are not the official, approved record until  
approved by this (council/committee)."**

TC/TG/TRG NO.: TC 1.11 DATE: June 26, 2012

TC/TG/TRG TITLE: Electric Motors and Motor Controls

DATE OF MEETING: June 28, 2011 LOCATION: **San Antonio**

**Tuesday 1:00 to 3:30 PM Grand Hyatt Hotel - Bonham C, 3rd Floor**

		MEMBERS ABSENT	YEAR APPTD	EX-OFFICIO MEMBERS AND ADDITIONAL ATTENDANCE
Robert Richard	2008V	Daryl Showalter	2012V	Ken Fonstad
Derrick Vigil	2010V	Charles Culp	2011NV	Caroline Mason
Tom Lowery	2011NV	Preben Christiansen	2008IV	Brian Reynolds
Alex Lifson	2011V	Rainer Grosse-Kracht	2014IV	Craig Wray
John Tolbert	2011V	Rick Bunch	2009V	Mike Wisif
Michael S Todd	2011V	Kurt Vega	2010V	Jin Jin Huang
Armin Hauer	2010V	Robert Helt	2010V	Doug Collings
Rupal Choksi	2012NV	Jim Chmielewski	2004C	Chris Haws
Terry Davies	2010V	Paul Lin	2012C	
Robert Coleman	2008NV	Colin Tait	2010C	
Rick Heiden	2011V	Mark Doty	2010C	
Art Giesler	2011C	Rudy Chervil	2008C	
		Phillip Johnson	2011C	
		Paul McCabe	2006C	
		James Rhinehart	2011C	
		Riyaz Papar	2008C	
		Harold Schnetzka	2011C	
		Donald Perry	2006C	
		William Tinsley	2002NV	
		Hermann Renz	2008C	
		Peter Walter	2006C	
		Tom Watson	2006C	

V: Voting Members      8 present/12

**June 26, 2012**

**DISTRIBUTION:**

ALL MEMBERS OF THE TC/TG/TRG

TAC COMMITTEE CHAIRPERSON: Donald Brundage

TAC SECTION HEAD: Victor Penar

Chapter Technology Transfer: Steven Rosen

RAC RESEARCH LIAISON: Arthur Giesler

ALI/PDC: John Nix

Special Pubs: William Flemming

STANDARDS: Michael Woodford

PROGRAM: Robert Bunn

HANDBOOK: Davor Novosel

JOURNAL/INSIGHTS LIAISON:

STAFF RESEARCH: Micheal Vaughn

STAFF STANDARDS: Claire B. Ramspeck

STAFF RESEARCH & TECHNICAL SERVICES: Michael R. Vaughn

ADDITIONAL DISTRIBUTION: All corresponding members.

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ASHRAE TC/TG/TRG ACTIVITIES SHEET

DATE: June 26, 2012

TC/TG/TRG NO.: TC 1.11 TC/TG/TRG TITLE: Electric Motors and Motor Controls

CHAIRMAN: Daryl Showalter VICE CHAIRMAN: Terry Davies

SECRETARY: Robert Richard

TC/TG/TRG MEETING SCHEDULE			
Location-Past 12 Months	Date	Location-Planned Next 12 Months	Date
Orlando, FL Las Vegas, NV Chicago	1/2010 2/1/2011 1/28/2012	San Antonio Dallas Denver New York Seattle	6/23-27 2012 1/26-30 2013 6/22-26 2013 1/18-22 2014 6/28-7-2 2014
TC/TG/TRG SUBCOMMITTEES			
Function			Chairman
Standards Research Program Handbook Web-master Membership ALI coordinator (ASHRAE learning institute)			Rick Heiden Rick Heiden John Tolbert Tom Lowery Terry Davies John Tolbert Rick Bunch
RESEARCH PROJECTS-CURRENT			
Project Title	Contractor	Monitoring Comm. Chpt.	Report Made At Meeting
LONG RANGE RESEARCH PLAN			
Rank Title	W/S Written	Approved	To RAC
1. PM Motor Application Survey 2. Issues with Poor Power Quality Electric Supply	No		

NOTE:

HANDBOOK RESPONSIBILITIES				
Year & Volume	Chapter Title	No.	Deadline	Handbook Subcom Liaison
2012 Systems	Electric Motors, Motor Controls and Variable Speed	45	Complete	Davor Novosel

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Drives			
STANDARDS ACTIVITIES-List and Describe Subjects			
SPC 41.11 Standard for Power Measurement, TC 1.11 members participating on SPC AHRI Standard 1210P Performance Rating of Variable Frequency Drives, MOT will become new ASHRAE standard once AHRI has developed			
TECHNICAL PAPERS from Sponsored Research-Title, when presented (past 3 yrs. present & planned)			
TC/TG Sponsored Transactions-Title, when presented (past 3 yrs. Present & planned)			
06/08 Motor Bearing Currents – Cause, Effect and Mitigation			
TC/TG Sponsored Seminars-Title when present (past 3 yrs. present & planned)			
6/08 Transaction (Symposium) “Motor Bearing Currents – Cause, Effect, & Mitigation” 1/09 Seminar – “VFDs Deliver Real Energy Savings” 6/09 Seminar – “Back to Basics – Motors and VFDs” 6/10 Seminar - Variable Speed Comparison: Induction vs. Permanent Magnet Motors 6/10 Seminar - Starters and drives - selection criteria, performance standards, longevity 1/11 Seminar 50 - Residential Power Factor and EMI (FCC) Requirements for VSDs 6/11 Seminar 8 - Role of Technology in Shaping the History of the United States 6/12 Seminar 48: Variable Frequency Drive Performance: What Is It and How Does It Relate to AHRI 1210-2011?			
TC/TG Sponsored Forums-Title, when presented (past 3 yrs. Present & planned)			
1/09 Variable Speed Drives (VSPD) and Residential Power Factor 1/11 Forum - VFD Standards, what’s in place, what’s coming and what’s needed			
JOURNAL PUBLICATIONS, when published (past 3 yrs. present & planned)			

**June 26, 2012**

**ASHRAE Technical Committee 1.11  
Electric Motors and Motor Controls  
Agenda for San Antonio Meeting  
June 26, 2012 – Tuesday 1:00 to 3:30 PM  
Grand Hyatt Hotel - Bonham C, 3rd Floor**

**Call to Order – Terry Davies**

- Welcome
- Introduction of Members and guests
- Additions to agenda  
    Agenda approved
- Quorum confirmation  
    8/12 quorum
- Attendance Sheet  
    Circulated

**Chairman's Report – Terry Davies**

- Review/approval Chicago Meeting Minutes  
    Chicago minutes  
    Pg 3 vice chair slot blank=>leave blank  
    Pg 5 Call to order quorum was met it says not met  
    Section one meeting third bullet Ken also volunteered to speak if needed pg 6  
    Programs second bullet, second sub bullet shorted=>shorter  
    Feedback n=> feedback on  
    Membership third sub bullet Kurt Vega and Daryl Showalter will become CM after June meeting  
    Pg 7 handbook chapter 40=>45 was finalized in September and will be publish June 2012  
    Pg 2 Thomas Lowery Company "Schneider electric"

Motion: Approve minutes as modified 8/0/0/CV (for/against/abstained/chair voting)

- Attendance Sheet Circulated
- Section One Meeting Report  
Program: Abstracts need to be well written, 100 slot so a lot of program proposals get rejected, 25 slot are for research therefore only 75 slots left for others. Speakers are rated and 25/290 speakers were rated less than 3.5. They were notified and are given two more chances to improve. If they do not improve, they will need to show proof of receiving speaker training prior to speaking again.

Chicago

Tracks: special research track (maybe only for Denver)

Research need RTARs for

- CSA method of test 5-15kW equipment
- Potential update for DOE database.

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Program Statistics for San Antonio:				
	Accepted	Submitted	Sessions Scheduled	% Scheduled
Technical Papers	31	43	10	23%
Conference Papers	43	86	14	16%
Seminars	67	120	67	56%
Forums	8	17	8	47%
Totals	149	266	99	37%

### Subcommittee Reports

**Programs –John Tolbert chair, Armin Hauer vice chair, Derrick Vigil vice chair**

Program John Tolbert

*Seminar 48: Variable Frequency Drive Performance: What Is It and How Does It Relate to AHRI 1210-2011?*

The seminar was well attended estimate 100 attendees.

An issue has been “not getting programs accepted”:

- Advice received is to spice it up, make it interesting and partner with other TCs.
  - The “Harmonic distortion” seminar has been rejected for the last three years.
  - Work on the Title Some ideas are:
    - “Harmonics perception versus reality. “
    - “Why should somebody Care? “
    - Utility companies are begin to charge for harmonic distortion
    - “Harmonic distortion what does it cost?”
    - “What a consultant should know about harmonics”
    - “Power line to buildings what should you know about harmonics.”
    - Submit for Dallas.
    - Wordsmith abstract and title by August.
    - Armin will send out abstract for comments.

One slot maybe accepted, a 90 minute slot, add a third topic.

- ARHI could explain standard relative to harmonics.
- Definition of IEEE 519 and AHRI 1210 for harmonic test.
- Third speaker Tom Lowery.
- Maybe we can get a power company representative to explain their view (displacement power factor.)

Other hotter topics

- Bypass: submit for Denver
- “VFD bypass method where and when needed”
- “Back to basic: VFD bypass, uses and abuses”

**June 26, 2012**

Forum for Denver (DEADLINE August 13)

Bearing current

Moderator: Tom Lowery

Rick Heiden will recommend an expert.

### **Standards – Rick Heiden**

- SPC41.11 Standard for Power Measurement Rick Hall chair. Interim meeting held April 11<sup>th</sup>. The current draft was reviewed in San Antonio (no quorum). Another interim meeting is planned for October with the objective of going out for public review in January 2013. Armin Hauer, Michael Todd, John Tolbert and Rick Heiden are voting members on this committee. Standard will ship with IEEE 120.
- AHRI Standard 1210 Performance Rating of Variable Frequency Drives – Rupal Choksi is the AHRI Quality Manager coordinating the effort and Mark Haiden (Trane) is engineering committee chair. Standard was published in December 2011.
  - Heiden with committee support will issue standards request for MOT for Variable Frequency Drive Performance Scope – Efficiency, Motor Stress (dV/dT) and Power Line Harmonics (Helt, Todd, Jim Chmiewlewski, Heiden, Choksi)
  - Expanding the scope from what's currently in 1210 (i.e. >75 hp, synchronous motors, >600V) will be left to subsequent efforts.
- CSA C393 Test Methods for Measuring Power Consumption in Low and Idle Power Modes of Commercial and Industrial Equipment, public review draft review closed on March 5, 2012. No update on publication plans at this time.
- CSA C838 Drive System Efficiency Method of Test – went out for public review, no comments were received. Meeting in July to approve final standard w/ expected release this fall. MOT for this standard are nearly identical to AHRI 1210
- New IEC standards – how does IEC 528xx compare to AHRI 1210 for instance

### **Research subcommittee report (Rick Heiden)**

- Members - Heiden, Tolbert, Rhinehardt, Hauer
  - No s/c meeting held since Chicago.
  - Heiden to write RTAR's noted below and submit to committee for letter ballot by Dallas
  - Subcommittee meeting before Dallas via teleconference
- Active Research Projects
  - None
- Active Work Statements
  - None
- Proposed RTAR's
  - Quantify standby power consumption in HVAC applications utilizing CSA MOT C393 and outline methods to reduce
    - Evaluate standby power consumption in 5-1500kW HVAC equipment
    - Pareto power consumption by application, climate and size
    - Summarize state of the art reduction methods
  - Survey available literature and databases used for motor-VFD performance modeling in HVAC design
    - Motor-VFD performance rating updates for DOE MotorMaster Plus Database
- Ideas
  - Power quality trends by region and technology (surges, sags, etc)
  - Data Center trends (i.e. 600 VDC ABB case) maybe a seminar

## June 26, 2012

- Effects of motor type on VFD efficiency. How does the MOT for VFD need to be changed for motors other than asynchronous.
- Completed Projects Sponsored by TC 1.11
  - RP-1078 -- Early Detection of Insulation Degradation In Low Voltage Motors
  - RP-1076 -- Diagnostic Test and Analytical Methods for Resolving Fan/Motor Vibration Problems in Air-Conditioning Units
  - RP-1095 -- Measurements of Electrical Power Inputs to Variable Speed Motors and Their Solid State Power Converters: Phase I
  - RP-667 -- Measurements of Electrical Power Inputs to Variable Speed Motors and Their Solid State Converters
  - RP-685 -- Test and Analysis Methods for Resolving Fan/Motor Vibration Problems in Air-Conditioning Units
  - RP-770 -- Measurement of Electrical Power Inputs to Variable Speed Motors and Their Solid State Power Converters

### Membership – John Tolbert

- Roster Review & Revisions

### Handbook – Tom Lowery

#### Chapter 45

Armin resend information to Tom Lowery and will update the online handbook. Vote on committee approve in Dallas

### NEMA Liaison & UL Liaison - Terry Davies

NEMA harmonize, wants to be a central clearing house for all US efficiency standards.

### Web Site – Terry Davies     <http://tc111.ashraetcs.org/>

- Any updates or new features suggested

### Old Business –

- Update on CSA committee regarding Commercial and Industrial Three Phase No Load (Standby) Power Test Method (C393)
  - CSA C393 Test Methods for Measuring Power Consumption in Low and Idle Power Modes of Commercial and Industrial Equipment, public review draft review closed on March 5, 2012. No update on publication plans at this time.
- Armin will confirm published date (maybe October 2012).

### New Business –

- MTG.EAS Energy-Efficient Air-Handling Systems For Non-Residential Buildings (Scope and membership of MTG.EAS was emailed with Agenda)  
Armin Hauer represented TC1.11 in recent teleconference and submitted these questions:
  - Does our TC get involved with process control and with diagnostics? – Or do we just deal with power electronics for motors?
  - Since the focus here is really on the air side, which TC1.11 members wish to contribute to this discussion?
  - Is there anything that we wish to explore in terms of motor/drive efficiency optimization at reduced fan speed?
  - Any other ideas as starting points?

**June 26, 2012**

- EISA motor efficiency minimums – Premium Motors Violation of Efficiency Limits
  - What is the procedure for a manufacturer or a motor vendor to declare motor efficiency?
  - What options does an honest vendor have when he suspects a competitor is fudging the declared efficiency data?
  - Does anybody know about cases where the enforcement has not worked?
  - DoE enforcement Premium Motors – violation of efficiency limits.
    - How surveillance should work
    - How are certification, surveillance and enforcement working in real life?
  
- Is the TC following the discussions about test methods for induction motors? – CSA versus Department of Energy versus IEC 60034-xx  
Do we assume that the test results correlate well enough.
  - New:
    - IEC 60034-2-1, 2<sup>nd</sup> ed 2012? Determination of motor efficiencies
    - IEC 60034-2-3, 1<sup>st</sup> ed 2012? Determination of extra harmonics losses
    - IEC 60034-25, 3<sup>rd</sup> ed 2012? Performance of converter fed motors
    - IEC 60034-30, 2<sup>nd</sup> ed 2012? Ranking of motor efficiencies
    - IEC 528xx, 1st ed 2012/13? Efficiency of frequency converters, power drive systems and complete drive systems
  
- Does anyone have a recent information about IEC528xx and its relation / correlation with AHRI 1210P?

Adjourn