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# 1791 Tullie Circle, N.E./Atlanta, GA 30329

**404-636-8400**

**APPROVED**

# 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 1.11 DATE 23. January 2019

TC/TG/MTG/TRG TITLE Electric Motors & Motor Controls

DATE OF MEETING 25. June 2019 & 11. July 2019 LOCATION Kansas City, MO & Conf. Call

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| MEMBERS PRESENT(VM’s in **bold)** | YEAR APPTD | MEMBERS ABSENT(VM’s in **bold)** | YEAR APPTD | EX-OFFICIO MEMBERS AND ADDITIONAL ATTENDANCE |
| Dr Casey Briscoe | 2015 | **Terry Davies** | 2009 | Gang Wang gwang2@miami.edu |
| **Jerry Edwards** | 2014 | Alex Lifson | 2006 | Sannece Iyama ssiyama@lbl.gov |
| **Ken Fonstad** | 2012 | **Rainer Grosse-Kracht (MNQ)** | 2008 | Sam Jasinski Samuel.jasinski@navigant.com |
| Chandra K Gollapudi | 2017 | Florian Antretter | 2012 | Michael Westlake michael.westlake@carrier.utc.com |
| **Paul Lin** | 2012 | Kim Baker | 2015 |  |
| **Armin Hauer** | 2008 | Dr Kelly Chandler | 2014 |  |
| **Rick Heiden** | 2006 | Dr Charles H Culp III | 2011 |  |
| Robert Helt | 2000 | Mark Doty | 2010 |  |
| Jing Li | 2018 | David Lee | 2012 |  |
| Thomas Lowery | 1998 | Timothy Mathson | 2016 |  |
| Billy Rhinehart | 2003 | Sally Anne McInerny | 1998 |  |
| **Kezhen Shen** | 2016 | Hermann Renz | 2000 |  |
| **Michael Todd** | 2008 | Brian Reynolds | 2013 |  |
|  |  | Robert Richard | 2006 |  |
|  |  | Richard Robertson | 2014 |  |
|  |  | Colin Tait | 2010 |  |
|  |  | William Tinsley | 1999 |  |
|  |  | Thomas Watson | 2000 |  |
|  |  | Adam Willwerth | 2013 |  |
|  |  | Michael Wolf | 2014 |  |
|  |  | Craig Wray | 2007 |  |
|  |  | Nathan Fetting | 2018 |  |
|  |  | Tim Kline | 2017 |  |
|  |  | Nitin Naik | 2017 |  |
|  |  | Eric Norstrom | 2018 |  |
|  |  | Pavithra Santhanam | 2018 |  |
|  |  | Vladimir Suslov | 2019 |  |
|  |  | Sage Tomlinson | 2018 |  |
|  |  | Grant Wheeler | 2018 |  |
|  |  | Stephen Wren | 2017 |  |
|  |  |  |  |  |
| **DISTRIBUTION: *All Members of TC/TG/MTG/TRG plus the following:*** |
| TAC Section Head: | SH1@ashrae.net |
| All Committee Liaisons As Shown On TC/TG/MTG/TRG Rosters (Research, Standards, ALI, etc.) | TACchair@ashrae.netCTTC1@ashrae.netRL1@ashrae.netHBS3@ashrae.netSL1@ashrae.net |
| 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.

**ASHRAE TC 1.11 Electric Motors and Motor Controls**

**Minutes for the Meeting at**

**Kansas City, MO**

**Tuesday, June 25, 2019**

1. **CALL TO ORDER**

**Introduction of Members and Guests.**

Technical Committee 1.11 was called to order at 1:02 PM by Chair Paul Lin. Paul first reviewed the ASHRAE ethics commitment. Technical Committee member and guest introductions were made and an attendance sheet was circulated. Paul asked for additions to the agenda and there were none. The membership list was reviewed and a quorum was established with 7 voting members present, 2 voting members absent including one non-quorum. .

1. **APPROVAL OF MINUTES AND REVIEW OF ACTION ITEMS**

Paul asked if everyone reviewed the minutes from Atlanta and if there were any additions/corrections;

**VOTE**

Armin made a motion to approve minutes from Atlanta with a second by Ken Fonstad. There was no additional discussion and the motion passed 7-0-0-0-CV (Yes-No-Abstain-Absent)

1. **TC MEMBERSHIP and COMMITTEE APPOINTMENTS**

Paul reminded everyone of their assigned committee positions for the 2019-2020 term as follows:

* Chair 🡪 Paul Lin
* VC 🡪 Chandra Gollapudi
* Secretary 🡪 Rick Heiden (Armin Hauer starting in Orlando)
* Research 🡪 Sage Tomlinson (Kezhen Shen assuming role starting now)
* Standards 🡪 Armin Hauer (Chandra Gollapudi starting in Orlando)
* Programs 🡪 Chandra Gollapudi (Terry Davies will cochair)
* Handbook 🡪 Tom Lowery
* Webmaster 🡪 Paul Lin
* Membership 🡪 Jerry Edwards (Mike Todd assuming role starting now)

The membership roster shows 57 total members including liaisons with 9 voting members.

1. **CHAIR REPORT: Paul Lin**

Report

Paul downloaded the latest roster to send out the agenda and minutes.

Discussion Topics

TAC letter to consolidate TC’s survey results were summarized and encourage more collaboration between TC’s. A select set of TC’s may benefit from combination but the wholesale initiative is not progressing in the manner suggested by TAC in Atlanta

Up and coming meetings in order 🡪 Orlando, Austin, Chicago

Webinar on IEC 61800-9-2 held on February 8th 2019 - Dan Delaney, Chair of NEMA 1MG Section Committee presented an overview of IEC standards whose goal is developing performance requirements and associated methods of test for motor drive units. Title of presentation is NEMA EPA Overview where EPA stands for Extended Product Approach. A copy of this presentation has been added to Basecamp. The committee wishes to thank Mr. Delaney for his time and information.

1. **SUBCOMMITTEE REPORTS**
2. **Standards: Armin Hauer**

Report

As per attached “job description – quote – “ASHRAE’s focus is primarily on ASHRAE developed standards and guidelines that may start at the TC level and then move to the PC level for development under Standards committee and PASA rules. We only react to other party’s standards if there is an issue that contradicts or does not fully agree with our standards”

This TC is cognizant of standard 222. – No news.

TC 1.11 does not maintain official liaisons to ASHRAE PCs. However, …

* Yet, AHRI is represented on 189.1, 90.2, and 90.1
* Armin Hauer is voting member in MSC 90.1.
* ASHRAE 205?

Questions to the TC:

* What else is covered presently?
* Do we need liaisons to additional PCs?

*Miscellaneous:*

90.1-2016 has a reference to small motor tables mislabeled. An erratum is in the works.

Efforts in 90.1 and 189.1 to deal with motor systems that are rated by electrical input power rather than shaft power output in regulations. Example: 90.1-2016 addendum ***CE***.

Discussion Topics

ASHRAE Std 205 which is interested in achieving a systems efficiency model based on subcomponent models including VFD’s and motor/drive components. Kezhen described a working group has been formed around motor/drive systems. Tom Lowery is participating in the work group but not as a liaison of TC 1.11.

ASHRAE SPC 41.11R – Power Measurement Standard - Michael Todd chaired revision committee SPC 41.11R – the committee voted in KC to approve revision for its 1st public review.

In order to stay more abreast of motor and motor control related topics associated with ASHRAE 90.1 Mechanical Sub-committee (MSC), appointing a formal liaison from TC 1.11 was discussed. For example, it was noted 90.1-2016 section 6.5.3.6 has requirements for fractional kilowatt fan-motor efficiency. Armin volunteered to serve in that capacity as he is already active in the 90.1 MSC.

**VOTE**

Motion by Paul Lin and seconded by Chandra Gollanpudi to to appoint Armin Hauer as official TC 1.11 Liason to 90.1 MSC.

Vote 7-0-0-0 CV

1. **Research: Kezhen Shen for Sage Tomlinson**

Report

WS 1793 Development of Method of Test for Motor Component Thermal Conductivity [TC8.2 lead, 8.2 & 1.11 co-sponsor]-

* TC 8.2 [Mark Adams, research s/c chair] indicated the RL to call a meeting with Mark Adams and Rick Heiden after KC to review the WS in more detail. No action required by TC 1.11 at this time.

RTAR TBD - Modeling Variable Frequency Drive (VFD) and motor efficiency at speed and load points not tested in Standard 1210/1211 to determine overall system efficiencies of any VFD-motor and fan, pump or compressor combination.

* Kezhen Shen reports draft RTAR is on basecamp but philosophically believes the scope may be too great. Paul and Kezhen will meet with target to complete by May

Discussion Topics

RAC has released a new proposal vehicle named a Publication Topic Acceptance Request (PTAC). This may be considered for the VFD RTAR above.

TC 5.1 has submitted a PTAC for comparison of EC fan with traditional fan looking for 1.11 and 2.6 cosponsorship. Straw pole of membership indicated support. Armin is working with author and Rick suggested a broader scope of motors.

ASHRAE Standards 90.1 and 189.1 are moving to require fans 1hp and above to use FEI metric by AMCA 207 Fan System Efficiency and Fan System Input Power.

AMCA is also looking to expand scope of motor types. This need may align with the RTAR Keszen Shen is authoring.

IEC 68100 Adjustable Speed Electrical Power Drive Systems was also discussed as a relavant standard when considering VFD standards

1. **Programs: Chandra Gollapudi**

Report

Advanced Motor Technologies and Next Steps in Motor Efficiency program was submitted and rejected for Kansas City. Suggest to resubmit again for Orlando.

Discussion Topics

State of the Art MOT for Motor/Drive Systems (SPC 222 now taking over MOT for ASHRAE 1210)

Chair – Paul Lin

Speakers – Ken, Armin, Kezhen will find a 3rd

1. **Handbook *Chapter 45*: Tom Lowery**

Report

Tom was unable to attend the meeting.

Discussion Topics

Handbook revisions were not circulated for review by the TC and the deadline may have passed. The TC may focus on updates to the electronic handbook versions which are cycled on an annual basis. Paul will contact Tom for any drafts in process.

Content was subsequently reviewed during a July 11, 2019 conference call following distribution of the drafts to the full committee.

D1**. Handbook Meeting Notes from special conference call meeting on 11. July 2019**

Attendees included voting members Armin Hauer, Ken Fonstad, Tom Lowery, Paul Lin and Rick Heiden along with Corresponding Members Chandra Gollapudi, Terry Davies and Tim Mathson. Chairman Paul Lin established quorum with 5 voting members of 7 on the current roster and called the meeting to order.

**VOTE:**

* Motion by Armin Hauer, 2nd by Tom to approve section 2.3 PERFORMANCE TESTING AND RATING STANDARDS mark-up as distributed by Armin on July 11. Discussion, this edit includes all markups and was identical to edited file loaded to basecamp by Tom Lowery.
* Role call vote of 5-0-2 CV (Yes-No-Absent)

**VOTE:**

* Motion by Armin Hauer, 2nd by Ken Fonstad to approve section 2.0 AIR VOLUME CONTROL draft markup distributed by Armin on July 11th and further consensus edits by members on the phone during the meeting.
* Role call 5-0-2 CV (Yes-No-Absent)

 **Action:** Armin will clean up edits and submit for inclusion

1. **Membership: Michael Todd**

Report

26 corresponding members

12 provisional members

8 voting members

1 voting member non-quorum

Discussion Topics

Several committee appointment changes were made as noted in section 3.

1. **WEB SITE** [*http://tc111.ashraetcs.org*](http://tc111.ashraetcs.org)**: Paul Lin**

Report

Up to date.

Add approved Atlanta meeting minutes

Discussion

The committee will continue to increase use of BASECAMP for communication.

1. **LIASION REPORTS**
2. **Section Head: Amir Jokar**

Amir was unable to attend. Jessica Leach is the incomonng SH and introduced herself to the TC.

1. **NEMA/UL Motor Committee Liaison – Chandra Gollapudi**
* For pool pump / motor packages, NEMA submitted request to DOE to apply Motor rule to align with the pump rule to avoid users replacing VFD motor pump packages with cheaper, less efficienct induction motors.
* Paul Schafer gave preso on planned motor/systems market assessment
* A new pump rating program called Extended Motor Products (XMP) launching by Northwest Energy Efficiency Advocates (NEEA) and Hydraulic Institute. The program is similar to Energy Star.
1. **NEMA/UL Drive Committee Liaison – Terry Davies**

Terry will provide and update in Orlando. He has been unable to attend recent meetings.

1. **OLD BUSINESS**

None.

1. **NEW BUSINESS**
2. **ANNOUNCEMENT OF NEXT MEETING**
3. **ADJOURNMENT**

**VOTE**:

Ken Fonstad made the motion to adjourn with a second by Chandran, PASSED 5-0-0-2-CNV. The meeting was adjourned at 2:48PM.

Respectfully Submitted,

Rick Heiden

Secretary, TC 1.11

**Appendix I – Section 1 Breakfast Minutes, CEC Info, & Pub Info**

Not provided