# 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. 1.1 DATE 06-26-2017

TC/TG/MTG/TRG TITLE Thermodynamics and Psychrometrics

DATE OF MEETING 26 Jane 2017 LOCATION Long Beach, California

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| --- | --- | --- | --- | --- |
| MEMBERS PRESENT | YEAR APPTD | MEMBERS ABSENT | YEAR APPTD | EX-OFFICIO MEMBERS AND ADDITIONAL ATTENDANCE |
| Vikrant Aute | 2013 | Howard Cheung | 2015 | Roy Crawford |
| Omar Abdelaziz | 2015 | Liping Liu | 2015 | Sebastian Herrmann |
| Kashif Nawaz | 2016 |  |  | Han-Joachim Kretzchmar |
| Stanislav Perencevic (NQ) | 2013 |  |  | Ayyoub Momen |
| Hongmei Liang | 2016 |  |  | S A Sherif |
|  |  |  |  | Amir Jokar |
|  |  |  |  | Scott Creamer |
|  |  |  |  | Bill Fox |
|  |  |  |  | Ray Rite |
|  |  |  |  | Sreenidhi Kishnamoorthy |
|  |  |  |  | Chris Hughes |
|  |  |  |  | Brian Restz  David Hulbrook |
|  |  |  |  | Yunhuo Huang |
|  |  |  |  | Ann Hoewing |
|  |  |  |  | Gil Staffend |
|  |  |  |  | Pedro Perez |
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**DISTRIBUTION**

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| --- | --- |
| **DISTRIBUTION: *All Members of TC/TG/MTG/TRG plus the following:*** | |
| TAC Section Head: Amir Jokar | SH1@ashrae.net |
| All Committee Liaisons As Shown On TC/TG/MTG/TRG Rosters (Research, Standards, ALI, etc.) | See ASHRAE email alias list for needed addresses. |
| Mike Vaughn,  Manager Of Research & Technical Services | MORTS@ashrae.net |

**DRAFT MINUTES: ASHRAE TC 1.1 – Thermodynamics and Psychrometrics**

**Annual Meeting, 26 June 2017**

**Call to Order and Reading of TC 1.1 Scope** (Omar Abdelaziz)

Chair Omar Abdelaziz called the meeting to order at 2:17 pm. The title, purpose and scope of the TC were read.

Technical Committee 1.1 is concerned with basic thermodynamic laws and property relationships, particularly as they are applied to processes involved in heating, ventilating, air conditioning, refrigeration, and related areas of environmental engineering. A second concern of the TC is the fundamental thermodynamic and transport relationships for air and water vapor mixtures, as used in the study, measurement, and calculation of psychrometric properties and processes.

**Introduction of members and guests** (Omar Abdelaziz)

Introductions around the room followed. Omar thanked the members and guest and appreciated the services by YAE members. Visitors were welcomed.

**Establishment of Quorum** (Omar Abdelaziz)

* 5 of 7 voting members (quorum) were present along-with 1 non-quorum members, so a quorum was established

**Review/Approve Minutes from Orlando, Jan 2016** (Omar Abdelaziz)

Motion:Approve minutes with cover page modified. (Vikrant Aute/ Stanislav) 5-0-0-2-CNV

**Section Head Comments** (Amir Jokar)

Section head reported regarding the significant improvements in the TAC processes and procedures. TAC is getting involved in program evaluation to ensure better communication.

Committee members highlighted that since the nature of Section 1 committees is considerably different from other sections, a uniform performance evaluation criterion is inappropriate.

Omar thanked the section head for the report.

**Program Subcommittee** (Omar Abdelaziz)

Omar presented updated for program.

**Handbook Subcommittee** (Kashif Nawaz)

TC 1.1 manages Chapter 1 and Chapter 2 of Fundamentals. Both chapters were voted on and the revised versions are part of ASHRAE Fundamentals 2017. Sub-committee chair provided update from Hand-book chair training session.

It was reported that all TC members have access to online portal to review and revise the chapters. ASHRAE intends to use the Handbook as an effective tool to disseminate the research projects outcomes by adding a mandatory section in research project reports which can become a part of handbook.

**Membership Subcommittee** (Liping Liu)

Omar Abdelaziz provided update on behalf of Liping Liu

VM rolling off: Omar Abdelaziz, Vikrant Aute, Stanislav Perencevic (NQ), Thomas Kuehn

New voting members: Bill Fox, Roy Crawford, SA Sherif, Hans-Joachim Kretzschmar(NQ), Ayyoub Momen (starting 7/1/2017)

Kashif Nawaz to assume the chair position, Liping Liu will continue to serve as vice-chair and Ayyoub Momen will be the secretary of the committee.

**Webmaster/Journal/Insights Reports** (Kashif Nawaz)

Section head advised to include relevant research information on website.

**Research Subcommittee** (Bill Fox)

Notes from sub-committee chairs’ breakfast.

* 7 RTARs were considered and 1 was approved 3 rejected, 4 work statements were evaluated- 1 was conditionally accepted and 3 returned.
* URPs
* Students should attend the meeting
* IRG (Innovative Research Grant)- which is specific for highly innovative ideas (out of the box). RAC resumed the program after interruption of few years and received 33 pre-proposals. 6 are down-selected for full proposal submission.
* New investigator award- there were six nominees and one was selected for the award.

RP- 1767 active project. Final report December to March next year. No cost extension for six month.

Abstain, Approve 4-0-1 (Vikrant Aute is sub-performer)

A couple of reminders:

* When an WS is conditionally accepted, the authors should include a cover letter to address all the concerns point by point.
* Co-sponsoring TCs should be more involved and actively participate in the development of RTARs, WSs- There should be a voting and the details must be included in draft.
* Abstentions and negative votes- details must be provided why there are concerns for the sake of completion. This will help RAC to understand any potential concerns.
* If there are external agencies who are willing to support the project. A support letter must be included.

Some notes for PMS:

* PMS has a very critical role in the successful completion of the project. A lot of effort is put to get the project approved and then provision of useful outcome of the project relies on PMS.
* There will be a training session by mid-May, it’s a webinar and all PMs member are encouraged to attend the training.
* It’s always a good idea to develop a timeline for the project and set milestones- vendors working on the project should also provide a timeline and provide updates about the progress. If there is any delay- PMS must inform RAC about the issue so that appropriate action can be taken.

TC 1.1 Research Status:

RP- 1767 “Transport Properties of Water and Steam” Sebastian Herrmann provided the updates.

New RTARs:

Omar proposed research topic “Thermodynamic properties of A2L refrigerants with contaminants”, Kashif Nawaz to work with Omar to prepare the RTAR.

Sebastian Herrmann/ Hans-Joachim Kretzschmar proposed a new topic “Impact of contaminants on the moist air properties” for further discussion. Thermodynamic properties of humid combustion gases. Non-ideal gases, humid air are some other potential subjects.

**Low GWP Refrigerants MTG Liaison** (Ray Rite, Alt#1 – Sankar Padhmanabhan)

Ray Rite provided updates for following research projects. The MTG.Low GWP website is being updated on a regular basis and as such the information about MTG representation and involvement is not repeated here. The latest roster and meeting minutes can be found at the above link.

**Activities Highlights**

* RP-1806, Flammable Refrigerants Post-Ignition Simulation and Risk Assessment Update. Status: Awarded to Gexcon US in December 2016, Project Start Date: 1/1/17, Duration: 12 months, Original cost: $797k, Funded Extension in the amount of $46.5k was approved in June 2017 to accurately quantify the source term for the AHRTI 9007 project, which includes amount of entrained air, fraction of vapor and liquid, and velocity of the release as well as other details from the AHRTI 9007 project.
* RP-1807, Guidelines for Flammable Refrigerant Handling, Transporting, Storing, and Equipment Servicing and Installation. Status: Awarded to Navigant Consulting in January 2017, Project Start Date: 3/1/17, Duration: 6 months, Cost: $80k.
* RP-1808, Servicing and Installing Equipment Using Flammable Refrigerants: Assessment of Field-made Mechanical Joints. Status: Awarded to Creative Thermal Solutions, Inc. in April 2017, Project Start Date: 5/1/17, Duration: 6 months, Cost: $115k

RP1808- Just started; Duration: May 2017 to Dec 2017. Summary as below:

1. Servicing and Installing Equipment Using Flammable Refrigerants: Assessment of Field Made Mechanical Joint Systems (Focus: A2, A2L and A3)
2. Status: Test matrix and methods discussed with PMS; incorporated feedback and finalized; waiting for full signed contract.
3. Joints: Brazed (Cu-Cu), flare (Cu-Cu, Cu-Al), compression (Cu-Cu, Cu-Al), press fittings(Cu-Cu, Cu-Al)
4. Skilled (2 categories of joint difficulty) and un-skilled (two categories)
5. Harshness Testing: PT Cycling; Freeze-Thaw Cycling; Vibration test. Detailed included in the PPT.
6. 325 Total fittings
7. Procedure: Prepare Fitting - Initial Leak Test with N2 - Harshness Test - Final Leak Rate Analysis (PMGA) - Vacuum Test

**Chair Comments** (Omar Abdelaziz)

Chair attended breakfast Sunday Morning 6:30 AM.

**New Business** (Omar Abdelaziz)

No new business was discussed.

**Schedule Next Meeting** (Omar Abdelaziz)

Monday, 22 Jan Chicago at 2:15 PM -4:30 PM.

**Adjournment** (Omar Abdelaziz)

Motion to adjourn at 4:10 PM