

AMERICAN SOCIETY OF HEATING, REFRIGERATION 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 60 days following the meeting.)  
TC/TG/TRG NO 1.1 DATE January 2014

TC/TG/TRG TITLE: Thermodynamics and Psychrometrics

DATE OF MEETING 01/20/2014 LOCATION New York, New York

MEMBERS PRESENT	YEAR APPTD	MEMBERS ABSENT	YEAR APPTD	EX-OFFICIO MEMBERS AND ADDITIONAL ATTENDENCE
James Schaefer (Chair)	13	Bill Fox (voting)	13	Art Geisler (Research Liaison)
Omar Abdelaziz (Vice Chair)	13			Chris Laughman
Liping Liu (Secretary)	13	<i>Corresponding members</i>		Kashif Nawaz
Thomas Kuehn	13	Mark Ahlers	05	Ray Rite
Vikrant Aute (Webmaster)	13	Chad Bowers	09	Stephen Wage
Tony Jacobi	13	Robert Braun	05	
Stanislav Perencevic (Non-Quorum)	13	Steven Brown	07	
		Roy Crawford	88	
<i>Corresponding members</i>		Jonathan Douglas	07	
Laura Schaefer	02	Ellen Franconi	99	
Howard Cheung	11	Don Gatley	01	
S. A. Sherif	05	Siviakumar Gopalnarayanan	06	
Sebastian Herrmann	11	Anna Hueffed	09	
		Edwin Huestis	11	
		Jason Hugenroth	07	
		Omar Huzayyin	11	
		Sandy Klein	02	
		Hans-Joachim Kretzschmar	11	
		Ness Lakadawala	11	
		Jason LeRoy	99	
		Pedro Mago	05	
		Thomas Meyer	07	
		Pavan Naicker	11	
		Ron Nelson	86	
		Nicole C Okamoto	04	
		Jose Perez-Galindo	04	
		Eric Ratts	01	
		Trilochan Singh	92	
		Robert Tozer	97	
		Kurt Zoellick	09	

**Distribution**

*All members of TC/TG/TRG plus the following:*

TAC Section Head:	<a href="mailto:SH1@ashrae.net">SH1@ashrae.net</a>
TAC Chair:	<a href="mailto:TACchair@ashrae.net">TACchair@ashrae.net</a>
All Committee Liaisons As Shown on TC/TG/TRG Rosters:	
RAC Research:	<a href="mailto:RL1@ashrae.net">RL1@ashrae.net</a>

Program:	<a href="mailto:PL1@ashrae.net">PL1@ashrae.net</a>
Standards:	<a href="mailto:SL1@ashrae.net">SL1@ashrae.net</a>
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**Unapproved Minutes**  
**TC 1.1 Thermodynamics and Psychrometrics**  
**Monday, January 20, 2014, New York, New York**  
**2:15 pm – 4:15 pm**

**1. Call to Order:**

James Schaefer called the meeting to order at 2:15 pm. A sign-in sheet was distributed and attendees registered. James asked attendees to introduce themselves. James reviewed quorum. Five out of the 8 voting member were present.

Vikrant Aute came in at 2:20PM and Omar Abdelaziz arrived at 2:26PM. Seven out of the 8 voting members were present; thus quorum was established.

**2. Liaison Reports:**

Arthur Giesler (research liaison) expressed appreciation to the committee members. He asked the TC to contact him if there are any questions.

Omar added that the research \$\$ looks good and now is a good time to submit RTARs. He mentioned that the new forms made things easy and reminded RTAR workers to make sure to use the new forms.

ASHRAE wants more people to report their affiliation to decide % in academia and % in industry. Also add disciplines. It is also time to update the TC roster.

**3. Chair Report and Announcements:**

James Schaefer discussed some of the announcements from the section breakfast:

- Outstanding Technical Committee Award, to be awarded based on TC activities
- Request for each TC to review ASHRAE Code of Ethics, which can be found on the website
- A new MTG has been formed – MTG.HCDG (Hot Climate Design Guide)
- Tracks have been announced for Seattle meeting. The Seattle Conference Technical Program addresses broad topics in the application of technology to practice, specific applications in ground source heat pumps, O&M and indoor environmental quality
- Next winter meeting in Chicago, January 24 – 28, 2015, has announced a call for papers. Conference paper abstracts are due March 24, 2014. If accepted, written conference papers due July 7, 2014. Technical Papers are due April 14, 2014.
- New online forum/discussion board “ASHRAE Exchange”. Post to ask questions and connect with other professionals.
- Remind members to update their bios.
- Upcoming workshops and conferences. See more information online.

**4. Previous Minutes Approval:**

Liping Liu pointed out that she attended the Denver TC1.1 meeting but was listed as absent in the minutes. James Schaefer made the revision.

Thomas Kuehn moved to approve Denver meeting minutes; the motion was seconded by Tony Jacobi and approved by the TC (5-0-0).

**5. Roster Updates:**

James Schaefer discussed the membership updates. The current roster started on July 1<sup>st</sup> 2013 with 8 voting members. James asked the audience to contact him if interested in joining as corresponding members.

## 6. Subcommittee Reports:

### *Research Subcommittee*

Tony Jacobi mentioned he would keep working on the RTAR “mass diffusivity of refrigerant in oil”. Omar Abdelaziz would also continue working on the RTAR “Not in kind technology mapping for different HVAC&R applications”.

### *Program Subcommittee (Howard Cheung)*

Howard submitted a seminar “Energy quality: Why it matters?” for New York meeting and it was not approved. It will be resubmitted for Seattle meeting. Howard had one speaker and is looking for more speakers.

A seminar from one year before on “thermoacoustic refrigeration” will be resubmitted for Seattle meeting. Laura Schaefer suggested a title “Environmentally sound refrigeration”. However, a previous confirmed speaker Steven Garrett from PSU can’t attend Seattle meeting. Howard is looking for more speakers for this seminar too.

Feb 14<sup>th</sup> is the deadline for program submission to Seattle meeting. Nothing planned for Chicago for future meetings. For Chicago meeting Omar suggested a program on “ideal buildings”, *e.g.* no loss from the windows, Carnot heat pumps at several locations, *etc.* Omar explained that it could be about how people use utilities at home, how to achieve commercial energy usage savings, and the thermodynamic limit in buildings. Laura Schaefer mentioned steam pipes versus direct heaters, *etc.* Howard suggested to contact other committees for cosponsor. Omar suggested TC7.4 Exergy Analysis for Sustainable Buildings.

For New York meeting there are 194 slots for programs, 44/66 technical paper sessions, 18 poster session, 93/103 conference paper sessions, 62/103 seminars, and 1/14 forums accepted. S. A. Sherif suggested not to submit forums. James Schaefer suggested workshop (30 minutes presentation, 30 minutes interactive discussion). Omar said we need to work (discuss) with the Track Chair.

### *Standard Subcommittee (Roy Crawford)*

Roy Crawford is no longer able to serve on the Standard Subcommittee. James Schaefer is looking for volunteers.

Standard 213P (Method for Calculating Moist Air Thermodynamic Properties) was approved in last meeting in Denver. The peer reviewed documents include enough information to perform uncertainty analysis. Standard 41.6 used to have all the properties which have been officially removed. People are using properties out of the handbook instead of the standards. Standard 41.2 (measurement standards) is still under the decision. The meeting will be on Tuesday morning at 8AM.

### *Handbook Subcommittee (Youngfang Zhong)*

Yongfang Zhong is no longer able to serve on the Handbook Subcommittee. James is looking for volunteers. He mentioned that one person expressed interest but didn’t show up at this meeting. James asked the audience to contact him if interested. The deadline for next handbook update is March 21<sup>st</sup> 2016.

MTG. Low GWP to be included in the handbook? Omar said he is not the liaison. Samuel Sami is the TC1.1 liaison to the MTG, but he didn’t come to ASHRAE for a long time. The next MTG meeting is on Wednesday from 10-11AM at the ASHRAE Lounge. Usually pre and post ASHRAE meetings. Ray Rite volunteered.

Vikrant reported research activities that are of interest to the MTG from the Jan 8<sup>th</sup> 2014 MTG teleconference. RTAR1717 “Improve Accuracy and Reproducibility of ASTM-E681 Test Method for Flammability Limit Measurement of 2L Flammable Refrigerants” is to be voted at the New York meeting. RP-1584 “Assessment of Alternative Approaches to Predicting the Burning Velocity of a Refrigerant” is near completion. Vikrant also mentioned there is an IIR LCCP Working Party on Tuesday afternoon (Lincoln room 4<sup>th</sup> floor).

*Website*

Vikrant put the roster on the website. Minutes from Omar (Denver meeting) is also on the website, along with approved meeting minutes from two earlier meetings. Vikrant asked the audience to contact him if there are any changes to be made.

**7. Old Business:**

Nothing to report

**8. New Business:**

ASHRAE encourage the participation of YEA (Young Engineers in ASHRAE) members. YEA members are below 36 years old. Six YEA members were present in the audience.

James Schaefer mentioned that he was contacted with a question (or proposal): Relative humidity is not properly defined for superheated steam. Should the ASHRAE definition of relative humidity be changed or amended? Thomas Kuehn suggested sending the question description to all TC1.1 members and see whether there are anyone interested.

**9. Adjournment:**

Vikrant Aute moved to a motion to adjourn the meeting; the motion was seconded by Stanislav Perencevic and approved by the TC (7-0-0). The meeting was adjourned at 3:17PM.

Submitted by Liping Liu

## ASHRAE TC/TG/TRG ACTIVITIES SHEET TC/TG/TRG

DATE January 2014

TC/TG/TRG NO. 1.1 TC/TG/TRG TITLE: Thermodynamics and Psychrometrics

CHAIRMAN: James Schaefer, Jr. VICE CHAIRMAN: Omar Abdelaziz SECRETARY: Liping Liu

### TC/TG/TRG Meeting Schedule

#### Location Past 24 months

Chicago, IL – January 21-25, 2012  
 San Antonio, TX – June 23-27, 2012  
 Dallas, TX – January 27-31, 2013  
 Denver, CO – June 22-26, 2013

#### Location next 24 months

Annual 2014 – Seattle, Wash; June 28 – July 2  
 Winter 2015 – Chicago, Illinois; January 24 – 28  
 Annual 2015 – Atlanta, Georgia; June 27 – July 1  
 Winter 2016 - Orlando, Florida; January 25 – 27

### TC/TG/TRG Subcommittees

Function	Chairperson
Standards	Roy Crawford
Handbook	Youngfang Zhong
Programs	Howard Cheung
Research	Bill Fox
Webmaster	Vikrant Aute

### RESEARCH PROJECTS – Current & Past

<u>Project Title</u>	<u>Contractor</u>	<u>Monitoring Comm. Chair</u>	<u>Report Made</u>	<u>Reported by</u>
TRP – 1460				
URP – 1485	Don Gatley	Ron Nelson	June 2008	

### LONG RANGE RESEARCH PLAN

<u>Rank</u>	<u>Title</u>	<u>W/S</u>	<u>Approved</u>	<u>To R&amp;T</u>

### HANDBOOK RESPONSIBILITIES

Year and Volume	Chapter and Title	No.	Deadline	Handbook Sub. Liason
2013 Fundamentals	1 Thermodynamics		2012	Youngfang Zhong
	6 Psychrometrics		2012	

### STANDARDS ACTIVITIES

#### TECHNICAL PAPERS from Sponsored Research – Title, when presented (past 10 yrs & planned)

#### TC/TG/TRG Sponsored Symposia – Title, when presented (past 10 yrs & planned)

Exergy Efficient Systems and Applications for Sustainable Buildings, Long Beach, CA – June 2007  
 Exergy: A New Frontier in Green Building Simulation, Long Beach, CA – June 2007  
 Psychrometrics at Extreme Conditions; Cincinnati, OH - June 2001  
 Thermoeconomics and Second-Law Analysis of HVAC&R Systems; Atlanta, GA - January 2001  
 Second-Law Studies of Systems and Processes; Chicago, IL - January 1999

**TC/TG/TRG Sponsored Conference** – Title, when presented (past 10 yrs & planned)  
Exergy as a Measure of Performance and Sustainability (planned), Albuquerque, NM – June 2010

**TC/TG/TRG Sponsored Seminars** – Title, when presented (past 10 yrs & planned)  
Thermoelectric cooling new applications for an old idea, Dallas, TX – January 2013  
Magneto-Caloric Refrigeration: Are You Attracted to Cool Ideas?, Chicago, IL – January 2012  
Thermodynamics of Advanced Cycles and Systems, Orlando, FL – January 2010  
Thermoeconomics of Net Zero Design, New York, NY – January 2008  
Exergy 101 for Beginners, Long Beach, CA - June 2007  
Exergy 201 Use it or Lose it, Long Beach, CA - June 2007  
Advanced Cycles and Systems, Dallas, TX – January 2007  
Advanced Cycles and Systems for Air Conditioning, Refrigeration and Power, Quebec City, Canada – June 2006  
Exergy Analysis and Sustainability, Part I: Fundamentals, Quebec City, Canada – June 2006  
Soft Cake Yet Not Crusted: Humidity Control and Measurement Challenges and New Technologies at Room, Low, and High Temperature Ranges, Chicago, IL – January 2006  
Second Law Analysis and Optimization: Orlando, FL – February 2005  
How Second-Law Analysis Can Save You Money; Atlanta, GA - January 2001

**TC/TG/TRG Sponsored Forums** – Title, when presented (past 10 yrs & planned)  
Thermodynamics of Biological Systems and Processes (planned); Orlando, FL – June 2009  
Thermodynamics of Sustainable Urban Energy Systems; Chicago, IL – January 2009  
Humidity Measurements at Extreme Temperatures; Denver, CO – June 2005

**JOURNAL PUBLICATIONS** – Title, when published (past 3 yrs & planned)

Submitted by: Liping Liu