

**AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING  
ENGINEERS, INC.  
1791 Tullie Circle, N.E./Atlanta, GA 30329  
404-636-8400**

**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. 10.7 DATE 8/17/2013

TC/TG/MTG/TRG TITLE Commercial Food and Beverage Refrigeration Equipment

DATE OF MEETING June 24, 2013 LOCATION Denver, CO

MEMBERS PRESENT	YEAR APPTD	MEMBERS ABSENT	YEAR APPTD	EX-OFFICIO MEMBERS AND ADDITIONAL ATTENDANCE
Dean Swofford	2011	Masood Ali	2011	
Cynthia Gage	2012	Massoud Neshan	2011	
Dave Demma	2012			
Cesar Lim	2010			
Georgi Kazachki	2009			
Pradeep Bansal	2012			
Maryline Rossi	2011			
Charlie Hon	2012			
Robert Sperl	2010			

**DISTRIBUTION**

*All Members of TC/TG/MTG/TRG plus the following:*

TAC Section Head:	Ken Cooper
TAC Chair:	Walter Grondzik
All Committee Liaisons As Shown On TC/TG/MTG/TRG Rosters:	ALI: Hugh McMillian CTTC: Gerald Hartford RAC: John Shonder Standards: Cecily Grzywacz
Manager Of Standards Manager Of Research & Technical Services	Stephanie Reiniche Mike Vaughn

THESE DRAFT MINUTES HAVE NOT BEEN APPROVED AND ARE NOT THE OFFICIAL,  
APPROVED RECORD UNTIL APPROVED BY THIS COMMITTEE.

**ASHRAE TC 10.7**  
**Commercial Food & Beverage Refrigeration Equipment**  
**Minutes from 2013 ASHRAE Annual Meeting**  
**Denver, CO – June 24, 2013**

**1. Call to Order**

The meeting was called to order by Chair D. Swofford at 2:18 pm. Members and guests introduced themselves. D. Swofford thanked everyone for their participation. A sign-in sheet was circulated (Attachment A).

**2. Review and Revise Agenda**

The agenda was reviewed and items were identified for New Business (see below).

**3. Determination of Quorum**

Quorum was established with nine voting members present including the Chair (Dean Swofford, Charles Hon, Cynthia Gage, Georgi Kazachki, Robert Sperl, Dave Demma, Maryline Rassi, Pradeep Bansal, Cesar Lim)

**4. Review New Scope / MBO's**

D. Swofford read the TC's new scope which was approved by TAC. The new objectives did not require TAC approval. The TC's new title was also approved by TAC.

▪ TC10.7 Scope:

- TC 10.7 is concerned with the application and performance of equipment and systems for the refrigeration of food and beverages in commercial operations. This includes commercial equipment such as refrigerated merchandisers and storage cases, walk-in freezers and coolers (<3000 sq. ft.), beverage vendors and dispensers, commercial ice makers, and water coolers.

▪ TC10.7 MBO's (Objectives):

- The pursuit of technological advancement of commercial food and beverage equipment and systems to enhance overall performance through improved food safety, food quality, energy efficiency, and reduced environmental impacts.
- To provide engineering design, application knowledge, and technical expertise to effectively support research and the Refrigeration handbook chapters and standards for which we are responsible.

**5. Recognition of Liaisons and Announcements:**

**A. Research Committee Liaison (P. Bansal)**

P. Bansal announced there was a surplus of funds for ASHRAE research. He noted that only one RTAR had been submitted by TC10.7, and it has been returned to the TC for some requested modifications. The TC 7.5 RTAR (co-sponsored by TC 10.7) was also returned with minor comments. TC 10.7 will have a new RAC liaison as of July 1.

**B. Refrigeration Committee Liaison (Cesar Lim)**

C. Lim reported that the *Ammonia Position Document* had been reaffirmed by the Refrigeration Committee. Issues are being resolved with UNEP on the Sustainable Refrigeration Design Guide.

**C. Technical Activities Committee (Ken Cooper – incoming)**

K. Cooper introduced himself as the incoming Section Head for Section 10. He noted that the new roster will indicate all new liaisons.

**D. TC Chair Breakfast (D. Swofford)**

D. Swofford informed the members that ASHRAE is requesting members to update their bio information on the ASHRAE website and enter their employment discipline. D. Swofford also

requested that members make sure their e-mail addresses and affiliations are correct. "Thank you" letters to employers from the ASHRAE President will be sent out in the next month. Watch for the e-mail with instructions from ASHRAE if you would like a letter to be sent to your employer. TC Subcommittee meetings can be held by conference call. Contact Mike Vaughn at ASHRAE through the TC10.7 Chair if interested. There are several upcoming meetings and conferences. A list is attached (Attachment B). There is a list of available ASHRAE awards information. Individuals are encouraged to submit nominations.

## **6. Membership**

A new Program Subcommittee Chair is needed as C. Gage will be changing roles to become the Secretary. C. Nelson agreed to serve. Two voting members will roll off in July. Incoming Chair, B. Fricke, will become a voting member. Vice-Chair will be R. Sperl. D. Swofford invited guests to join as corresponding or provisional members of the TC. B. Fricke noted there is a place on the ASHRAE website where one can request to be added as a provisional member.

## **7. Review Draft Minutes from the 2013 Winter Meeting in Dallas**

The minutes of the January 28, 2013 meeting of the TC were reviewed. Two corrections were noted. R. Sperl moved to approve the minutes as amended. P Bansal seconded. Minutes were approved as amended: 8-0-0-2-CNV

## **8. Subcommittee Reports:**

### **A. Program Subcommittee (Cynthia Gage, Chair)**

The Program Subcommittee met Sunday, June 23 from 5:15 to 6:00. C. Gage prepared notes from the meeting and summarized the discussion (Attachment C). Three potential program submissions for New York were recommended to the TC from the subcommittee meeting. No objections were raised on the recommendations. V. Baxter mentioned the on-going difficulty in getting programs approved for the conference. His demand response seminar was submitted three times before it was accepted for Denver. E. Groll noted that the trend is to move to conference papers.

### **B. Research Subcommittee (Daryl Erbs, Chair)**

The Research Subcommittee met Sunday, June 23 from 6:00 to 6:45. D. Erbs prepared notes from the meeting and summarized the discussion (Attachment D). A new RTAR form is coming out to help organize areas and limit necessary text. The final report for RP-1467 will be sent out soon to the TC for a vote. Two RTARs (1615 and 1706) can be developed into work statements while addressing comments from RAC. New projects will be developed into RTARs.

### **C. Handbook Subcommittee (Dave Demma, Chair)**

The Handbook Subcommittee met Sunday, June 23 at 6:45. D. Demma reported that Chapter 16 was sent out to reviewers but no comments were received. Comments were received and incorporated into Chapter 15. Chapters were sent out to the full TC for review. An e-mail ballot to approve the updated Chapter will be sent out to voting members in the next two weeks. C. Gage noted that Chapter 16 has not been updated in the last several handbook cycles, and recommended that the subcommittee begin to identify and assemble potential revisers to start an update for the next handbook cycle.

### **D. Standards Subcommittee (Van Baxter, Chair)**

V. Baxter reported that the TC is cognizant for 6 standards. Several are under revision. V. Baxter informed the TC that Standard 32.1-2010 needs to be voted on. ASHRAE staff provided some comments on this standard, and V. Baxter has forwarded these to the

committee for review. C. Weber reported that on June 4, DOE opened the rulemaking process for vending machines and is looking to make additional changes. A stakeholders meeting was held. Many additional loads are not part of the standard and DOE is trying to capture these. The DOE Rule now refers to Standard 32.1-2004. In light of this information, the TC discussed revising this standard. C. Hon made a motion to recommend to Standards that Standard 32.1 be revised. C. Gage seconded. The TC voted in favor of the recommendation: 7-0-0-3-CNV. V. Baxter will prepare the form for submission to Standards. S. Mitchell volunteered to chair the SPC, and D. Demma and C. Weber volunteered to participate as members.

D. Erbs reported that SPC-29 was meeting after the TC meeting. A web meeting was held in May with good progress. The SPC hopes to finish the first draft for public review by the end of the day.

C. Hon reported that SPC-72 met yesterday (June 23, 2013), and all comments were resolved. The SPC is aiming for Aug 1 to release the standard for public review.

K. Kamensky reported that SPC-210 is undergoing a revision to its purpose and scope. It is close to getting enough voting members. K. Kamensky hopes to begin work through a webinar before the New York conference.

V. Baxter reported that Standard 18 has been reaffirmed. Standard 32.2 will need to be voted on in New York or Seattle. SPC-147 finished the last public review with no comments and will be released probably in September. An SSPC will be set up for this standard with Paul Solberg remaining initially as chair.

**E. Website (Kyle Larson, Webmaster)**

K. Larson reported that the website has been updated with the new membership. Presentations from TC sponsored seminars can be posted on the website. D. Swofford thanked Larson for bringing the website up to date.

**9. New Business**

E. Groll announced that the Purdue conference is scheduled for next summer. An announcement with information on the Call for Papers was distributed.

C. Gage commented that in order for an ASHRAE member to be nominated for an award, their ASHRAE bios need to be up to date. Gage provided examples of the types of information which is not automatically logged into the bio, e.g. conference session presentations, session chairs, ASHRAE Journal articles, and others. Gage encouraged the TC members to take the time to enter this information into their bios since awards provide one of the few opportunities for participants to receive well-deserved recognition for their contributions.

**10. Adjournment**

The meeting was adjourned at 4:19 pm.

**Attachment A: TC 10.7 Attendee List for June 28, 2013 Meeting, Denver**

Name	Company/Affiliation	Status
Dean Swofford	Hillphoenix	Chair/VM
Brian Fricke	Oak Ridge National Labs	Vice Chair/CM
David Demma	United Refrigeration	Handbook/VM
Cynthia Gage	US EPA	Program/VM
Daryl Erbs	Manitowoc Food Service Group	Research/CM
Van Baxter	Oak Ridge National Lab	Stds/CM
Cesar Luis Lim	San Miguel Corporation	VM
Charles Hon	True Manufacturing	VM
Georgi Kazachki	Cryotherm Consulting	VM
Maryline Rassi	AHRI	VM
Pradeep Bansal	ORNL	VM
Robert Sperl	Wegmans	VM
Carl Roberts	Zero Zone Inc.	CM
Christopher Rogers	PECI	CM
David Cowen	Food Service Technology Center	CM
Eckhard Groll	Purdue University	CM
Jon Murray	Structural Concepts	CM
Kristina Kamensky	Prismitech LLC	CM
Kyle Larson	Vacom Technologies	CM
Mark Spatz	Honeywell	CM
Patti Conlan	Arkema	CM
Ramin Faramarzi	Southern California Edison	CM
Samir Traboulsi	Thermotek	CM
Sarah Widder	PNNL	CM
Scott Mitchell	Southern California Edison	CM
Shitong Zha	Hill Phoenix	CM
Tim Anderson	Hussmann Corporation	CM
Abdul Mohammed	UD-IAC	Guest
Assaad Zoughaib	Mines Paris	Guest
Bingyi Yu	LBNL	Guest
Carlos Haiad		Guest
Caleb Nelson	CTA	Guest
Chad Bowers	Creative Thermal Solutions	Guest
Colin Weber	Navigant Consulting Inc	Guest
Denis Livchak	Food Service Technology Center	Guest

Gustavo Pottker	Honeywell	Guest
Jason Paquette	Structural Concepts	Guest
Jeff Newel	Hillphoenix	Guest
Louis Escobar	ACCA	Guest
Martin Hansen	Heat Transfer Products Group	Guest
Mazyar Amin	Miami University	Guest
Niel Hayes	Hillphoenix	Guest
Randy Haseman	Underwriters Laboratories	Guest
Richard Weekley	HTPG	Guest
Robert Dody	Structural Concepts	Guest
Samuel Yanna	Honeywell	Guest
Stefan Elbel	Creative Thermal Solutions	Guest
Stephen Schaefer	Hoshizaki	Guest
Ankit Sethi	Honeywell	Guest
Tim Roberts	Parker-Sporlan	Guest

## Attachment B: Upcoming Workshops and Conferences

- **ECOS 2013**, July 16-19, 2013 - Guilin, China. Endorsed by ASHRAE. Contact [ecos2013-china@iet.cn](mailto:ecos2013-china@iet.cn) or <http://tinyurl.com/d6s3gnk>.
- **CIAR XX**, July 22-23, 2013 - Cartagena, Colombia. Endorsed by ASHRAE. Contact [ciar2013@acaire.org](mailto:ciar2013@acaire.org) or <http://tinyurl.com/CIAR2013>.
- **IBPSA 2013 (13th International Conference of the International Building Performance Simulation Association)**, Aug. 25-30, 2013 - Chambéry, France. Endorsed by ASHRAE. Contact: <http://www.bs2013.fr/>
- **AHR Expo-Mexico 2013**, Sep. 23-25, 2013 – Mexico City, Mexico. Endorsed by ASHRAE. Contact [www.ahexpomex.com/eng](http://www.ahexpomex.com/eng)
- **5th International Conference – Solar Air Conditioning**, Sep. 25-27, 2013 – Black Forest, Bad Krozingen, Germany. Endorsed by ASHRAE. Contact: <http://solaircon.com/>
- **7th CLIMAMED Mediterranean Congress of Climatization**, Oct. 3-4, 2013 - Istanbul. Endorsed by ASHRAE. Contact 90 3124194571, [ttmd@ttmd.org.tr](mailto:ttmd@ttmd.org.tr), or [www.climamed.org](http://www.climamed.org).
- **ICEBO (13th Annual International Conference for Enhanced Building Operations)** Oct. 8-11, 2013 Montreal, QB, Canada. Contact <http://ietc.tamu.edu/home> or <http://icebo.tamu.edu/home>
- **IAQ 2013: Environmental Health in Low Energy Buildings**, Oct. 15-18, 2013 Vancouver, BC, Canada. Contact ASHRAE at 800-527-4723, ext. 1158, [IAQ2013@ashrae.org](mailto:IAQ2013@ashrae.org), or [www.ashrae.org/IAQ2013](http://www.ashrae.org/IAQ2013).
- **iMechE BIM Seminars: Manufacturing with BIM: Ensuring Cost-Effective Integration**, Oct. 17, 2013 Manchester, UK. Contact: <http://events.imeche.org/>
- **The 12th Asia Pacific Conference on the Built Environment**, Nov. 5-7, 2013 Shangri-la Hotel Makati, Manila, Philippines. Contact: <https://www.ashrae.org/membership--conferences/conferences/ashrae-endorsedevents/2013/12th-asia-pacific-conference-on-the-built-environment>
- **iMechE BIM Seminars: Manufacturing with BIM: Ensuring Cost-Effective Integration**, Nov. 7, 2013 London, UK. Contact: <http://events.imeche.org/>
- **1st International Conference on Energy and Indoor Environment for Hot Climates**, February 24-26, 2014, Doha, Qatar. Contact: [www.iea-hpc2014.org](http://www.iea-hpc2014.org) or <http://ashraem.confex.com/ashraem/ihc14/cfp.cgi>
- **49th AiCARR International Conference of 2014**, February 26-28, 2014, Rome, Italy. Contact: <https://www.ashrae.org/membership--conferences/conferences/ashraeendorsed-events/2014/49th-edition-of-aicarr-international-conference-of-2014>
- **2014 International Sorption heat Pump Conference (ISHPC2014)**, Mar. 31 – Apr. 3, 2014, College Park, MD, USA. Contact: <http://www.ceee.umd.edu/events/ISHPC2014/>
- **2014 ASHRAE High Performance Buildings Conference – San Francisco, CA USA**
- **2014 ASHRAE/IBPSA-USA Joint Building Simulation Conference – Atlanta, GA USA Sep. 10-12**

• **Efficient, High Performance Buildings for Developing Economies** — April 24 - 25, 2014 - Manila, Philippines Conference Paper Abstracts due July 12, 2013.  
<http://ashraem.confex.com/ashraem/dev14/cfp.cgi>

• **11th International Energy Agency (IEA) – Heat Pump Conference**, May 12-16, 2014, Montreal, Canada. Contact: [www.iea-hpc2014.org](http://www.iea-hpc2014.org). See attached call for papers pamphlet. Paper Abstracts due date extended to June 30 and if someone needs more time that will be ok too.

**Attachment C**  
**Report from TC 10.7 Program Subcommittee Meeting**  
**Denver, CO - Sunday June 23, 2013**

Denver has 22 Conference paper sessions presenting 82 papers (105 submitted). 162 conference paper abstracts and 66 Technical papers were submitted for New York. Like Denver, Seattle will have a research focus as will annual meetings in the foreseeable future.

CEC would like TCs to package papers together that make sense and submit a session package. Paper abstracts should be reviewed by TCs for clarity. CEC suggests contacting track chairs when submitting sessions and if the abstract is received early enough they will review and provide feedback.

- Denver Program from TC10.7
  - Conference Paper Session 2: Smart Grid: Demand Response Measures, the Human Element, Building Management Systems and Smart Appliances, Sunday morning (1 paper from TC10.7)
  - Conference Paper Session 7: Reducing the Climate Impacts of Refrigeration Systems Monday 8-9:30. (2 papers from TC10.7)
  - Conference Paper Session 12: Identifying Efficiency Opportunities for Refrigeration Systems; Monday 11:00-12:00 (1 paper from TC 10.7)
  - Seminar 34 – Reducing the GWP Impacts of Commercial Refrigeration (Tues 3:15PM -4:45 – Plaza Ballroom E)
  - Seminar 39 – Demand Response (DR) Opportunities with Commercial Ice Machines (Wed 9:45AM -10:45 – Governors Square 14)
  - Seminar 46 (co-sponsor) - Practical Experiences with Low-GWP and Natural Refrigerants in Supermarkets (Wed 11:00AM -12:30 – Governors Square 15)
- 2014 Winter Meeting – New York, NY – January 18-22
  - Final conference papers due July 3
  - Technical paper reviews due Aug 12
  - Seminar and Forum proposals due Aug 12
- 2014 Annual Meeting – Seattle, WA – June 28-July 2 (Research Focus again)
  - Conference Paper abstracts due Sept 23, approval Oct 7, due Jan 9
  - Technical papers due Sept 23
  - Seminar and Forum due Feb 13

Suggestions for New York:

Forum (Moderator-Carl): Supermarket hot gas defrost piping guidelines

Panel Discussion (Chair – Caleb Nelson): “System Design Procedures with Zeotropes” regarding design approach for high-glide refrigerants, viz., condenser sizing, compressor maps, dew point vs. bubble point vs. mid-po int temperatures, etc. Members: Carl Roberts (how manufacturers use that info), Caleb (general issues), Dave Demma (heat exchangers), Emerson compressors (Otto Nickelson?)

Seminar (Chair -Cynthia):” Natural Refrigerants in Supermarket Refrigeration”: Presenters: Shitong Zha (CO2 booster system case study by Hill-Phoenix; Caleb Nelson (DeCA – ammonia store at Lackland AFB or international speaker on ammonia store). Charlie Hon (Propane as an option for supermarkets)

Options for Seattle+

Heat reclaim - response to CA regs coming on in 2014 and Seattle regs in place.

It was thought SCE might have information on laboratory and field studies of CO<sub>2</sub> vending machines. No longer an option. Instead they may have some test results on demand defrost testing including coatings for HXs. This could be part of a seminar for Seattle.

Forum topic - something on floating head and interactions with other efficiency strategies? Are models available? How do you know if it's optimized?

**Attachment D**  
TC 10.7 Research Subcommittee Meeting  
2013 Annual Meeting – Denver  
June 23, 2013  
Meeting Minutes

**1. Active Research Projects:**

**Research Project #1467 - Balancing Latent Heat Load between Display Cases & Store Comfort Cooling**

- Contractor: Michael Brandemuehl and Penny Cole - University of Colorado
- Project Monitoring Subcommittee: Daryl Erbs, Rob Uhl, Xudong Wang

Draft final report received and reviewed by PMS. Minor changes were provided by PMS, incorporated into updated draft, and draft report submitted by PMS to TC 10.7 chair for review and vote by full Committee.

**Refrigeration Committee Research Project #1634 – Guide for Sustainable Refrigerated Facilities and Refrigeration Systems**

Contract negotiations are continuing.

**2. Pending and Potential Research Projects:**

**Draft RTAR: Minimum Refrigerant Charge Attainment for Commercial Refrigeration Systems**

- RTAR Draft prepared by Daryl Erbs

RTAR was submitted to RAC for review at the annual meeting. The RTAR was returned by RAC with comments. The reviewers concerns include too broad of a scope for both the list of working fluids and components, and whether the research would be pre-competitive. RTAR can be converted to a work statement as the next step to address the concerns stated.

**TC7.5 Work Statement 1615-WS (previously TC10.7 RTAR #1429) - Fault Detection and Diagnostic Methods for Supermarkets (co-sponsored by TC10.7)**

RTAR Author: Zheng O'Neill – JCI, TC7.5

TC 10.7 approved submission of the work statement as a co-sponsor, and it was reviewed by RAC. The work statement was returned by RAC with comments.

**MTG Low GWP**

- Current Status:
  - MTG approved by TAC in Chicago

Meeting held on Wednesday, June 26<sup>th</sup> in Denver.

**3. New Research Project Ideas**

Carl Roberts will take the lead in developing a RTAR on use of air curtains for reducing refrigeration loads in glass door cases. Benefits include reducing infiltration when doors are opened, reducing convective heat transfer to inner glass surface, and reduction of anti-sweat heating required for condensation on glass. Kristina Kamensky volunteered to help author RTAR.

Tim Anderson has started working on RTAR for Method of Test for secondary fluids with two phase flow entering or leaving a case. Background research has not turned up much prior work in this area. The primary

need is for CO2 overfeed systems. It was recommended he talk to Bruce Coburn based on work done at SCE RTTC on use of mass flow meters for two phase flow measurement.

Kristina Kamensky submitted a research proposal to RAC as an unsolicited project. It was rejected. She has agreed to work with TC 10.7 to create an RTAR and submit through the TC once it has been reviewed and approved by 10.7.

A new research topic introduced is the use of geothermal heat exchange for condensing CO2 in supermarket refrigeration. This may extend the range of climate/geography where CO2 is able to be used for both the medium and low temp stages.

It was decided to drop the topics of: 1) heat reclaim optimization for supermarket rack systems, and 2) real world return gas temperature vs. manufacturer ratings for condensing units. The general consensus is the industry is capable of analyzing and completing designs based on information and design tools currently available.

Attendees to Program/Research/Handbook Subcommittee meetings

<b>Name</b>	<b>Affiliation</b>	<b>Email</b>
Daryl Erbs	Manitowoc Ice	
Scott Mitchell	SCE	
David Cowen	PG&E FSTC	
Kristina Kamensky	Prismitech LLC	
Christopher Rogers	PECI	
Shitong Zha	Hill Phoenix	
Barbara Minor	DuPont	
Cynthia Gage	US EPA (retired)	
Denis Livchak	PG&E FSTC	
Carl Roberts	Zero Zone	
Caleb Nelson	CTA	
Kyle Larson	VaCom	
Patti Conlan	Arkema	
Dave Demma	United Refrigeration	