ASHRAE TC 10.7
Commercial Food & Beverage Refrigeration Equipment
Minutes of 2019 Summer Meeting
Monday, June 24, 2019, 2:15 pm - 4:15 pm
Marriott Hotel, Bennie Moten Room, Kansas City, MO

1. Welcome & Introductions

Chairman Tim Anderson welcomed the members and guests and called the meeting to order at 2:22 pm. Members and guests introduced themselves. The Agenda was distributed, and a sign-in sheet was circulated. Mr. Anderson reminded everyone that the ASHRAE Code of Ethics must be adhered to by those doing ASHRAE business whether or not the participant is an ASHRAE Member. The Code of Ethics can be found at https://www.ashrae.org/about-ashrae/ashrae-code-of-ethics

2. Review and Revise Agenda

No changes were requested and the agenda was approved.

3. Determination of Quorum

Quorum was established with ten (10) of eleven (11) voting members present.

Members Present: Lauren MacGowens (VM 6/19), Timothy Anderson (VM 6/19), Massoud Neshan (6/21), Brian Fricke (VM 6/21), Shitong Zha (VM 6/19), Gustavo Pottker(6/19), Stephen Schaefer (6/21), Jeff Bauman (6/21), Daryl Erbs (6/21), Cesar Lim (Non-Quorum 6/19).

Not Present: Pradeep Bansal (6/19)

4. Scope / MBO's

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. Liaisons & Announcements

Committee Liaisons:
- Section Head ..... Jim Tauby
- Program Committee Liaison ..... Kevin Gallen
- Research Committee Liaison ..... Krishnan Gowri
- Handbook Committee Liaison ..... Scott Fisher
- Chapter Technology Transfer Committee Liaison ..... Gerald Hartford
- Standards Committee Liaison ..... Cecily Grzywacz
- Refrigeration Committee Liaison..... Charlie Hon
- ALI/PDC Liaison .....Hugh McMillan
- MTG Low GWP Liaison…….. Brian Fricke

Committee Liaisons were acknowledged and brief announcements were given.

- **Section 10 (Jim Tauby)**

ASHRAE is moving away from consolidating to a set number of TCs. Based on feedback received since the meeting in Atlanta, each functional group (FG - includes TCs, TGs, MTGs, and TRGs) is not in the same place. While there are some groups that would benefit from restructuring, others are very productive and could be used as best-practice models for other groups.

One of the goals of the re-organization is to get more programs in and making sure members will be able to attend those programs. Meeting times will be changed to a block schedule where subcommittee meetings will take place in the mornings and programs will be held in the afternoons. Subcommittee meetings will also be scheduled into a single time slot on the same day, and immediately before the main group meeting. This way, if someone can only attend for a few days, they can attend all meetings for a functional group.

A newly merged TC will have one Chairman and a number of Vice-Chairman that matches each of the original TCs. Want to have merger plans by the Winter Meeting in Orlando.

Functional groups will be working with their Section Heads in TAC to determine how to make their work more effective - what will it take to go from good to great? This may look like many things, including:

- Possible mergers- many great ideas were suggested from TCs.
- Possible joint subcommittee meetings
- Holding interim meetings online
- Updated mailing lists/ communications structures

For programs to be included in the Refrigeration tracks, it was recommended to ensure that the titles of the proposed programs match the theme of the overall theme of the show.

The TC discussed which TCs would be beneficial to merge with?

- 10.5, 10.8, and 10.2 should be together

- 10.6 was possibly considering joining TC 10.7
- Other potential mergers:
    - 10.6 Transport
    - 8.9 Residential refrigeration and freezers
    - Maybe 10.8 if split up between commercial and industrial

Massoud Neshan motioned to submit merger plan to TAC of a merger with TC 10.6 and 8.9. Lauren MacGowens seconded the motion. The motion was approved. Votes: 10-0-0-1.

ACTION: TC 10.6 to reach out to the chairs of TC 8.9 and 10.6 to discuss a merger.

- **Handbook (Scott Fisher)**

No information presented.

- **MTG – Low GWP (Brian Fricke)**

  Research sub-committee meeting is reviewing three projects:

  - RP-1806, Flammable Refrigerants Post-Ignition Simulation and Risk Assessment Update.
    - The project is running a bit behind schedule, working on modeling issues.

  - RP-1807, Guidelines for Flammable Refrigerant Handling, Transporting, Storing, and Equipment Servicing and Installation.
    - The final report has been accepted.

  - RP-1808, Servicing and Installing Equipment Using Flammable Refrigerants: Assessment of Field-made Mechanical Joints.
    - This paper presents the results of a study investigating the assembly, durability, and leakage rate of different types of flame free field-made joints used in refrigeration and air-conditioning systems.

  There is a RTAR to develop odorants for flammable refrigerants.

  The MTG is also considering developing a work statement addressing the topic of using flammable refrigerants in vending machines.

- **Refrigeration Committee (Charlie Hon)**

  The Refrigeration Committee would like to get the chairman of TC 10.7 to be a liaison to the refrigeration committee. The committee is being restructured to be a cold chain focused committee.

Charlie gave brief update from refrigeration committee. Because of the suggested structure changes to ASHRAE committees, the Refrigeration Committee is reevaluating their current makeup and membership. The committee would like to include more members to reach all TCs, SPCs and general membership needs. The full committee scope will be reviewed for necessary changes.

6. Membership

Membership table:

Voting Members (11)	End Date
Timothy Anderson	6/30/2019
Pradeep Bansal	6/30/2019
Massoud Neshan	6/30/2020
Lauren MacGowens	6/30/2019
Shitong Zha	6/30/2019
Daryl Erbs	6/30/2020
Cesar Lim (NQ)	6/30/2019
Gustavo Pottker	6/30/2019
Jeff Bauman	6/30/2021
Brian Fricke	6/30/2019
Stephen Schaefer	6/30/2021

Leadership Team	
Chair:	Timothy Anderson
Vice Chair:	Brian Fricke
Secretary:	Lauren MacGowens
Handbook Chair:	David Demma
Program Chair:	Caleb Nelson
Research Chair:	Shitong Zha
Standards Chair:	Jon Murray
Webmaster:	Kyle Larson
MTG Low GWP Liaison:	Brian Fricke

Jon Murray requested to be added to the voting roster. Anyone interested in joining the committee should contact Tim or Lauren.

7. Review Draft Minutes from the 2019 Winter Meeting in Atlanta, GA.

A motion was made and seconded to approve the Atlanta meeting minutes. VOTE: 9-0-1-1

8. Subcommittee reports:

A. Program Subcommittee (Gustavo Pottker, Chair)

- Seminar idea for Orlando Refrigeration Track: State of the art refrigeration technologies with lower environmental impact – Chair GK
    - Use of R-290 in Display Cases – Tim Anderson
    - TC CO2 efficiency improvements – Shitong Zha
    - Ice Rink Refrigeration Experience with TC CO2 – Masood Ali
    - Use of Natural Refrigerants - Eric Smith from IIAR
- Part 2
    - Experiences with low-GWP HFO blends – Gustavo Pottker
    - Performance and properties of A2Ls below GWP 300 - Ivan R from Daikin
    - A2Ls Stephen S. from Chemours
    - Use of ejectors to improve efficiency – Stefan Elbel – U of Ill

- Ask for co-sponsorship from MTG-Low-GWP and Ref Com
- Sent titles and abstracts to Georgi by end of June. Due by August 2nd.

Send an email to Georgie if you are interested in presenting. Include in the subject line ABSTRACT. We are going to have two seminars.

Georgie to reach out to TC 3.1 for co-sponsorship

Ask for co-sponsorship from MTG-Low-GWP and Refrigeration Committee. Currently 9 seminar slots.

Neshan Motioned to approve the seminar. Gustavo seconded. Voted 10-0-0-1

Additional Ideas:

- Efficient fan operation in condenser applications
- Solar powered WICF

All authors will need to submit the following items: Presentation title, abstract, Q&As and brief bio.

Previous ideas:

- IoT, Big Data, and control methodologies to improve the operation and efficiency of commercial refrigeration equipment – Ramin and Daryl Erbs
    - ACTION: Daryl to follow-up with Ramin

- Transactive control (electrical load shifting) for refrigeration equipment (e.g., ice makers) to correspond to renewable power generation.
    - Could thermal storage fit into this?

- Living with a 150-gram charge limit on Hydrocarbons

B. Research (Shitong Zha, Chair)

Meeting: Sunday, 6:00pm-6:45pm, KCCC (Room 2209)

WS 1831: Validation of a Test Method for Applying a Standardized Frost Load on a Test Evaporator in a Test Chamber with an Operating Conditioning System
Contact: MacGowens, Lauren <LMacGowens@ahrinet.org> (AHRI with DOE), Detlef Westphalen
Draft sent to TC 10.7 on June 12th.
Action: Need to submit WS prior to August 2019

Shitong Zha Motioned to approve WS 1831 to be sent to research liaison. Daryl seconded. Votes 10-0-0-1.

ACTION: Lauren to look into whether AHRI will co-sponsor this research project.

RTAR 1876 Optimizing Air Curtains and the effect on the infiltration load of Refrigerated Display Cases with Glass Doors

Contact: 'Mike Chieffo' <Mike.Chieffo@zero-zone.com>; Carl Roberts Carl.Roberts@zero-zone.com
Resubmitted to Dr. Khalifa (RL) in Dec. 2018
Action: Accepted and waiting for a work statement.

RTAR proposal from TC 4.1 – Heat gain from self-contained refrigeration equipment

Summary: This research project will measure heat gain loads of popular commercial self-contained refrigeration equipment. These loads will be published in the ASHRAE handbooks and will be used to perform internal heat gain calculations for commercial buildings that include food-service facilities. This published data will allow designers to size HVAC systems correctly.

Action: *TC 4.1 is asking 10.7 if it will cosponsor this RTAR.*

Previous ideas:

RTAR - DOE test according to ASHRAE Standard 72 and how instrument accuracies and input tolerances can affect the outcome of the test results and repeatability.
This could involve both analytical and testing. It was noted that ASHRAE 37 may be doing something similar and this should be considered when developing this RTAR. SPC 37 should be contacted and SSPC 72 should propose an RTAR for this. Lauren will reach out to the chair of SPC 37 to determine the status of this project and then report back to SSPC 72 and TC 10.7

RTAR proposal: Transactive control (load shifting) for refrigeration equipment (e.g., ice makers) to correspond to renewable power generation. TC 10.5, 10.6, and 10.1 may be interested in co-sponsoring.

Deadline to submit nominations for panel on Developing a Sustainable Future is September 1. August 15 is deadline to submit RTAR.

C. Handbook (Dave Demma, Chair)

No meeting in KC.

Refrigeration, Chapter 15 – Retail Food Store Refrigeration and Equipment

Refrigeration, Chapter 16 – Food Service and General Commercial Refrigeration Equipment

Ideas for next version:

Use of hydrocarbons in commercial refrigeration

Refrigerants with glide – selecting components and using the right rating points

Heat gain loads for typical types of self-contained equipment

Standard method of rating capacity of evaporators and condensers? (AHRI 1250)

With no meeting in KC, there no additional action at this time.

There was a request to include insulation for piping, tanks, etc. – Jim Young of ITM was present and recommended that in our chapters we refer to Refrigeration Handbook Chapter 10 (Insulation Systems for Refrigerant Piping) handled by TC 10.3.

The refrigeration committee is looking at the refrigeration handbook for possible restructuring of the handbook and chapters. An update will be given at upcoming meetings.

Additional items for consideration: additional alternative refrigerants, heat gains in typical self-contained refrigeration equipment.

Lauren motioned to form an ad-hoc committee to revise the Handbook. Carl seconded the motion. Votes 10-0-0-1.

Carl Roberts to lead ad-hoc committee to draft new sections of Refrigeration Handbook. Tim, Gustavo, Neal M., Charlie Hon volunteered to be on the ad-hoc committee.

ACTION: Carl to follow up with Dave D. about being the Handbook chair.

D. Standards subcommittee (Jon Murray, Chair)

Standards:
TC10.7 is the Cognizant TC for the following standards and project committees:

- **SPC 18-2008:** *Methods of Testing for Rating Drinking-Water Coolers with Self-Contained Mechanical Refrigeration*
  Standard is up to date
- **SPC-29-2015** *Methods of Testing Automatic Ice Makers* (Daryl Erbs)
  Was reaffirmed in 2018
- **SPC 32.1-2016** *MOT for Rating Vending Machines for Bottled, Canned and Other Sealed Beverages* (Scott Mitchell)
  Standard is up to date.
- **SPC 32.2-2018** *MOT for Rating Pre-Mix and Post-Mix Beverage Dispensing Equipment* (Daryl Erbs)
- **SSPC-72-2018** *MOT Open and Closed Commercial Refrigerators and Freezers* (Jon Murray)
- **SPC-210** *MOT/for Rating Commercial Walk-in Refrigerators and Freezer* (Lauren MacGowens)
  Under revision. Aiming for publication in early 2020.
- **SPC 220P** *Method of Testing for Rating Small Commercial Blast Chillers, Chiller Freezers and Freezers* (Denis Livchak)
  Meeting following this. Aiming for publication in early 2020.

9. New Business

Discussion on merging TC 10.7 with one more other TCs:

- Favorable discussion around merging with TC 8.9 Residential Refrigerators and Freezers

- TC 10.6 Transport Refrigeration is fairly small and would also be easily integrated.
- TC 10.7 + 10.6 + 8.9 to create a cold chain technical committee. Brian F. will reach out to 10.6 and Lauren M. will reach out to 8.9.
- TC 10.8 Refrigeration Load Calculations is also very small and could merge with 10.7 or with 10.5 and 10.2
- TC 10.6 could merge with mobile air-conditioning.

10. Adjournment

The meeting adjourned at 3:52 pm.

Upcoming ASHRAE Meetings:
ASHRAE Winter Meeting Feb. 1-5, 2020 – Orlando, FL
ASHRAE Annual Meeting June 27 – July 1, 2020 – Austin, TX
ASHRAE Winter Meeting Jan. 23-27, 2021 – Chicago, IL
ASHRAE Annual Meeting Jun 26–30, 2021 – Phoenix, AZ

TC 10.7 ACTION ITEMS

Summer meeting 2019

ACTION #	Responsibility	Summary of Action	Status
1	Tim Anderson	**TC 10.6 to reach out to the chairs of TC 8.9 and 10.6 to discuss a merger.**	
2	Lauren MacGowens	Look into whether AHRI will co-sponsor this research project	
3	Carl Roberts	Follow up with Dave D. about new Handbook chair	
4			
5			
6			
7			