

**ASHRAE TC 10.7  
Commercial Food & Beverage Display & Storage Equipment  
2010 ASHRAE Annual Meeting  
Albuquerque, NM**

**Research Subcommittee Meeting  
Sunday, June 27, 2010, 6:00 – 7:30 pm  
Room: Albuquerque Convention Center – Santa Anna (Lower Level)**

**Draft Minutes**

**1. Welcome & Introductions**

- Approximately 20 Attendees
  - Bob Tanner, Dean Swofford, Maryline Rassi, Massoud Neshan, Scott Mitchell, Chad Bowers, Pega Hrnjak, Daryl Erbs, Bryan Becker, Brian Fricke, Carl Roberts, Mark Spatz, David Cowen, Devin Rauss, David Hinde, Penny Cole, Michael Brandemuehl, Roderick Jackson

**2. Active Research Projects:**

**Research Project #1402 – Comparison of Vertical Display Cases**

- Contractors: Bryan Becker and Brian Fricke – UMKC
- Project Monitoring Subcommittee: Carl Roberts, Van Baxter, Rob Uhl, Mary Saroka, Derrick Aller
- Results indicated little to no impact of doors on product sales.
- Current Status:
  - TC10.7 approved final report at 2010 Winter Meeting in Orlando following PMS recommendation
  - Seminar given during Orlando meeting
  - Technical Paper has been submitted to ASHRAE for peer review
- Next Steps:
  - ASHRAE Press Release and Article in ASHRAE Journal later this fall
  - Presentation at FMI Energy Breakout Session by Brian Fricke (Sept. 19-22, Minneapolis, MN)
  - Paper by Brian Fricke at Purdue Conference (July 12-15, Lafayette, IN)

**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, David Hinde
- Current Status:
  - Task 2 in progress with contractor-PMS conference calls held over spring
  - PMS Meeting Sunday, June 27, 7-8am
    - Reviewed Draft Interim Report: Task 1
    - Identified additional information needed on 1) latent heat ratio of display cases, 2) miscellaneous loads inside store, 3) produce misters and how much latent load is added to store ambient, 4) mass of product in store, both dry product and possibly cardboard, 5) case load variation vs. humidity ratio
- Next Steps:
  - Complete Interim Report: Task 1 and submit to PMS and ASHRAE
  - Continue Task 2 modeling work

### **TC3.1 Research Project #1484 - Energy and Performance of Secondary Coolant Low-Temperature Refrigeration Systems (co-sponsored by TC10.7)**

*(Note: TC3.1 is "Refrigerants and Secondary Coolants")*

- Contractor: Eckhard Groll and Joe Poland - Purdue University
- Project Monitoring Subcommittee: Kevin Conner, Xudong Wang, Don Bivens, David Hinde
- Current Status:
  - Project nearly completed
  - Seminar given in Orlando summarizing project results
  - Draft Final Report has been reviewed by PMS and comments submitted to contractors
- Next Steps:
  - Submission of Final Report for approval by PMS and TC3.1
  - Submission of Technical Paper
  - Paper at Purdue Conference (July 12-15, Lafayette, IN) summarizing project results

### **3. Potential Research Projects:**

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

*(Note: TC7.5 is "Smart Building Systems")*

- RTAR Authors: Carol Lomonaco – JCI, TC7.5 Research Subcomm. Chair
- Project Status:
  - RTAR was re-submitted by TC7.5 with co-sponsorship by TC10.7
  - RAC vote Saturday, June 26 was to (Return or Conditionally Accept) – comments included too much emphasis on leak detection, possible overlap with proprietary software.
- Next Steps:
  - Review comments from RAC, incorporate additional information into RTAR, and re-submit to RAC.
  - Pending approval, begin work on Work Statement – would need support from TC10.7

#### **TC3.1 Work Statement #1580 - Risk Assessment of 2L Flammable Refrigerants in Stationary Applications (occupied spaces) for a)residential A/C and Heat Pumps, and b)Small Commercial Refrigeration**

- Work Statement Authors: Barbara Minor, Debra Kennoy, David Wilson, William Walter, Sonny Sundaresan, and a representative from ARTI
- Project Status:
  - Work Statement has been approved by RAC
- Next Steps:
  - Waiting for Funding allocation by RAC
  - Formation of PES (Project Evaluation Subcommittee)
  - Send Work Statement out for bid
  - TC10.7 may participate through PES/PMS

#### **TC3.1 Proposed RTAR - Risk Assessment of 2L flammable refrigerants in applications using large quantity refrigerants such as centrifugal chillers, supermarket racks, sea containers (likely co-sponsorship by TC10.7)**

- Extension of Project #1580 to larger refrigeration systems
- Current Status:
  - RTAR work stalled due to lead author change – now Mark Adams – JCI
  - RTAR support for multiple volunteers including David Hinde
- Next Steps:
  - Develop RTAR based on #1580

## **TC10.10 Proposed RTAR – Lubricant Issues with CO2 in Cascade Systems for Supermarket Applications (likely co-sponsorship by TC10.7)**

*(Note: TC10.10 is “Management of Lubricant in Circulation”)*

- **Current Status:**
  - Project origin uncertain – Dan Monole volunteered to assist
  - TC10.7 voted to co-sponsor this project in Orlando
  - TC10.10 has given this project low priority (Yunho Hwang – Chair) with no plan to continue work

### **4. New Research Project Ideas (no priority established):**

- **Quantifying Walk-In Cooler/Freezer Loads under Different Design Variations** – variables include door types, glass doors, air curtains, unit cooler strategies. Could include field measurements or laboratory testing under different design scenarios. Interest expressed by TC10.8 – Refrigeration Loads (Michele Friedrich – Research Contact). Southern California Edison has current projects directly related to this and may point towards needed research.
- **Balancing Energy Consumption vs. Refrigerant Charge in Heat Reclaim Systems** – could include information on design parameters, control strategies, energy optimization, abuse.
- **Display Case Energy Improvement Devices** – including occupancy sensors for lighting and doors, night curtains – survey of technologies and improvement possibilities
- **Charge Reduction Strategies in Direct Expansion Refrigeration Systems** – focusing on evaporators (microchannel?) and system design parameters (sizing criteria for components, lines) – possible retrofit applications with existing system, refrigerant retrofit, new cases. Interest in topic also expressed by TC 8.4 – Refrigerant Heat Exchangers (Chad Bowers – Chair). Daryl Erbs expressed interest in drafting RTAR for this project – Dan Manole volunteered to assist. Project to include possible field-evaluations, geared to walk-in coolers and freezers.
- **Suction Line Heat Exchange / Exchangers** – Evaluating proper design criteria and application with high-glide refrigerants.
- **Other CO2 system-related topics** as this seems to be long-term direction.

### **5. Adjournment**