



**(DRAFT)**

**REFRIGERATION COMMITTEE (REF)  
MINUTES**

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*Winter Meeting  
January 24, 2010*

**TABLE OF CONTENTS**

**Page No.**

**1.0 CALL TO ORDER AND ROLL CALL .....1**

**2.0 REVIEW OF AGENDA .....1**

**3.0 APPROVAL OF MINUTES .....1**

**4.0 REPORTS .....2**

**5.0 POSITION DOCUMENTS (PD) .....3**

**6.0 AWARDS.....4**

**7.0 SUBCOMMITTEE/PROJECT REPORTS.....5**

**8.0 UNFINISHED BUSINESS .....8**

**9.0 NEW BUSINESS.....8**

**10.0 NEXT MEETING .....8**

**11.0 ADJOURNMENT .....8**

**PRINCIPAL MOTIONS  
JANUARY 24<sup>th</sup>, 2010**

No.	Page No.	Motion
1	1	The minutes of the June 21st, 2009 meeting in Louisville be approved.
2	3	REF recommends to Technology Council that the Ammonia as a Refrigerant Position Document (PD) be reaffirmed with minor, editorial corrections.
3	5	REF recommends that the Milton Garland Award go to Mr. Tom Dosch, PE, from the San Diego chapter for the Innovative Cold Storage Enterprises ICE II project.
4	7	REF recommends that a seminar program for Albuquerque related to Natural Refrigerants be approved and submitted as first priority.

**ACTION ITEMS FROM ANNUAL MEETING  
ORLANDO JANUARY 24<sup>th</sup> 2010**

No.	Page No.	RESPONSIBILITY	SUMMARY
1	2	Werkema, Chasserot, Anderson	Work with Anderson to determine if item can be on agenda and prepare presentations for Albuquerque on Copenhagen accord as appropriate.
2	4	Chasserot, Siller, Vallort, Pearson, Anderson	Review Ammonia PD to update references other editorial updates for the Annual meeting.
3	4	Staff	send PD request forms and documents to REF
4	4	Chasserot	Consider the proposal of new PD's to Technology Council for New Mexico meeting.
5	4	Staff	Compile list of chapter refrigeration contacts for distribution of information on REF awards.
6	4	Gage/Staff	Review award processes to see if they can be streamlined
7	5	Anderson/Staff	Notify all Milt Garland applicants of results.
8	5	Anderson	Draft proposal for liaisons to REF for consideration at Annual meeting.
9	6	Staff	Review and summarize educational programs related to refrigeration for Annual meeting.
10	6	Staff	send DSL list to REF and request nominations to Gage
11	6	Gage	collect suggestions and volunteers from REF for DSL list
12	6	Anderson	REF to consider looking into developing recorded presentations for refrigeration issue updates.
13	7	Chasserot, Gage	Develop program for Las Vegas on Kyoto/Montreal impacts. Explore co-sponsorship with TC 2.5 and Advocacy Committee
14	7	Anderson	Discuss idea of conference with CEC chair.
15	8	Chasserot	add ASHRAE to ammonia21.com directory

**ACTION ITEMS FROM WINTER MEETING  
LOUISVILLE JUNE 21<sup>st</sup> 2009**

<b>No.</b>	<b>Page No.</b>	<b>RESPONSIBILITY</b>	<b>SUMMARY</b>	<b>STATUS</b>
1	3	Gage, Chasserot	Follow up with Turner on REF award related Journal articles.	Complete
2	3	Staff	Assure ASHRAE conference program uses current description of Milt Garland Award	Complete
3	4	Gage	Distribute Refrigeration Speakers list to chapters through CTTC newsletters.	Complete
4	5	Sluga	Determine if the TC liaison procedure is achieving its purpose, how it can be improved.	Complete
5	5	Anderson	Re-evaluate international organization liaison MBO and determine how to proceed going forward.	Complete
6	6	Chasserot, Kazachki	Organize natural refrigerants related program for Orlando.	Complete
7	7	Gage	Approach Journal editor Fred Turner with series or track or articles on natural refrigerants	Complete
8	7	Chasserot, Mueller, Gage	Identify authors and develop Journal articles on natural refrigerants.	Complete

**ACTION ITEMS FROM WINTER MEETING  
CHICAGO JANUARY 25<sup>th</sup> 2009**

<b>No.</b>	<b>RESPONSIBILITY</b>	<b>SUMMARY</b>	<b>STATUS</b>
2	Anderson	Lead effort to survey the need for a commissioning guideline on refrigeration systems. Develop TPS as appropriate.	Ongoing

**LIST OF APPENDICES**

Appendix 1:	REF Agenda for Orlando
Appendix 2:	2009-2010 MBO's status report
Appendix 3:	PEAC presentation
Appendix 4:	New refrigerants PD proposal
Appendix 5:	Liaison Report
Appendix 6:	IIR proposal

## LIST OF ACRONYMS

ALI	-	ASHRAE Learning Institute
AHRI	-	Air-conditioning, Heating, and Refrigeration Institute
AMORTS	-	Assistant Manager of Research and Technical Services
ASHRAE	-	American Society of Heating, Refrigerating, and Air-conditioning Engineers
ARTI	-	Air Conditioning & Refrigeration Technology Institute
BOD	-	Board of Directors
CNV	-	Chair Not Voting
CV	-	Chair Voting
CO <sub>2</sub>	-	Carbon Dioxide
CRC	-	Chapter's Regional Conference
CTTC	-	Chapter Technology Transfer Committee
DSL	-	Distinguished Speaker List
GCCA	-	Global Cold Chain Alliance
IARW	-	International Association of Refrigerated Warehouses
IAR	-	International Institute of Ammonia Refrigeration
MBO	-	Management by Objective
NEBB	-	National Environmental Balancing Bureau
ODS	-	Ozone Depleting Substances
PAOE	-	Presidential Award of Excellence
PEAC	-	President-Elect Advisory Committee
PD	-	Position Document
PDC	-	Professional Development Course
RAC	-	Research Administration Committee
RAP	-	Research Advisory Panel
REF	-	Refrigeration Committee
RETA	-	Refrigerating Engineers and Technicians Association
RSES	-	Refrigeration Services and Engineering Society
RVC	-	Regional Vice Chair
SDL	-	Self Directed Learning
TC	-	Technical Committee
TPS	-	Title, Purpose, Scope

**MINUTES**  
**REFRIGERATION (REF) COMMITTEE**  
**JANUARY 24, 2010**  
**ORLANDO, FL**

**MEMBERS PRESENT:**

Kent Anderson, *Chair*  
Cynthia Gage, *Vice Chair*  
Marc Chasserot  
Donald Hay  
Todd Jekel  
Georgi Kazachki  
Cesar Lim  
Norbert Mueller  
Andy Pearson  
Doug Scott  
John Sluga  
Ron Vallort  
Don Siller, *Consultant*  
Tom Watson, *Coord. Officer*  
Tom Werkema, *BOD Ex-O*

**GUESTS:**

Bruce Badger, *IAR*  
Don Cleland  
Hugh Crowther  
Dan Dettmers  
Steven Freidman  
Art Garbarino  
Bruce Griffith  
Eckhardt Groll  
Patrick Hughes  
Dan Manole  
Bruce Nelson  
Doug Reindl  
Christopher Rodgers  
Chris Seeton  
Don Tragethon, *RETA*  
Bill Williams

**MEMBERS NOT PRESENT:**

**ASHRAE STAFF:**

Claire Ramspeck, *DOT*  
Steve Hammerling, *AMORTS*

**1.0 CALL TO ORDER AND ROLL CALL**

Chair Kent Anderson called the meeting to order at 8:00 a.m. Members, incoming members, and guests introduced themselves.

**2.0 REVIEW OF AGENDA**

The agenda distributed prior to the meeting was reviewed. The following items were added:

- 4.5 – CTTC - Garbarino
- 4.6 - Guests from IAR, RETA
- 7.7 – Standards Activities
- 9.1 –ASHRAE/IIR proposal - Groll
- 9.2 – Federal Walk-in Cooler Requirements - Scott
- 9.3 – B2B global directory. Ammonia 21 – Vallort

The agenda is included with these minutes as **Appendix 1**.

**3.0 APPROVAL OF MINUTES**

Anderson referred to the draft minutes from Louisville distributed prior to the meeting.

It was moved (DS) and seconded (CG) that,

1. The minutes of the June 21st, 2009 meeting in Louisville be approved.

**MOTION 1 PASSED: 8-0-1 CNV**

## **4.0 REPORTS**

### **4.1 Chair - Anderson**

Anderson noted that the Special Project "Guide for Sustainable Refrigerated Facilities and Systems" was approved by Technology Council without funding. The Council noted that REF could help to secure funding and project could move forward at that point.

No other REF motions from the previous meeting that required approval from a higher committee.

Anderson reported that Technology Council had their Technology Weekend meeting through a web-conference. A number of action items were assigned to REF and completed.

A status report on the 2009-2010 Society Year MBO's is included with this report as **Appendix 2.**

### **4.2 Vice- Chair - Gage**

Gage reported that she'd submitted some comments from REF on the [ASHRAE Strategic Plan](#) to Technology Council for their consideration. This was a result of the "brainstorming" input which Tech Council has requested from Standing Committees. The goal is to move information which may impact ASHRAE "up the chain". REF had been asked to review the current plan to identify gaps in the plan, highlight things we've say we should be doing that we aren't, and to identify things that we are doing that are not in the plan.

Gage noted that there was nothing on the REF budget to report with little discretionary funds available to REF.

### **4.3 BOD Ex-Officio - Werkema**

Werkema presented his PowerPoint for the President-Elect Advisory Committee (PEAC) (**Appendix 3**) to REF. Highlights includes:

- ASHRAE membership is higher now than last year at this time while other associations are significantly lower.
- ASHRAE certification program is growing. REF may wish to consider recommending certification.
- Launch of Building EQ label underway.
- Headquarters renovation complete. Has 1<sup>st</sup> Building EQ label.

Werkema summarized the Copenhagen accord on climate change. Noted he could have a PPT presentation for New Mexico if desired. There was interest on REF for a summary. Chasserot noted he could have presentation to add to the discussion as well.

**Action Item 1** – Werkema, Chasserot, Anderson – Work with Anderson to determine if item can be on agenda and prepare presentations for Albuquerque on Copenhagen accord as appropriate.

Anderson thanked Werkema for the PEAC presentation, a good summary of the big picture and Society.

### **4.4 Coordinating Officer - Watson**

Watson, chair of Technology Council, thanked Werkema for giving his PEAC presentation to REF and thanked REF for their continued work. Watson emphasized the efforts related to Strategic Planning. ASHRAE needs to identify what we're doing, what should be doing, what

we shouldn't be doing any longer. BOD is asking committees for their input and encouraged all to participate in the process.

#### **4.5 CTTC – Garbarino**

Garbarino addressed REF and expressed a concern that refrigeration resources are not getting to chapters. CTTC notes their hands are tied with workload. Anderson asked Siller to be the REF liaison to CTTC and Siller tentatively accepted the role.

Steve Friedman, CTTC member seconded concern that CTTC is overloaded with work. The annual turnover on CTTC and with chapter leadership makes things difficult to coordinate as well. Suggestions on areas that could improve included:

- Improve ASHRAE website to make information easier to find.
- Milt Garland and Comfort Cooling deadlines are too early. The Nov. 1 deadline is too close to CRC's. More time would likely lead to more nominations.
- Friedman knows of project in Albany for Milt Garland Award.

#### **4.6 Guests from IAR, RETA**

Anderson recognized Don Tragethon, executive director of the Refrigerating Engineers and Technicians Association ([RETA](#)). Tragethon noted that he was attending REF meeting to identify areas where RETA and ASHRAE could work together. RETA is nearly 100 years old and aims to enhance development of industrial refrigeration engineers/technicians through education and continual improvement. RETA has approximately 4000 members and a 22 year old certification program.

Anderson recognized Bruce Badger, President of the International Institute of Ammonia Refrigeration ([IAR](#)). Badger noted that his members were primarily involved in ammonia industrial refrigeration but were embracing all natural refrigerants, with emphasis on carbon dioxide. The IAR is participating in the [GCCA](#). IAR was a partner with RETA in sponsoring ammonia safety programs and have 14 events planned for 2010.

### **5.0 POSITION DOCUMENTS (PD)**

#### **5.1 Ammonia**

Anderson noted that REF was asked to recommend a reaffirmation, retirement, or revision of the [Ammonia as a Refrigerant PD](#), as part of the three year PD cycle.

As background to the discussion, Siller noted that the initial aim of the PD was to help address restrictive fire/safety requirements that limited use of ammonia and to educate. Most on REF felt the need is still there for this. Siller emphasized that the new Natural Refrigerants PD assumed the existence of the Ammonia PD so all the details on ammonia that are in the Ammonia PD are not included in the Natural Refrigerants PD. The Natural Refrigerants PD was not intended as replacement for Ammonia PD.

Jekel noted that the current Ammonia PD is primarily information and doesn't really take positions or recommend ammonia. The statement on page 2 of the PD notes ammonia's use 'should be expanded', may be more appropriate as 'could be expanded'. Anderson noted that editorial updates can be made to the document and that the more controversial or broader issues would likely be addressed in the newly proposed refrigerant PD being discussed later on the agenda, and that REF will be involved in the development of that PD.

It was moved (RV) and seconded (CL) that,

2. REF recommends to Technology Council that the Ammonia as a Refrigerant Position Document (PD) be reaffirmed with minor, editorial corrections.



**MOTION 2 PASSED:** 11-0-0 CNV

**BACKGROUND:** As cognizant committee of the PD, REF was asked if the PD should be revised, reaffirmed, or retired. REF noted that the PD should be reaffirmed but that some of the references in the document should be updated. An action item was assigned to a subcommittee of REF to identify and update these references.

**Action Item 2** - Chasserot, Siller, Vallort, Pearson, Anderson – review Ammonia PD to update references other editorial updates for the Annual meeting.

**5.2 Natural Refrigerants**

No action is required at this time. The document was approved in January of 2009.

**5.3 Ozone Depleting Substances (ODS)**

Current chair of this committee, Julian de Bullet, was not in attendance. Anderson summarized that the Ozone Depleting Substances (ODS) PD Committee has not met to revise the current PD. The committee is awaiting a decision on the initiation of a new Refrigerants PD that may supersede or incorporate the ODS PD. The development is essentially on hold.

**5.4 New Refrigerants PD**

Werkema stated that a proposal (**Appendix 4**) for a new document called ‘Refrigerants and their Use in the Built Environment’ is being considered for approval by Technology Council at this meeting.

Gage noted that the new PD would not supersede existing PD’s. Chasserot voiced a concern in encompassing new chemicals and natural refrigerants in the same PD but would recommend supporting if the document could maintain an objective discussion on pros and cons. Anderson noted that REF would be cognizant (TC 3.1 perhaps co-cognizant) on new documents and can have some influence and approval of document.

**5.5 Other**

Chasserot expressed an interest in PD’s on other refrigerants similarly as to what’s done for Ammonia, including perhaps CO<sub>2</sub>, hydrocarbons, and water. Anderson stated PD proposals can be submitted by anyone and suggested members submit proposals.

**Action Item 3** - Staff – send PD request forms and documents to REF

**Action Item 4** - Chasserot – consider the proposal of new PD’s to Technology Council for New Mexico meeting.

**6.0 REFRIGERATION AWARDS**

Hammerling reported there were two nominations for the Milt Garland award, none for the Comfort Cooling award, and four eligible articles for the George Briley Award. Gage and others had made efforts to promote awards with Journal articles, web postings, etc. but need to solicit more nominations. REF should review process to see what can be done to increase nominations.

**Action Item 5** – Staff – compile list of chapter refrigeration contacts for distribution of information on REF awards.

**Action Item 6** – Gage/Staff – Review award processes to see if they can be streamlined.

Gage noted she'd spoken with Journal editor, Fred Turner, regarding articles featuring award winning projects and he thought favorably of the idea. REF can forward the package submission of the winning project to Turner and he will work with the winner to develop an article for the journal.

### **6.1 Milt Garland Award**

Two submissions were received on the Milt Garland Award. Scott excused himself for involvement in one of the projects. The subcommittee of judges reviewed the nominations and recommended the award go to Mr. Dosch.

It was moved and seconded that,

3. REF recommends that the Milton Garland Award go to Mr. Tom Dosch, PE, from the San Diego chapter for the Innovative Cold Storage Enterprises ICE II project.

**MOTION 3 PASSED:** 10-0-0, CNV

**BACKGROUND** The Milton Garland Award will be presented at the Annual Meeting in Albuquerque.

**Action Item 7** – Anderson/Staff – notify all Milt Garland applicants of results.

### **6.2 Comfort Cooling Award**

No submissions were received for the Comfort Cooling Award. REF will step up efforts to solicit nominations.

### **6.3 ASHRAE Journal Award**

Lim, Jekel, and Chasserot were asked to consider the following articles for the George Briley ASHRAE Journal Award:

- Chiller Plant Optimization Tool – July 2008 - T. Morris, S. Blaine
- Refrigeration for Ships – December 2008 – A. Majgaonkar
- CO<sub>2</sub> in North American Supermarkets – February 2009 – D. Hinde
- Improving Efficiency in Ice Hockey Arenas - June 2009 – L. Nichols

The judges agreed to score after the Orlando meeting and to make a recommendation to the full committee for a letter ballot vote. The letter ballot should be completed before April to assure time to procure award and invite winner.

## **7.0 SUBCOMMITTEE/PROJECT REPORTS**

### **7.1 Functional**

Anderson is considering options to change REF's subcommittee structure and to utilize more formal liaisons relationships. REF could consider formal liaisons with other committees modeled after the Research Administration Committee (RAC) and the Air-conditioning and Refrigeration Technology Institute (ARTI) where an ARTI designee is on RAC. Werkema noted that Technology Council performs an annual review of subcommittee structure and duties that REF may wish to consider.

**Action Item 8** – Anderson – draft proposal for liaisons to REF for consideration at Annual meeting.

### **7.2 Education**

Dettmers noted a series from e-learning being developed by Becker and Fricke. Anderson reported a lack of refrigeration related educational content. TC's, REF, or anyone can

propose topics for courses, but Education Committee will only develop if they perceived a demand for the content. The REF developed refrigeration webinar is not listed on the education page and never did materialize.

Scott noted that the Fundamentals of Refrigeration is in final editing to be available in a few weeks. Chasserot stated [YouTube education](#) and [Itunes University](#) offer free content from instructors on refrigeration topics.

**Action Item 9** – Staff – Review and summarize educational programs related to refrigeration for Annual meeting.

Gage noted there is a refrigeration speakers list now on the REF page of the website ([www.ashrae.org/refrigeration](http://www.ashrae.org/refrigeration)). This is in addition to the Distinguished Speaker List (DSL) organized by CTTC.

**Action Item 10** – Staff – send DSL list to REF and request nominations to Gage

**Action Item 11** – Gage – collect suggestions and volunteers from REF for DSL list.

Lim noted the budget for Region XIII allows for only six distinguished lecturers. The Region's interest in refrigeration is fairly limited outside of perhaps Thailand or the Philippines, so the demand for refrigeration speakers there is low.

Freidman noted CTTC is starting a program to record technical or informational presentations for upload to chapters as technology updates.

**Action Item 12** – Anderson - REF to consider looking into developing recorded presentations for refrigeration issue updates.

### **7.3 Liaisons**

Representatives from IIAR and RETA attended the REF meeting and gave summaries earlier. As noted in the Functional report, REF is exploring methods to formalize liaison relationships with other refrigeration-related organizations, including IIAR and RETA.

Sluga sent Liaison report (**Appendix 6**) prior to the meeting. Sluga is seeking feedback on how to improve or update report to serve its initial purpose to involve or inform chapters on TC activities.

Anderson noted that he's attended Section 10 meeting and many expressed that TC websites were not useful and suggested staff maintain them or they be abolished. They felt the websites were unnecessary, had minimal information, and were not current.

### **7.4 Publications**

Siller noted that the CO<sub>2</sub> chapter is to be included in the 2010 Refrigeration volume of the Handbook when it is available later this year.

REF continues to identify co-funding for the approved Special Project proposal titled 'Guide for Sustainable Refrigerated Facilities and Systems'. REF members plan to meet with agencies and utilities before April 1 to explore their interest and support.

### **7.5 Program**

Kazachki noted that REF sponsored Seminar 14, Advancements in AC&R Sustainability in Building Applications for Orlando. He noted there are four very good speakers for the program on Sunday afternoon:

- Back to the Future? Environmental Impact of Retrofitting CO2 Refrigeration for Heating and Cooling of Existing Buildings and Applications to New Buildings – K. Visser
- Sustainable Use of Refrigerants in Supermarket Applications – R. Grosse-Kracht
- R718-Water as Refrigerant – Norbert Mueller
- Low GWP Refrigerants in Secondary Loop Systems – Y. Hwang

Several other refrigeration related programs in Orlando were sponsored by Section 10 TC's and are listed below. There were more refrigeration-related presentations sponsored by other sections and committees.

- Seminar 5 : Sustainability Enhancements for Commercial Refrigeration Equipment
- Seminar 25 : Energy, Water and Sound: Improvements in Cooling Tower Design to Optimize Equipment Efficiencies
- Seminar 39 : Comparing Refrigeration Loads: Peak Calculations, Hourly Simulation and Actual Operation
- Seminar 51 : Modeling and Characterization of Transport Refrigeration Unit
- Seminar 60 : Advances in Refrigerants and Secondary Coolants
- Seminar 75 : Recent Advances in Heat Transfer and Fluid Flow

REF discussed options for future programs noting that the program on natural refrigerants proposed for Orlando was not accepted.

It was moved and seconded that,

3. REF recommends that a seminar program for Albuquerque related to Natural Refrigerants be approved and submitted as first priority.

**MOTION 4 PASSED:** 10-0-1, CNV

**BACKGROUND:** Session would have same four speakers as proposed for Orlando.

Chasserot suggested a Las Vegas meeting program on the Kyoto/Montreal impacts. Gage invited Chasserot to attend TC 2.5 program subcommittee meetings as they are talking about this subject. Werkema suggested REF co-sponsorship. Gage reported that TC 2.5 was doing a presentation related to the subject here in Orlando (Tuesday 1-3:30pm).

**Action Item 13** – Chasserot/Gage – develop program for Las Vegas on Kyoto/Montreal impacts. Explore co-sponsorship with TC 2.5 and Advocacy Committee.

Anderson suggested the idea for an ASHRAE sponsored conference on refrigerants. The focus could be on the technical, objective study of the various refrigerant options and applications. The Conference and Exposition Committee (CEC) is focusing now on specialty conferences on specific applications such as net zero buildings, indoor air quality, educational facilities, etc.

**Action Item 14** – Anderson – discuss idea of conference with CEC chair.

## **7.6 Research**

A committee called the Research Advisory Panel (RAP) is updating the ASHRAE research plan for 2010-2015. Current goal #8 is to “Facilitate use of natural and low global warming potential (GWP) refrigerants Natural/Low GWP Refrigerants and develop methods to reduce refrigerant charge”.

More information including an opportunity to provide comment on the draft 2010-2015 plan is available at [www.ashrae.org/research](http://www.ashrae.org/research).

### **7.7 Standards Activities**

Anderson continues to determine if there is support for a commissioning guideline on refrigeration systems within ASHRAE. If so, a TPS can be drafted.

## **8.0 UNFINISHED BUSINESS**

Anderson noted no unfinished business from this meeting.

## **9.0 NEW BUSINESS**

### **9.1 ASHRAE/IIR proposal - Groll**

Eckhardt Groll presented REF with a draft proposal (**Appendix 6**) on the U.S. Membership in the International Institute of Refrigeration. The proposal is for ASHRAE to assume the role of lead agency and designate the U.S. delegate to the IIR Executive Committee. The benefits and responsibilities for ASHRAE and members were discussed. Groll trying to get a measure of support in Orlando on whether interested parties thought this would be of value to ASHRAE member. A formal proposal would not come to the ASHRAE BOD until the Albuquerque meeting at the earliest. Section 10 Technical Committees will also be discussing the proposal at their Orlando meetings. Discussion on the topic will continue at the IIR/USNC meeting Tuesday from 2-4pm.

### **9.2 Federal Walk-in Cooler Requirements - Scott**

Scott reported that the DOE developed requirements for walk-in coolers affecting efficiency, energy use over year, minimum performance requirements, and labeling. The AHRI has developed a test standard to go with this. Scott highlighted the difficulty in that coolers involve a system design and multiple vendors with multiple contractor assemblies, a situation that makes it tough for designers/owners to ensure meeting a minimum performance goal.

The proposed rule is available for a free download [here](#). DOE is hosting a [workshop](#) on the topic and REF or other ASHRAE committees may wish to comment or participate. Anderson noted TC's 10.7 and 10.5 would have an interest in this also.

### **9.3 B2B global directory. Ammonia 21 – Vallort**

[www.Ammonia21.com](http://www.Ammonia21.com) launched a directory of organizations working in that industry. Vallort noted that ASHRAE is not listed in the directory. Chasserot noted that he maintains the website and the directory and could add ASHRAE shortly.

**Action Item 15** – Chasserot – add ASHRAE to ammonia21.com directory.

Chasserot noted [www.R744.com](http://www.R744.com) is a good resource on carbon dioxide refrigeration. This sort of information may be of interest to chapters.

## **10.0 NEXT MEETING**

The next meeting of REF is scheduled for Sunday, June 27<sup>th</sup>, 2010 in Albuquerque, NM.

## **11.0 ADJOURNMENT**

The REF meeting was formally adjourned at approximately 12:00 p.m.

**Refrigeration Committee Meeting Agenda**  
**Sunday, January 24<sup>th</sup>, 2010**  
**8:00 AM – 12:00 PM**  
**Rosen Shingle Creek - Gatlin E4 (1)**

- 1.0 CALL TO ORDER/ INTRODUCTIONS/OPENING COMMENTS
- 2.0 REVIEW OF AGENDA
- 3.0 APPROVAL OF MINUTES- Annual Meeting – Louisville, KY, June 21<sup>st</sup>, 2009
- 4.0 REPORTS
  - 4.1 Chair – Anderson
  - 4.2 Vice Chair – Gage
  - 4.3 Coordinating Officer – Watson
  - 4.4 BOD Ex-Officio – Werkema
  - 4.5 CTTC - Garbarino
  - 4.6 Guests from IIAR, RETA
- 5.0 POSITION DOCUMENTS
  - 5.1 Ammonia
  - 5.2 Natural Refrigerants
  - 5.3 Ozone Depleting Substances
  - 5.4 New Refrigerants PD
  - 5.5 Other
- 6.0 REFRIGERATION AWARDS
  - 6.1 Milt Garland Award
  - 6.2 Comfort Cooling Award
  - 6.3 ASHRAE Journal Award
- 7.0 SUBCOMMITTEE/PROJECT REPORTS
  - 7.1 Functional
  - 7.2 Education
  - 7.3 Liaisons
  - 7.4 Publications
  - 7.5 Program
  - 7.6 Research
  - 7.7 Standards Activities
- 8.0 UNFINISHED BUSINESS
- 9.0 NEW BUSINESS
  - 9.1 ASHRAE/IIR proposal - Groll
  - 9.2 Federal Walk-in Cooler Requirements - Scott
  - 9.3 B2B global directory. Ammonia 21 – Vallort
- 10.0 NEXT MEETING – Albuquerque, NM, June 27<sup>th</sup>, 2010
- 11.0 ADJOURNMENT



## REFRIGERATION COMMITTEE MBO's – M. Kent Anderson, Chair 2009-2010

Revision 2.0

1/25/10

OBJECTIVE	Strategic Direction	Responsibility	Status
<b>1.0 Develop an ASHRAE Guide for Sustainable Refrigeration Facilities and Systems</b> 1.1 Request approval as a Special Project 1.2 Identify funding sources and potential co-sponsors 1.3 Create RTAR(s) to support the Guide 1.4 Propose the Guide project as a Special Project or research project with ASHRAE funding support	SD#1 - 1.1, 1.2, 1.6	Scott, Anderson	Special Project approved (without funding). Various agencies and utilities are being approached for cofunding. REF meeting before April
<b>2.0 Enhance grassroots refrigeration activities and programs</b> 2.1 Appoint REF Committee liaison to CTTC, and establish CTTC liaison with REF Committee 2.2. Review and update tools on refrigeration technology available for chapter use on society website 2.3 Submit recommendations for 2010-11 refrigeration PAOE criteria to President-Elect 2.4 Develop plan for enhancing chapter refrigeration activities jointly with CTTC	SD#2 - 2.2, 2.4 / SD#3 - 3.4		Don Siller appointed as REF's CTTC liaison. Review of website completed. Will explore a CTTC presentation on refrigeration technology issues for Albuquerque.
<b>3.0 Support and coordinate Society refrigeration activities</b> 3.1 Organize programs on sustainable refrigeration for annual and semi-annual meetings 3.2 Appoint a committee coordinator for a Society "refrigeration track" 3.3. Promote and solicit entries for refrigeration awards: Garland, Comfort Cooling, and Briley 3.4 Provide a recommendation on refrigeration educational programs that should be provided by ASHRAE 3.5 Review assigned Society position papers/statements/documents and initiative revisions, as needed	SD#2 - 2.1, 2.2, 2.4		REF sponsored 2 seminars in OR. 2 more planned for Albuquerque. Garland and Briley awards will be presented in Albuquerque. Ammonia PD reaffirmed
<b>4.0 Establish a formal liaison program with key refrigeration technical organizations</b> 4.1 Coordinate refrigeration Technical Committee programs, research projects and handbook revisions 4.2 Identify international organizations involved with sustainable refrigeration technology 4.3 Establish a mechanism for maintaining relationships with key technical organizations in the committee MOP	SD #4 - 4.2, 4.13		RETA, IAR liaisons attended OR meeting. MOP changes to be prepared for Albuquerque.
<b>5.0 Identify the appropriate role for ASHRAE in commissioning of refrigeration systems</b> 5.1 Obtain input from refrigeration Technical Committees on the need for refrigeration commissioning programs 5.2 Identify current refrigeration commissioning projects and guideline activities 5.3 Manage ASHRAE liaison activities with other organization's refrigeration commissioning work 5.4 Provide a recommendation to Tech Council on the ASHRAE role in refrigeration commissioning	SD#1 - 1.1, 1.2, 1.3, 1.5		Commissioning activities ongoing. Seminar in Orlando. Will explore liaisons with relevant orgs.
<b>6.0 Develop a new communications vehicle for members/chapters on refrigeration technology</b> 6.1 Establish a format, schedule and budget for the new communications vehicle. 6.2 Publish at least two editions by June 2010	SD#3 - 3.1, 3.2, 3.3, 3.4		Ongoing

Notes:

# ASHRAE Members

Engineering the World We Live In





# Headquarters Renovation

- LEED Platinum Certification in the New Construction 2.2 rating awarded in November
- “...Uphold ASHRAE’s noble mission through completion of this project.”
- Incorporates ASHRAE technology and demonstrates its strong commitment to sustainability
- Features living lab, and learning and meeting center
- [www.ashrae.org/building](http://www.ashrae.org/building)



# Foundation for Energy Efficiency

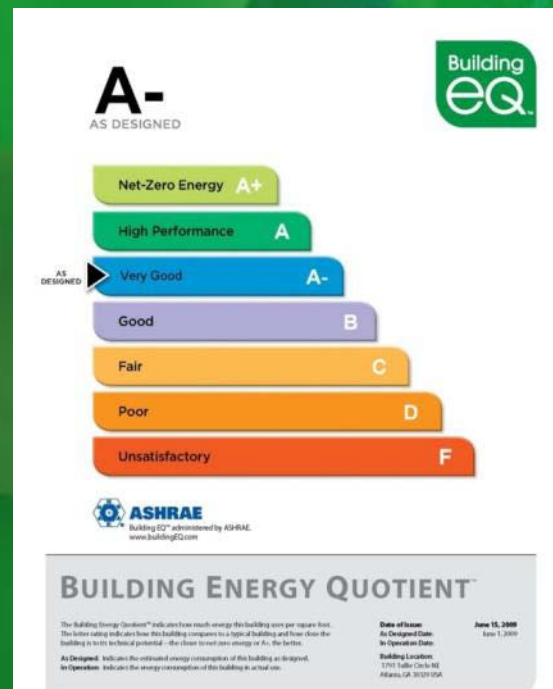
- Standard 90.1-2010
  - On track for publication in 2010
  - Incorporates continuous process addenda since 2007
  - 20-30% more energy efficient than 2004 version
- Standard 189.1P
  - Board Approved on December 4
  - Expect publication in early 2010
  - Reduces building energy use by 30%
  - USGNC/IESNA partners in development



# What's Your Building EQ?

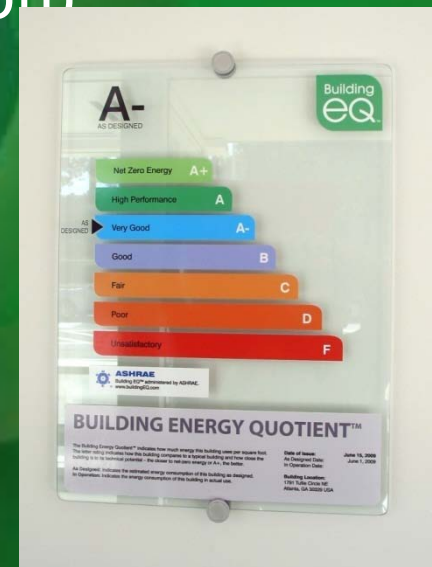
*Provide motivation for reducing energy use in commercial buildings by expressing the energy performance of buildings in a tangible way*

*[www.buildingeq.com](http://www.buildingeq.com)*



# What's Your Building EQ?

- Awarded prototype label to ASHRAE Headquarters
- Rolling out prototype program early 2010
  - 20-30 buildings
  - NY city, US GSA, Hines (London, Houston)
- Two ratings: As Designed, In Operation
- [www.buildingeq.com](http://www.buildingeq.com)



# Certification

*ASHRAE certification provides members with benefit of professional designations that showcase their body of knowledge to the industry*

- More than 200 certified
- Current programs
  - High-Performance Building Design Professional
  - Operations & Performance Management Professional
  - Healthcare Facility Design Professional
  - Commissioning Process Management Professional
  - Building Energy Modeling Professional



# ASHRAE Governance: Focus on Empowerment

- Five Councils reduced to three in 2004-05
- Board Planning Committee working on simplified structure
- Delegate responsibility and authority



# ASHRAE Governance: Strategic Plan

- Most Councils/Committees linked MBOs to Strategic Plan
- Board has performed one GAP analysis
- Focusing on Board functions



# Future Conferences

- High Performance School Facilities, March 1-2, Atlanta, [www.ashrae.org/highperformanceschools](http://www.ashrae.org/highperformanceschools)
- Existing Buildings in Urban Areas: Dramatically Cutting the Energy Waste, April 19-20, New York, [www.ashrae.org/cutenergywaste](http://www.ashrae.org/cutenergywaste)





# ASHRAE Membership

*Although the economy has had an impact, membership has been sustained through an aggressive campaign.*



**Request Form for an ASHRAE Position Document**

**Originator:** Bill Bahnfleth/Gordon Holness/Tom Werkema    **DATE:** August 28, 2009

**Topic: Refrigerants and their use in the Built Environment**

**Describe the issue:**

ASHRAE has two existing Position Documents (PDs) on refrigerants: *Ammonia as a Refrigerant* and *Natural Refrigerants*. Additionally, the *Climate Change* and *Ozone-Depleting Substances* PDs touch on refrigerant issues. The requestors propose that a PD be developed on overall refrigeration/refrigerant issues, discussing broad issues, criteria and perspectives. Logically, this PD would provide the broadest ASHRAE Refrigerants position. Upon completion, this PD could supplement or supplant the existing *Ammonia*, *Natural Refrigerants* and *Ozone Depleting Substances* PDs, based on recommendations from Technology Council and the cognizant committees.

**What governmental action or involvement has occurred (or is anticipated) on this topic? (Attach a summary of regulatory or legislative measures.)**

Extensive worldwide government activity has occurred and will continue. Such action is domestic (i.e., US, State, Province), national (other countries) and international (thru Montreal Protocol and Kyoto Protocol, predominantly). Some government programs already provide "bright line" criteria for refrigerant selection.

**If the Society develops a position document, what specific items should be addressed?**

The PD would consider all refrigerants and all refrigerant physical properties. Perhaps more important, the PD should discuss all major considerations for refrigerant selection. This list (not exhaustive) should include:

- 1) Applications - this PD should focus on refrigerants, although it might be appropriate to eventually develop an additional PD on other applications such as building envelopes, solvents, and fire suppression agents.
- 2) Consideration of secondary effects including energy consumption, climate change and other environmental impacts, safety and health
- 3) Recommendations, including those for additional research requirements and public policy.

**Who within the Society are most knowledgeable on the technical aspects of the issue and which members are most familiar with governmental actions (actual or anticipated)?**

The issue touches many committees including Advocacy, Refrigeration and Technical Council. With pervasive ASHRAE interests, there are many interested Members including those representing hydrocarbons, carbon dioxide, ammonia and fluorochemicals. Additionally, companies are developing new alternatives that should be generically included in the PD.

Specific related Committees include: Advocacy, Refrigeration, Technical Council, TC 2.5, TC 2.8, TC 3.4.

**What is the time frame for use of the final document?**

Immediately. Interest in ASHRAE's Natural Refrigerants PD has increased visibility for ASHRAE and the need for a broad perspective.

TC No	TC Name	REF Liaison	TC Chair	TC Vice Chair	Members Voting / CM	Handbook Chapters	ASHRAE Standards	Outside Liasons	Programs		Active Research	RTAR's accepted WS req'd	WS's Released for Bid	Proposed RTAR's	Research Closed	Website	
									Orlando January 2010	Albuquerque June 2010						Webmaster	Status
REF	Refrigeration Committee		Kent Anderson	Cynthia Gage		Intro to Refrigeration			Seminar 14	CO2 systems, components, and applications, Part 3		SPC "Guide for Refrigerated Facilities and Systems"					
TC 1.3	Heat Transfer & Heat Flow		Steven Eckels			Fundamentals 2 thru 5 & 39			Forum 10 Seminar 75		1352-RP 1444-RP				1270-RP 1280-RP		
TC 3.1	Refrigerants & Secondary Coolants	Cynthia Gage	Barbara Minor	Sean Cunningham		Fundamentals 19 thru 21			Seminar 14 Forum 5 Seminar 60		1484-RP 1507-RP						
TC 3.8	Refrigerant Containment		Danny Halel			Refrigeration 8											
TC 8.1	Positive Displacement Compressors	Georgi Kazachki	Alex Lifson	Matt Irons	9 VM 31 CM	Refrigeration 45	23, 41, 179, 186 (see below for details)		Seminar 14					See below for details			
TC 8.2	Centrifugal Machines	Norbet Mueller	Ajay Iyengar						Seminar 8		1476-RP						
TC 8.3	Absorption & Heat Operated Machines		Laura Schaefer			Fundamentals 1 Refrigeration 41											
TC 8.5	Liquid to Refrigerant Heat Exchangers		James Bogart			Equipment 35 & 37			Seminar 75		1316-RP 1345-RP				1394-RP		
TC 8.9	Residential Refrigerators & Food Freezers	Cynthia Gage	Pradeep Bansal	Gregory Rosenquist		Refrigeration 48											
TC 10.1	Custom Engineered Refgn Systems	Don Siller	Doug Scott	Dan Dettmers	12 VM	Refrigeration 1, 4, 36, 37 & 43	15		Seminar 44			1513-RTAR		1514-RTAR			
TC 10.2	Ice Making/Skating Rinks	Don Siller	William Wladyka	Wayne Borrowman	7 VM 23 CM	Refrigeration 34 & 35											
TC 10.3	Refgn Piping, Controls, Acc	John Sluga	Todd Jekel	Don Siller		Refrigeration 2, 3 & 33 (new CO2 Chapter)		B31.5 IAR Piping			1327-RP 1356-RP w/TC 1.8	1513-RTAR w/TC 10.1		1569-RTAR			
TC 10.4	Ultra Low Temp/ Cryogenics		Pradeep Bansal			Refrigeration 38 thru 40			Forum 10		1472-RP						
TC 10.5	Refgn Distrib/Storage Facilities	Don Siller	John Miranda	Dennis Halsey	10 VM 37 CM	Refrigeration 11 & 14			Seminar 39 Seminar 44								
TC 10.6	Transport Refrigeration	Don Cleland	Jeff Berge			Refrigeration 30 thru 32	29		Seminar 51								
TC 10.7	Food Display/Storage Equip	Cynthia Gage	David Hinde	Scott Mitchell	10 VN 46 CM	Refrigeration 46 & 47			Seminar 5 Forum 3		1402-RP 1467-RP						
TC 10.8	Refgn Load Calculations	Don Siller	Don Siller		11 VM 10 CM	Refrigeration 13			Seminar 19 Seminar 39					1435-RTAR 1433-RTAR			
TC 10.9	Refgn for Food & Beverage		Brian Fricke	Ajay Chatlani	7 VM 38 CM	Refrigeration 9, 10, 12 & 15 thru 29			Seminar 19								
TC 10.10	Managemnet of Lubricant Circulation	Doug Reindl (?)	Pega Hrnjak														
USNC/IIR		Georgi Kazachki	E. Groll														
Standard 15	Safety Standard for Refrigeration Systems	Bruce Griffith															

**TC 8.1 Proposed research:**

- Status of RTAR – “Low and High Pressure Falex Style Testing and a Tribology Comparison to Actual Compressor Tests” – Chris Seeton
- Status of RTAR – “Measurement and Comparison Methods for Studying Oil Circulation Rates” TC 8.01 voted to co-sponsor with TC10.10.
- Status of RTAR – “Measurement of the Dielectric Properties of Oil/Refrigerant Mixtures” Alex Leyderman has drafted this RTAR.  
Chris Seeton and Matt Iron recommended RTAR to be sent to Research liaison to be submitted to RAC after his review.  
At Salt Lake it was suggested to approach TC 3.4 and TC 3.1 to determine if they want to co-sponsor it.
- TC 8.1 discussed at Salt Lake to list 8.1 as interested in research and then to vote as co-sponsor on “Quantification and Mechanism of Oil Hold up in Vertical and Horizontal Suction Risers with Immiscible and Miscible refrigerants” TC 10.10 is a primary sponsor who will resubmit this RTAR – need status from TC10.10.
- TC3.4 is working on RTAR on “Physical Property measurements of CO2/Lubricant Mixtures”. RTAR has been written and Chris Seeton and Liz Dixon wrote work statement.  
Chris indicated that he will contact 3.4 if they want to co-sponsor it. Chris also indicated that he will send a letter ballot to TC 3.4 asking to approve our participation and send work statement to TC8.1 with a letter ballot asking them to co-sponsor it

**TC 8.1. Standards**

- SPC 23-2005R “Method of Testing for Rating Positive Displacement Compressors and Condensing Units”.
- SSPC-41 Project Committee – Standards 41.9 and 41.10
- SPC 179P (Bob Utter – Chair) “Method of Test for Life Testing of Positive Displacement Compressors”
- SPC 186P “Method of Test for Rating Positive Displacement Compressors and Condensing Units that Operate at Supercritical Conditions”.

## **U.S. Membership in the International Institute of Refrigeration Who pays the Yearly Dues?**

**Clark Bullard, Eckhard Groll, Piotr Domanski**

**Draft January 21, 2010**

### **Background**

The IIR is an intergovernmental organization established in 1908, currently operating under a 1954 International Agreement, and headquartered in Paris, France. The United States is one of 62 member countries. In most member countries either the Foreign Ministry or one of the domestic ministries pays the country dues and selects the country delegate to the IIR Executive Committee. The US has traditionally been represented by the US National Committee for the IIR (USNC/IIR), a voluntary association of individual and corporate members of the IIR, who have raised funds from various sources to pay the U.S. country dues. Over the years a variety of federal agencies including DoE, USDA, and DOC/NIST have contributed to the USNC/IIR's dues and expenses, which currently total approximately \$90,000 annually.

### **Current situation**

Operating as an all-volunteer committee has proven to be unsustainable, and results in the U.S. being underrepresented relative to Japan, Germany, France and other leading member countries. The USNC/IIR has encountered difficulties of raising the funds to pay the yearly dues over the years, frequently falling behind in its dues payments due to the vagaries of personnel changes in the sponsoring agencies and the business cycle within the air conditioning and refrigeration industries. It is frankly difficult for agency personnel to justify contributions to a non-profit non-governmental organization, which only indirectly represents U.S. interests in the international arena. This problem has become particularly apparent in recent years as the USNC/IIR volunteers have struggled to ensure that U.S. interests are adequately represented in positions taken by the IIR in the Montreal and Kyoto Protocols, and to provide U.S. companies with access to the latest technical innovations from the global arena.

### **Proposal**

ASHRAE would assume the role of lead agency and designate the U.S. delegate to the IIR Executive Committee. ASHRAE would create a standing committee similar to the USNC/IIR to represent the U.S.' and ASHRAE's interest in the IIR. This would enable ASHRAE to take a higher profile role in the IIR activities relating to the Montreal Protocol and the Rio Convention on Climate Change. In addition, ASHRAE members would benefit to the information disseminated by the IIR.

### **Benefits of US Membership**

Existing and pending global agreements phasing out ozone-depleting chemicals and greenhouse gases have stimulated an unprecedented rate of innovation in the now-global a/c and refrigeration industries. At this critical time, it is imperative for the U.S. to be properly represented in the presentation of IIR positions within those decisionmaking processes, and to provide scientists and engineers in our highly decentralized domestic industry with direct and indirect benefits of the types described below:

**a.) Influencing international decisions**

The IIR is involved in the preparation of international standards (e.g. refrigerated transport and various committees of the *Codex Alimentarius*, which proposes international regulations and standards on food). U.S. industry and academics participate in the development of IIR position papers and other materials presented to the United Nations. Its status as an intergovernmental organization provides IIR a formal role as a source of scientific expertise and objective technical advice in ongoing negotiations regarding phase-out of ozone depleting chemicals (Montreal Protocol) and climate change (Rio Convention on Climate Change).

**b.) Access to technical information**

The US can designate 8 individuals within various agencies to access the members-only part of the IIR website with free downloads from IIR conference proceedings and the top scientific journal in the field, the *International Journal of Refrigeration*; the bimonthly *Bulletin of the IIR* with the latest abstracts of technical papers from other journals and conference proceedings. The IIR's database contains more than 85,000 abstracts and articles.

**c.) International network of expertise**

As a member country, the U.S. can host technical conferences and appoint 30 experts from industry, universities and national laboratories to IIR Commissions. Covering 10 specialties ranging from cryogenics and food processing to air conditioning and refrigerated transport, these commissions prepare guidelines, standards, codes of practice, informatory notes, and organize working parties and sponsor conferences on emerging technologies. These 600 experts are linked via the IIR expertise directory and accessible to companies and individuals in member countries. They too receive preferential access to the IIR publications mentioned above. In addition, scientists and engineers from member countries receive discounts on registration fees at IIR conferences anywhere in the world. The U.S. has recently hosted about 2 of the 12 conferences sponsored or co-sponsored annually by the IIR.