

**AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING
ENGINEERS, INC.
1791 Tullie Circle, N.E./Atlanta, GA 30329
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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 8.1 DATE July 16, 2011

TC/TG/TRG TITLE Positive Displacement Compressors

DATE OF MEETING June 28, 2011 LOCATION Montreal, Canada

MEMBERS PRESENT	YEAR APPTD	MEMBERS ABSENT	YEAR APPTD	EX-OFFICIO MEMBERS AND ADDITIONAL ATTENDANCE
Alex Lifson	2006	David Bergeron	2008	See Attachment
Bruce Griffith	2009	Rainer Grosse-Kracht (IM)	2009	
Rick Hall	2008	Jason Hugenoeth	2009	
Matt Irons	2010	Curt Slayton	2009	
Georgi Kazachki	2009	Juergen Suess (IM)	2009	
Scott MacBain	2010	Bob Utter	2010	
Chris Seeton	2007	John Williams	2010	
Mike Wegenka	2009			
Ward Wells	2008			

DISTRIBUTION

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

TAC Section Head:	William McQuade
TAC Chair: TAC Vice-Chair:	Donald Brudage
All Committee Liaisons As Shown On TC/TG/TRG Rosters:	Richard Hermans– RAC Russell Lindemann – Handbook Debra Kennoy – Standards Kimball Ferguson – Special Pubs Lynn Werman – Program Nathan Hart– CTTC
Manager Of Standards Manager Of Research & Technical Services	Stephanie Reiniche Mike Vaughn

CALL TO ORDER – ALEX LIFSON

Alex Lifson called the meeting to order at 3:30 pm in the Saguenay Room of the Fairmont Queen Elizabeth Hotel in Montreal, Canada.

ESTABLISHMENT OF A QUORUM - ALEX LIFSON

Alex established a quorum of seven out of thirteen voting members, Bruce Griffith, Rick Hall, Matt Irons, Georgi Kazachki, Scott MacBain, Mike Wegenka and Ward Wells. Chris Seeton arrived shortly after the meeting started, bringing the total to eight.

ACCEPTANCE OF THE MINUTES – WARD WELLS

Alex Leyderman indicated that the Standards portion of the minutes should be amended. Ward Wells' notes on Alex' proposed amendments are incomplete. *Ward will contact Alex for the proper wording and will re-issue the minutes.* Ward moved for the Las Vegas minutes to be accepted with Alex' amendment, Rick Hall seconded, and the motion carried unanimously.

CHAIR BREAKFAST MEETING MINUTES

The Society is asking for the names of people willing to be session chairs and/or paper reviewers. Give your name to Matt Irons if you're interested. Please provide your name, TC, e-mail and areas of expertise.

Bill McQuade will be leaving to become the Vice Chair on TAC. Steve Duda is the new Section Head.

Seminar speakers will be rated now. Someone with an average rating of 3.5 or lower would need to go for speaker training. If that person receives a rating of 3.5 or lower again, they are banned from presenting in the future. At the program in Las Vegas, 17% of speakers got a rating of 3.5 or less.

Each member can now view all of the rosters of their committees on the ASHRAE Website. Go to www.ashrae.org, click on the "Membership" tab in the header, click on "Manage Your Membership" text in the left sidebar and log in.

ASHRAE is introducing a new "multi-disciplinary group" committee. The objective is to have combinations of technical committees. There are 4 such MTG committees so far:

- MTG.BIM Building Information Modeling
- MTG.BPM Building Performance Metrics
- MTG.EEC Energy Efficient Classification of General Ventilation Air-Cleaning Devices
- MTG.ET Energy Targets

ASHRAE encourages members to conduct web-based meetings using Google Groups. Members of our committee pointed out that some companies prevent use of Google Groups with a firewall.

Upcoming workshops and conferences: |

- 7th International Symposium on Heating, Ventilating and Air-Conditioning, Nov 6-9 in Shanghai, China.
- The Purdue conference is next year but the deadline for abstracts is Dec 12, 2011.
- ASHRAE Winter Meeting, Chicago, Jan 21-25, 2012.
- ASHRAE Summer Meeting, San Antonio, June 24-28, 2012.

Deadlines:

October 21, 2011 Completed TC/TG/TRG Meeting room request form for 2011 winter meeting due to Judy Marshall (jmarshall@ashrae.org) at ASHRAE HQ. Subcommittee meeting rooms must be requested each meeting or they will be dropped automatically.

December 21, 2011 TC/TG/TRG meeting agenda for the Chicago meeting are posted on TC website and distributed to membership.

LIAISONS - ALEX LIFSON (Liaisons came at various times, but are collected here for clarity)

Debra Kennoy - Incoming CTLS

There is continuing discussion about whether or not to exempt speakers from the conference registration fee. Now the Society is considering reducing the registration fee for speakers by twenty-five percent. The consensus of the TC is that we don't want to charge speakers for attending the conference. Georgi Kazachki suggested the Society might give speakers two options. If a speaker wants to attend the conference without paying a registration fee, then he or she would have to agree to have his or her presentation recorded. If the speaker refuses to the presentation recorded, he or she would have to pay the normal registration fee.

Bill McQuade - Section Head

Bill talked about the speaker fee issue again. Bill congratulated Alex Lifson on his three-year tenure as TC Chair and the TC expressed its gratitude to Alex's efforts.

STANDARDS – RICK HALL

Rick suggests that TC8.1 begin to recruit for a replacement Standards Committee chair.

Standard 23.1 “Methods of Testing for Rating Positive Displacement Refrigerant Compressors and Condensing Units That Operate at Subcritical Temperatures of the Refrigerant” was published in 2010 and will come up for periodic maintenance in a couple of years. Standard 23.2 is its counterpart in supercritical fluids. SPC 23.2 met yesterday with Scott MacBain as chair and the document is in pretty good shape. The subcommittee will have several web meetings beginning in July. They are publishing what meetings are being held in the Standards Activities announcements.

Standard 41.4 “Standard for Measurement of Proportion of Lubricant in Liquid Refrigerant” is close to going out for public review. It will probably be listed as a public review draft. Descriptive comments about using Flowmeters will probably be removed.

Standard 41.9 “Standard Methods for Volatile Refrigerant Mass Flow Measurement Using Calorimeters” was published earlier this year. There is no new activity at this time. The standard describes how to measure compressor capacity. Capacity is based on superheat at the exit of the compressor. Georgi Kazachki said that superheat is taken at the compressor based on the return gas temperature (RGT). There was a lot of discussion of where to determine the superheat. Alex Leyderman told the committee that there is a need for accurate subcooling and superheat measurement. We discussed this issue at the Las Vegas TC meeting and said there is a need for such a standard but voted to take no action. Any individual can propose that ASHRAE create a new standard with a title, purpose and scope. *Alex plans to write a short white paper about this which might lead to a proposal to ASHRAE for a standard to clarify definitions and measurement.*

Standard 41.10 “Standard Methods for Volatile Refrigerant Mass Flow Measurement Using Flowmeters” has a new review committee with Shane Angle as chair. The committee met at this conference and started modifying the standard

SPC-179 “Method of Test for Life Testing of Positive Displacement Compressors” committee met on Sunday afternoon. In the absence of a quorum, we continued with the work plan as far as practicable. John Tolbert has polled refrigeration OEMs and air-conditioning and heat pump system OEMs to get reaction to our proposed set of endurance test conditions. The big issue continues to be pressure-ratio tests. One consistent suggestion is that we should have different combinations of tests for different designs of compressors. There was also talk of getting AHRI involved so we can access interested parties in their membership for opinions and guidance. We

are continuing to work toward sending out an Advanced Public Review (APR) later this year. Rick Hall pointed out that if there are no objections to a normal Public Review, the standard goes to print. If an APR has no comments, the standard does not.

Standard 99 “Refrigeration Oil Description” has a new revision committee led by Chris Seeton. Chris is preparing for the first meeting of this committee in Chicago. The SPC is out of balance in terms of membership and is looking for a user and a general interest member. There are too many oil suppliers so they need a user, defined as an equipment manufacturer. *Anyone interested in joining the SPC should see Chris.* They are looking for a Tuesday morning meeting time slot.

PROGRAM – SCOTT MACBAIN

Curt Slayton is preparing a seminar on part-load compressor performance for the Chicago meeting. Alex Lifson agreed to provide a paper as did Shane Angle and John Tolbert. Bitzer will also provide a speaker. The deadline is August 12.

Shane Angle proposed an alternate title of “Compressor Options And Features To Enhance (Improve) System Performance”. This title broadens the topic range and is more relevant due to the recent SEER and HSPF regulations.

We have another possible seminar which we are keeping on the back burner for now, dealing with compressor design for low GWP refrigerants. We might propose it for the San Antonio meeting.

Georgi Kazachki asked us to cosponsor a Refrigeration Committee seminar “Advancements and Trends in Technologies in Low-global-warming-impact Technologies” in Chicago. If they get more papers than will comfortably fit in one session, Georgi will try to split it into two seminars in Chicago.

Scott MacBain attended the TC 8.2 “Centrifugal Machines” meeting yesterday. TC 8.2 is considering a session for Chicago on which applications are better suited for centrifugal chillers and which for positive displacement chillers. *Scott is looking for possible speakers for this session.*

Deadlines:

August 12, 2011 Deadline for program proposals for the 2012 winter meeting in Chicago.

September 26, 2011 Full Technical paper drafts and Conference paper abstracts are due for the San Antonio. Seminar and forum session proposal are due February 13, 2012.

RESEARCH - MATT IRONS

Research and Handbook are sharing a Monday afternoon time slot, with Alex Leyderman leading the Handbook discussion at 2:15 pm and Matt Irons leading the Research discussion at 3:15 pm.

RAC currently has 8 to 10 Tentative Research Projects (TRPs) waiting for funding. Plan to send 2 TRPs out for bid in the fall of 2011.

ASHRAE has collaborated with the Greater Philadelphia Innovation Cluster (GPIC) for Energy-Efficient Buildings at the Philadelphia Navy Yard. This a Federal Innovation HUB organized by DOE but lead by Penn State University. The focus is on Energy Efficiency in Existing Small Commercial Buildings. They have funding of \$129M over 5 years total. There is \$2M worth of funding available from the Opportunity Research Fund (ORF). GPIC and ASHRAE are looking for mechanisms to pool resources on research projects of common interest and meet the GPIC’s need for fast results with ASHRAE’s technical rigor.

The ASHRAE Innovative Research Grant is a new program to provide seed funding for up to \$125k for novel research. This award is \$50,000 per year for two years, with an additional \$25,000 available in the third year if it is matched by an industrial contributor. ASHRAE will award once per year but not obligated to make an

award every year. Pre-proposals in the form of a 2 page white paper are due September 1 of this year and should be submitted to ASHRAE's Manager of Research & Technical Services, Michael Vaughn, mvaughn@ashrae.org.

RTAR Status

1642-RTAR "Improved Compressor Performance Modeling Methodology for use in System Simulation Programs" status: Returned from Research Committee with questions.

RTAR 1628: "Properties Measurements of HFO-1234yf/Lubricant mixtures"

TC 8.1 and TC 3.4 are co-sponsoring RTAR. This has been accepted as and a work statement is being drafted. It deals with thermophysical properties, not electrical ones. The work statement will go out to TC 8.1 and TC 3.4 prior to Chicago, so RAC can review it there, after which we will answer the usual questions and resubmit the work statement for approval.

Proposal RTAR is for physical property measurements of R-32, R-152a and R-1234ze with some lubricants. The product will include Daniel charts. We won't have to act on this until Chicago. POE lubricants will be involved and maybe a polyalkylene glycol, alkyl benzene or mineral oil. *Joe Karnaz of TC 3.4 is drafting the RTAR with assistance from Steve Kujak of TC 3.2.*

Another proposal which is cosponsored with TC 3.4 is about ultra-high pressure viscosity. The work would involve taking measurements up to maybe 100,000 psi. Investigation would include fluid film behavior in journal bearing and rolling-element bearings. *Chris Seeton is writing the RTAR and will bring it to TC 8.1 and to TC 3.4*

TC 10.10 voted at the Montreal meeting to be combined into TC 3.4. TC 10.10 has no RTARs pending. *Alex Leyderman wants to write an RTAR entitled "On-line Measurement of Oil Circulation Rate".*

Deadlines:

August 15, 2011 New or revised Work Statements and RTARs are due to MORTS

December 15, 2011 New or revised Work Statements and RTARs are due to MORTS

HANDBOOK - ALEX LEYDERMAN

There is nothing to do on either chapter at this time. We need to revise the positive displacement compressor chapter in three ways. 1) we need to expand on speed of sound, 2) over- and under-compression is not covered and 3) variable speed descriptions need to be revised. He asks for volunteers and noted that we have at least two or three years ahead of us. *John Tolbert volunteered to help with variable-speed motors, Alex Lifson volunteered to work on over- and under-compression, and Alex Leyderman will try the speed of sound part. We need updated compressor pictures. Shane Angle agreed to provide new pictures and schematics.*

There is currently no section in Chapter 42 on scroll compressors. Scott MacBain volunteered for this along with Matt Irons.

JOHN TOLBERT – MEMBERSHIP

We currently have 13 voting members plus 2 international members for this year and next. Two years from now when we will be down to 8 voting members. Immediately after that, the membership comes back to 11.

Matt Irons will become the chair of TC 8.1 at the end of this meeting and Bob Utter will become Vice Chair. Alex Leyderman and Jim Douglass will become voting members, added as of July. Eckhard Groll will become a corresponding member. Since Jim Douglas will retire from Tecumseh sometime this fall, Doug Collings of Tecumseh will roll on as a voting member after the summer meeting in June 2012.

Deadlines:

November 30, 2011 TC/TG/MTG/TRG Chairs receive 2012-13 roster update workbook for completion.

January 24, 2012 Roster update workbooks for 2012-13 TC/TG/MTG/TRG rosters are due midnight

WEBSITE – ALEX LIFSON (for Webmaster Bob Utter)

The website is in good shape at this time.

ADJOURN – ALEX LIFSON

With no further business pending before the committee, Alex Lifson adjourned the meeting at 5:45 pm.

Attachments

1) **ATTENDANCE LIST**

TC 8.1 Attendance List – Montreal

Name	Company	Status
Alex Lifson	Carrier UTC	Chair/CM
Rick Hall		Standards/VM
Matt Irons	Emerson Climate Technologies	VC/Researc/VM
Alex Leyderman	Fairchild Controls	Handbook/CM
Scott MacBain	Carrier UTC	Program/VM
John Tolbert	Bristol Compressor	Membership/CM
Ward Wells	DuPont	Secretary/VM
Bruce Griffith	Johnson Controls	VM
Georgi Kazachki	DRS-ESI/Cryotherm	VM
Chris Seeton	Honeywell	VM
Mike Wegenka	Trane	VM
Debra Kennoy	Arkema	Standards Liaison
Shane Angle	Emerson Climate Technologies	CM
Doug Collings	Tecumseh	CM
Jim Douglas	Tecumseh	CM
John Neel	Fairchild Controls	CM
John Scott	Natural Resources Canada	CM
Steve Spletzer	Arkema	CM
Rakesh Goel	Lennox Industries	Guest
Raymond Good	McQuay	Guest
Edwin Huestis	Pacific Gas and Electric	Guest