June 2013

THE LONG ISLAND SOUNDER

ASHRAE Long Island Chapter

ASHRAE Long Island Chapter, Region 1...*Founded in 1957* www.ashraeli.org

American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc.

Inside this issue:

President's Message

The Long Island ASHRAE Chapter is pleased to report that we had a very successful year full of excellent programs and back to basic sessions. Following all these programs up was another exceptional golf outing and I am looking forward to this year's fishing trip. All this would not have happened without the outstanding efforts put forth by our Board of Governors, Committee Chairs, and Volunteers they truly are an invaluable resource; we had Ten (10) PDH approved events along with Two (2) Distinguished Lecturers. I would like to take this opportunity to thank all the Long Island ASHRAE Chapter Past Presidents, Executive Board, Board of Governors, Committee Chairs and their members for volunteering all their hard work, dedication and support over the past year. Our Chapter activities make the Long Island ASHRAE Chapter one of the very best!

Please make a note this month Chapter meeting will be the "Installation of Officers" 2013-2014. We will be installing the newly appointed Chapter Board of Governors and Committee Members as follows: Andrew Manos President, Richard Rosner, President Elect, Thomas Fields, Vice President, Donald Kane, Treasurer and Andrew Dubel, Secretary. We will also be awarding our Student Scholarships at this meeting and I am looking forward to meeting them all.

Please consider coming out to the Westbury Manor and show your appreciation of the past Chapter programs, facility tour, joint meetings, technical presentations, back to basics, student nights, YEA events, scholarship awards, etc. 2012-2013 season. It has been my pleasure serving on the board for the past 7 years and I am looking forward to the coming years helping the team keep on track of continuing the Long Island ASHRAE Chapter tradition of excellence.

Brian Simkins, LEED AP
President - Long Island Chapter

CHAPTER MONTHLY MEETING

DATE:	**Tuesday, June 11, 2013**
TIME:	6:00 PM - Cocktails 7:00 PM - Buffet Dinner
LOCATION:	Westbury Manor South Side of Jericho Tpke. 25 Westbury, NY 11590
FEES: Members - Guest - Student -	**NO CHARGE**

Reservations requested, but not required.

Long Island Chapter Officers & Committees

ASHRAE 2012/2013 OFFICERS

POSITION	NAME	PHONE	FAX	EMAIL
President	**Brian Simkins, LEED AP**	203.261.8100	203.261.1981	bsimkins@accuspecinc.com
President-Elect	**Andrew Manos, LEED AP**	631.632.2791	631.632.1473	andym22@optonline.net
Vice President	**Richard Rosner, P.E.**	631.737.9170	631.737.9171	rrosner@csfllc.com
Financial Secretary	**Thomas Fields, P.E., LEED AP**	212.643.9055	212.643.0503	thomas.fields@mgepc.net
Treasurer	**Charles Lesniak, P.E**	516.484.1020	516.484.0926	charles.lesniak@leapc.com
Secretary	**Don Kane, P.E.**	631.737.9170	631.737.9171	dkane@csfllc.com
Board of Governors	**Andrew B. Dubel, P.E.**	212.967.7651	212.967.7654	andrew.dubel@leapc.com
Board of Governors	**Richard Halley**	718.269.3809	718.269.3725	rchalley@trane.com
Board of Governors	**Carolyn Arote**	516.568.6550	516.568.6575	carote@adehvac.com

ASHRAE 2012/2013 COMMITTEES

COMMITTEE	NAME	PHONE	FAX	EMAIL
Programs & Special Events	**Andrew Manos, LEED AP**	631.632.2791	631.632.1473	andym22@optonline.net
Membership	**Charles Lesniak, P.E.**	516.484.1020	516.484.0926	charles.lesniak@leapc.com
Chapter Technology Transfer (CTTC)	**Don Kane, P.E.**	631.737.9170	631.737.9171	dkane@csfllc.com
Newsletter Editor	**Liset Cordero**	212.643.9055	212.643.0503	liset.cordero@mgepc.net
Research Promotion	**Richard Rosner, P.E.**	631.737.9170	631.737.9171	rrosner@csfllc.com
Historian	**Thomas Fields, P.E., LEED AP**	212.643.9055	212.643.0503	thomas.fields@mgepc.net
Student Activities	**Richard Halley**	718.269.3809	718.269.3725	rchalley@trane.com
Young Engineers in Training	**Andrew B. Dubel, P.E.**	212.967.7651	212.967.7654	andrew.dubel@leapc.com
Webmaster	**Thomas Fields, P.E., LEED AP**	212.643.9055	212.643.0503	thomas.fields@mgepc.net
Nominating	**Michael Gerazounis, P.E., LEED AP**	212.643.9055	212.643.0503	michael.gerazounis@mgepc.net
Reception & Attendance	**Lee Feigenbaum, LEED AP BD+C**	212.243.2555		lfeigenbaum@pjmechanical.com
PR & Engineering Joint Council of LI	**Brian Simkins, LEED AP**	203.261.8100	203.261.1981	bsimkins@accuspecinc.com
Golf Outing	**Peter Gerazounis, P.E., LEED AP** **Steven Friedman, P.E., HFDP, LEED AP**	212.643.9055 212.354.5656	212.643.0503 212.354.5668	peter.gerazounis@mgepc.net sfriedman@akfgroup.com

Young Engineers in ASHRAE (YEA)

This month brings another successful year in ASHRAE to a close. We have had 3 back to basics nights. We have had good young engineer turn out. And we look forward to continuing YEA growth into next year. This year a third YEA member received a scholarship and traveled to a YEA leadership weekend.

The latest YEA leadership weekend has been scheduled. This October 24th through 26th will be held in Dubai, UAE. Regional scholarships are available to cover the cost of registration. Topics that will be covered include: Understanding the big picture, Personal goals that go way beyond work, What managers & leaders actually DO, How to stand out at work, and What successful people have in common. Details here: https://www.ashrae.org/membership--conferences/young-engineers-in-ashrae/yea-leadership-international---dubai

Are you going to the ASHRAE annual Conference this year? It will be held in Denver Colorado on June 22nd through the 26. Find out how to get involved here: https://www.ashrae.org/File%20Library/docLib/YEA/YEA-TC-Guide-2012.pdf.

Hope to see everyone at our finial meeting and on the ASHRAE fishing trip.

Andrew B. Dubel, P.E.
YEA Chairman

Long Island Chapter - Past Presidents

1958	H. Campbell, Jr. PE	1985	Edward W. Hoffmann
1959	Clyde Alston, PE	1986	Jerome T. Norris, PE
1960	Sidney Walzer, PE	1987	Abe Rubenstein, PE
1961	Sidney Gayle	1988	Michael O'Rouke
1962	William Kane	1989	Mel Deimel
1963	Louis Bloom	1990	Robert Rabell
1964	Milton Maxwell	1991	Gerald Berman
1965	Will Reichenback	1992	Donald Stahl
1966	Joseph Minton, PE	1993	Ronald Kilcarr
1967	Irwin Miller	1994	Jerald Griliches
1968	Walter Gilroy	1995	Walter Stark
1969	Charles Henry	1996	Joe Marino
1970	William Wright	1997	Norm Maxwell, PE
1971	Louis Lenz	1998	Alan Goerke, PE
1972	Ronald Levine	1999	Frank Morgigno
1973	Henry Schulman	2000	Michael Gerazounis, PE, LEED AP
1974	Myron Goldberg	2001	Ray Schmitt
1975	John N. Haarhaus	2002	Steven M. Stein, PE
1976	Richard K. Ennis	2003	Andrew Braum, PE
1977	Kenneth A. Graff	2004	Claudio Darras, P.E.
1978	Evans Lizardos, PE, LEED AP	2005	Craig D. Marshall, P.E.
1979	Albert Edelstein	2006	John Nally
1980	Ralph Butler	2007	Peter Gerazounis, PE, LEED AP
1981	Robert Rose, PE	2008	Steven Friedman, PE, HFDP, LEED AP
1982	Timothy Murphy, PE	2009	Steven Giammona, P.E., LEED AP
1983	Leon Taub, PE	2010	Nancy Román
1984	Raymond Combs	2011	Carolyn Arote

ASHRAE Long Island Chapter

PAOE POINTS FOR 2012/2013

Chapter Members	Membership Promotion	Student Activities	Research Promotion	History	Chapter Operations	CTTC	Chapter PAOE Totals
301	350	635	1,205	425	1,065	1,450	5,120

Chapter Monthly Meeting - Program for 2012/2013

September 11, 2012 * At Westbury Manor
Dinner Presentation – International Building Code Requirements for Design & Installation of HVAC&R Components from the Effects of Wind, Seismic, Snow & Flood Loads!

Presenter: Richard Berger

****1 PDH****

October 9, 2012 * *At Westbury Manor*
Dinner Presentation—ASHRAE 52.2, Testing Air Filters on Particle Size versus Efficiency
Presenter: Danja McMillan

****1 PDH****

Resource Promotion Night

Back to Basic Session I -
Fundamentals of Pumping System Design *****1 PDH*****

November 13, 2012 * *At Westbury Manor*
Dinner Presentation-- HVAC Air Duct Leakage Testing and Testing Methodology

Presenter: Lee Feigenbaum, LEED AP BD+C ****1 PDH****

JOINT MEETING WITH SMACNA

Student Activities Night, Membership Promotion, & YEA Night

December 11, 2012
Holiday Party - Westbury Manor

January 8, 2013 * *At Westbury Manor*
Dinner Presentation—Dispute Resolution such as Mediation, Arbitration and Litigation, the pros and cons of each and what to expect
Presenter: Michael D. Ganz, Esq.

****1 PDH****

Back to Basic Session II -
Design and Analysis of Pumping System Design *****1 PDH*****

January 2013
ASHRAE Winter Meeting
Jan 28-30
Convention Center, Dallas

February 12, 2013 * *At Westbury Manor*
Dinner Presentation—Introduction to BEQ Labeling Program
Presenter: T. David Underwood P. Eng

Joint Meeting with USGBC
Resource Promotion Night
Membership Promotion Night ****1 AIA****

February 2013
NATIONAL ENGINEERS WEEK
Feb 17 through Feb 23

March 12, 2013 * *At Westbury Manor*
Dinner Presentation—Condensing Boilers Designs and Applications
Presenter: Ian Rowburrey

****1 PDH****

YEA Night

Back to Basic Session III -
The Rise of Variable Flow Primary and Fall of Primary/Secondary/Tertiary Pumping Systems
*****1 PDH*****

April 9, 2013
ANNUAL FIELD TRIP
Sysco Long Island
199 Lowell Avenue
Central Islip, NY 11722

400,000 sq. ft. Food Distributor including 88,000 sq. ft. of Freezer, Ammonia Refrigeration Plant and Hydrogen Fueled Fork Lift Trucks (Indoor Air Quality)

Dinner to follow

May 6th, 2013 * *Cherry Valley Club, Garden City, NY*
ANNUAL GOLF OUTING

May 14th, 2013 * *At Westbury Manor*
Dinner Presentation—Update on Refrigerants: Past, Present and Future
Presenter: Eckhard A. Groll, Dr. Eng.
ASHRAE DISTINGUISHED LECTURER

****1 PDH****

Student Activities Night
Refrigeration Night

June 11, 2013 * *At Westbury Manor*

PAST PRESIDENTS & OFFICER INSTALLATION
STUDEN T SCHOLARSHIPS TO BE GIVEN OUT

Chapter Regional Conference (CRC) Region I
Burlington, VT August 15-17

Board of Governors Meeting Minutes

Attendees: Andy Manos – President Elect; Rich Rosner - V. Pres; Tom Fields – Financial Secretary; Charles Lesniak – Treasurer; Don Kane – Secretary; Andrew DuBel –BOG; Richard Halley – BOG; Carolyn Arote – BOG/Past President

The meeting was called to order by Andy Manos at 5:00 PM at Westbury Manor (Brian Simkins was enroute after picking up our evening's Distinguished Lecturer at the airport).

Secretary Don Kane noted that there were no corrections or changes to the minutes as published in the May *Sounder.*

President-Elect/Programs Andy Manos, reminded all to update their **PAOE points** information on-line. Additionally, all BOG/Committee chairs who have established **MBO**'s should prepare the final report for the year. The CRC will be held in Burlington, VT in August (15th-17th) this year. The Officer/Committee assignments as shown in the CIQ will be as follows for next year: Brian Simkins – Past President; Andy Manos – President; Rich Rosner – President Elect/Webmaster/Programs Chair/ Research Promotion Chair; Don Kane – Treasurer/CTTC Chair/GGCA Chair; Charles Lesniak – Financial Secretary; Andrew DuBel – Secretary; Tom Fields – Vice President/Historian; Lee Feigenbaum-YEA Chair/Membership Promotion Chair.

Chapter Technology Transfer Don Kane noted that our speaker tonight would be ASHRAE Distinguished Lecturer, Eckhard Groll.

Treasurer Charles Lesniak reported that the current bank balance is $24,973. Whenever possible, if purchases are made for the chapter, the W9 form should be submitted to avoid sales taxes. We need to open a separate account to handle expenses for CRC planning.

Historian Tom Fields noted that History scans are in process.

Research Promotion Richard Rosner reported that the chapter currently has received $14,350 toward the goal of $14,681. Additional funds are anticipated from directory listings, 50/50 and the Golf outing, as well as end of the year matching contributions from participating organizations.

Membership Promotion Charlie Lesniak distributed the BOG ballots received, which were verified for correctness. The BOG roster for next year will be: Andy Manos-President, Richard Rosner-President-Elect, Thomas Fields-Vice President, Charles Lesniak-Financial Secretary, Donald Kane-Treasurer, Andrew DuBel-Secretary, Richard Halley-BOG 1 Yr., Lee Feigenbaum-BOG 2Yr., Brian Simkins- BOG 1 Yr (past President).

Student Activities Richard Halley reported that the submissions for Chapter Scholarships have been reviewed and will be awarded as follows: Patrick Montalto - $1,000; Nicholas Panzarino - $500 and Nicolas Hernandez -$500. These will be awarded at the June meeting.

YEA Andrew DuBel reported that the Chapter/YEA fishing trip will take place June 14th, leaving out of Captree on the Dixie II at 3:00PM. All are welcome, reservations and prepayment is required.

Web Master Tom Fields/Rich Rosner are transitioning the web activities. ASHRAE National has a site that the Chapter website can be transferred to, with unlimited storage. This would permit the inclusion of photos and scanned historical documents.

Golf Andy Manos thanked Steven Friedman and Peter Gerazounis for their efforts that made this a successful an enjoyable event.

Old Business Don Kane inquired if we are still pursuing obtaining a US Postal Service mail box address? There was a brief discussion relative to the need to keep changing the PO box with changes in officers. Andy DuBel will check into commercial mail box services to see if forwarding services are available to permit maintaining the same address when new officers are elected.

New Business It was suggested that we look into what service the National uses for online voting, to eliminate the need for paper ballots. This will be taken up at the next meeting.

Time/Place of next BOG Meeting– 5:00 PM/ Westbury Manor/ June 11th. The meeting was adjourned at 6:00pm

Respectfully submitted

Donald W. Kane, PE
Chapter Secretary

June Program

The Long Island Chapter's Year End Celebration

Past Presidents Night,

Student Scholarship Night

DATE:	**TUESDAY, JUNE 11, 2013**		
Time:	6:00 PM – Cocktails and Hors D'ouevres 7:00 PM – Buffet Dinner	**Fee:**	**NO CHARGE**
Location:	**WESTBURY MANOR** (516) 333-7117 Jericho Tpke (South Side), 3/10 of mile east from Glen Cove Rd., Nassau County, NY. **Directions are posted at @ www.ashraeli.org.** - ***Reservations requested but not required. Business attire suggested***		
Presentation:	Please join us for our ASHRAE year-end meeting celebrating our past presidents and new officers. There will be no charge for our chapter members and guests, and we have arranged for a special buffet dinner and open bar for the evening. Our past presidents will be asked to talk a little about their ASHRAE experience during their board years and we suspect there will be some interesting stories. We will be having a Long Island Chapter trivia contest with prizes and our historical archives will be on display. The winners of our student scholarships will be present to receive their awards and we will finish off the evening with the installation of our new officers. Please mark your calendar for this special day and join us for some great conversation and excellent food and spirits compliments of the chapter.		

Research Promotion

Don't forget to pick up the 2013 Product Directories at this June meeting, no cost to members or advertisers. Please let our generous advertisers know when you use their services that you saw them listed in the Long Island Chapters Product Directory. Thanks again to those who have supported the Product Directory. The Product Directory is now online too, thanks Anthony, and can it be accessed at http://ashraeli.org/productdirectory.html just click on the cover page to browse through the entire directory.

Of the $14,681 or more we were expected to raise **WE MADE IT TO $14,865** to date. I still have another $2,300 to collect for ads and other monies need to be sent in yet which will hopefully bring the total to over $20,000. I have been reminded again, so I will remind all of you, that that all monies for this year have to be at national by **June 28th**. If the monies have to go through me first, like for the directory payment, they must be to me **NOW**. That's not a lot of time, leaving us just weeks to wrap things up. This is a busy time of the year also for most, so don't put off getting those funds out today while you are thinking about it. I am sending out a reminder today for directory ads and will be calling you next week if I don't have them by then.

I have enjoyed working with you all and appreciate your generosity. I signed up to do RP again next year for the chapter and think I have worked out the first year bugs. I just hope another "Sandy" stays away as it really played havoc with my start into RP, not to mention the devastation for us all. I will also be the President Elect next year and amongst my duties I will be in charge of getting the program speakers for our meeting nights. If you have an interest in speaking or if you know of someone or just want to hear about a certain topic, let me know as soon as possible as I want to fill up the schedule early. I thought it would help round out the positions if I became the webmaster also so I am taking on that spot next year as well. I will be a one stop person for you to contact who can help take your donations, get you in the product directory, get you a company showcase at our meetings, get you or others as our meeting speakers and help disseminate all of the information on the web! My contact information is below and I can be reached by phone at 631-737-9170 at the office or on my cell at 516-982-2648.

Have a great summer!!!

CONTRIBUTIONS CAN BE MADE IN THE FOLLOWING WAYS:

1) You can mail your checks, made out to **ASHRAE Research Promotion**, to:

Richard L. Rosner, P.E.
ASHRAE Research Promotion Chair
c/o Nassau Suffolk Engineering & Architecture, PLLC
801 Motor Pkway, Suite 103
Hauppauge, NY 11788

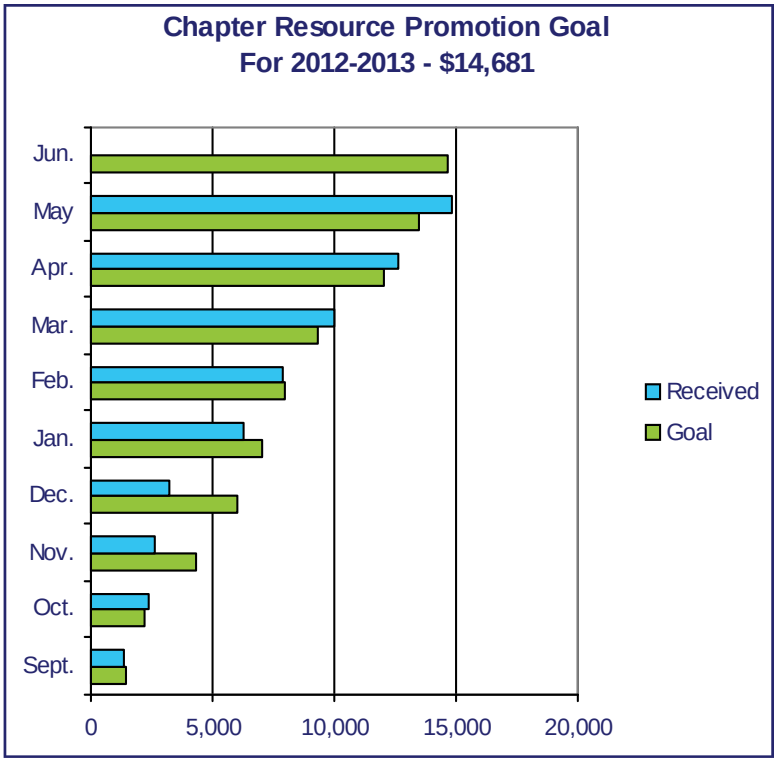
2) You can bring your check to any of the meetings and give it to me. I will mail it into headquarters.

3) You can contribute via paypal from the ASHRAE LONG ISLAND web site just click on the donate button.
4) You can contribute directly on-line. www.ashrae.org

*** Please make sure you accredit your contribution to the LONG ISLAND CHAPTER 006 ***

Thank you again for all your support!

Richard L. Rosner, P.E.
Research Promotion Chair



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Research Promotion (Cont'd. from Page 7)

We would like say 'thank you' to all the contributors listed below whom have already donated to ASHRAE this year:

First	Last
Ms Carolyn	Arote
Mr Marcel A	Bally
Mr Kevin	Beirne
Mr Gerard J	Brannigan
Mr Mordechai	Chetrit
Mr Andrew	Dubel
Mr Thomas	Fields, PE
Mr Paul	Freeman
Mr Ricky	Gaska
Mr Peter	Gerazounis, PE
Mr Michael	Gerazounis, PE
Mr Steven R	Giammona, PE
Mr Alan J	Goerke, PE
Mr Carl E	Graber, PE
Mr Roy	Gustafson
Mr Richard I.	Halley
Mr David Robert	Jendras
Mr Donald W.	Kane, PE
Mr Ronald J	Kilcarr, PE
Mr James R	Kolk
Mr Charles J.	Lesniak, PE
Mr John	Lizardos
Mr Evans J	Lizardos, PE
Mr Andrew E	Manos
Mr Frank D	Morgigno
Mr John D	Nally
Mr Jerome T	Norris
Mr Richard J	Pearson, PE
Mr Raj	Prime
Mr Anthony J	Rosasco, Sr
Mr Richard L	Rosner, PE, BOG
Mr Raymond	Schmitt
Mr Jerome A	Silecchia
Mr Jerome A	Silecchia
Mr Brian C	Simkins

Company
Accuspec Inc
ADE Systems
Air Control Supply
Albert Weiss Air Conditioning Products
Applied Technologies of NY Inc
ASAP Sales
Bladykas Engineering P C
Brandon Associates
Building Cooling Systems
Bush Wholesalers
Bush Wholesalers
Carrier Corp.
Catan Equipment Sales
Chimney Design Solutions Inc
County Fair Air Conditioning Corp
Dagher Engineering PLLC
EMTEC Consultants Professional Eng
Environmental Air Quality
Gil-Bar Industries Inc
J-Mar Controls
KLIMA New York
Lizardos Engineering Associates PC
Long Island ASHRAE Chapter
M V Controls
Mason East Inc.
Metro Air Products
Miller Proctor Nickolas Inc
Mitsubishi Electric & Electronics USA Inc
New York Thermal Systems, LLC
Platsky
Rathe Associates
RPG Associates
SMACNA - Long Island
SRS Enterprises Inc
Technical Air Systems Incorporated
Twinco Supply Corporation
Vmc East Incorporated
Wales Darby Incorporated
Wallace Eannace Associates

CTTC - SAVING OUR PLANET - ONE BTU AT A TIME

"*May you live in interesting times"...*thought by some to be a Chinese curse (or proverb) while attributed by others to less ancient English speaking sources, the wish conveyed certainly seems appropriate for those of us involved with the HVAC/R industry. Some view the increasing regulation of what may be used as a refrigerant and how it is used as a curse, while others (especially those who feel that we are experiencing anthropogenic climate changes) feel that it is a blessing, another step to further protect this *'third rock from the sun"* from itself. While the debate on global warming will continue unabated for the foreseeable future, without taking sides, there are certain facts which we have to accept and deal with. First and foremost, mechanical system design today is, for the most part, driven by regulations. Some may deal with energy efficiency, others may deal with resistance to seismic and wind induced forces while others still address those compounds which have been identified as being green-house gases(GHG) or possessing global warming potential (GWP). Previous articles in these pages (as well as the technical presentations at our monthly Chapter meetings) have addressed some of the issues involved in meeting these regulatory requirements.

We have presented approaches to energy efficient building design from both the "big picture" approach (such as the USGBC LEED program) covering a broad range of requirements, to other, more specific ones, such as; minimizing duct leakage and restrictions, the use of more accurate and reliable sensing and control devices, the use of condensing boilers to extract more BTUs from each gallon or cubic foot of fuel and the use of "natural" refrigerants such as ammonia and cryogenic nitrogen for cooling food in transport, distribution and storage. In all cases, it is always necessary to compare the positives and negatives of each solution in order to make a rational choice as to what is the best approach for a given application, though today, some of the choices are established by regulation rather than engineering analysis.

Those who were fortunate enough to have attended last month's chapter meeting, heard ASHRAE Distinguished Lecturer Dr. Eckhard Groll present a look back into the history of refrigerants and a look ahead into what lies before us. Most striking was the slow, almost evolutionary, development of different refrigerants from the beginning of (refrigerant) time until around 1970. From that time until the present, however, a plethora of refrigerant types have been developed, tested and, in some cases, been accepted for use by industry in various types of equipment. Also notable is that, with the overshadowing regulation of GHG and GWP compounds, characteristics (such as "moderate flammability") which were previously considered show-stoppers are no longer impediments to use - except, perhaps, if one wants to drive a vehicle manufactured by Daimler. Based on some testing performed by Daimler, an in-house determination was made that the fire hazard associated with certain refrigerants was in excess of what they felt was reasonable. However, there are those who feel the testing methodology used was not representative of the real-world conditions and liken the concern to the ban on saccharin for use a sweetener, based on testing performed on rats. Further review indicated that the testing performed used massive doses and subsequent mechanistic studies showed that the test results did not have application to humans, and saccharin was removed from the "*Report On Carcinogens"...* thirty years later! Hopefully, it will not take thirty years to develop a reasonable test scenario/methodology to evaluate the flammability characteristics of refrigerants in vehicles (perhaps a good candidate for a joint ASHRAE/SAE RP study), or it may be rendered moot should autos have to incorporate on-board fire-suppression systems (not totally a bad idea, given the amount of thermoplastics used in a modern vehicle).

But, we digress...why are we developing all these new refrigerant compounds, evaluating compromises between thermal performance and possible flammability or toxic/corrosive combustion by-products? Because a lot of the refrigerants are leaking into the environment. Therefore, we are focusing on developing compounds that, when leaked into the environment cause little harm. Unfortunately, when the refrigerant leaks into the environment, it is no longer in the mechanical system so the HVAC/R system no longer performs its function, or performs at an efficiency much less than anticipated, perhaps required (remember those efficiency mandates). Rather than having DOE and EPA doing battle to determine whose regulations are more important, perhaps we should be spending more time on making sure the refrigerant stays in the system it is designed to be used in!

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CTTC (Cont'd. from Page 9)

All systems leak. Some less than others. However, as an example, let us consider supermarket refrigeration equipment. In this industry, 25% leakage (based upon the amount of refrigerant in the system) is considered "average". In some cases leakage rates as high as 50% have been reported. How does this compare with other applications? Automotive applications, even though subjected to vibration, temperature extremes and periods of non-use are in the 10-20% leakage bracket (although, anecdotally, this seems to be drastically improving in recent years). Even the International Space Station has had several well publicized (ammonia) coolant leaks, in 2012 and again this past May, (2013), but still probably fares better than a supermarket. On the other hand, there are supermarkets who have been able to maintain leakage as low as 6.5%. What factors need to be considered with regard to refrigerant leaks? Shaft seals, connections, piping runs and system configuration are major concerns. What can be done to improve performance?

Shaft seals can be either wet or dry types. Wet seals are typically found in large rotating equipment, such as power plant turbine-generators which use hydrogen gas as the cooling medium within the machine housing (due to good thermal properties and low windage losses due to small molecular size). The sealing is effected by a film of oil and while it is important to contain the hydrogen gas within the housing, it is also important that no air be permitted to enter the housing (which would result in higher windage losses and, if the air/hydrogen ration were to become within combustible limits, result in a catastrophic combustion event). Even with the best of wet seal technology, and the relatively slow rotational speed of the turbines, a 450Mwe power plant may release approximately 300,000 scf of hydrogen a year. To put this in perspective, this would represent approximately six (6) 330 cubic-ft bottles at approximately 2200-2300 psi. Wet seals, then, do not appear to be an ideal candidate for most HVAC/R applications, as along with gas leakage, one can expect some finite amount of oil leakage. Dry seals, which may use ceramic, metallic or elastomeric elements do present an economical choice for shaft seals, especially if care is taken to select the materials used based on the expected temperature variation, vibration and chemical compatibility.

Piping/tubing leaks can occur due to manufacturing defects, installation damage or damage in use. Leaking tubes due to manufacturing defects and/or installation damage can be detected by testing. To detect minute leaks may require a helium or hydrogen/nitrogen based leak detection system to be employed. Damage after installation is best prevented by adequate guards, bollards and the like, to prevent errant contact with the piping.

The configuration of the HVAC/R system should minimize long distances between condensers and evaporators or, perhaps, utilize a secondary coolant loop (using, for example, glycol) as the thermal transport medium between the cooling equipment and the point of use.

Last, but not least, we must be concerned with connections between parts of the system. In one study of refrigerant leaks in German supermarkets, 96% of the total refrigerant loss was through field assembled joints. 22% of the measureable leaks were from flared fittings--which were responsible for 50% of the refrigerant loss. This is the point that Mr. Pareto would say "eureka". Use of O-ring type connections (with material selection based, as with shaft seals, on the temperature, chemical compatibility and vibration resistance)either spring loaded or incorporated into a mechanically crimped fitting, will eliminate the bulk of the leakage. If care is taken to protect piping against physical damage and the connection seals are improved it is likely that even the 6.5% leakage rate could be improved upon.

In conclusion, one can hope that the same kind of effort that has been devoted to finding refrigerants which can safely leak into the environment will be directed to developing seals which do not leak, perhaps allowing us in the future to not have to compromise when selecting a refrigerant for use.

Don Kane, P.E.
CTTC Chair

Membership

I would like to say “hello and welcome to our chapter” to all our new members who signed up this year. This has been an amazing year with year with 33 new members joining our chapter. We had 2 membership promotion nights one in November and one in February. This is my last year as the chapter membership promotion chair and its been a pleasure writing these articles for the past two years and getting the word about joining ASHRAE.

There are many perks of being an ASHRAE member. With your membership you get discounts on the many publications and standards that ASHRAE produces. You also get a discount at our monthly meetings where you can earn between 1 and 2 PDH credits, enjoy great company, and delicious food. ASHRAE is multinational society with over 51,000 members so you have the ability to add a lot of people to your Facebook friends list. Just kidding, ASHRAE is a great networking opportunity at both the regional levels and at society levels. And ASHRAE is a great place to help engineers new to our field to find their place in it. Another perk is the indisposable 4 books ASHRAE provides us with when renewing our membership.

Please visit the ASHRAE website at http://www.ashrae.org to review and update your bios, and to check if you are up to date with your membership dues.

Charles Lesniak, P.E.
Membership Chairman

History

ASHRAE was founded in 1894 at a meeting of engineers in New York City, formerly headquartered at 345 East 47th Street, and has held an annual meeting since 1895. Until 1954 it was known as the American Society of Heating and Ventilating Engineers (ASHVE); in that year it changed its name to the American Society of Heating and Air-Conditioning Engineers (ASHAE). Its current name and organization came from the 1959 merger of ASHAE and the American Society of Refrigerating Engineers (ASRE). The result, ASHRAE, despite having 'American' in its name, is an influential international organization. Amongst other international activities, it helps organize international events

Thomas J. Fields, P.E., LEED AP
History Chair

Student Activities

School is finally out! Students who are moving out of their dorms should be sure to update our mailing address for you. This can be done by logging onto ASHRAE.org. If you are losing your school email address, be sure to update that also. We would like to congratulate our 2013 student scholarship winners, Patrick Montalto - $1,000; Nicholas Panzarino - $500 and Nicolas Hernandez -$500. These will be awarded at the June meeting.

All winners and their parents are invited to attend our June meeting where awards will be presented. Thank
Have a great summer and we hope to see you in the fall.

Richard Halley
Student Activities Committee Chair

Pictures of May's Golf Outing

Pictures of May's Golf Outing

Pictures of May's Golf Outing

The Rocket Science of Productivity

4 Rules of Learning Curve Maximization for Increased Productivity in the Construction Industry

By:
Lee Feigenbaum, LEED AP BD+C
Project Director, PJ Mechanical Corp.
ASHRAE Associate Member

April 26, 2013

According to NASA, "the theory of learning is simple." This 'simple' theory of learning that is commonly referred to as "The Learning Curve" is as relevant to the construction industry as it was to the assembly of the Mars Lunar Rover. For builders this "simple" theory impacts costing, budgeting, forecasting, and scheduling. Hinze and Olbina (2009) add that the learning curve can help refine estimates, predict profits, and aid negotiations. Fortunately, adherence to a few 'simple' Rules of Productivity can help leaders and managers utilize this theory to reduce direct labor costs as workers learn to work in a more efficient and profitable manner.

T.P. Wright first introduced the concept of the learning curve to the aircraft industry when he published an article in the February, 1936 *Journal of Aeronautical Science*. Wright was among the first to recognize that repetition of the same operation or task resulted in less time or effort expended on that operation. For his learning curve, Wright asserts that "the man-hours necessary to complete a unit of production will decrease by a constant percentage each time the production quantity is doubled." Though originally offered to the aircraft industry, NASA observes that learning curves have subsequently been applied to all types of work from simple tasks to more complex jobs like building their space shuttles. To that end Abilla (2007) asserts that "it is easy to apply the concept of the learning curve to construction because output is a physical product that is easily measured." Indeed, any industry where repetitive tasks can be tracked by physical progress can gain easily quantifiable benefits from understanding how the learning curve functions – its benefits and limitations.

NASA's cost estimating tool (http://cost.jsc.nasa.gov/learn.html) shows learning curve as a constant percentage every time a unit of effort or "production quantity" is doubled. For instance, when the rate of improvement is 20% between doubled quantities, the learning percent is 80%. NASA continues to present learning percentages for a variety of industries (see Figure 1 for full list). Though construction is notably absent from the list, their estimates range from 85% for labor intensive tasks like aerospace and shipbuilding to a stingier 95% for repetitive machining operations. With this, NASA suggests that gains associated with repetitive tasks are greater when they are performed by hands-on labor as opposed to simpler shop or machining operations. This supports Abilla's (2007) assertion that "the most obvious way learning is realized is with experience acquired by direct labor." Recent observation of labor-intensive construction/ building activities conducted in a field environment revealed a 77-80% learning curve. This represents a 20-23% increase in efficiency every time a unit of effort is doubled, and somewhat exceeds NASA's estimate for learning while completing repetitive tasks. If these findings are applied to a sample task that initially takes 100 hours to complete, after 6 repetitions this ultimately results in a 36% increase in efficiency (see figure 2). However, Hinze and Olbina (2009) caution that "the [learning curve] predictions are approximation(s)." In this data set it is noteworthy that the 4th repetition showed gradual improvement en route to the final predicted efficiency gain. Learning curve predictions must allow this type of flexibility.

While an understanding of learning theory is advantageous for anyone in the construction industry, it is similarly important to understand that the learning curve does not provide positive gains infinitely. To the contrary, if observed over a long enough timeline the learning curve demonstrates diminished, if not negative returns. Abilla (2007) points out that "typically, the increase is sharpest after the initial attempt and then gradually evens out." Dozzi and Abou (1993) continue that "the learning curve eventually reaches a plateau that reflects the minimum amount of time required for a task." As repetition increases, learning decreases and the time required to complete a task stabilizes. After this point of maximum efficiency is attained, the time required to complete a repetitious task can only increase.

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Fortunately, adherence to some "simple" Rules of Productivity can help leaders and managers in a variety of industries utilize the learning curve to their advantage. Direct labor often accounts for the greatest cost on a job. Since learning curve theory states that labor intensive tasks gain the greatest reward from learning through repetition, this is where leaders and managers must focus their attention in order to attain maximum profitability. First and foremost, leaders and managers must get involved with Job Task Planning prior to construction. Design must precede construction. Contractors stand to gain huge increases in efficiency when they get involved earlier in the design process. Abou and Dozzi (1993) confidently state that "design improvements have the greatest impact" when measuring the effectiveness of direct -labor. To that end, Tony Guzzi (2012), President and CEO of The EMCOR Group recently attributed strong revenue growth to EMCOR's involvement "at an earlier stage in the contracting cycle." By getting involved with the design process builders can insert repetitive tasks into the design in order to increase their efficiency.

Workforce Management follows Job Task Planning once a job begins and progresses. Wideman (1994) points out that managers and leaders must ensure sufficient and continuous availability of work prior to commencement. After investing the effort to include repetitive tasks in the design phase, leaders and managers must ensure an uninterrupted workflow in order to reap the rewards of their efforts. Personnel assigned to repetitive tasks must also remain uninterrupted. Abou (1993) points out that it is "desirable to have the same person perform a task several times as opposed to making personnel changes along the way." It is therefore desirable to allow the same workers to complete repetitive tasks so that they can gain efficiency and profitability through repetition.

Another important Rule of Productivity that managers must pay special attention to both during the pre-construction planning process and during construction is Logistics. In seeing to proper Workforce Management, managers must not disrupt productivity through failed logistics. Instead, they must ensure sufficient and continuous availability of physical resources prior to beginning work and throughout the building process. Learning curve calculations aside, Abou and Dozzi (1993) estimate that this task alone represents a 6% gain in productivity when compared to the inherent inefficiency that results from the "starting and stopping" (i.e. mobilization) that occurs when "an essential component of an activity is not available when it is required."

Builders must also understand the Human Factors that contribute to productivity. Motivation and boredom are of the utmost importance when workers are performing repetitive tasks. Abilla (2007) states that people need to be motivated and interested in what they are doing. If workers lack motivation, they will perceive repetitive tasks as boring. Abilla (2007) continues that when boredom invades the workplace, "learning and performance will be compromised." It follows that when performance is compromised by monotony, quality and craftsmanship suffer as well. In speaking to motivation, best-selling business author Jim Collins (2001) suggests that if you can successfully implement these Rules of Productivity, then "you will not need to spend time and energy 'motivating' people." To the contrary, if workers have meaningful work and sufficient supplies then they will self-motivate!

Failure to follow these Rules of Productivity could have costly consequences. Wideman (1994) reports that if delays occur between reps, the "unlearning curve" effect can be noted as the workers fall out of practice (see figure 3 for observed results of "unlearning" applied to sample data). In addition to setbacks on the learning curve, initial productivity when beginning (or resuming) a task is not 100%. There are extended losses that include (re) mobilization, material handling and distribution, and start-up.

Management has much, if not more control over efficiency than labor has. Hinze (2009) estimates that "85% of cost reduction is expected from management." Regardless of the trade or industry, leaders and managers must pay special attention to Job Task Planning, Workforce Management, Logistics, and Human Factors in order to fully benefit from learning associated with repetitive tasks. If these 'simple' Rules of Productivity are properly executed, Abilla (2007) reports that "the rate of improvement [will be] consistent and predictable." In an industry where predictable and consistent improvement is the goal, leaders and managers must account for learning as a best practice.

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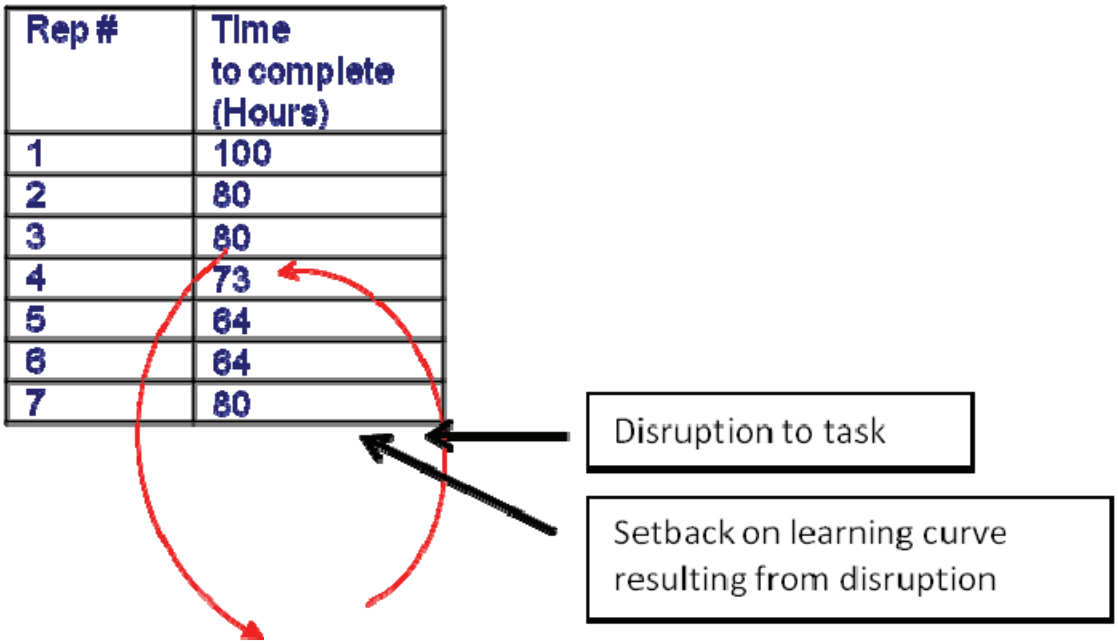
Figure 1 – Learning Curve Percentage by Industry from NASA NASA's cost estimating website (http://cost.jsc.nasa.gov/learn.html)

1. Aerospace 85%
2. Shipbuilding 80-85%
3. Complex machine tools for new models 75-85%
4. Repetitive electronics manufacturing 90-95%
5. Repetitive machining or punch-press operations 90-95%
6. Repetitive electrical operations 75-85%
7. Repetitive welding operations 90%
8. Raw materials 93-96%
9. Purchased parts 85-88%

Figure 2 – Example Time Study of 80% Learning Curve

Rep #	Time to complete (Hours)
1	100
2	80
3	80
4	73
5	64
6	64

Figure 3 – Example Time Study of Unlearning Curve



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ASHRAE™
Long Island
Chapter

ASHRAE Fishing Trip 2013 - Friday, June 14, 2013

Come Join Us!

ASHRAE Long Island Chapter's Fishing Trip 2013

Date/Time

Friday, June 14th, 2013

3:00 p.m. – 7:00 p.m.

(Please be at the dock at 2:30 p.m.)

Location

Dixie II @ Captree State Park Boat Basin, NY

Fee

$50 per person

(Maximum of 50 people)

Food, Beverages, Bait &Tackle will all be provided

Please RSVP by June 1st, 2013

andym22@optonline.net

We are also looking for sponsors for food and non-alcoholic beverages. Please contact Andrew Manos at 631.632.2791 for details.

Directions to the Boat: Take Southern State Parkway to Exit 40 South Robert Moses Causway South. (Ocean Beaches). Continue South on Robert Moses Causeway (over two bridges) follow the signs for Captree State Park Boat Basin. Dixie II is located on the east end of the parking lot near the bait store.

ASHRAE Annual Conference - June 22-26, 2013

Join ASHRAE in sharing lofty ideas, high-level concepts and rock-solid applications on what's new in the building industry in Denver, Colo., at the 2013 Annual Conference, June 22–26. ASHRAE helps you rise above it all and advance your career with its outstanding technical program, learning courses, technical tours and chances to network and socialize. Earn PDHs, while hearing the latest updates from the Society and other leaders in the industry. ASHRAE in the Mile-High City will elevate you to new heights.

REGISTER EARLY & SAVE!

Early registration fees (until April 22):

- $345 member/$535 non-member
- First-time Conference attendee: $320 member/$510 non-member
- $90 Life Member

NEW registration fees for the following:.

- $95 speakers
- $25 student branch advisors
- $25 student member/ $50 full-time student non-member

Register now at **www.ashrae.org/denver**

Research Summit

A newly created **Research Summit** is being held as part of the Conference. The Summit comprises a major portion of the technical program with 33 sessions scheduled, 22 of which are paper-based sessions, presenting the latest research results, innovative research and updates on research in progress. Other sessions of interest to the research community are also presented, including how to apply for ASHRAE research funding.

ASHRAE Annual Conference - June 22-26, 2013

Technical Program

Integrated Project Delivery mini-conference is featured on Sunday and Monday. Other focused tracks on Energy Modeling vs. Verification; Energy Efficiency in Buildings and Equipment; Renewable and Alternative Energy Sources; and HVAC&R Applications and Systems Tracks. **Learn more here**.

ASHRAE Learning Institute

Further your professional development through onsite classes offered by the **ASHRAE Learning Institute,** which provides real-world training presented by industry-recognized subject matter experts. ALI offers seven in-depth training courses including a new professional development seminar on *Operations and Maintenance of High-Performance Buildings* and a new short course on *Optimization of HVAC Systems and their Components*.

Technical Tours

Technical tours offer you an inside view of how technology developed by ASHRAE members is practically applied in building environments. Tours include the Denver Zoo, the National Renewable Energy Laboratory, SolarTAC and Pepsi Center Stadium. **Learn more here**.

2013 AIA National Convention in Denver

ASHRAE Conference attendees can extend their learning and networking opportunities through the 2013 AIA National Convention and Design Exposition. The AIA Convention, which takes place June 20–22 at the Colorado Convention Center—less than half a mile from the ASHRAE Conference hotel. Of note to ASHRAE attendees is the AIA Expo 2013, which will feature over 700 exhibitors. The Expo Only registration is ***free***, and includes entrance to the expo hall and access to the three keynote presentations. See who's exhibiting at the AIA Convention website and register at **www.aig.org/convention.**

Register now at **www.ashrae.org/denver**

We look forward to seeing you in Denver.
If you have any questions, please contact us at **meetings@ashrae.org**.

ASHRAE wishes to recognize the following Conference Sponsor for their support.

Munters

For information about sponsoring the 2013 Annual Conference, contact Greg Martin at gmartin@ashrae.org.

2013 Region I CRC - August 15-17, 2013 - Burlington, VT

You won't want to miss this year's CRC! Burlington is the perfect venue to accomplish our annual Region I ASHRAE business and relax in a beautiful setting.

The Burlington Hilton overlooks Lake Champlain (the "Sixth Great Lake") and is within walking distance to waterfront activities and the renowned Church Street Marketplace. The spouses tour will be a chartered trip to Stowe with stops at the Trapp Family Lodge and Ben & Jerry's plant in Waterbury. Our planning committee has put together a CRC Event that will be talked about for a long time.

Thanks to our sponsors, we have been able to assemble a quality event at a very reasonable cost. All registrations must be made through our CRC website. Please pass this flyer along to your Chapter Officers and leaders who will be attending.

We look forward to hosting Region I in Burlington August 15th through the 17th. We will do our best to make this CRC a productive and memorable weekend!

Tom Zoller P.E. (CRC Chairman)

CONFERENCE REGISTRATION FEES

	Before June 30th	After June 30th
Full Conference	$350	$450
Companion Full Conference with Stowe trip ***	$235	$335
Companion Full Conference without Stowe trip	$200	$300
Friday/Saturday Conference	$200	$300
Friday/Saturday Companion	$125	$225
Saturday Only	$100	$200
Kids under 18	$ 25	$100

**** Space limited - first come , first serve. If kids will be attending the Stowe trip, must register each kid at Companion Full Conference rate ($235)*

So here's how you register . . .

Log onto to the CRC2013 website:

www.ashrae2013crc.com

Click on "Registration" tab, follow directions.

PLEASE NOTE: Payments must be made through PayPal.

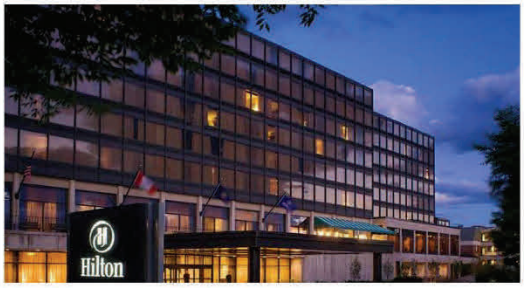
Hilton Rooms Rates *(until 7/25)*

2 Queen beds, city view	$189
1 King bed, city view	$189
2 Queen beds, lake view	$225
1 King bed, lake view	$225

Hilton WEB Link

All rooms at the Hilton are nice rooms, however, the lake view rooms have a stunning view of Lake Champlain. There are a limited number of these rooms

NOTE: Hotel reservation is separate from conference registration.



Distinguished Guests

William P. "Bill" Bahnfleth
Ph.D., P.E., Fellow ASHRAE, ASME Fellow
2013-14 President ASHRAE

William P. "Bill" Bahnfleth, Ph.D., P.E., Fellow ASHRAE, ASME Fellow, is a professor of Architectural Engineering and director of the Indoor Environment Center at The Pennsylvania State University, University Park, Pa. As ASHRAE's president, Bahnfleth chairs the Society's Board of Directors and Executive Committee.

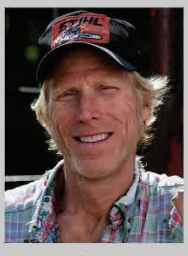
We are honored to have the current Society President visit Region I for this event.

Darryl Boyce
P. Eng., Fellow ASHRAE,
2013-14 Vice President ASHRAE

Darryl Boyce, P.Eng., Fellow ASHRAE, is assistant vice president (Facilities Management and Planning), Carleton University, Ottawa, Ontario, Canada.

As vice president, Boyce is a member of the Board of Directors and the Executive Committee and serves as vice chair of the Publishing and Education Council. He is the recipient of an ASHRAE Distinguished Service Award.

Rusty DeWees
"The Logger"



Rusty DeWees alter ego, The Logger, is a raw, energetic backwoodsman that is a combination of all that's wonderful and wacky about the northern New England spirit. Some might say Rusty's comedy is a mix of Larry the Cable Guy and Prairie Home Companion. The Logger stage show is a hilarious combination stand-up and theatre show that also incorporates plenty of tight pin-point funny ad libs, and recently, a great set of country kickin' music.

The Boston Globe says, The Logger is, "Inventive, entertaining, exceptional".

2013 Region I CRC - August 15-17, 2013 - Burlington, VT

ASHRAE Region 1
Chapter Regional Conference - Burlington
August 15-17, 2013

EVENT SCHEDULE

Day	Start Time	End Time	Event	Location	Attendees
THURSDAY	12:00pm	7:00pm	Registration	Mezzanine (2nd Floor)	All Attendees
	12:00pm	2:00pm	Region 1 Audit	Burlington Conf Room	Invited Region 1 Officers
	1:00pm	3:00pm	Hospitality Suite	Room 737 Seventh Floor	Registered Attendees
	1:00pm	3:15pm	Technical Sessions - National Life / UVM Aiken Hall	Vermont Conference Room	Registered Attendees
	3:30pm	5:30pm	Business Meeting 1	Lake Champlain (2nd Floor)	Delegates, Alternates & Regional Officers and Chairs
	6:00pm	7:00pm	Welcome Reception	Seasons (2nd Floor)	Registered Attendees
	7:00pm	8:30pm	Welcome Dinner	Seasons (2nd Floor)	Registered Attendees
	10:00pm	1:00am	Hospitality Suite	Room 737 Seventh Floor	Registered Attendees
FRIDAY	7:00am	7:00pm	Registration	Mezzanine (2nd Floor)	All Attendees
	9:00am	11:00am	Hospitality Suite	Room 737 Seventh Floor	Registered Attendees
	7:00am	9:00am	Breakfast	Mezzanine (2nd Floor)	Registered Attendees
	8:00am	9:00am	Local ASHRAE Recognition Breakfast	Vermont Conference Room	Invited Society and Local Guests
	8:00am	10:00am	Caucus	Lake Champlain (2nd Floor)	Delegates & Alternates **ONLY**
	9:00am	4:00pm	Companion Trip to Stowe	1st Floor Lobby	Registered Attendees **w/ RSVP**
	10:00am	11:45am	Chapter Operations Workshop	Lake Champlain (2nd Floor)	Chapter Officers
	12:00pm	1:00pm	Lunch	Mezzanine (2nd Floor)	Registered Attendees
	2:00pm	3:30pm	Executive Session	Lake Champlain (2nd Floor)	Delegates & Alternates **ONLY**
	2:30pm	5:00pm	Tour of UVM Aiken Center	1st Floor Lobby	Registered Attendees **w/ RSVP**
	3:30pm	5:45pm	Business Meeting 2	Lake Champlain (2nd Floor)	Delegates, Alternates & Regional Officers and Chairs
	6:00pm	10:00pm	Presidential Dinner	ECHO Center	Registered Attendees
	10:00pm	???	YEA Event	Meet in Lobby	YEA Members
	10:00pm	12:00am	Hospitality Suite	Room 737 Seventh Floor	Registered Attendees
SATURDAY	7:00am	10:00am	Registration	Mezzanine (2nd Floor)	All Attendees
	9:00am	11:00am	Hospitality Suite	Room 737 Seventh Floor	Registered Attendees
	7:00am	9:00am	Breakfast	Mezzanine (2nd Floor)	Registered Attendees
	8:00am	9:45am	Business Meeting 3	Lake Champlain (2nd Floor)	Delegates, Alternates & Regional Officers and Chairs
	8:00am	11:00am	Government Activities Workshop	Adirondack Ballroom	GA Chairs
	8:00am	9:00am	Research Promotion Workshop	Montpelier C	Research Chair
	8:30am	11:30am	Membership Promotion Workshop	Montpelier B	Membership Chairs
	8:30am	11:30am	CTTC Workshop	Vermont Conference Room	CTTC Chairs
	8:30am	9:30am	RECC Workshop	Burlington Conf Room	RECC Chairs
	8:30am	10:30am	Student Activities Workshop	Montpelier A	Student Activities Chair
	10:00am	11:30am	Historian Workshop	Montpelier C	Historians
	10:00am	11:30am	YEA Workshop	Burlington Conf Room	YEA Members
	10:00am	12:00pm	Hospitality Suite	Room 737 Seventh Floor	Registered Attendees
	12:00pm	2:00pm	Awards Luncheon	Green Mountain Ballroom	Registered Attendees
	2:30pm	3:30pm	CRC Debrief	Burlington Conf Room	CRC Host Committee & Guests

Conference schedule is preliminary, subject to change prior to CRC

The Presidential Dinner will be held at one of the Burlington lakefront Crown Jewels:

ECHO LAKE AQUARIUM AND SCIENCE CENTER | LEAHY CENTER FOR LAKE CHAMPLAIN

Special Thanks to our sponsors who are making this CRC a memorable event:

Platinum Level ($5,000 minimum)
- Trane
- Urell

Gold Level ($2,500 minimum)
- Temperature Controls of Vermont
- Efficiency Vermont
- Weil-McLain

Silver Level ($500 minimum)
- Vermont Heating & Ventilating
- Multistack
- Vermont Mechanical
- F.W. Webb
- Blake Group
- Dubois & King, Inc.
- Quality Air Control
- Daikin AC
- L.J. Early
- Yeaton Associates
- Hallam-ICS

Bronze Level ($150 minimum)
- R.F. Peck
- ARC Mechanical
- Control Technologies
- RJ Murray
- Dodge Engineering and Controls
- Advanced Comfort Systems

Just a few of the local attractions . . .

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If you would like to place an advertisement in The Long Island Sounder please contact our Chapter Treasurer, Mr. Charles Lesniak, P.E @ 516.484.1020 or via email charles.lesniak@leapc.com for further details. Thank you.

Advertising Rates:

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