



June 2014

THE LONG ISLAND SOUNDER



ASHRAE Long Island Chapter, Region 1...Founded in 1957

www.ashraeli.org

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

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President's Message

Welcome to the June issue of the "Long Island Sounder". We thank all of those who attended last month's meeting. Thank you again to ASHRAE Distinguished Lecturer Douglas Reindl on his presentation of "Introduction to Ammonia Refrigeration Systems"

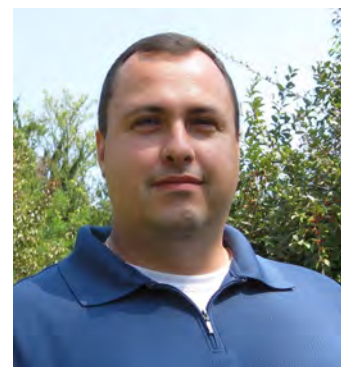
The Long Island ASHRAE Chapter is pleased to report that we had a very successful year full of excellent programs and back to basic sessions. Following all these programs up was another exceptional golf outing and we are looking forward to this year's fishing trip. All this would not have happened without the outstanding efforts put forth by our Board of Governors, Committee Chairs, and Volunteers they truly are an invaluable resource; we had Twelve PDH approved events along with one 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" 2014-2015. We will be installing the newly appointed Chapter Board of Governors and Committee Members as follows: Richard Rosner, President, Thomas Fields, President Elect, Donald Kane, Vice President, Andrew Dubel, Treasurer and Richard Halley Secretary. In addition by your vote, welcome Frank Paradiso and Ken Mueller to the

ASHRAE Long Island Board of Governors, these gentlemen will be fantastic additions to our Board. We will also be awarding our Student Scholarships at this meeting and I am looking forward to meeting them all.

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.

Andrew Manos, LEED AP BD+C
President - Long Island Chapter



CHAPTER MONTHLY MEETING

DATE:	Tuesday, June 10, 2014
TIME:	6:00 PM - Cocktails 7:00 PM - Buffet Dinner
LOCATION:	Westbury Manor South Side of Jericho Tpke. 25 Westbury, NY 11590
FEES:	
Members -	NO CHARGE
Guest -	
Student -	

Reservations requested, but not required.

Call (516) 333-7117

Long Island Chapter Officers & Committees

ASHRAE 2013/2014 OFFICERS

POSITION	NAME	PHONE	FAX	EMAIL
President	Andrew Manos, LEED AP	631.632.2791	631.632.1473	president@ashraeli.org
President-Elect	Richard Rosner, P.E.	631.737.9170	631.737.9171	president_elect@ashraeli.org
Vice President	Thomas Fields, P.E., LEED AP	212.643.9055	212.643.0503	vice_president@ashraeli.org
Financial Secretary	Charles Lesniak, P.E	516.484.1020	516.484.0926	financial_secretary@ashraeli.org
Treasurer	Don Kane, P.E.	631.737.9170	631.737.9171	treasurer@ashraeli.org
Secretary	Andrew B. Dubel, P.E.	212.967.7651	212.967.7654	secretary@ashraeli.org
Board of Governors	Richard Halley	718.269.3809	718.269.3725	bog1@ashraeli.org
Board of Governors	Lee Feigenbaum, LEED AP BD+C	212.243.2555		bog2@ashraeli.org
Board of Governors	Brian Simkins, LEED AP	203.261.8100	203.261.1981	bog3@ashraeli.org

ASHRAE 2013/2014 COMMITTEES

COMMITTEE	NAME	PHONE	FAX	EMAIL
Programs & Special Events	Richard Rosner, P.E.	631.737.9170	631.737.9171	programs@ashraeli.org
Membership	Lee Feigenbaum, LEED AP BD+C	212.243.2555		membership@ashraeli.org
Chapter Technology Transfer (CTTC)	Don Kane, P.E.	631.737.9170	631.737.9171	cttc@ashraeli.org
Grassroots Government Activities Committee	Charles Lesniak, P.E	516.484.1020	516.484.0926	ggac@ashraeli.org
Newsletter Editor	Liset Cordero	212.643.9055	212.643.0503	editor@ashraeli.org
Research Promotion	Richard Rosner, P.E.	631.737.9170	631.737.9171	rp@ashraeli.org
Historian	Thomas Fields, P.E., LEED AP	212.643.9055	212.643.0503	historian@ashraeli.org
Student Activities	Richard Halley	718.269.3809	718.269.3725	sa@ashraeli.org
Young Engineers in Training	Lee Feigenbaum	212.243.2555		yea@ashraeli.org
Webmaster	Richard Rosner, P.E.	631.737.9170	631.737.9171	web@ashraeli.org
Nominating	Michael Gerazounis, P.E., LEED AP	212.643.9055	212.643.0503	nominating@ashraeli.org
Reception & Attendance	Frank Paradiso Ken Mueller	631.632.2791 201.395.3761	631.632.1473 763.231.6924	reception@ashraeli.org
PR & Engineering Joint Council of LI	Andrew Manos, LEED AP	631.632.2791	631.632.1473	pr@ashraeli.org
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	golf@ashraeli.org

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Long Island Chapter - Past Presidents

1958	H. Campbell, Jr. PE	1986	Jerome T. Norris, PE
1959	Clyde Alston, PE	1987	Abe Rubenstein, PE
1960	Sidney Walzer, PE	1988	Michael O'Rourke
1961	Sidney Gayle	1989	Mel Deimel
1962	William Kane	1990	Robert Rabell
1963	Louis Bloom	1991	Gerald Berman
1964	Milton Maxwell	1992	Donald Stahl
1965	Will Reichenback	1993	Ronald Kilcarr
1966	Joseph Minton, PE	1994	Jerald Griliches
1967	Irwin Miller	1995	Walter Stark
1968	Walter Gilroy	1996	Joe Marino
1969	Charles Henry	1997	Norm Maxwell, PE
1970	William Wright	1998	Alan Goerke, PE
1971	Louis Lenz	1999	Frank Morgigno
1972	Ronald Levine	2000	Michael Gerazounis, PE, LEED AP
1973	Henry Schulman	2001	Ray Schmitt
1974	Myron Goldberg	2002	Steven M. Stein, PE
1975	John N. Haarhaus	2003	Andrew Braum, PE
1976	Richard K. Ennis	2004	Claudio Darras, P.E.
1977	Kenneth A. Graff	2005	Craig D. Marshall, P.E.
1978	Evans Lizardos, PE, LEED AP	2006	John Nally
1979	Albert Edelstein	2007	Peter Gerazounis, PE, LEED AP
1980	Ralph Butler	2008	Steven Friedman, PE, HFDP, LEED AP
1981	Robert Rose, PE	2009	Steven Giammona, P.E., LEED AP
1982	Timothy Murphy, PE	2010	Nancy Román
1983	Leon Taub, PE	2011	Carolyn Arote
1984	Raymond Combs	2012	Brian Simkins, LEED AP
1985	Edward W. Hoffmann		



PAOE POINTS FOR 2013/2014

350Chapter Members	Membership Promotion	Student Activities	Research Promotion	History	Chapter Operations	CTTC	GGAC	Chapter PAOE Totals
296	900	605	2,001	350	1,450	1,460	950	7,716

Chapter Monthly Meeting - Program for 2013/2014

September 10, 2013 * At Westbury Manor  Dinner Presentation – Characteristics of Throw (Overhead Air Distribution Fundamentals) Presenter: ADE - Frank Bergamini **1 PDH** Membership Promotion Night	February 2014  NATIONAL ENGINEERS WEEK Feb 16 through Feb 22
October 8, 2013 * At Westbury Manor  Dinner Presentation—Optimizing Efficiency of Multiple Hydronic Boiler Systems Presenter: Joel Southwell **1 PDH** Resource Promotion Night <i>Back to Basic Session I - Evans Lizardos **1 PDH**</i> <i>"How to Select & Specify Heating & Cooling Coils"</i>	March 11, 2014 * At Westbury Manor  Dinner Presentation—GeoThermal Systems – Design and Installation Considerations Presenter: Ray Schmitt and Panel **1 PDH** Joint meeting with LI-Geo / YEA Night <i>Back to Basic Session III – Evans Lizardos **1 PDH**</i> <i>"Design & Theory of Dedicated Outside Air Systems for Humidity Control"</i>
November 12, 2013 * At Westbury Manor  Dinner Presentation—Seismic Design for Building Systems Presenter: Jim Sadler from Mason Industries **1 PDH** Joint meeting with SMACNA Student Activities Night & YEA Night as well as Membership Promotion and Upgrade Night	April 8, 2014 (5 PM)  ANNUAL FIELD TRIP Long Beach Ice Skating Rink – See the refrigeration system and hear about the storm damage and recovery. **1 PDH** Dinner to follow at a local Restaurant with a "Sandy" story
December 10, 2013 * At Westbury Manor  HOLIDAY PARTY Free Buffet Dinner for Members VISIT FROM DRC - Joseph Furman	May 5th, 2014 * Cherry Valley Club, Garden City, NY  ANNUAL GOLF OUTING
January 14, 2014 * At Westbury Manor  Dinner Presentation- Automatic Flow Balancing Presenter: John Knowles **1 PDH** <i>Back to Basic Session II - Evans Lizardos **1 PDH**</i> <i>"Design of Variable Air Volume Systems"</i>	May 13th, 2014 * At Westbury Manor  Dinner Presentation—Introduction to Ammonia Refrigeration Systems Presenter: Douglas T. Reindl, Ph.D., P.E. **1 PDH** ASHRAE DISTINGUISHED LECTURER Student Activities Night / Refrigeration Night
January 2014  ASHRAE Winter Meeting Jan 18-22 New York Hilton 1335 Avenue of the Americas, New York, NY	June 10, 2014 * At Westbury Manor Free Buffet Dinner for Members PAST PRESIDENTS NIGHT & OFFICER INSTALLATION STUDENT SCHOLARSHIPS TO BE AWARDED ASHRAE History Quiz and prize Give-A-Ways
February 11, 2014 * At Westbury Manor  Presentation #1—Leed Ver 4 Rating System & ASHRAE 191P Water efficiencies in Bldgs. Presenter: Rich Gerbe **1 PDH** Presentation #2—Desiccant Dehumidification System for Energy Efficient Temperature & Humidity Control Presenter: Mark Piegay **1 PDH** Joint Meeting with USGBC and IFMA-LI Resource Promotion Night / Membership Promotion Night	August 2014 Chapter Regional Conference (CRC) Region I Bi-State Chapter Hosting August 14-16, 2014

Board of Governors Meeting Minutes

Board of Governors Meeting Minutes – May 13, 2014 - Westbury Manor

Attendees: Andy Manos (AS); Rich Rosner (RR); Charles Lesniak (CL); Don Kane (DK); Andrew Dubel (AD); Brian Simkins (BS), Tom Fields (TF)

The meeting was called to order at 5:10pm by Andrew Manos – President. Presidents PAOE points are currently at 1360. Motion to approve March meeting minutes was approved. CL, RH and DK will submit MBO status update. CRC will be in Tarrytown, NY on August 14-16.

President-Elect/Programs: The Distinguished Lecturer could not make the meeting due to canceled flights. BS setup a remote conference.

Chapter Technology Transfer: Account balance is \$61,000.73. Approximately 34,000 is owed for the golf outing, awaiting invoices. Checks for \$ 240 have been issued for student membership applications. Checks for \$2,000 in scholarships will be issued at the June meeting. DK will update the board on what is owed to RP for 50/50 monies.

Treasury: DK reported the current balance of \$9,120.96. The Tax filing for FY 2013-2014 will be mailed on or before the February 15, 2014 extended filing date. Documentation was sent to IRS confirming that the request for extension was filed in a timely manner (USPS signed and dated return receipts). Once the tax filing is complete, collection of unpaid advertising revenue will be a priority.

Grassroots Government Activities: GGAC PAOE points are current at 950.

History: Historian PAOE points are currently 350.

Honors and Awards: BS has submitted 2 chapter service awards as well as a 50 years of service award.

Research Promotion: RP PAOE points are currently at 1951. RP PAOE is currently first in region 1 and 3rd in the world. \$21,003 has been collected. High five goal is \$21,422.

Student Activities: SA PAOE points are currently at 505. 3 scholarships will be awarded in next chapter meeting. (1) \$1000 and (2) 500 scholarships.

New Business: 65 votes were counted. The slated officers were elected to the positions which they were nominated for. Richard Rosner will be President. Thomas Fields was elected President Elect. Charles Lesniak was elected vice president. Donald Kane was elected Financial Secretary. Andrew Dubel was elected Treasurer. Richard Hally was elected Secretary. Lee Feigenbaum was elected to the BOG. Frank Paradiso was elected to the BOG. Ken Mueller was elected to the BOG. Andrew Manos, will join the BOG as past President.

The next meeting will be held on June 10th at Westbury Manor.

The meeting was adjourned at 5:45.

Andrew B. Dubel, P.E.
Chapter Secretary

June Program

The Long Island Chapter's Year End Celebration

Past Presidents Night, Student Scholarship Night



DATE:	TUESDAY, JUNE 10, 2014		
Time:	6:00 PM – Cocktails and Hors D'oeuvres 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.		

CHAPTER MAY NOT ACT FOR SOCIETY

An International Organization

Research Promotion

Did you get your copy of the 2014 Product Directories yet? They will be at the meeting again for pickup by our members. Remember to pick up this great reference when you come to the meeting, it is free to all members. We would also like you to please tell our generous advertisers 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 also appears online at <http://ashraeli.org/productdirectory.html>

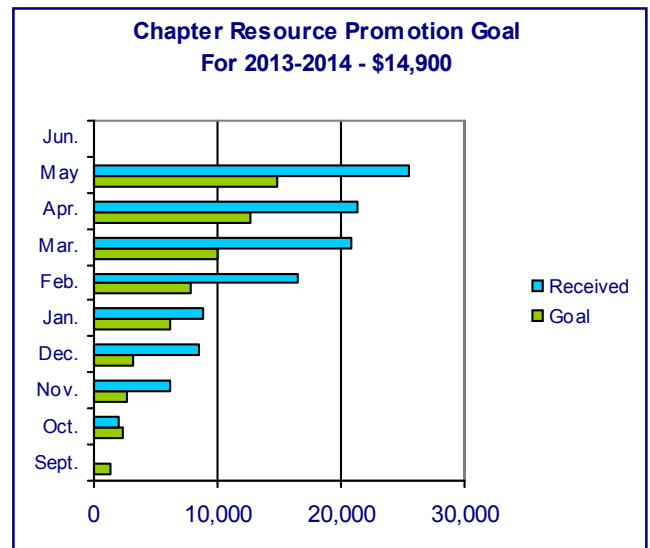


Of the \$14,900 or more we were expected to raise this year I am happy to say we passed it and collected \$25,488 to date. This has us above the High Five level of \$21,442. I told you though I was shooting for the High Five Challenge Level which is the highest level and is at \$22,514. We did it and are \$2,974 over that goal. Now is the time to get in those last minute donations that will help keep us in first place in the region! Thanks All !!!

All monies for this year have to be at national by June 30th. If the monies have to go through me first, like for the directory payment, they must be to me even earlier. That's not a lot of time, leaving us less than month 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. There is still \$1,750 outstanding for Directory ads and if you haven't had a chance to pay yet please send in your payment now. I am sending out another reminder shortly.

We are soaring with PAOE points for RP and have 2001 points which is the number 1 spot in the Region 1 at this time with a real close second. Our yearly goal was 1050 points so we are almost double that.

This year's fishing trip is on June 20th 2014 and you can sign up by contacting Andy Manos. It was a blast last year and this year I understand they have reduced the size limit so more of us can bring home fish.



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 Parkway, 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

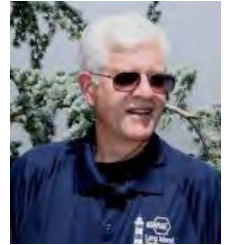
* Please make sure you accredit your contribution to the LONG ISLAND CHAPTER 006 *

Thank you again for all of your support! I hope to see you at the April Field Trip.

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

CTTC - More Alternative Cooling Technologies

As discussed in last month's CTTC article (if you missed it, back issues of the *Sounder* can be found at www.ashraeli.org), the HVAC industry has been the focal point for some time now of environmental concerns related to the various refrigerants used in conventional vapor-compression-expansion cooling equipment. In Europe, regulations prohibiting the use of certain refrigerants are pitting several automobile manufacturers against those enforcing the regulations due to a difference of opinion as to what is considered a "safe" refrigerant to use in conventional, vapor compression/expansion systems. On this side of "the Pond", in response to similar concerns, the U.S. Department of Energy contracted for a study of alternative technologies, rather than merely looking for a new "refrigerant de jour" to use in conventional systems. As a result of this study, a March 2010 report, "The Prospects of Alternatives to Vapor Compression Technology for Space Cooling and Food Refrigeration Applications" was issued identifying five (5) alternative technologies:



- Thermoelectric Cooling
- Magnetic Cooling
- Thermionic Cooling
- Thermotunneling Cooling
- Thermoacoustic Cooling

In general, the effectiveness of the various technologies was compared to the ideal Carnot cycle coefficient of performance, establishing the theoretical limits as well as some empirical data to illustrate "real world" numbers. By reference, it is noted that conventional equipment exhibits performance of 40-60 percent of the Carnot COP reference value (larger, centrifugal water-cooled chillers being found at the upper level and smaller air cooled chillers and unitary equipment bringing up the rear).

As the first, **thermoelectric cooling**, based upon the Peltier Effect (utilizing the impressing of an electric potential across a junction of two dissimilar materials) was discussed last month, it will not be discussed in detail again. While this technology has enjoyed some success in niche markets (for example, vibration free wine coolers and automobile seats), it has not, generally, been an economically viable replacement for conventional equipment, in the capacities needed for air conditioning automobiles or buildings.

Magnetic Cooling relies upon the use of materials exhibiting the *magnetocaloric* effect. A ferromagnetic material is heated by the application of a magnetic field, this heat is rejected and, upon removal of the magnetic field, the material returns to a temperature below that which it started. Heat is then removed from the cooling load to return the material to the starting temperature, at which point the cycle is repeated. While modeling indicates a potential for high efficiencies, this performance has not been obtained by prototype equipment. Further, as the design for this equipment is somewhat complex, ultimate reliability may suffer when compared to simpler approaches.

Thermionic Cooling, while this technology is based (as are others) on the application of a voltage across two materials, unlike the Peltier devices, which rely on solid state charge carrier (holes and electrons) movement, thermionic cooling utilizes a *ballistic electron transport* phenomenon, across two materials separated by a gap or carrier thickness less than an electron mean free path. The mechanism involved is similar to that of thermionic emission which takes place in vacuum tubes (those glass enclosed things that glow when on, used in old electronic equipment and boutique audio amplifiers). This technology, presently, appears to be more of laboratory interest. With theoretical efficiencies less than that of vapor compression/expansion equipment and a propensity for backward conduction of heat (due to a lack of multilayer devices) this does not appear to be a technology that will be commercialized soon.

Thermotunneling Cooling, another technology relying upon the impressing of a voltage, however, in this case, it is a low voltage applied across two surfaces separated by a few nanometers. The applied voltage allows the more "energetic" electrons to jump the gap, with their places taken by electrons with average energy. The loss of the energetic electrons results in a cooling of the "donor" surface, while the receptor surface exhibits heating due to the transfer of the energetic electrons. Even though some studies were conducted in the early 1940 regarding this electron behavior and resultant temperature differences, thermotunneling cooling is considered an "infant" technology, albeit one with a theoretical efficiency approaching 50-80% of ideal Carnot efficiency. As there has been little success in developing a working prototype of a capacity exhibiting a measureable cooling effect, there is no way to corroborate the theoretical values.

CTTC - More Alternative Cooling Technologies (Cont'd. from Page 8)

Thermoacoustic Cooling, the last alternative technology to be discussed today, while not yet enjoying significant commercialization, deserves a more in-depth look due to a number of factors including; simplicity in design (potentially increased reliability), a history going back 200 years (or at least the principle involved) and working prototypes, for both terrestrial and extraterrestrial applications.

Simply put, thermoacoustic cooling (TAC) is based on the property of gases that compression and expansion of gases results in changes in temperature. When excited by acoustic energy, all gases will exhibit this effect, however, at normal (atmospheric) pressure, the effect is so small as to be impossible to measure. Increase the pressure to 10 to 20 atmospheres and you will be able to measure the change in temperature, when excited by a sufficiently high sound pressure level.

The mechanism of excitation is not too different than when you blow across the top of a soda bottle and the vibrating column of gas in the bottle generates an audible sound, though with little measureable temperature increase as noted above. Two hundred years ago, glass blowers noted this effect when forming closed vessels (Soundhauss Oscillations) as have cryogenic researchers who have noted similar sounds (Taconis oscillation) when inserting a gas filled tube which bridges between room temperature and the cryogenic liquid temperature. Lord Rayleigh, in 1887 developed a theory for the causes of these oscillations, but it was not until the 1940's when further study took place leading to modern theories being developed in the 1960's.

The primary advantage to the TAC concept is the simplicity of the device, especially important for applications where maintenance is difficult or impossible. TAC devices may be broken down into two classes; **Standing Wave** (stack) type or **Travelling Wave** (regenerator) type.

The **standing wave** devices, the simplest, utilize a glass or ceramic "stack" located between the exciter and the resonator. Glass or ceramic is used as it has the capacity to store heat and is not a good thermal conductor. The exciter (think of a loudspeaker on steroids) is used to generate sound levels internally of up to 300 dB. Due to the robust nature of the container for the TAC device, the sound level outside the device will be on the order of 60dBA or less. In the standing wave (stack) device, the displacement of gas is a small fraction of the length of the stack. The gas used is typically Helium or a Helium/Argon or Helium/Xenon mixture. The standing wave devices do not lend themselves to reverse operation.

Travelling wave devices utilize a regenerator instead of the glass/ceramic stack used in the standing wave types. The displacement of gas in a travelling wave type must pass through the regenerator and heat exchangers completely. These devices are reversible and lend themselves to proportional control. This way, only the required amount of cooling is developed, saving energy. The TAC devices may be used to obtain temperatures in the cryogenic range, potentially of use in liquefying air or natural gas. Travelling wave devices may be paired in order to use heat input (solar or waste heat) to generate the sound pressure needed to excite the contained gas to provide cooling.

While TAC devices are inherently simple mechanically, auxiliary electronics are needed in order to control and maintain resonant conditions and/or match load to the device output. This additional circuitry does increase the complexity and, therefore, may decrease reliability. As noted above, the working gas is typically Helium or Helium mixed with Argon or Xenon. There is currently a predicted shortage of Helium which would increase the cost of using this as the working gas. Additionally, due to the characteristics of Helium, seals and/or gasketing would have to be carefully designed (small molecules tend to leak). In most cases, secondary heat transfer fluids would be used, allowing optimization of the fluid characteristics, but increasing system complexity.

Working TAC devices have been used in some high profile applications, notably, aboard STS-42 (Discovery) in 1992 and at a Ben & Jerry's store around 2004. While it is said that the prototype developed for Ben & Jerry's worked acceptably and was no more noisy (maybe less) than a conventional ice cream storage cabinet, production did not follow. The small (4-5W) test unit sent into space as experiment HG-337 was noted to have "operated nominally".

While TAC seems to remain a niche technology, further development for automotive use could possibly change that.

And now for something completely different..."ASHRAE 23P, Guideline for the Design and Application of HVAC Equipment for Rail Passenger Vehicles" is presently out for public comment, until June 30, 2014. If you have a few moments, go to: <https://www.ashrae.org/news/2014/ashrae-guideline-on-hvac-equipment-for-rail-passenger-vehicles-open-for-comment> and provide your comments on the document as instructed at the ASHRAE link.

Best wishes to all for an enjoyable summer!

Don Kane, P.E.

CTTC Chair - cttc@ashraeli.org

Membership

ASHRAE is proud to see its members advance both personally and professionally. Your Long Island Chapter is no exception. As another season of ASHRAE nears its end, it is important to take credit for your investment in ASHRAE over the past months. One of the best ways to accomplish this is through membership advancement.

If you are an Associate, this is an excellent time to advance to Member! There is no additional cost, and advancement entitles you to all of the benefits of ASHRAE.

To advance from Associate to Member, simply update your ASHRAE bio online, and then notify membership@ashrae.org that you would like to be considered for grade advancement.

Steps for updating your biography:

1. Log into www.ashrae.org by selecting 'Join or Login' in the upper right corner. Enter your email address and password then select 'Sign In.'
2. Hover over the 'Membership & Conferences' tab and select 'My Membership.'
3. Under 'Manage Personal Information,' select 'Change Your Address/View or Edit Your Profile.'
4. Select the 'Edu. Pro. Reg' link located in the blue font above your name. Add all of your educational history, relevant professional licenses and work history.
5. Confirm that your contact information is current by clicking on 'Contact Info.'

Take the benefits that you have worked so hard for. Upgrade your membership today!

Lee Feigenbaum, LEED AP BD+C
Membership Chairman



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 2014 student scholarship winners, Martin Lane - \$1,000; Caroline Mueller - \$500 and Muneeb Chaudhry - \$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.

Have a great summer and we hope to see you in the fall.

Richard Halley
Student Activities Committee Chair



Young Engineers in ASHRAE (YEA)

Students and aspiring Young Engineers contribute so much to ASHRAE! Diversity remains one of our primary strengths. There are few professional organizations that have the strength to bring so many people from so many backgrounds together in the common interest of improving our HVAC industry.

As we move toward the end of the season we are confident that the excellent networking and educational opportunities you've enjoyed over the past months will serve you well as you move forward in your career. We look forward to another excellent turnout as we celebrate the members that have made your Long Island Chapter one of the best! As always, our meetings remain open to new members and guests.



We hope to see you there!

Lee Feigenbaum
YEA Chairman



Grassroots Government Activities Committee (GGAC)

I would like to say it's been a pleasure working with and helping starting the inaugural Grassroots Government Activities Committee. I would like to thank the other members of the committee who have helped with our activities. We've had a very successful year at our chapter. We had joint engineering meetings with Long Island Chapter of SMACNA, Long Island Chapter of USGBC, and LI-Geo. We participated in National Engineering Week by holding a few seminars.

I will be the chair of the committee again next year. I will bring you the news of what ASHRAE has learned with the GGAC after our next CRC. Our chapter is looking to see if other organizations would like to join us for joint meetings for the next ASHRAE year so please contact me if your organization would like to hold a joint meeting. We are looking forward to participating in National Engineering Week once again. If you have any ideas for additional activities please contact me. In the meantime please look at the ASHRAE's main GGAC Facebook page at www.facebook.com/ASHRAEGGAC for more information what the GGAC is doing nationally.



Thank you and have a great summer.

Charlie J. Lesniak, P.E.
Grassroots Government Activities Chair

History

A history of Comfort Cooling Using Ice

There is a basic human drive to be comfortable. I once had a rhyme (author unknown) on my college room bulletin board that put it whimsically:

*"Man is a funny creature.
When it's hot he wants it cold.
When it's cold he wants it hot.
Always wanting what is not.
Man is a funny creature."*



Funny or not, the quest for comfort probably is as old as the human race. We know that fire was used for warmth at least 100,000 years ago, and perhaps much longer than that. There are charred remains of ancient campfires to prove it. But what of comfort cooling? Melting ice or snow leaves no archeological record. Thus the beginning of the timeline of comfort cooling is buried in obscurity; we have to rely on written records for the history of cooling. Since there was no mechanical refrigeration before the 19th century, any attempts to artificially cool the air would have used ice, snow, cold water or evaporative cooling. This article will consider the history of comfort cooling in the United States using ice.

The Antecedents

One of the earliest written records, the Holy Bible, mentions "The coolness of snow in the heat of the harvest." There are other sporadic accounts of ancient peoples using ice or snow for cooling. For example, the Roman emperor Varius Avitus ordered that mountain snow be brought and formed in mounds in his garden so that the natural breezes might be cooled. Other examples, most unrecorded, are scattered across the centuries. However, apparently not much was done in the comfort cooling field until the 1800s.

Shortly after the turn of the 18th century, Frederic Tudor of Boston sent a shipload of ice to Martinique in the West Indies to relieve the Yellow Fever epidemic that raged there. Curiously, the beginnings of the commercial ice industry in the U.S. can be traced to this shipment, Tudor's first one. That shipment that, technically, was used for comfort cooling was the beginning of the ice trade in the U.S. At that time, physicians were already using ice in their efforts to reduce fever. In 1901 it was reported that prior to 1825, physicians in larger American cities already kept stores of ice for medical use.

The Debut of Ice-Powered Systems

The aforementioned U.S. examples of ice use for cooling are not those that HVAC engineers envision. The doctors did provide comfort cooling, but it was done by direct application of the ice to the body. Engineers think of complete systems, but examples of ice cooled ventilating systems and equipment didn't materialize until the mid-18th century. Their frequency increases as the 20th century approaches.

The earliest proposal for comfort cooling in the U.S. using ice was possibly that of George Knight of Cincinnati who, in 1864, proposed a hospital cooling system in *Scientific American*. It featured a ventilating system with an air washer to clean and cool the air. The water for the air washer was run through a cooling coil immersed in melting ice. Outside air was forced by a fan through the cold water spray to be distributed overhead through perforated outlets. Knight noted that "The device is intended especially for optional and discretionary use in the heat of summer...."

Nathaniel Shaler of Newport, Ky. (across the Ohio River next to Cincinnati) who was the grantee of U.S. Patent 47,991 in 1865 for an "improved air cooling apparatus" envisioned another cooling system.

The patent describes a heat exchanger made with "ice holders" placed in a "tortuous passage" through which room air is blown to cool it. Shaler also says that a desiccant can be placed in the airstream to dry it.

After 1870, refrigeration and large building heating and ventilating systems began to be commercialized. For the first time, enterprises were organized with the express purpose of the engineering, manufacturing and sales of building infrastructure systems.

A demand was arising for central systems that would provide refrigeration for breweries, ice making and cold storage. Central heating and ventilating plants were needed for the various buildings being constructed. However, there was little demand for comfort cooling. At the time, mechanical refrigeration was too expensive to be used in this fashion. But ice was too!

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In his 1873 article "On the various systems of cooling the air" A. Joulet discussed using ice as a means of comfort cooling, but concludes: "In point of fact, this method of refrigeration must be considered as impracticable, while ice is not very cheap, and cold cannot be produced as inexpensively as heat. It seems that the few attempts at cooling at that time were perhaps done by the curious or by the entrepreneurs. One example was the ice cream vendor who was said to have cooled a Staten Island, N.Y., hotel dining room about 1880. He used a system that blew air through pipes imbedded in a mixture of ice and salt. It was an isolated example, typical for a cooling era at the point of conception."

Engineered Systems

The Sanitary Engineer reported in 1880 that New York's Madison Square Theater was using about 4 tons of ice to cool patrons at evening summer performances. Fresh air was filtered through a 40-ft long cheesecloth bag, passing over wooden inclined racks, containing 2 tons of ice, and into an 8-ft diameter centrifugal fan. The fan discharge was directed over another 2 tons of ice, into ductwork to various openings through which the cool air "...poured into the house to reduce the temperature and to furnish a supply for respiration."

The Madison Square Theater installation was a new type of comfort cooling system. It was an engineered system, provided by B. F. Sturtevant Co., an engineering and manufacturing firm that soon became the foremost purveyor of air side heating and ventilating systems in the U.S. Engineered building systems would frequent the U.S. landscape in the coming decades. Companies like Sturtevant that offered to engineer, make and install H&V equipment were forming with frequency after 1880. The technical staffs at these companies were the newborn in a new profession, that of the heating and ventilating engineer. Their increasing numbers would soon show the need for a specialized engineering society, the result being the organization of the American Society of Heating and Ventilating Engineers in 1894.

This new era saw building systems designed to provide specified results. At first such results were often broadly defined. This was especially true for the few comfort cooling systems that were designed between 1880 and the early 1890s. And those few systems were ice type systems.

Possibly the most famous of them was the one that used ice to relieve the sufferings of U.S. President James Garfield who lay dying from an assassin's bullet in the summer of 1881. The system was described in a pamphlet "Reports of officers of the Navy on ventilating and cooling the executive mansion during the illness of President Garfield," published in 1882. It seems that the Naval engineers passed air through dozens of thin cotton screens onto which dripped the cold meltage from a salt-ice mixture contained in a tank above. The cooled air was ducted into the president's bedroom, resulting in as much as a 20°F temperature drop. The desired result - to cool down the president's room - was a broadly defined one. Any reasonable drop in temperature was acceptable.

Another cooling system was designed in 1889 for the Carnegie Music Hall by consulting engineer Alfred Wolff. Wolff was probably the first really successful heating and ventilating engineer, and he designed some of the most important comfort cooling systems around the turn of the nineteenth century. His first attempt used ice. The building's dedication records described the system:

"Fresh air, at any temperature desired, in large volume but at a low velocity, is introduced, and the vitiated air is exhausted. Generally, the fresh (warmed or cooled) air enters through perforations in or near the ceilings, and the exhaust is effected through registers or perforated risers in or near the floors and, passing through an elaborate system of ducts, worked into the construction of the building, is expelled above the roof."

"Through [the] heating surface, or at will through the ice racks, the air is drawn by four powerful blowers, each 12 ft high, and forced through the system of fresh air ducts into the various parts of the building."

"The heating surface and other appliances are so subdivided that atmospheric changes can be immediately compensated for, and the temperature of the air introduced suited to the winter weather or the heat of summer."

The cooling side of this system was not engineered to maintain a specified temperature and humidity. Wolff was happy with a result that simply lowered the room temperature. The effectiveness of the Carnegie Hall system is unknown - confirmations of its use seem to be absent.

More ice-type cooling systems were installed in the next score of years. The Broadway Theater in New York used an ice cooled ventilating system for at least 10 years beginning in the early 1890s. The system forced outside air over ice blocks placed on wooden troughs, through ducts to registers in the theater. Keith's Theater in Philadelphia allegedly

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used a ton of ice per performance in 1903. That system was described as using natural induction, with hot air exiting through windows at the top of the auditorium. One engineer, a Mr. C. M. Stokes, commented: "... I have been in the auditorium in pretty warm weather. In fact I go there on a hot day to get cooled off. You can look down the floor register and see the ice in there."

These systems had been mentioned in a technical session at the January 1903 meeting of the American Society of Heating and Ventilating Engineers. This was the first time the topic of comfort cooling using ice was presented to that Society. The subject obviously interested the H&V engineers - the discussion following the paper took up three times as much space as the paper did when it was published in the ASHVE Transactions

The system that had fostered such interest was an ice type comfort cooling system used in Scranton, Pa., at the local high school. For at least three years, beginning in 1901, the auditorium was cooled at the time of the June graduation exercises. Comfort for as many as 1,400 persons was maintained by circulating 3 million ft³ of air per hour over blocks of ice. The air was discharged high up on the walls, exiting through aisle floor registers. About 6.5 tons of ice were used for sensible cooling on a typical night to maintain an about 15°F temperature difference between outside and inside. Pans of calcium chloride were also placed in the airstream when necessary to lower the humidity. The amount of calcium chloride used was determined by deciding on a humidity level, then adding pans of the desiccant until a check of the air with a sling psychrometer indicated the desired result.

Four years later, Theodore Weinshank, ASHVE member, described an Indianapolis theater cooling system that used ice before 1907:

"At the opening of one of their theaters the engineer undertook to cool the building. The outside temperature was 85°F. The outside air was taken into a fan through a large galvanized iron duct. Into this duct they placed a number of wire baskets... filled with crushed ice. The baskets were so arranged that the air entering the fan had to pass over or through the ice. The engineer succeeded in reducing the temperature of the auditorium to 70°F, but it kept four ice men hauling ice to the building as fast as they could go." Weinshank estimated that about 20 tons of ice were used for the performance.

Ice was being used, at least in some comfort cooling systems. Could it compete with mechanical refrigeration?

Ice Effectiveness Questioned

Although few in number, some of the cooling systems using ice did not achieve uniformly good results.

Leicester Allen, writing in *Heating and Ventilation* in 1893, commented:

"But there as yet exists one defect in this method of cooling. When warm air not previously dried by artificial means is made to pass over a cold surface, its humidity is made to approach the point of saturation as it is cooled; and, if not cooled to below the point of saturation so as to throw down some of its moisture its power to take up moisture is lessened by the cooling process... the air is not rendered thirsty for moisture until it is again reheated by the warmth of the room into which it flows. Simultaneous coolness and dryness are never attained by these processes."

Ten years later, Professor William Kent observed:

"I know other attempts have been made to cool with ice and have failed on account of the excessive humidity. It seems that if you carry air that is normally near saturation into a chamber filled with ice, the escaping air will be thoroughly saturated. Then, if you bring that cold air into a hall which has warm air which is near the saturation point, you will make a fog, a mist, and deposit moisture on the walls."

Both Allen and Kent blamed ice-type cooling systems for inadequacy. However, such blame actually was not warranted.

Today's engineers, studying early cooling systems, would note that many of these did not properly mix or distribute the air, nor did their design properly recognize the relationships of sensible and latent cooling. Such science and practice was in its infancy in the period between 1890 and 1910.

By the early 1900s, a science of comfort cooling had evolved. The effect of humidity on human comfort was understood,

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probably because it could be personally experienced. The relationship of humidity to temperature, the means of measuring it, and the control of it were the topics of study and discussion.

The debut of the scientific approach to air conditioning dates to the publication of German Professor Herman Rietschel's 1894 book: *Guide to Calculating and Design of Ventilating and Heating Installations*. This book contained a chapter, "Cooling of Rooms," that discussed topics like humidity control, etc. It was the first time that engineers had a handbook for comfort cooling practice. Gershon Meckler described Rietschel's accomplishment in 1994: "What Rietschel did, in effect, was to use his scientific understanding to define the problem in engineering terms, i.e., to identify the variables and present a step-by-step design process. Because he put science into an engineering framework, making it more accessible to engineers, Rietschel was a pioneer of the engineering science of air conditioning."

ASHVE charter member Herman Eisert presented Rietschel's science of air conditioning to the U.S. engineering profession in 1896. Soon, the control of humidity became a primary goal. This was the objective of Alfred Wolff when he designed the HVAC system for the New York Stock Exchange in 1901, and of Willis Carrier in his design of the system for the Sackett-Wilhelms Lithographing Co. in 1902. Both used mechanical refrigeration to accomplish their goals. Why did Wolff abandon the ice approach he had used years earlier at Carnegie Hall? Why did Carrier choose not to consider ice for his systems?

Neither Wolff nor Carrier seem to have explained their preference for mechanical refrigeration in their cooling systems. We can speculate that there were several reasons.

The fact that more precise control of humidity was possible with mechanical refrigeration was no doubt one reason. Another was convenience. Mechanical refrigeration provides cooling on demand. Use of ice as a standby cooling medium is predicated upon the willingness to store it on site, or arrange for instant delivery when the weather demands comfort cooling. Still another reason could have been the growing public suspicion about the cleanliness of ice. At the turn of the last century many sources of harvested ice were becoming polluted. Contaminated ice might produce foul smells- bad for business in public halls! In some cases the reason was cost. Wolff's New York Stock Exchange system was a cogeneration system and the cooling was in effect free. The NYSE didn't have to pay for ice.

The period leading up to World War I saw more H&V installations that featured comfort cooling systems. These were large systems installed in hotels, offices, restaurants, stores, hospitals and theaters. As a percentage of the total number of heating systems, the number installed were relatively small. However, most of these systems, as described in contemporary literature, used mechanical refrigeration to provide the cooling. It would seem that the ice type cooling systems were losing out to on-site refrigeration plants.

Ice Sees a Resurgence

By the 1920s, many American homes had refrigerators that used ice. However these so-called "ice boxes" slowly disappeared, replaced by electric or gas refrigerators. At first, the ice industry felt no threat from mechanical refrigeration applied to the home. Before the 1920s, it had been expensive and unreliable. This changed after 1925 as mechanical household refrigerators got better and less expensive. By the late 1920s, the mechanical units were seen as a serious threat to the commercial well-being of the ice industry, which soon searched for a means to replace its lost business. One possibility was to use ice, once again, for comfort cooling. The ice industry wondered: could its ice sales to homes and small businesses that had been superseded by mechanical refrigeration be replaced by sales of ice for comfort cooling to those same customers?

Beginning about 1929, numerous articles appeared that promoted comfort cooling using ice. By 1931, dozens had been published. Even the U.S. Government got into the act. For instance, the possibility of cooling homes was discussed at President Herbert Hoover's Conference on Home Building in 1932. The conclusion: Mechanical equipment was still too expensive to make home comfort cooling feasible, but use of ice for the purpose offered the most likely solution, provided that the cost of ice could be reduced. For a house costing \$10,000, the installation cost should not exceed \$500 and its operating cost \$100 per season.

The ice industry recognized an opportunity. It was a fact that air cooling installations using ice would be cheaper than those using mechanical refrigeration. The ice industry was concluding that homes had not been cooled to any extent because equipment cost was high and there was little effort to sell the idea. "Whether or not ice is used for this purpose depends a great deal upon what the ice industry does about it." commented one writer.

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Doing something about this potential fell to the ice industry trade group: The National Association of Ice Industries. Fred McCandlish of the technical department of the NAII outlined the agenda of the ice industry:

"First: it is necessary that we interest air-conditioning and equipment manufacturers in the development of an apparatus suitable for ice refrigeration. Second: our own members, icemen, must be awakened to the possibilities of increased ice sales by the development of this market. Third: potential comfort cooling customers as well as the general public should be sold on the idea of comfort cooling so that they will be receptive to the development."

The ice industry concluded that: "The potential market for comfort cooling is so vast that the saturation of a small part of it will require more than double the present production capacity of the ice industry." "Therefore, our sales program for the immediate future will have as its objective the obtaining of installations in locations where the advantages of comfort cooling can be seen, felt, and appreciated by the greatest number of potential users." "... we must sell an idea rather than merchandise."

The focus of the ice industry was on selling a perishable product. This was different from the approach used in earlier comfort cooling installations. In those cases, the mechanical refrigeration industry and its engineers approached the market as one that used equipment that was sold once. The ice industry approached its market as a continuous consumer of its product, ice. "We are interested in equipment sales only as a means to an end-creating new markets and increasing the consumption of our product, ice."

The National Association of Ice Industries supported its promotional efforts with manuals issued by its technical department. These included an engineering manual that prescribed methods of load calculation and system design.

The manual pointed out that comparisons of systems using ice and mechanical refrigeration should not be done using general cases because the calculations could be manipulated to show that ice type systems were more expensive.

Although the capital expense of an ice-type cooling system was much lower, the operating cost could be shown to be much higher when compared to a cooling system using mechanical refrigeration. This depended upon the assumptions used to calculate the seasonal load and the time allowed to depreciate the equipment. The manual included an example of a system in which the seasonal owning and operating cost varied. Using one set of calculations the cost was \$1,000 more for ice; or it could be \$260 less using different assumptions. The manual recommended that each job should be considered independently for comparison purposes. No doubt, sales personnel on both sides of the issue took liberties with their assumptions to show that their own system was the least costly.

Typical Installations Using Ice

It seems that the efforts of the ice industry were successful. An article in *Ice and Refrigeration* reported that "Ice is now being successfully used to cool and condition many theaters throughout the country. We have learned of two in New York City, one in Philadelphia, one in Baltimore, two in Indianapolis, one in Cleveland and six in Chicago. Contracts have been made to install equipment in other theaters in Boston, Philadelphia, St. Louis, Chicago and Kansas City. No doubt there are many others..." It was reported that these installations typically used about 6 tons of ice per day, costing about \$250 in 1998 dollars. The article notes that the theaters were able to charge extra for the cooling, with admission prices of \$6 to as much as \$11 (expressed in 1998 dollars). "The neighborhood theaters, with their admission prices of 25, 35, 50 cent admissions have been unable to absorb such expense." (In 1998 dollars, these admissions would cost about \$2.50 to \$5.00.)

The article went on to report installations in restaurants and stores. "Many department stores are providing equipment for conditioning the ladies. Alteration and fitting departments. This will eliminate their previous losses due to soiled dresses and gowns which has been quite an item"

Although the ice industry did not directly manufacture or install air cooling equipment, there seemed to be no shortage of manufacturers or installers. For example, the Betz Unit Air Cooler Co. manufactured two kinds of coolers for ice. One used an air washer-type arrangement; the other melted ice in water, circulating it through a fan coil.

A typical installation was that engineered for the offices of the Knickerbocker Ice Co. on the 21st floor of the Liggett Building in Detroit about 1937. The system, designed by the Typhoon Air Conditioning Co., was used by the ice company as a showcase installation to promote use of ice for air conditioning purposes. More than 8,000 ft² of office space was

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cooled with 2,000 cfm of outside air and 4,000 cfm of recirculated air. The air was passed over 1,100 ft² of cooling surface cooled with chilled water. The water was cooled by spraying it over cakes of ice in an insulated bunker having a capacity of holding 6 tons of ice. Constant supply water temperature was maintained by use of a thermostatically controlled bypass valve at the bunker that sensed the return water temperature. A second bypass valve was used to vary the amount of chilled water pumped to the cooling coil. The second valve was controlled by a variable differential temperature control that sensed the fresh air and the recirculated air temperatures. In effect, the outside air and the room air temperatures were sensed, and the thermostat operated in such a manner that at 75°F there was no difference between inside and outside. As the outdoor temperature increased, the differential increased to a maximum of 12°F at 95°F. The ice was recharged when 80% to 90% of it had melted.

"With this system of controls, the ice-cooled equipment becomes entirely automatic and it is not necessary to vary the fan speed in order to prevent overcooling at low loads. This is advantageous, as it is virtually impossible to contrive a system of distribution that will function effectively through any considerable range of air volume variations."

No doubt there are those who would maintain that this problem still has not been solved!

Mechanical Refrigeration Triumphs

The promotional efforts of the ice industry had the result that many of the comfort cooling systems installed in the 1930s did use ice. Those vigorous efforts by the ice industry did not achieve the potential originally envisioned, for mechanical refrigeration proved to be an equally vigorous competitor. In fact, the use of ice began to decline after World War II. Mechanical cooling equipment continually improved, and like the household refrigerator a couple decades earlier, the evolution of cooling equipment aimed for better reliability, smaller size and lower cost. Although there were many factors, one of the most important was the introduction of sealed refrigeration systems. By the 1950s, mechanical air-cooling equipment was affordable to many smaller businesses and homeowners. Ice type systems were rarely considered an option for comfort cooling.

It seemed that ice was doomed once again to be a relic of an earlier age. But the 1970s brought the energy crisis, and with it, a renewed interest in off-peak storage for comfort cooling. Some systems were designed and installed using ice banks. In these systems, ice was manufactured during the night, and that stored energy was then used during the day for cooling. In refrigeration systems with air-cooled condensers, evaporative condensers or cooling towers, use of cooler nighttime air resulted in energy savings.

Although storage systems are still being designed, raw ice is being replaced with different storage media with a greater energy capacity.

Ice – It's Still Here?

The saga of ice seems to have turned full circle. The article began by showing how ice was applied for on-the-spot comfort cooling by direct application in the first commercial venture. We saw that the principal use of ice in the early 1800s was in medicine.

Today, much ice is still used for comfort cooling in medicine. However, there is a new version of on-the-spot cooling, one not evident 200 years ago. In the U.S., no informal dine-out meal is complete without an iced drink. More ice is used for this direct application of comfort cooling than could have been dreamed of by the ice industry 70 years ago. Unfortunately for that industry, virtually all of this modern use of ice is satisfied by on site manufacture using icemakers. It seems that the ice industry's nemesis - mechanical refrigeration - has succeeded in replacing the ice man in virtually every application.

Thus the ice man and the ice industry has withered. Cooling systems using ice instead of mechanical refrigeration have all but disappeared. But ice itself has survived and even prevailed in its own modern comfort cooling niche.

Every time we use an ice pack on our feverish head; every time we take a sip from an iced tea on a hot summer day, breathing a sigh of relief as we swallow; we are experiencing the uniqueness of ice for cooling. The art and science of air conditioning has progressed mightily, but we still take comfort from a block of ice!

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

ASHRAE Fishing Trip 2014 - Friday, June 20th, 2014



Come Join Us!



ASHRAE Long Island Chapter's Fishing Trip 2014

Date/Time

Friday, June 20th, 2014

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, 2014

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Directions to the Boat: Take Southern State Parkway to Exit 40 South Robert Moses Causeway 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.

The ASHRAE Green Guide



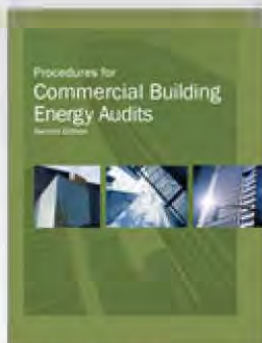
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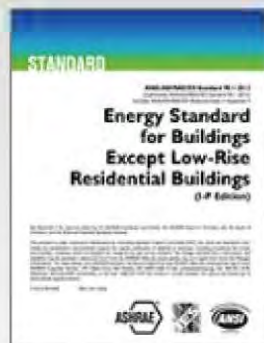
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ASHRAE Annual Conference - June 28-July 2 - Seattle, WA

2014 ASHRAE Annual Conference

June 28-July 2 | Seattle, WA



Between the Puget Sound, the Olympic Mountains and Lake Washington, Seattle offers beautiful natural surroundings that are not to be missed. Be sure to find time to break away from the many Technical Sessions to enjoy tours and social events around the city. Kick off the Conference at beautiful Bell Harbor at the Welcome Party. Learn more about the original inhabitants of the area with a visit to Tillicum Village, explore the lakes and waterways around the city on a leisurely cruise or sample chocolates and wine at one of Washington's 700+ wineries. Get out and go see the host city of the ASHRAE 2014 Annual Conference.



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ASHRAE Annual Conference - June 28-July 2 - Seattle, WA

Seattle Welcomes You! - Message from the Host Committee

The 2014 Annual Conference kicks off June 28 in Seattle with a Welcome Party at the Bell Harbor Conference Center located on Elliott Bay, a perennial event to rekindle friendships and make new acquaintances.

The following three days are packed full of technical sessions and seminars, between and around which we have planned a variety of tours to make you ponder the latest in technical design and give you a taste of the Pacific Northwest.

Specifics regarding the Welcome Party, tours, President's Luncheon and Member's Night Out can be found in links on Society's website - please secure your reservations early!

On behalf of our Host Committee, Local Chapter and the greater Region XI, we are excited to have you visit us and we hope you take advantage of the opportunity to explore the variety of "sights," restaurants and activities around the Pacific Northwest during your visit.

Pat O'Donnell
Seattle Host Committee General Chair

167 Professional Development Hours Available
PDHs recognized by most U.S. states, AIA LUs and LEED® AP credits are available through ASHRAE Learning Institute courses and Technical Program sessions.

Technical Program

The Conference's Technical Program addresses broad topics in the application of technology to practice, specific applications in ground source heat pumps, operations and maintenance and indoor environmental quality, as well as new reports on research taking place worldwide.

Featured is a track on Ground Source Heat Pumps State of the Art: Design, Performance and Research, which addresses all aspects of design that lead to optimally performing systems in addition to avoiding common pitfalls that lead to poorly performing systems.

Sessions include:

- Design and implementation of GSHP systems from conception to close-out.
- The new ASHRAE GSHP design guide.
- Latest Ground Source Heat Pump research
- Performance data from monitored systems

The track features speakers from coast to coast plus international speakers.

Cross organization efforts on track from ASHRAE, National Ground Water Association (NGWA), International Ground Source Heat Pump Association (IGSHPA) and GeoExchange (GEO).

A networking coffee break takes place at 9 a.m. Sunday, June 29, at the Washington State Convention Center.

Research Summit

The second annual ASHRAE Research Summit presents innovations in HVAC&R research with particular emphasis on high performance building design and its role in a clean energy economy, and brings together researchers to present and discuss the latest research. Researchers present papers, seminars and forums or participate in panel discussions. Also, highlights on ongoing ASHRAE funded research are presented.

ASHRAE Learning Institute

ASHRAE Learning Institute (ALI) provides high-quality training presented by industry-recognized experts. Choose from two full-day professional development seminars and seven half-day short courses to stay current on new HVAC technologies. Register at www.ashrae.org/seattlecourses.

Certification

The Building Energy Assessment Professional (BEAP) and Building Energy Modeling Professional (BEMP) exams are offered at 2 p.m. July 1. ASHRAE's certification programs recognize industry professionals who have mastered the knowledge and skills reflecting best practices in certain aspects of building design and operations. Only BEAPs and BEMPs, exclusively, may use the Building Energy Quotient (bEQ) Certified Provider logo to indicate that bEQ is among the services included in their portfolio. For more information visit www.ashrae.org/seattleexams (certification) or www.buildingenergyquotient.org (bEQ).

Keynote Speaker



Robert Bryce, one of America's most prominent energy journalists, is a senior fellow at the Manhattan Institute. He serves as the keynote speaker at the opening Plenary Session, held Saturday, June 28.

Registration is not required to attend the Session, which also features the Honors and Awards program.

Technical Plenary Speaker



Denis Hayes, president and CEO, Bullitt Center, serves as keynote speaker at Technical Plenary, Sunday, June 29. Conference registration is required to attend.

In his remarks, "Bullitt Center: A Net Positive Building That Functions Like A Tree," Hayes discusses the problems and opportunities associated with "net positive" commercial construction, using the Bullitt Center as an illustration of what is currently possible.

Social Events

Welcome Party

Saturday, June 28 | 6:30-8:30 p.m.

Maritime Event Center at Bell Harbor

International Conference Center | Cost: \$55

Maritime Event Center, adjacent to Bell Harbor, provides a historical maritime setting for the Welcome Party. Offering views of Puget Sound with its passing ferry boats and harbor activity and maybe a view of a harbor seal, it is a wonderful way to start the Conference.

Young Engineers in ASHRAE (YEA)

Young professional members age 35 and younger are invited to visit the YEA Hospitality Suite on Sunday, June 29, from 4-7 p.m. The suite offers social and networking opportunities, and light refreshments are served.

President's Luncheon

Monday, June 30 | Noon-2 p.m. | Cost: \$45

2014-15 ASHRAE President Tom Phoenix, P.E., Fellow ASHRAE, ASHRAE-Certified Building Energy Assessment and Building Energy Modeling Professional, presents his presidential theme, "People, Passion, Performance." He says, "People, passion and performance are three things that come to mind when I think about ASHRAE. Our members are great people. Thanks to our 53,000 members around the globe, ASHRAE is building a worldwide best practices network of innovative people and successful technologies to serve the built environment community. Our membership also has great passion—I see that in how much time and dedication our people give to helping write standards, develop research, guide in policy and procedure, etc. Together, our people plus their passion ensures performance—whether that's improving the performance of our great Society or improving the performance of building stock around the world.

Certificates of appreciation to retiring Board members are presented, and the 2014-15 officers and Board of Directors installed.

Members Night Out

Tuesday, July 1 | Reception 6:15-7:15 p.m.

Dinner 7:30 p.m. | Cost: \$55

Join fellow attendees in celebrating the successes of the Conference with the closing event, Members Night Out reception and dinner. Come prepared to test your knowledge with a night of trivia, which includes questions on ASHRAE history. Door prizes are awarded to winners. Dinner includes Kentucky limestone lettuce, asparagus, hearts of palm, heirloom tomato, honey pecan bourbon dressing; entrée: Chipotle Macaroni with Jack Grilled Salmon, potatoes, carrots, caramelized pearl onions, vegetable; dessert: Seattle trio crème brûlée.

REGISTRATION

Advance (through June 8)

- \$565 member/\$755 non-member
- \$540 first-time member attendee/\$735 first-time non-member attendee
- \$160 Life Members

Fees beginning June 9

- \$695 member/\$885, non-member
- \$675 first-time member attendee/\$860 first-time non-member attendee
- \$165 Life Member
- \$285 member one-day fee/\$340 non-member one-day fee

Fees for speakers, student branch advisors and students

- \$130 speaker
- \$55 student branch advisor
- \$55 student member/\$80 full-time student non-member

HOTEL INFORMATION

Conference Location The Conference takes place at the headquarters hotel (Sheraton Seattle, 1400 Sixth Ave.), and the Washington State Convention Center.



NOTE:

Accommodations at the Sheraton Seattle are now sold out. Reservations may also be made at the Crowne Plaza Hotel Seattle for \$209 single or double. The Crowne Plaza is located at 1113 6th Avenue and is a 10 minute walk to the Sheraton Seattle. Reserve a room in the Crowne Plaza at <https://resweb.passkey.com/go/ASHRAEAnnual>.

Internet Access

Internet access is provided for free in sleeping and meeting rooms at the Sheraton Seattle.

ASHRAE Annual Conference - June 28-July 2 - Seattle, WA

Technical Tours

ASHRAE Conference technical tours give you a first-hand look at technology developed by members to further the industry. Tours cost \$20 each. Full tour descriptions can be found at www.ashrae.org/seattle.

Federal Center South Building 1202 Sunday, June 29 | 3-5:30 p.m.



This 209,000 square foot, regional headquarters for the United States Army Corps of Engineers, Northwest District, is located on a

former 4.6-acre brownfield site along the Duwamish River. The building is a result of both the 2009 American Recovery and Reinvestment Act and the US General Services Administration's Design Excellence program, established to achieve innovative and high performance design in federal government building projects.

Attendees must present a valid government issued identification (drivers license or passport) and pass through a metal detector upon entry.

The Fred Hutchinson Cancer Research Center 1100 Eastlake Facility Sunday, June 29 | 3-6 p.m.

Originally developed as a 175,000 gross square foot office building, the 1100 Eastlake Facility was acquired by the Fred Hutchinson Cancer Research Center (FHCRC) in 2009 and upgraded to accommodate biological laboratories, long term cryogenic storage and an 8,000 square foot, Tier II data center. The intensity of these uses relative to standard offices

required extensive upgrades to the existing shell and core systems. Roughly a third of the building is currently used for office space, but the HVAC&R system has been upgraded to accommodate its future use as labs.

The Bullitt Center Monday, June 30 | 2:30-5:30 p.m.

The Bullitt Center is a 50,000 square foot commercial office building, which is among the most energy efficient buildings in the world. Designed to meet the Living Building Challenge set by the International Living Future Institute, the Center is intended to operate at net zero energy—using the building's 242 KW photovoltaic solar panels to offset all of the building's annual energy consumption. To achieve this goal, all aspects of the building target high energy efficiency.

Bill and Melinda Gates Foundation Headquarters Monday, June 30 | 3-5 p.m.



The Bill and Melinda Gates Foundation Headquarters provides a central office for the foundation's staff, who were previously spread between five offices. The completed, occupied portion of the campus is the first of two phases and includes two of three six-story buildings. Early in the design process, the project team developed a framework for sustainable design, with

three key priorities: the Human Environment, the Local Ecosystem and a Climate Neutral future. The sustainable and high-performance features and systems throughout the campus all reflect these priorities.

Participant names, companies and email addresses must be submitted to the Foundation at least one week before the tour. All participants must show photo identification on entry.

The University of Washington Molecular Engineering & Sciences Building Tuesday, July 1 | 2-5 p.m.



As the first facility in the United States dedicated to molecular engineering, the new Molecular Engineering &

Sciences Building (MoES) co-locates researchers in six specialized disciplines in a highly integrative setting, characterized by immediate lab/office adjacencies.

Completed in September 2012, the new facility houses research programs ranging from drug delivery systems that mimic molecular and cellular processes to microscopic solar cells that can be incorporated into building materials.

The University of Washington Power Plant Tuesday, July 1 | 1:30-4:30 p.m.

The University of Washington Power Plant supplies steam, chilled water, compressed air, and emergency power to through seven miles of utility tunnels on a 643-acre campus. The buildings served represent over 16 million square feet of floor area.

Participants should wear pants and closed-toe shoes without high heels.

General Tours: See the City

Bringing your spouse? Got spare time? Take advantage of ASHRAE's general tours.

Tillicum Village

Sunday, June 29 | 11 a.m.-4 p.m. | Cost: \$100
Experience the Northwest's tribal culture in the Tillicum Village tour and Native American salmon bake and performance. Cruise from downtown Seattle, across scenic Elliott Bay, to historic Blake Island — birthplace of Chief Seattle. Inside the cedar longhouse, watch salmon being prepared over open fires as it has been for centuries, before getting a taste. After the meal, sit back and enjoy a one of a kind stage performance and imagery combining Coast Salish storytelling and live traditional Native American dance.

Show Me Seattle

Sunday, June 29 | 9 a.m.-1 p.m. | 1:30-5:30 p.m. Cost: \$60



This tour showcases the best that Seattle has to offer, including iconic Pike Place Market where attendees see Seattle's first Starbucks coffee shop and the Fish Market.

Visit historic Pioneer Square, the epicenter of Seattle and home to the oldest buildings in town, and learn about the fire from a century ago that leveled the entire city, peruse the Klondike Gold Rush museum, a glass blowing shop and more. Take in the International district and the SODO area—home to Seattle's two new sports arenas. Enjoy the views along the waterfront before heading to Queen Anne Hill for a brief break at Kerry Park. The tour highlight may be a ride up to the 76-story high Columbia Tower Sky View Observatory.

Aircrafts, Airpark and Aviation Artifacts

Monday, June 30 | 2-5:30 p.m. | Cost: \$50
Enjoy an afternoon at the Museum of Flight, a showcase of more than 150 historic air and spacecraft and related artifacts. Visit the Red Barn, Boeing's

original manufacturing plant where wooden aircraft structure with fabric overlays were manufactured in the early years of aviation. Take the pilot seat and climb into the cockpit of a real SR-71A Blackbird plane or a full scale mock up of an F/A 18L Hornet fighter. Cross the sky bridge into the Airpark, located a short distance from the museum, and walk aboard the first presidential jet Air Force One or relax in the world's fastest jetliner, a British Airways supersonic Concorde.

Leisurely Lakes Cruise

Monday, June 30 | 3-6 pm | Cost: \$52



Enjoy both Lake Union and Lake Washington on this two-hour sightseeing cruise. The cruise includes live

narration pointing out fascinating history and interesting facts. Discover how this area made its mark in aviation history. Learn about the regions transformation from a pristine wilderness to its exciting role in bio-technology. Travel under the world's second longest floating bridge with the majestic Mount Rainier in the distance. View the magnificent waterfront mansions of Seattle's rich and famous.

Cascades, Cabernets and Chocolates

Tuesday, July 1 | 10 a.m.-3:30 p.m. | Cost: \$90
Attendees enjoy breathtaking sights, fine wines and sumptuous delights. The tour begins with a ride over Lake Washington on Seattle's famous Evergreen Pt. Bridge, the world's second longest floating bridge. It continues to Woodinville, home to a dozen of Washington State's 700+ premium wineries. The next stop includes

the Chateau Ste Michelle for a tour and wine tasting. There attendees enjoy a box lunch. Following lunch, enjoy Pacific Northwest scenery with rolling Cascade Mountain foothills, past horse ranches and flower farms en route to a stop at the spectacular 268 foot Snoqualmie Falls. The tour concludes with a visit to Boehm's Chocolates for samplings of chocolate treats.

Going Boeing

Tuesday, July 1 | 8:30a.m.-1 p.m. 12:30-5:30p.m. | Cost: \$46



This tour provides a behind-the-scenes look at large airliner manufacturing and the amazing face of future commercial aviation. Ride in comfort to Boeing's massive factory in Everett, by volume the largest

building in the world! From high above the Boeing Factory floor, view the assembly of Boeing's wide body airplanes — the 747, 767, 777 and the technologically advanced 787 Dreamliner. In the Future of Flight learning center, attendees use touch screen computers to digitally design and test airplanes. The factory tour involves walking approximately one-third of a mile, climbing 21 steep stairs, riding an elevator 35 feet above the factory floor and walking through a tunnel.

Museum of History and Industry (MOHAI)

Tuesday, July 1 | 2-5 p.m. | Cost: \$46
MOHAI is the place to discover Seattle and to connect with the region and its rich history. MOHAI is the largest private heritage organization in the State of Washington maintaining a collection of artifacts that primarily focus on Seattle and the greater Puget Sound region. Highlights include Boeing's first commercial plane, the 1919 Boeing B-1 and the Petticoat Flag, an 1856 American flag sewn by women during the Battle of Seattle. The core exhibit includes the Great Fire Theatre, a "Gilbert and Sullivan style opera" that involves artifacts from the 1889 Great Seattle Fire.

ASHRAE Annual Conference - June 28-July 2 - Seattle, WA

Conference Venue

The Conference takes place at the Sheraton Seattle and the Washington State Convention Center. For hotel reservations, visit www.ashrae.org/seattle.

Registration

Online: www.ashrae.org/seattle

Once you complete your online registration, be sure to look for your e-mail confirmation. A printable PDF version of the registration form can be found at www.ashrae.org/seattle.

Registration Form

1. Complete all portions of this form and mail to: ASHRAE Annual Conference, 1791 Tullie Circle NE, Atlanta, Georgia 30329.

A check payable to ASHRAE or credit card authorization for registration fees **must** be received with form to be registered.

2. Print or type all information. Your name will appear **exactly** as you have indicated on this form.

3. Please copy for your files.

4. Use the 24-hour FAX (678) 539-2129 or call 800-527-4723 to register with credit card information. If using FAX, please **do not mail** the original form.

Onsite Registration

On-site registration will be in the Washington State Convention Center. One-day conference registration will be available beginning June 9 @ \$285 Member; \$340 non-member. Tickets to social events, tours and Learning Institute courses may be purchased individually.

Refund Policy

All substitutions, cancellations and refund requests must be in writing and are subject to the following: Full refunds will be granted prior to June 9. After June 9 all refunds are subject to a \$50 processing fee. Registrants who fail to attend or contact ASHRAE prior to the close of business June 16 are liable for the entire fee. All approved refunds will be processed through Atlanta within four weeks after the conference.

REGISTRATION FORM

ASHRAE 2014 ANNUAL CONFERENCE

Seattle, WA, June 28-July 2

Last Name	First	Initial
Nickname (for badge)		
Phone Number		FAX Number
Company Name (or name of school, if student)		
Mailing Address		
City	State/Province/Country	Zip/Postal Code

Conference Registration includes technical program

**Includes Virtual

CONFERENCE REGISTRATION **Includes Virtual Conference

Advance Apr 28-June 8	Full Registration June 9-June 28	
<input type="checkbox"/> \$565	<input type="checkbox"/> \$695	ASHRAE MEMBER**
<input type="checkbox"/> \$540	<input type="checkbox"/> \$675	ASHRAE MEMBER-1ST TIME ATTENDEE**
<input type="checkbox"/> \$755	<input type="checkbox"/> \$885	NON-MEMBER**
<input type="checkbox"/> \$735	<input type="checkbox"/> \$860	NON-MEMBER-1ST TIME ATTENDEE**
<input type="checkbox"/> \$130	<input type="checkbox"/> \$130	SPEAKER** (includes session chair & forum moderator)
<input type="checkbox"/> \$160	<input type="checkbox"/> \$165	LIFE MEMBER**
<input type="checkbox"/> \$55	<input type="checkbox"/> \$55	ASHRAE STUDENT MEMBER
<input type="checkbox"/> \$55	<input type="checkbox"/> \$55	ASHRAE STUDENT BRANCH ADVISOR
<input type="checkbox"/> \$80	<input type="checkbox"/> \$80	FULL TIME STUDENT NON-MEMBER
<input type="checkbox"/> \$0	<input type="checkbox"/> \$0	name of school
<input type="checkbox"/> \$0	<input type="checkbox"/> \$0	SEATTLE HOST COMMITTEE
<input type="checkbox"/> \$0	<input type="checkbox"/> \$0	SEATTLE MONITORS
<input type="checkbox"/> \$55	<input type="checkbox"/> \$55	PRESS**
<input type="checkbox"/> \$249	<input type="checkbox"/> \$249	SPOUSE
<input type="checkbox"/> \$445	<input type="checkbox"/> \$445	name for badge
<input type="checkbox"/> \$249	<input type="checkbox"/> \$249	ASHRAE MEMBER-VIRTUAL CONF.
<input type="checkbox"/> \$445	<input type="checkbox"/> \$445	NON-MEMBER-VIRTUAL CONF.

ASHRAE LEARNING INSTITUTE

FULL-DAY PROFESSIONAL DEVELOPMENT SEMINARS

Fees per Seminar: ☐ \$295 ASHRAE Member ☐ \$465 Non-member

Saturday, June 28, 2014, 8am-3pm

- ☐ 60 Introduction to Building Enclosure Commissioning
☐ 61 Commercial Building Energy Audits

HALF-DAY SHORT COURSES

Fees per short course: ☐ \$119 ASHRAE Member

☐ \$159 Non-member

Saturday, June 28, 2014, 12-3pm

- ☐ 62 Designing High-Performance Healthcare HVAC Systems

Sunday, June 29, 2014, 3:30-6:30pm

- ☐ 63 Designing Toward New Zero Energy Efficiency Commercial Buildings
☐ 64 Troubleshooting Humidity Control Problems

Monday, June 30, 2014, 2:30-5:30pm

- ☐ 65 Building Demand Response and the Coming Smart Grid **NEW!**
☐ 66 Commissioning High-Performance Buildings

Tuesday, July 1, 2014, 8-11am

- ☐ 67 Application of Standard 62.1-2013

Tuesday, July 1, 2014, 12-3pm

- ☐ 68 Exceeding Std 90.1-2013 to Meet LEED Req.

METHOD OF PAYMENT: ☐ CHECK ENCLOSED - (Payable to ASHRAE/Seattle/14) U.S. FUNDS ONLY ☐ MasterCard ☐ AMEX ☐ Diners Club ☐ VISA ☐ DISCOVER

CARD NO. _____ EXP. DATE _____ SIGNATURE _____

Send registration form and payment to: Conference Section, ASHRAE, 1791 Tullie Circle NE, Atlanta, GA 30329. Phone 404/636-8400, FAX 678/539-2129.

☐ Under proper safeguard ASHRAE will provide names of conference registrants to sponsors of the ASHRAE meeting. If you do not wish to have your name and mailing address provided, please check here. Email addresses will not be provided to sponsors.

Your advance conference registration will be confirmed by email. If you do not receive a confirmation, please contact the ASHRAE Conference Section.

☐ **MEMBER #**
Member # must be supplied to receive member pricing.

☐ **NON-MEMBER** (Registrants paying the non-member registration fee receive first year of membership free. Completed membership application form must be submitted by August 4, 2014).

☐ If you have a disability which requires special assistance, please attach a description of your requirements with your registration form to enable us to make appropriate arrangements.

E-MAIL CONFIRMATION SENT VIA EMAIL

SOCIAL EVENTS All social events and tours will increase by approximately \$5 each June 9.

QTY.	BY JUNE 8	TOTAL	
20	@ \$55		Saturday, June 28
20			Welcome Party, 6:30 pm
21	@ \$45		Monday, June 30
21			President's Luncheon, 12:15 pm
22	@ \$55		Tuesday, July 1
22			Members Night Out, 6:15 pm
23	@ \$35		Life Member's Luncheon 12 noon

TOURS (limited space per tour)

QTY.	BY JUNE 8	TOTAL	
24	@ \$100		Sunday, June 29
24			Tillicum Village, 11am-4 pm
25	@ \$60		Show Me Seattle, 9am-1 pm
26	@ \$60		Show Me Seattle, 1:30-5:30 pm
27	@ \$50		Monday, June 30
27			Museum of Flight, 2-5:30 pm
28	@ \$52		Leisurely Lakes Cruise, 3-6 pm
29	@ \$46		Tuesday, July 1
29			Boeing, 8:30-1 pm
30	@ \$46		Boeing, 12:30-5:30 pm
31	@ \$90		Cascades Cabernets & Chocolate 10am-3:30pm
32	@ \$46		Museum of History and Ind., 2-5 pm

TECHNICAL TOURS (limited space per tour)

QTY.	BY JUNE 8	TOTAL	
33	@ \$20		Sunday, June 29
33			Federal Center S. Bldg, 3-5:30 pm
34	@ \$20		Fred H. Cancer Research Ctr, 3-6 pm
35	@ \$20		Monday, June 30
35			The Bullitt Center, 2:30-5:30 pm
36	@ \$20		Gates Foundation Hqts., 3-5 pm
37	@ \$20		Tuesday, June 31
37			U of WA Molecular Eng & Sciences, 2-5pm
38	@ \$20		U of WA Power Plant, 1:30-4:30 pm

RESEARCH

- ☐ Research Promotion Contribution
☐ Seattle Sustainability Project

ASHRAE CONFERENCE PUBLICATIONS

Code #	Quantity	@Price	Total
Code #	Quantity	@Price	Total

GRAND TOTAL \$ _____ (Registration fees, social events, tours, publications)
Payment must accompany registration form. ASHRAE reserves the right to charge the correct amount if different from the total listed above.

FOUR EASY WAYS TO REGISTER

By Fax
(678) 539-2129

By Mail
ASHRAE Conferences
1791 Tullie Circle NE
Atlanta, GA 30329

By Phone
1-800-5-ASHRAE (U.S. & Canada)
(404) 636-8400 (Worldwide)

ASHRAE Online
www.ashrae.org/seattle



ASHRAE Conference Publications

2014 ASHRAE Papers CD-Annual Conference (searchable CD) \$105 (code 50)

2014 Annual Conference Seminars DVD (audio and Power Point presentations) \$119 (code 51)

2014 Transactions Pt. 2 (Seattle) (print volume of final Technical papers) \$79 (code 52)

Package: 2014 ASHRAE Papers CD-Annual Conference & Seminars DVD \$175 (code 53)

Package: 2014 ASHRAE Papers CD-Annual Conference & Transactions Pt. 2 (Seattle) \$149 (code 54)

The Complete Annual Conference Content Package (ASHRAE Papers CD, Seminars DVD and Transactions) \$199 (code 55)

Region I Dinner - Monday, June 30, 2014 - Seattle, WA

1916 Post Alley, Pike Place Market Seattle, Washington, 98101

**Join Region I For Dinner, Monday, June 30, 2014 at 7:00 PM.**

(Just a short 10 Minute walk from the Hotel)

We have a Semi-Private Area for Dinner. Dinner: Order from the Menu.
Attendees will be responsible for their own food and beverage costs.
Separate checks will be accepted.

RSVP by June 20, 2014 to Steve Sill at: stevesill1966@hotmail.com

Irish Restaurant & Pub is one of Seattle's favorite hideaways. Situated in Post Alley above the historic Pike Place Market, Kells is a fine way to round up a day's sightseeing or browsing at the market. The pub is always alive with folks cooling off after a day's work. The restaurant will be sure to remind you of the Old Country with its warm, cozy atmosphere and traditional surroundings. There's also a patio outside that's a great place to feel the breeze from the Sound and the buzz of the marketplace. We also have a grand celebration every St. Patrick's Day. And great live music !!

Kells Irish pub in Seattle is believed to be the most haunted pub in America. Ghost hunters, bartenders and patrons have all witnessed some spooky goings on in the Irish pub built over a 1900s mortuary. The mortuary, in the Butterworth building, had been purpose-built in the early 1900s to deal with the flood of dead bodies resulting from the spread of disease, mining accidents, and violence. The bar's owners agree that the dark history has clung to the establishment. Otherworldly forces including mirrors shattering, plaster falling from the walls and glasses inexplicably falling to the ground have convinced them that there's paranormal activity going on at this Irish watering hole. In 2010, the Travel Channel's show "Ghost Adventures" visited the pub. The hosts of the show claim they snapped photos of a disfigured child sitting on the steps in the bar. They also reported the sound of footsteps and tortured whispers.

<http://www.kellsirish.com/seattle>

ASHRAE Long Island Chapter Polo Shirts for Sale

New ASHRAE Long Island Chapter Polo shirts are now available for purchase at our monthly chapter meetings:

Sizes Available: Small to 2XL
Colors: Blue or White
Pricing: \$30 per shirt



\$\$\$ SAVE MONEY \$\$\$

ASHRAE-LI is now offering **Ticket Books** for our Monthly Meeting/Dinner presentations. **\$400 for a book of Eleven** (that's right....eleven, one better than ten) tickets for the price of ten member admissions. Tickets are valid until December of 2015 and may be used by members and non-members. For those of you who attend all or most of our meetings and for organizations who normally send large groups to the meetings, this is a great way to save a few dollars and speed up the entry process. For more information and/or to purchase ticket books, **please contact Don Kane at treasurer@ashraeli.org or call 631-574-4870.**



2014 Region I CRC - August 14-16, 2014 - Tarrytown, NY



Welcome to the historic Hudson Valley. We are ready to book your registration for the Region I CRC, August 14-16, at the *DoubleTree hotel by Hilton* located in the beautiful and pleasant County of Westchester, New York. The Hotel has a newly built Conference Center overlooking the Tappan Zee Bridge and the famous Hudson River. Just to bring everyone up to date, the Bridge is in the process of being replaced with two new Bridges, North and South Bound. The construction has already started and is expected to be completed within five years.

Westchester County offers many charming, historical attractions and entertainment to please the spouses and their different interests. Following are just a few: Union Church of Pocantico Hills, famous for the stained glass window by Henri Matisse; Sunnyside, the home of Washington

Irving, author of the Legend of Sleepy Hollow; Lyndhurst, a historic site of the National Trust, one of the great domestic landmarks of America; Playland Amusement Park in Rye; The Hudson River Museum of Yonkers; the Race Track and Empire Casino in the city of Yonkers; and shopping throughout Westchester, including some of the biggest and great shopping centers.

We look forward to hosting you and making your stay as pleasurable and relaxing as possible. Our committee has been working hard to prepare and is eager to receive and warmly welcome you. Please, pass the word and help us distribute our flyer to everyone. **PLEASE REGISTER THROUGH OUR CRC WEBSITE.**

Michael Croosta, P.E. (CRC Chairman)

Distinguished Guests

David Underwood

P.Eng., Fellow ASHRAE, Life Member, ASHRAE-Certified Commissioning Process Management Professional, 2014-15 President-Elect ASHRAE



David Underwood has many years of experience in the HVAC&R industry and founded Isotherm Engineering Ltd. In 1975. Among his many accomplishments he coauthored a trade refrigeration safety manual and served on a trade advisory committee for the refrigeration trade in Ontario. He is an ASHRAE Distinguished Lecturer and a member of technical committee 7.2, HVAC&R Construction & Design Technologies. He has received an Exceptional Service Award, a Distinguished Service Award and the William J. Collins Research Promotion Award.

James K. Vallort

Fellow ASHRAE, 2014-15 Vice President ASHRAE



James K. Vallort is senior vice president, Environmental Systems Design, Chicago, Ill. He currently serves as a member of Standard Project Committee 211P, *Standard for Commercial Building Energy Audits*, and Technical Committee (TC) 7.9, Building Commissioning. Jim Vallort plays a large role organizing one of ASHRAE's biggest and best-attended Conferences in Chicago every three years. Vallort co-chaired the most recent ASHRAE Winter Conference in Chicago in 2012, and also in 2006, 2003 and 1999; and served as chair in 1993; he organized the technical tours and was on the entertainment committee when ASHRAE was in Chicago in 2009. Vallort is the recipient of an Exceptional Service Award, a Distinguished Service Award and an Excellence in Engineering Award from the Illinois Chapter in 1998.

Conference Registration Fees:

	Before July 30th	After July 30th
Full Conference	\$370	\$450
Companion Full Conference	\$220	\$270
Friday/Saturday Conference	\$220	\$270
Friday/Saturday Companion	\$130	\$160
Saturday Only	\$120	\$150
Kids under 18	\$ 25	\$ 25

To register:

Go to the web address:
www.ashraebistate.org/crc-2014
Click on "Registration" tab and follow the directions.

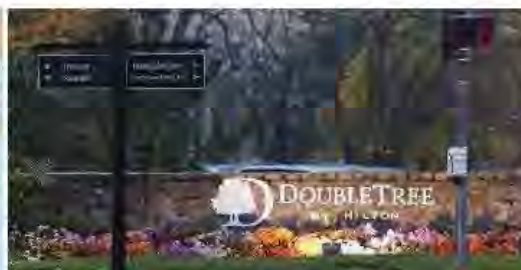
Double Tree by Hilton Room Rates (until 7/22)

2 Queen beds	\$159
1 King bed	\$159

DoubleTree web link:

<http://doubletree3.hilton.com/en/hotels/new-york/doubletree-by-hilton-hotel-tarrytown-TERHIDT/index.html>

NOTE: Hotel reservation is separate from conference registration.
Make hotel reservations by calling 914-631-5700



2014 Region I CRC - August 14-16, 2014 - Tarrytown, NY



Bi-State Chapter

**2014 Region I Chapter Regional Conference
August 14-16 Tarrytown, NY**

EVENT SCHEDULE

Start Time	End Time	Event	Location	Attendees
Thursday, August 14				
12:00 PM	7:00 PM	Registration	Pre South	All Attendees
12:00 PM	2:00 PM	Region 1 Audit	Lounge	Invited Region 1 Officers
1:00 PM	3:00 PM	Hospitality Suite	Suite	Registered Attendees
2:00 PM	4:00 PM	Technical Sessions	Hudson Room C	Registered Attendees
4:30 PM	6:30 PM	1st Business Meeting	Salon 4/5	Delegates, Alternates & Regional Officers and Chairs
7:00 PM	8:00 PM	Welcome Reception	Multi/Terrace	Registered Attendees
8:00 PM	9:30 PM	BBQ Dinner	Multi/Terrace	Registered Attendees
10:00 PM	12:00 AM	Hospitality Suite	Suite	Registered Attendees
Friday, August 15				
7:00 AM	7:00 PM	Registration	Pre South	Registered Attendees
9:00 AM	11:00 AM	Hospitality Suite	Suite	Registered Attendees
7:00 AM	9:00 AM	Continental Breakfast	Pre South	Registered Attendees
8:00 AM	9:00 AM	Local ASHRAE Recognition Breakfast	River Room	Invited Society and Local Guests
8:00 AM	10:00 AM	Caucus	Salon 4/5	Delegates & Alternates ONLY
10:00 AM	11:45 AM	Chapter Operations Workshop	Salon 4/5	Chapter Officers
12:00 PM	1:30 PM	Lunch w/Speaker	Salon 3	Sandwich Buffet
2:00 PM	3:30 PM	Executive Session	Salon 4/5	Delegates & Alternates ONLY
3:30 PM	5:45 PM	2nd Business Meeting	Salon 4/5	Delegates, Alternates & Regional Officers and Chairs
6:30 PM	7:30 PM	Reception	Multi	Registered Attendees
7:30 PM	10:00 PM	Presidential Dinner	Salon 3	Registered Attendees
10:00 PM	???	YEA Event	Meet in Lobby	YEA Members
10:00 PM	12:00 AM	Hospitality Suite Open	Suite	Registered Attendees
Saturday, August 16				
7:00 AM	10:00 AM	Registration	Pre South	All Attendees
9:00 AM	11:00 AM	Hospitality Suite	Suite	Registered Attendees
7:00 AM	9:00 AM	Continental Breakfast	Pre South	Registered Attendees
8:00 AM	9:45 AM	3rd Business Meeting	Salon 4/5	Delegates, Alternates & Regional Officers and Chairs
8:00 AM	11:00 AM	Government Activities Workshop	Sleepy Hollow Rm	GA Chairs
8:00 AM	9:00 AM	Research Workshop	Hudson Room A	Research Chairs
8:30 AM	11:30 AM	Membership Workshop	Hudson Room B	Membership Chairs
8:30 AM	11:30 AM	CTTC Workshop	Hudson Room C	CTTC Chairs
8:00 AM	9:30 AM	History Workshop	River Room	Historians
8:30 AM	10:30 AM	Student Activities Workshop	Tarrytown Room	Student Activities Chairs
10:00 AM	11:30 AM	RECC Workshop	River Room	RECC Chairs
10:00 AM	11:30 AM	YEA Workshop	Tarrytown Room	YEA Members
12:00 PM	2:00 PM	Awards Luncheon	Salon 3	Registered Attendees
2:30 PM	3:30 PM	CRC Debrief Meeting	Suite	CRC Host Committee & Guests

Conference schedule is preliminary, subject to change prior to CRC

Presidential Dinner Entertainment

Master storyteller Jonathan Kruk offers a dramatic performance of Washington Irving's classic tale, *The Legend of Sleepy Hollow*.



Just a few of the local attractions . . .



Kykuit — Rockefeller Estate



SUNNYSIDE
The home of Washington Irving



LYNDHURST
A historic site of the National Trust.



Playland Amusement Park — Rye



Hudson River Museum — Yonkers
Exhibitions, planetarium, programs



Yonkers Raceway and Empire City Casino



World Trade Center — Manhattan

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HICKSVILLE, NY 11801
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