



October 2015

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

We had a great start to the ASHRAE New Year with a well-attended meeting. It was a great pleasure to look around the room and see familiar faces, especially those of our past presidents and members that regularly attend. We thank everyone for their continued support of our chapter. There were also some new faces in the crowd and we hope they will become part of our regular attendance.

Mr. Bill Artis from Daikin Applied, New York, presented on Commissioning Considerations for VRF Systems. VRF has been increasing its market share and we are happy to be continually reviewing the proper ways to use this and any other systems. We thank him and his organization for their support and efforts. It is always great to have one of our own members present.

October's meeting will be very informative. We welcome ASHRAE Distinguished Lecturer Mr. Max Sherman, PhD, A.K.A "Dr. Duct Tape", to present on duct sealing. We are looking forward to an enjoyable presentation.

The esteemed Mr. Evans Lizardos, PE, will be presenting one of his Back to Basics topics, "Selecting and Designing Refrigeration Equipment Component Packages." As always, we are happy and honored to have Evans educate us.



CHAPTER MONTHLY MEETING

DATE:	Tuesday, October 20, 2015
TIME:	6:00 PM - Cocktails/Dinner 6:30 PM - Back to Basics #1 7:00 PM - Dinner Presentation 8:45 PM - Conclusion
LOCATION:	Westbury Manor South Side of Jericho Tpke. 25 Westbury, NY 11590
FEES:	
Members -	\$45.00
Guest -	\$50.00
Student -	\$15.00

Reservations requested, but not required.

Please check out our website www.ashraeli.org and take a look at the latest programs that Charles Lesniak, PE, Program Chair, has scheduled for the chapter monthly meetings. Please pencil in those dates on your calendar so you won't miss out on these great topics.

November will be a joint meeting with SMACNA and we will be back to our usual second Tuesday of the month as normally scheduled. We look forward to seeing everyone at the October meeting and thank you for your continued support of the Long Island Chapter of ASHRAE.

Thomas J. Fields, P.E., LEED AP
President - Long Island Chapter

Long Island Chapter Officers & Committees

ASHRAE 2015/2016 OFFICERS

POSITION	NAME	PHONE	FAX	EMAIL
President	Thomas Fields, P.E., LEED AP	212.643.9055	212.643.0503	president@ashraeli.org
President-Elect	Charles Lesniak, P.E			president_elect@ashraeli.org
Vice President	Don Kane, P.E.	631.737.9170	631.737.9171	vice_president@ashraeli.org
Financial Secretary	Andrew B. Dubel, P.E.	212.967.7651	212.967.7654	finsec@ashraeli.org
Treasurer	Richard Halley	718.269.3809	718.269.3725	treasurer@ashraeli.org
Secretary	Frank Paradiso	631.632.2791	631.632.1473	secretary@ashraeli.org
Board of Governors	Ken Mueller	201.395.3761	763.231.6924	bog1@ashraeli.org
Board of Governors	James Hanna	718.269.3768	718.269.3794	bog2@ashraeli.org
Board of Governors	Bill Artis	201.395.3750		bog3@ashraeli.org
Board of Governors	Richard Rosner, P.E.	631.737.9170	631.737.9171	BOG4@ashraeli.org

ASHRAE 2015/2016 COMMITTEES

COMMITTEE	NAME	PHONE	FAX	EMAIL
Programs & Special Events	Charles Lesniak, P.E			programs@ashraeli.org
Membership	Ken Mueller	201.395.3761	763.231.6924	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			ggac@ashraeli.org
Newsletter Editor	Liset Cordero	212.643.9055	212.643.0503	editor@ashraeli.org
Research Promotion	Andrew B. Dubel, P.E.	212.967.7651	212.967.7654	rp@ashraeli.org
Historian	James Hanna	718.269.3768	718.269.3794	historian@ashraeli.org
Student Activities	Richard Halley	718.269.3809	718.269.3725	sa@ashraeli.org
Chapter Regional Conference Committee	Richard Halley	718.269.3809	718.269.3725	crc@ashraeli.org
Young Engineers in Training	Frank Paradiso	631.632.2791	631.632.1473	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	Bill Artis	201.395.3750		reception@ashraeli.org
PR & Engineering Joint Council of LI	Andrew Manos, LEED AP	631.632.2791	631.632.1473	pr@ashraeli.org
2014 CRC Committee	Richard Halley	718.269.3809	718.269.3725	CRC@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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Chapter Monthly Meeting - Program for 2015/2016

September 8, 2015 * At Westbury Manor  Dinner Presentation – Commissioning Considerations for VRF Systems Presenter: Bill Artis **1 PDH**	February 2016 NATIONAL ENGINEERS WEEK
October 20, 2015 * At Westbury Manor Dinner Presentation— “Dr. Duct Tape” Presenter: Max Sherman, PhD **1 PDH** ASHRAE DISTINGUISHED LECTURER <i>Back to Basic Session I -</i> **1 PDH** <i>“Selecting and Designing Refrigeration Equipment Component Packages”</i>	March 8, 2016 * At Westbury Manor Dinner Presentation— TBA Presenter: TBA **1 PDH** Joint meeting with LI-Geo YEA Night <i>Back to Basic Session III –</i> **1 PDH** <i>“Design & Theory of ”</i>
November 10, 2015 * At Westbury Manor Dinner Presentation-- TBA Presenter: TBA **1 PDH** Resource Promotion Night Joint meeting with SMACNA Student Activities Night & YEA Night as well as Membership Promotion and Upgrade Night	April 12 , 2016 (5 PM) ANNUAL FIELD TRIP **1 PDH** Dinner to follow at a local Restaurant
December 8, 2015 * At Westbury Manor HOLIDAY PARTY Free Buffet Dinner for Members	May 12th, 2016 * Cherry Valley Club, Garden City, NY ANNUAL GOLF OUTING
January 12, 2015 * At Westbury Manor Dinner Presentation- TBA Presenter: TBA **1 PDH** <i>Back to Basic Session II -</i> **1 PDH** <i>“Design of “</i>	May 12, 2015 * At Westbury Manor Dinner Presentation— TBA Presenter: TBA **1 PDH** Student Activities Night Refrigeration Night
January 2016 ASHRAE Winter Meeting	June 14, 2016 * 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 9, 2016 * At Westbury Manor Dinner Presentation—TBA Presenter: TBA **1 PDH** Joint Meeting with USGBC Resource Promotion Night Membership Promotion Night	August 2016 Chapter Regional Conference (CRC) Region I

BOG Meeting Minutes

President (Tom Fields) :

- Minimum/Pars for points needs updating, Update #'s and MBO's by next week
- We should announce that prices have gone up to \$45-members / \$50-non-members
- MBO's Management objective: List of goals for year follow up at end of year.

Chapter Technology Transfer (Don Kane) :

- MBO will be submitted soon
- Field Trip? Hicksville Ice Plant, Building recently redone
- Advertise ticket books
- Form needed for CRC reimbursement for attendees
- Chapter assessment has not come in yet for ASHRAE Region 1
- Possible capping of reimbursements for travel?
- Non allocated DL is more points for Chapter, Ads will be updated
- No accounting info from Andrew (breakdown of in/out monies), copies of check stubs, Pay-pal
- Pay-pal needs a SSN#

History (James Hanna) :

- Tom has records in office/ some need digitizing
- Anything of historical significance needs to be digitized.
- Interview: past presidents, local business owner

Research Promotion (Andrew Dubel) :

- RP goals? High again
- Coin submission not done
- Full Circle \$100 made out to ASHRAE/ Do it online
- Award given w/ Full Circle
- 30% given by the end of the year usually
- 1 year Grace period for late Ad book account payments

YEA (Frank Paradiso) :

- Work on a Facebook/Linked in page for ASHRAE Long Island YEA members for better connectivity.
- Work on ideas for future YEA events/field trips

Student Activities (Richard Halley) :

- Will talk to Silverstein at Suffolk Community College for introductions to students
- Students need student membership applications
- Aiming for 100 student members
- NYIT?
- Hofstra needs 3 to sign up to reactivate for 100 pts
- Working load calc curriculum/budget for 10 needed for brand new chapter
- 7 members from Boces last year, push for 3 more
- Who wants to help for CRC or Students
- Electrical institute wants to give money?
- Money for scholarships/members, better ratio than most larger chapters

We need an ASHRAE Long Island gmail account with calendar Events

Email chimp/constant contact motion for some money (passes)

Rich H motions for ~ \$50/ month (for dinner fee?), Andrew D. seconds

Allow people to sign out of email list

BOG Meeting Minutes (Cont'd. from Page 4)

CRC 2017 (Richard Halley):

- CRC contracts signed with hotel
- Wyndham Windwatch/ Meeting on Friday
- Add another golf outing? Around 8:30am shotgun start, finish around 12:30-1pm
- Early lunch (on Thursday)
- Major donations needed from corporate sponsors
- Event needs payment 10 days in advance
- \$1 per Region 1 members Syracuse = 200-250 people
- Hotel blocked at \$155/night
- Presentation needed for next CRC
- Contracts reviewed
- Soon CRC Monthly meetings may be required (within the next 3 months)

President-Elect/Programs (Charles Lesniak):

- USGBC February
- SMACNA November
- Dr. Duct Tape
- Spring timeslot is open
- Looking for cocktail sponsors
- Evans Lizardos has 3 Back to Basics
- Many attendees support 2 PDH's/night
- DRC
- BEQ (Stony Brook buildings)
- Email Architectural Group in Riverhead (Electric Infrared heating)

GGAC (Charles Lesniak):

- Masters or equivalency in Granite State

New Business: Volunteers (non-BOG members) to help with tasks

Long Island Chapter - Past Presidents

1958	H. Campbell, Jr. PE	1987	Abe Rubenstein, PE
1959	Clyde Alston, PE	1988	Michael O'Rourke
1960	Sidney Walzer, PE	1989	Mel Deimel
1961	Sidney Gayle	1990	Robert Rabell
1962	William Kane	1991	Gerald Berman
1963	Louis Bloom	1992	Donald Stahl
1964	Milton Maxwell	1993	Ronald Kilcarr
1965	Will Reichenback	1994	Jerald Griliches
1966	Joseph Minton, PE	1995	Walter Stark
1967	Irwin Miller	1996	Joe Marino
1968	Walter Gilroy	1997	Norm Maxwell, PE
1969	Charles Henry	1998	Alan Goerke, PE
1970	William Wright	1999	Frank Morgigno
1971	Louis Lenz	2000	Michael Gerazounis, PE, LEED AP
1972	Ronald Levine	2001	Ray Schmitt
1973	Henry Schulman	2002	Steven M. Stein, PE
1974	Myron Goldberg	2003	Andrew Braum, PE
1975	John N. Haarhaus	2004	Claudio Darras, P.E.
1976	Richard K. Ennis	2005	Craig D. Marshall, P.E.
1977	Kenneth A. Graff	2006	John Nally
1978	Evans Lizardos, PE, LEED AP	2007	Peter Gerazounis, PE, LEED AP
1979	Albert Edelstein	2008	Steven Friedman, PE, HFDP, LEED AP
1980	Ralph Butler	2009	Steven Giammona, P.E., LEED AP
1981	Robert Rose, PE	2010	Nancy Román
1982	Timothy Murphy, PE	2011	Carolyn Arote
1983	Leon Taub, PE	2012	Brian Simkins, LEED AP
1984	Raymond Combs	2013	Andrew Manos, LEED AP BD+C
1985	Edward W. Hoffmann	2014	Richard L. Rosner, P.E.
1986	Jerome T. Norris, PE		



PAOE POINTS FOR 2015/2016

Chapter Members	Membership Promotion	Student Activities	Research Promotion	History	Chapter Operations	CTTC	GGAC	Chapter PAOE Totals
282	0	0	0	0	125	200	0	325

October Program



Dinner Presentation

“Dr. Duct Tape”

Presented by

Dr. Max Sherman, Ph.D.

Lawrence Berkeley National Laboratory

ASHRAE DISTINGUISHED LECTURER

**Attendees
Will Earn
2 PDH's!**

DATE:	TUESDAY, OCTOBER 20, 2015		
Time:	6:00 PM - Cocktails and Hors D'oeuvres 6:30 PM - Back to Basics #1 7:00 PM - Dinner Presentations 8:45 PM - Conclusion	Fee:	\$ 45.00 Member \$ 50.00 Guest \$ 15.00 Student
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.		
Presentation:	The serious side of duct tape is that duct leakage, especially in homes, can waste 20-40% of the energy that goes through the ducts. The study of duct leakage led to the finding that duct tape does not work on ducts. That finding led to changes in codes and standards. This lecture will examine that research, but also entertain the lighter side with the story of one researcher's "15 minutes of fame" that results when a serious piece of work catches the fancy of the popular press. In addition Evans Lizardos will present his Back to Basic Series, Session 1 “Selecting and Designing Refrigeration Equipment Component Packages”. All attendees will receive 2 PDH's.		
About our Speaker:	Dr. Max Sherman is a Staff Senior Scientist at the Lawrence Berkeley National Laboratory and is senior advisor on residential matters. His research career spans over 35 years and 200 publications, most of which focus on buildings, energy efficiency, IAQ and HVAC. His most recognized research areas also include ventilation, thermal distribution systems, infiltration, IAQ and envelope-dominated buildings. He gives technical lectures frequently and has appeared in the popular media on issues of energy, ventilation and duct tape. Dr. Sherman was one of the youngest to be made an ASHRAE Fellow and has had a distinguished career since being elevated including winning the Holladay Distinguished Fellow award—Society's highest technical level. He has received the Exceptional Achievement award and most recently the Standards Achievement award. He has chaired SPC 62.2, the committee which developed ASHRAE's residential ventilation standard. He served as a Director-At-Large for the Society in 2001-2004 as well as numerous councils and committees. He continues to be an active member of ASHRAE including work on SSPC 62.2 and international activities. He currently chairs the Presidential Ad-hoc committee on the Residential Market.		

CHAPTER MAY NOT ACT FOR SOCIETY

An International Organization

Young Engineers in ASHRAE (YEA)

The summer has come to an end and we are now fast approaching the heating season. Attending the monthly chapter meetings is a great opportunity to discuss different methods and learn about products and approaches for design for a heating system.

Keep up to date with some upcoming YEA programs and events as follows:

The New Faces of Engineering recognition program, introduced by ASHRAE in 2003, is part of **National Engineers Week**—sponsored by DiscoveryE (formerly known as the National Engineers Week Foundation)—a coalition of engineering societies, major corporations and government agencies. Engineers Week, February 21-27, 2016, promotes New Faces to provide incentive to those in college and inspire even younger students to consider engineering careers.



Nominees/applicants must be 30 years or younger as of Dec. 31, 2015 and have a degree in engineering from a recognized U.S. college or university, or from an equivalent international educational institution. Degrees in engineering technology, science, computer science and similar disciplines do not qualify, though a degree in computer engineering is acceptable.

HVAC Design Essentials Training Scholarship allowing attendees to gain the fundamentals and technical aspects to design, install and maintain HVAC systems. To apply for a scholarship to an upcoming training, an application is to be filled out and is located on the Membership & Conferences section of the ASHRAE website.

- **January 11-13, 2016 in Atlanta GA** (deadline for application is Monday, November 16, 2015)
- **March 14-16, 2016 in Atlanta, GA** (deadline for application is Monday, January 18, 2016)
- **June 13-15, 2016 in Atlanta, GA** (deadline for application is Monday, April 18, 2016)

For any other questions there is more information for all these programs on the ASHRAE website.

Stay tuned because I will be starting a Long Island chapter YEA ASHRAE Facebook page and LinkedIn in the coming weeks which will be a great way to communicate with members and set up YEA events.

We will be looking for ideas for social event so please contact me if you have suggestions.

Frank Paradiso
YEA Chairman

Research Promotion

This is my first year as ASHRAE Resource Promotion Chair. I have taken over for Andy Manos who has stepped up to the regional level to manage Resource Promotion throughout Region 1. I was able to attend RP training held in Chicago several weeks ago, which was very insightful. I brought back some new ideas about new events and new ideas to generate funds. Look to this section next month for more information.



ASHRAE has a 2.3 million dollar funding raising goal. This supports 140 research projects with a combined value of more than 15 million. The bar has been set pretty high by our former RP Chairs for our chapter's goals. We have a goal of \$17,000. Every year we exceed our goal and reach towards challenge goal. This year the challenge is \$28,491. With your help I believe we can achieve it.

I would like to thank the following people for donating early to the 201502015 ASHRE RP drive:

INDIVIDUALS

Andy Manos
Andrew Dubel
Frank Morgigno
John Nally
Michael Gerazounis

COMPANIES

SMACNA – Long Island

CONTRIBUTIONS CAN BE MADE IN THE FOLLOWING WAYS:

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

Andrew Dubel, P.E.
ASHRAE Research Promotion Chair
c/o Lizardos Engineering Associates PC
240 West 35th Street, Suite 304
New York, NY 10001

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

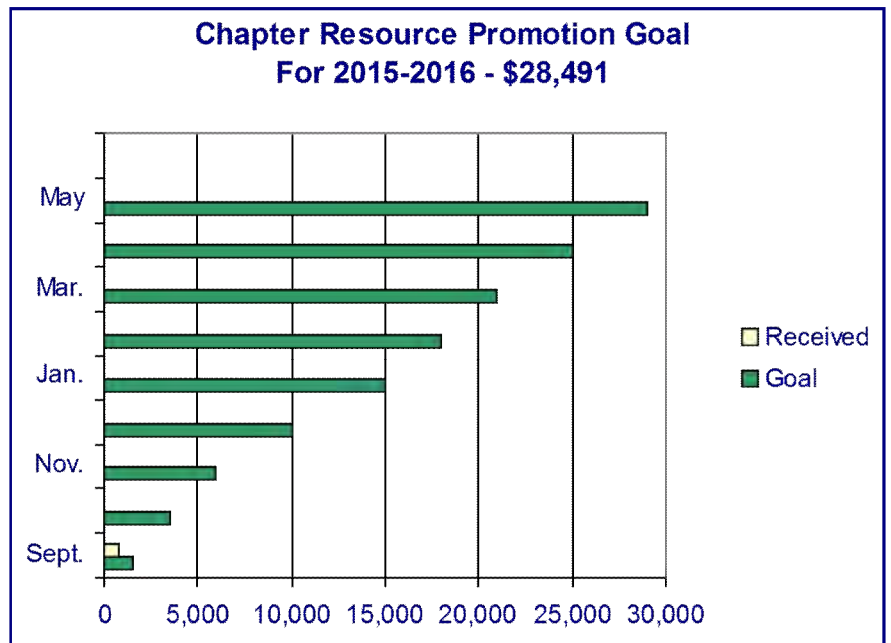
3) You can contribute via PayPal from the ASHRAE LONG ISLAND web site, just click on the donate button.

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!

Andrew B. Dubel, P.E.
Research Promotion Chair



CTTC - Duct, Duct, Loose (or at least not air tight)

I think it is safe to say that no one intentionally wants to design an HVAC system that performs poorly, costs a lot to operate and degrades the environment in a structure. We have a plethora of standards and codes from which to choose (and sometimes chosen for us by the AHJ) which provide the minimum requirements to adhere to. Yes...minimums. Standards and codes do not represent the acme of design, the ceiling to which we wish to asymptotically approach in our engineering endeavors. Rather, they are the floor, the barest minimum that will meet the requirements of an inspection, an energy analysis or, perhaps, a plaque.

We have codes that require minimum insulation levels to conserve the use of energy while heating or cooling our buildings and we have seen the development of a whole cottage industry of thermographers, IR cameras in hand, to assist in constructing structures that do not leak heat...in or out...except where and when intended. Additionally, we have codes and standards addressing the installation, connection and termination of the transport mode of choice, be it via air or water based system. Yet, scholarly research tells us that perhaps thirty to forty percent of the air flow (in a ducted system) leaks in and out of ducting which is installed to convey the bearer of BTU's to their desired location in the edifice. Research has further pinpointed the issue to be primarily related to connections in the air distribution system. Apparently, we have come to believe that ducts leak...and that's that! Can you imagine a hydronic system which leaking thirty to forty percent of its vital fluid while coursing through the copper or steel (even PEX) arteries of the heating/cooling system? Why do we accept the concept of high rates of air leakage as "normal"? Could it be that we are only interested in keeping the integrity of the duct system intact long enough to pass whatever commissioning tests are required? Why are there so many energy inefficient, uncomfortable buildings today, even with the existence of building codes, energy codes and the like? While there are certainly buildings with sheet metal ducting, factory fabricated and installed on-site where short-cuts have been taken when sealing the mating pieces and tape was substituted for a more permanent mastic seal, however, anecdotally, it appears that a major contributor to the leaking joint issue are those installations using flexible ducting for site-designed and installed air distribution systems.



Flexible ducting is not, inherently, a bad thing. There are times when it is indispensable for final runs to terminal devices for which it would be difficult or impossible to fabricate in an economical fashion or, to isolate component vibration. If it is properly installed, not too stretched, not too slack and not crushed, it can be a decent performer. However, even if properly supported and routed, if the termination to the end device is not something that will last the life of the duct material, how can we consider this an acceptable system. We can't, and we shouldn't! While perusing the research that has been conducted on the long term performance of tape based connection/sealant methods, one cannot help but think that the take-away is NOT how to come up with a better tape for duct connections; but, rather, why we are still accepting a construction that is marginal when properly installed and, due to shortcuts and variation in workmanship, is short lived in the as-installed configuration?

In fairness to the tape crowd, one also comes away from the research thinking that some of the testing was not representative of the conditions of use. Conditioning and aging tests at elevated temperature to evaluate adhesives is a typical method to shorten the time needed to evaluate aging effects and to fault ancillary polymeric material for not withstanding temperatures in excess of the material's mechanical temperature index is somewhat misleading. Further, code making groups seem to be quite happy to rely on UL-181B without really thinking about what it does or does not indicate about a product. UL standards are primarily related to safety, a fact acknowledged in some of the test results. A listing by UL would indicate that the product was a "safe" product and, since the intended use is in an air handling system, one could be comfortable that fire and toxicity should not be problem. However, the typical UL listing does not necessarily reflect on the performance of a product. One could purchase a listed radio receiver that sounded terrible, had low sensitivity and little selectivity...yet it would be safe. It would not burn or shock you. Further, the fact that the UL-181B scope indicates that ... "When used at the core to fitting attachment, a mechanical fastener shall be installed over the tape." This might explain why the adhesive testing is not so much oriented toward longevity, rather, that it hold long enough to put a mechanical fastener on top of the tape, where the function of the tape is more of a gasket than a connection device. Further, it appears that these tapes are frequently being used in a manner not intended by their manufacturer; instead of the duct to fitting connection, some are using the tapes to seal a poorly fitted and sealed take-off from a duct or plenum.

CTTC - Duct, Duct, Loose (or at least not air tight) (Cont'd. from Page 10)

The more one delves into this question, the more one is reminded of much of the research directed at finding a more environmentally friendly refrigerant, that can leak into the atmosphere without problem, rather than developing seals and systems that do not leak! I think we can safely say that flexible ducting is not going to go away. It is convenient, it serves a useful purpose and, properly terminated, can be leak free. In my opinion, rather than searching for the holy grail of duct tapes, the effort should be spent to come up with a better termination and connection method for the flexible duct. Perhaps a molded insert to fit inside the flex duct on one end, secured with a tapered ferule that would slide over the end of the duct, capturing the end in the fitting. The other side of the fitting could have a lip with spring like retainers that would snap into the plenum and incorporate an O-ring or bead of pliable sealant. It would certainly cost more than a roll of tape...but it is possible the labor savings could outweigh the material cost. We have to start looking at new ways to make these connections, not flogging the old way to make it less failure prone, but still failure likely. Years ago on the hydronic side of the plant, we had piping joints that were either threaded, flanged, welded, brazed or soldered. Now we have grooved pipe, compression type fittings, a variety of PEX fittings and chemically and thermally welded plastic pipe, and fewer leaks.

For those entrepreneurial types out there, just think of the opportunity to come up with the new standard flex duct connection. I can almost hear the crowd-sourcing starting :-)

Don Kane, P.E.

CTTC Chair - cttc@ashraeli.org

Grassroots Government Activities Committee (GGAC)

Grassroots Government Activities Committee (GGAC)

As most of you know ASHRAE is no longer a US based society it has moved itself to a global society, ASHRAE wanted to start a new committee in their local chapters to help it grow globally so it created the GGAC. The main purposes of the GGAC is to serve as a communicator between the local ASHRAE chapters and national, serve as a communicator between the local ASHRAE chapters and other trade organizations, and to update local government officials on ASHRAE standards and technical issues. Please look at the ASHRAE's main GGAC webpage at <https://www.ashrae.org/government-affairs/> for more information what the GGAC is doing nationally.



For this ASHRAE season we will have three joint engineering meetings and we are looking to see if other organizations would like to join us for joint meetings for the next ASHRAE year. Our Joint Meetings are in November with SMCNA Long Island <https://www.smacna-li.org/>, February with the USGBC Chapter of Long Island <http://usgbc-li.org/>, and in March with Long Island Geo <http://www.li-geo.org/>. In addition to our joint meetings we will have presentations for National Engineering Week with EJCLI <http://www.ejcli.org/>.

Please contact me if your organization would like to join us for a joint meeting.

New York State Reforming the Energy Vision (REV)

Recently the State of New York introduced a new program for its energy strategy going forward. It is called Reforming the Energy Vision or REV for short. REV is looking to achieve by 2030 a 40% reduction of Greenhouse House Gas Emission of 1990 Levels, providing 50% of electricity from renewable energy sources and a 23% decrease in building energy consumption from 2012 levels. REV is looking to produce a strategy to build clean, resilient, and affordable energy systems. It will accomplish this by incubate the more clean energy innovation in the areas of energy storage, local energy production (micro grids) and increasing the reliability of energy distribution.

Please see the websites below for more information:

<http://www.ny.gov/programs/reforming-energy-vision>
<https://www.ny.gov/reforming-energy-vision/learn-more#programs>

Charlie J. Lesniak, P.E.

Grassroots Government Activities Chair

Student Activities

We are off to a good start this year with introduction meetings held at Suffolk Community College and SUNY Stony Brook.

The November Chapter meeting will be our first student night of the year. We encourage all student members to attend and enjoy an evening on ASHRAE. We will be having a back to basics lecture in addition to our main seminar. These are great ways to gain experience and do some networking. We also encourage you to check out the ASHRAE student's zone at <http://www.ashrae.org/students/>. Information on society level design completions, scholarship and grant programs can all be found here.



The ASHRAE Senior Undergraduate Project Grant Program provides grants to engineering, technical and architectural schools worldwide with the goal of increasing student knowledge, learning and awareness of the HVAC&R industry through the design and construction of senior projects. Grants are to be used to fund equipment and supplies for senior projects and 2-year technical school projects that focus on ASHRAE-related topics. Grants may cover projects lasting from one academic term up to one year.

Learn More Here: <http://www.ashrae.org/students>

Our outreach to students should not be limited to colleges or students visiting us at our monthly ASHRAE meetings. We encourage our members to reach out to their local school districts and visit schools to discuss engineering. The society has produced a great deal of materials to assist you with lectures and project ideas. Please come talk to the board about any meeting which you have, the board may be able to support you with educational materials.

Richard Halley
Student Activities Committee Chair

Membership

It was good to see you all at the September meeting. We hope to continue our strong meeting attendance. Membership in ASHRAE allows for a variety of opportunities outside of our chapter meetings. Please take the time to speak to each committee chairperson at this month's meeting. We are always looking for volunteers and you may find that the goals of these committees interest you. We have several people that are not on the board, but are actively involved in chapter operations on a yearly basis. Please speak to me or to Thomas Fields if you have any questions regarding a committee.

As always, please renew your ASHRAE memberships if they are due. If you know of any prospective members, please encourage them to attend this month's meeting. Dinner is complimentary on new members' first chapter meetings.

ASHRAE is on Facebook and Twitter, so if you are active on these sites, please check out the ASHRAE pages. These forums allow for varied discussions on all HVAC&R topics, as well as the future of the industry and engineering as a whole.

Ken Mueller
Membership Chairman

History

Ever wonder how today's technology was influenced from our past? Specifically how modern day refrigeration started? Below is a article by Bernard Nagengast on "History of Comfort Cooling Using Ice". Link to article can also be found here https://www.ashrae.org/File%20Library/docLib/Public/200362710047_326.pdf



ASHRAE JOURNAL

Comfort from a Block of Ice

A History of Comfort Cooling Using Ice

The First Century of Air Conditioning

This is the third article in our special series to commemorate a century of innovation in the HVAC&R arts and sciences.

By Bernard Nagengast
Member ASHRAE

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 Bible¹, 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.²

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.³

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

About the Author

Bernard Nagengast is a consulting engineer in Sidney, Ohio, who has been researching the history of HVAC&R for 26 years. He is past chair and present consultant for the ASHRAE Historical Committee and co-author of the ASHRAE Centennial history book *Heat & Cold: Mastering the Great Indoors*.

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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..."⁴

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 (see *Figure 1*).

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!

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."⁵ It seems that

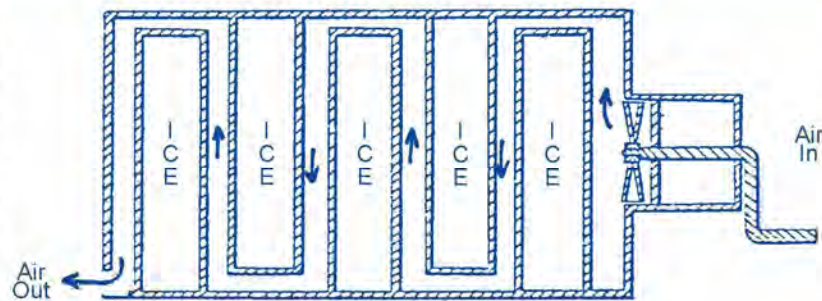


Figure 1: Shaler's patented cooler for ventilating air, 1865.

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.⁶ 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 (3630 kg) of ice to cool patrons at evening summer performances. Fresh air was filtered through a 40-ft (12 m) long cheesecloth bag, passing over wooden inclined racks, containing 2 tons (1815 kg) of ice, and into an 8-ft (2.5 m) diameter centrifugal fan. The fan discharge was directed over another 2 tons (1815 kg) 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."⁷

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 (-11°C) 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

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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 [3.7 m] 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."⁸

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 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."⁹

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.

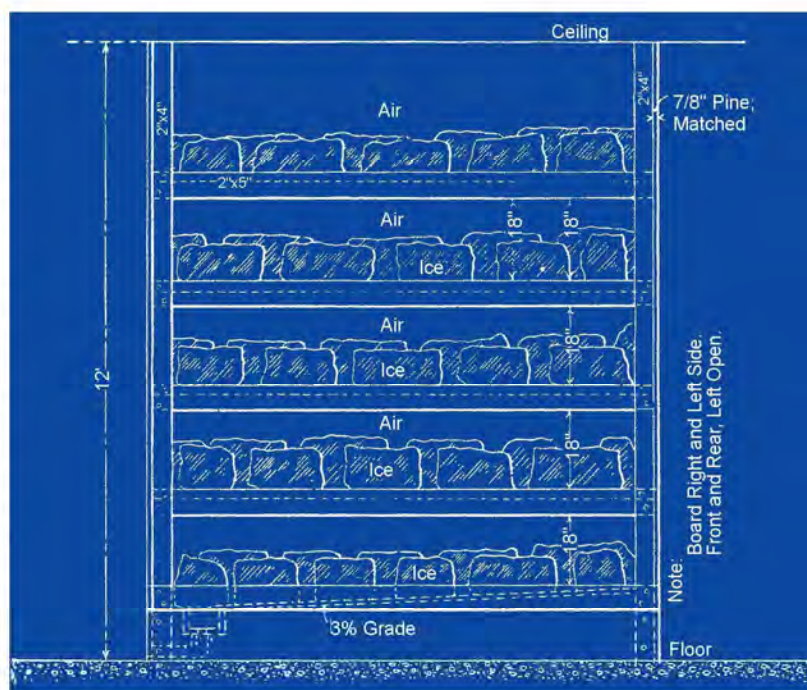


Figure 2: Ice refrigerator for high school.

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 (85 million L) of air per hour over blocks of ice (see Figure 2). The air was discharged high up on the walls, exiting through aisle floor registers. About 6.5 tons (5900 kg) 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.¹⁰

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 (29°C). 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 (21°C), but it kept four ice men hauling ice to the building as fast as they could go." Weinshank estimated that about 20 tons (1800 kg) of ice were used for the performance.¹¹

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

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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."¹²

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."¹³

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, 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* (see Figure 3). 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."¹⁴

ASHVE charter member Herman Eisert presented Rietschel's science of air conditioning to the U.S. engineering profession in 1896.¹⁵ 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



Figure 3: Hermann Rietschel's textbook title page.

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

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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?

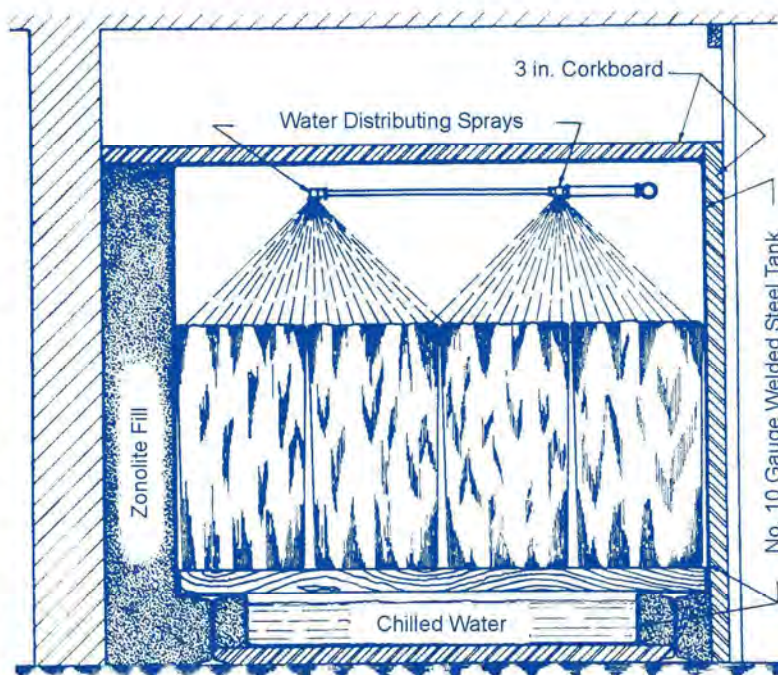
Beginning about 1929, numerous articles appeared that promoted comfort cooling using ice. By 1931, dozens had been published.¹⁶ Even the U.S. Government got into the act. For instance, the possibility of cooling homes was discussed at President Herbert Hoover's Conference on Home Building in 1932. The 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.¹⁷

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.¹⁸

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."¹⁹

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



Section of the ice bunker.

Figure 4: Diagram of Knickerbocker air cooler.

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."²⁰ "... we must sell an idea rather than merchandise."²⁰

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."²¹

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 mechani-

cal 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.²² 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

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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 (5440 kg) 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."²³

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.²⁴

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 (743 m²) of office space was cooled with 2,000 cfm (944 L/s) of outside air and 4,000 cfm (1888 L/s) of recirculated air. The air was passed over 1,100 ft² (102 m²) 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 (5443 kg) of ice (see *Figures 4 and 5*). Constant supply water temperature was maintained by use of a thermostatically controlled bypass valve at



Figure 5: Ice blocks inside air cooler.

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 (see *Figure 6*). In effect, the outside air and the room air temperatures were sensed, and the thermostat operated in such a manner that at 75°F (24°C) there was no difference between inside and outside. As the outdoor temperature increased, the differential increased to a maximum of 12°F (-7°C) at 95°F (35°C). 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."²⁵

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 manu-

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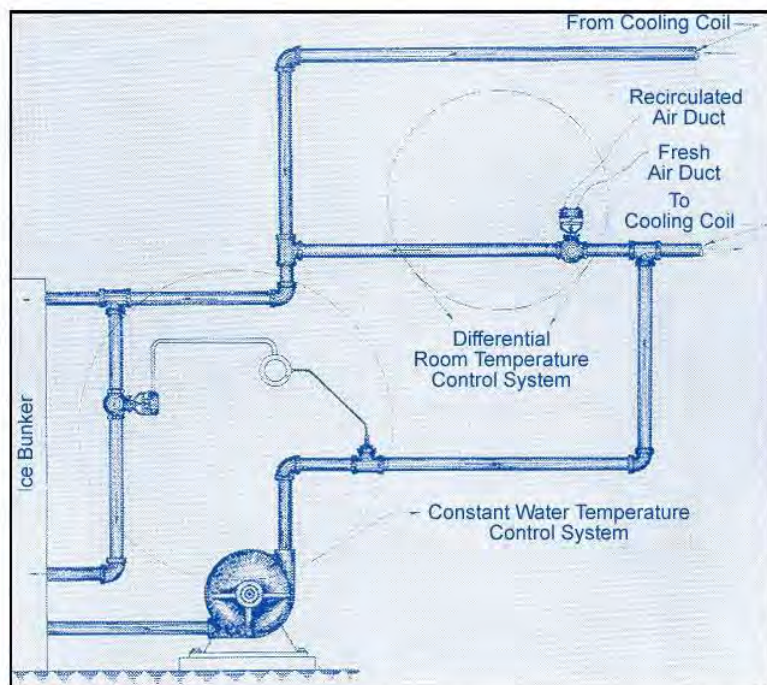


Figure 6: Piping and controls for Knickerbocker system.

facture 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!

References

1. Proverbs 25:13
2. Oldham, B. 1965. "The history of refrigeration." *The Journal of Refrigeration* 8(May):147-149.
3. Anonymous. 1901. "The tenth anniversary of Ice and Refrigeration." *Ice and Refrigeration* 21(July):7,8.
4. Anonymous. 1921. "Cooling of hospitals." *Journal of the A.S.H.V.E.* 27(October):763-764.
5. Joulet, A. 1873. "On the various systems of cooling the air; and their application in factories, public buildings, and private houses." *The Practical Engineer* 1(6):450-463.
6. Ohmes, G. and A. Ohmes. 1936. "Early comfort cooling plants." *Heating, Piping and Air Conditioning* 8(June):310-312.
7. Billings, J. 1893. *Ventilation and Heating* 391-392. New York: The Engineering Record.
8. Ohmes and Ohmes, 1936.
9. Harris, J. 1903 "Cooling an auditorium by the use of ice." *ASHVE Transactions* 9:179-187.
10. *ibid.*
11. Anonymous. 1907. "Topical Discussions" Topic no. 4 "Air washers and air cooling." *ASHVE Transactions* 13:287.
12. Allen, L. 1893. "Summer ventilation and cooling." *Heating and Ventilation* 13(March):6.
13. Harris, 1903, p. 182.
14. Meckler, G. 1994. "The scientific roots of HVAC&R," p. xxiii, published in: Donaldson, B. and Nagengast, B. 1994. *Heat & Cold: Mastering the Great Indoors*. Atlanta: ASHRAE.
15. Eisert, H. "The cooling of closed rooms." *ASHVE Transactions* 2: 172-195.
16. McCandlish, F. 1932. "Bibliography of articles on use of ice for air conditioning." *Ice and Refrigeration* 82(February): 120-122.
17. Anonymous. 1932. "Comfort cooling for the home." *Ice and Refrigeration* 82 (February):142-143.
18. Bullard, J. 1931. "Automatic house cooling." *Ice and Refrigeration* 81 (July):1,2.
19. McCandlish, F. 1931. "Recent developments in comfort cooling with ice." *Ice and Refrigeration* 81(August):97.
20. Brandt, E. and L. Currey. 1932. *Comfort Cooling Sales Manual*, section III: "Increasing ice sales with comfort cooling," p.4. Chicago: National Association of Ice Industries.
21. *ibid.*
22. Brandt, E. and L. Currey. 1932. *The Engineers Manual*, section VII: "Increasing ice sales with comfort cooling." Chicago: National Association of Ice Industries.
23. McCandlish, F. 1931. "Recent developments in comfort cooling with ice." *Ice and Refrigeration* 81(August):98.
24. Anonymous. 1931. "Air cooling with ice." *Ice and Refrigeration* 81(October):207-211.
25. Holske, C. 1937. "A study of office air conditioning using ice." *Heating & Ventilating* November:31-34.

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September Meeting Pictures



September Meeting Pictures (Cont'd. from Page 14)



Help Protect Model Building Energy Codes by Contacting Your US House Representative!

Shaping Tomorrow's
Built Environment Today

Dear ASHRAE Member,

ASHRAE respectfully requests your help and voice to protect the development, adoption, and implementation of ANSI/ASHRAE/IES 90.1 Energy Standard for Buildings Except Low-Rise Residential Buildings, and the International Energy Conservation Code (IECC) from the potentially harmful effects of proposed Federal legislation.

Take action by clicking here or visiting <https://account.votility.com/enterprise/ASHRAE/ec/142>

The Energy and Commerce Committee of the US House of Representatives is in the process of marking up the North American Energy Security and Infrastructure Act of 2015 (H.R.8), an energy bill that could include language from the Energy Savings and Building Efficiency Act (H.R.1273, commonly known as "Blackburn-Schrader"). Such language would likely limit the technical assistance that the US Department of Energy (DOE) currently provides, upon request, to ASHRAE, the International Code Council, States, and Indian tribes for the development, adoption, and implementation of Standard 90.1 and the IECC.

Taken together, the possible provisions in this legislation threaten to reduce understanding of the potential full impacts of the consensus-based model building energy codes.

ASHRAE's leadership believes that more information on the impacts of building energy efficiency is needed, not less. As a result, I strongly encourage you to contact your US House Representative and urge them to protect model building energy codes by opposing the inclusion of language from H.R.1273 in the North American Energy Security and Infrastructure Act of 2015 (H.R.8) or any bill in the US House of Representatives.

For your convenience, ASHRAE has provided a suggested letter to send to your US Representative. Please take action by clicking here or visiting <https://account.votility.com/enterprise/ASHRAE/ec/142>

Thank you in advance for your time and efforts to protect the development, adoption, and implementation of 90.1 and the IECC.

Sincerely,

David Underwood
ASHRAE President 2015–16

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Part 1 - Wed, October 21, 2015, 1:00 pm to 4:00 pm, EDT /

Part 2 - Wed, October 28, 2015, 1:00 pm to 4:00 pm, EDT

Instructor: Rick Casault, P.E., Member ASHRAE

Environmental Quality

Humidity Control: Applications, Control Levels, and Mold Avoidance IAQ Practices

Wed, September 16, 2015, 1:00 pm to 4:00 pm, EDT

Instructor: Lew Harriman, Fellow ASHRAE

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Energy Management Best Practices ES Practices

Mon, October 12, 2015, 1:00 pm to 4:00 pm, EDT

Instructor: Richard Pearson, P.E., Fellow/Life Member ASHRAE

Combined Heat & Power: Creating Efficiency through Design & Operations IAQ Practices

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Mon, November 2, 2015, 1:00 pm to 4:00 pm, EST

Instructor: John Varley, P.E., Member ASHRAE, HBDP, LEED® AP

Standards & Guidelines

Fundamental Requirements of Standard 62.1-2013 IAQ Practices

Wed, November 4, 2015, 1:00 pm to 4:00 pm, EST

Instructor: Hoy Bohanon, P.E., Member ASHRAE, BEAP, LEED® AP

Complying with Standard 90.1-2013: HVAC/Mechanical ES Practices

Wed, October 14, 2015, 1:00 pm to 4:00 pm, EDT

Instructor: McHenry Wallace, P.E., Member ASHRAE, LEED® AP

Save-the-Date - ASHRAE Webcast - April 21, 2016

SAVE THE DATE! April 21, 2016 | 1–4 pm EDT

This webcast will feature industry experts who will define the importance of, and why we should strive for, net zero in the built environment. Viewers will be able to identify behaviors that create more effective ownership, design and construction teams, and will recognize the value of a collaborative process in building design and the impact on costs. With a strong emphasis on real-world applications, the program will also discuss the primary technical and financial challenges in achieving net zero buildings, and where this design approach can best be applied.

- Take advantage of the **two week On Demand period from April 22 – May 6** and schedule your viewing of the webcast around your time zone and schedule
- The On Demand player has fast forward and rewind capabilities — allowing you to view all or part of the program with your members
- Plan a lunch or dinner meeting with your Chapter to view the webcast
- Utilize the Net Zero Resources online to supplement the webcast program
- Earn 3 FREE PDHs
- Chapters who register to view the webcast will earn **100 PAOE points**

Visit www.ashrae.org/webcast for additional information about the program, sponsorships, continuing education credits, speakers, and registration.

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