March 2020

THE LONG ISLAND SOUNDER

ASHRAE Long Island Chapter, Region I...*Founded in 1957* www.ashraeli.com

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

Inside this issue:

President's Message

Hello everyone,

Welcome to the March newsletter. Spring is quickly approaching and will be here before we know it.

I would like to thank Kenny Balci, who gave our Chapter's February presentation on Flame-Free Refrigerant Fittings. It was a very interesting and educational presentation, especially when discussing the positive performance in leakage failure rates.

Thank you to YEA chair Michael Nigro and the YEA sub committee for organizing a joint YEA event with the New Jersey and New York chapters. March is Student Activities and YEA night.

Keep up with the Long Island Chapter as we will be planning several social events in the upcoming months. Interest in volunteering for the chapter and assisting in any of our committees is always welcome so please reach out to myself or anyone within the chapter if you would like to participate in any way.

Our annual Ashrae Long Island golf outing is set for May 4th; we are currently receiving applications for this event and it is expected to fill quickly (See pages 24-26). Please send your applications into Peter Gerazounis.

Thank you and I look forward to seeing everyone at our next meeting.

Frank Paradiso
President - Long Island Chapter

CHAPTER MONTHLY MEETING

DATE:	**Tuesday, March 10, 2020**
TIME:	6:00 PM - Cocktails/Dinner 7:00 PM - Dinner Presentation 8:45 PM - Conclusion
LOCATION:	Westbury Manor 1100 Jericho Tpke. Westbury, NY 11590
<u>FEES:</u> Members - Guest - Student -	 $50.00 $60.00 $15.00

Check the ASHRAE Website for Society news and to join/renew membership!
http://www.ashraeli.com

Long Island Chapter Officers & Committees

ASHRAE 2019/2020 OFFICERS

POSITION	NAME	PHONE	EMAIL
President	Frank Paradiso	631.632.2792	c006@ashrae.net
President-Elect	James Hanna	718.269.3768	c006pe@ashrae.net
Vice President	Bill Artis	516.732.2519	c006vp@ashrae.net
Financial Secretary	Matthew Vitrano	212.643.9055	c006tr@ashrae.net
Treasurer	Murat Bayramoglu	631.312.8818	c006tr@ashrae.net
Secretary	Michael Nigro	212.643.9055	c006sec@ashrae.net
Board of Governors	Elizabeth Jedrlinic	516.490.1621	c006bog1@ashrae.net
Board of Governors	Andrew Blom	631.626.1695	c006bog2@ashrae.net
Board of Governors	Matthew Catan	407.489.6684	c006bog3@ashrae.net
Board of Governors	Michael Razzano	516.805.3084	c006bog4@ashrae.net
Board of Governors	Richard Halley	516.490.1616	c006bog5@ashrae.net

ASHRAE 2019/2020 COMMITTEES

COMMITTEE	NAME	PHONE	EMAIL
Programs & Special Events	James Hanna	718.269.3768	c006pe@ashrae.net
Membership (MP)	Michael Razzano	516.805.3084	c006mep@ashrae.net
Refrigeration	Murat Bayramoglu	631.312.8818	c006ref@ashrae.net
Chapter Technology Trans-	Matthew Catan	407.489.6684	c006cttc@ashrae.net
Grassroots Government	Andrew Blom	631.626.1695	c006ggac@ashrae.net
Newsletter Editor	Liset Cordero	212.643.9055	c006ne@ashrae.net
Research Promotion (RP)	Andy Manos	631.632.2791	c006rp@ashrae.net
Historian	Matthew Vitrano	212.643.9055	c006his@ashrae.net
Student Activities (SA)	Elizabeth Jedrlinic	516.490.1621	c006sa@ashrae.net
Young Engineers in	Michael Nigro	212.643.9055	c006yea@ashrae.net
Webmaster	Bill Artis	516.732.2519	c006web@ashrae.net
Nominating	Michael Gerazounis, PE, LEED AP	212.643.9055	nominating@ashraeli.org
Reception & Attendance	Matthew Catan		reception@ashraeli.org
PR & Engineering Joint	Andrew Manos, LEED AP	631.632.2792	pr@ashraeli.org
Golf Outing	Peter Gerazounis, PE LEED AP	212.643.9055	golf@ashraeli.org
Awards	Brian Simkins	203.261.8100	c006ha@ashrae.net
ASHRAE LI, P.O. Box 79, Commack, NY 11725			

Chapter Monthly Meeting - Program for 2019/2020

September 10, 2019 * At Westbury Manor Dinner Presentation – Builds & NYC Code Compliance Presenter: Ian Nelson ****1 PDH**** **Refrigeration Night**	**March 10, 2020** * *At Westbury Manor* Dinner Presentation - Natatorium Design Presenter: Joseph Schmitz ****1 PDH**** **Student Activities Night** **YEA Night**
October 8, 2019 * *At Westbury Manor* Dinner Presentation— Back to Basics: Hot Gas Bypass and Hot Gas Reheat (and why mixing them up will cost you money) Commissioning for Dummies (by dummies) Presenter: Bill Artis ****1 PDH****	**April 14, 2020** Dinner Presentation - TBD Presenter: ****1 PDH****
November 12, 2019 * *At Westbury Manor* Dinner Presentation-- Energy Efficient Solutions for Commercial Kitchen Ventilation Presenter: Dr. Andrey Livchak ****1 PDH**** **Membership Promotion** **Student Activities Night and YEA Night** **Resource Promotion Night**	**May 4, 2020** * *Cherry Valley Club, Garden City, NY* **ANNUAL GOLF OUTING**
December 10, 2019 * *At Westbury Manor* Dinner Presentation-- Fire & Smoke Damper Actuators Presenters: Rick Smith ****1 PDH****	**May 12, 2020** **Annual Field Trip**
January 14, 2020 * *At Westbury Manor* Dinner Presentation– Grow Rooms– And how to Design them Presenter: Chuck Nora ****1 PDH****	**June 9, 2020** * *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 1-5, 2020 ASHRAE Winter Meeting Orlando, FL	**June 2020 - TBD (4pm-8pm)** * *Dixie II @ Captree State Park Boat Basin, NY* **ANNUAL FISHING TRIP**
February 11, 2020 * *At Westbury Manor –* Dinner Presentation– Flame Free Refrigerant Fittings Presenter: Kenny Balci ****1 PDH**** **Membership Promotion Night** **Resource Promotion Night**	**August 13-15, 2020** **CHAPTERS' REGIONAL CONFERENCE (CRC) REGION I**
February 16-22, 2020 **NATIONAL ENGINEERS WEEK**	

Meeting Program

Dinner Presentation

Natatorium: The What How and Why

Presented by

Joseph Schmitz
Partner & Vice President, Design and Construction
Highmark

Attendees Will Earn 1 PDH!

DATE:	TUESDAY, FEBRUARY 11, 2020		
Time:	6:00 PM - Cocktails and Hors D'ouevres 7:00 PM - Dinner Presentations 8:45 PM - Conclusion	Fee:	$ 50.00 Member $ 60.00 Guest $ 15.00 Student
Location:	**WESTBURY MANOR** (516) 333-7117 1100 Jericho Tpke., Westbury, NY 11590 **Directions are posted at @ www.ashraeli.com**		
Presentation:	This month's presentation topic will be "Natatorium - The What How and Why" **All attendees will receive 1 PDH.**		
About our Speaker:	Joseph Schmitz is Partner and Vice President, Design and Construction, at HIGHMARK. In this role, he leads efforts to introduce innovative building-efficiency technologies to architects, developers, general contractors and MEP consulting engineers. He seeks to challenge the HVAC status quo and improve building sustainability and efficiency, thus cutting energy use, carbon emissions and costs. Schmitz, with HIGHMARK since 2015, is an expert in numerous technologies that bring greater efficiency to the built environment. He focuses on several key ones, including heat pumps for HVAC and domestic hot water applications, heat-recovery strategies and chilled-water and condenser-water systems. His robust knowledge enables him to tackle each unique issue and achieve client goals for energy efficiency, electrification, decarbonization and cost savings. Prior to joining HIGHMARK, Schmitz was a Sales Engineer at Trane for nearly five years. He worked primarily in the area of applied systems with New York City consulting engineers and mechanical contractors. Schmitz received a Bachelor of Science in Electrical Engineering from the University of Cincinnati.		

Long Island Chapter - Past Presidents

1958	H. Campbell, Jr. PE	1989	Mel Deimel
1959	Clyde Alston, PE	1990	Robert Rabell
1960	Sidney Walzer, PE	1991	Gerald Berman
1961	Sidney Gayle	1992	Donald Stahl
1962	William Kane	1993	Ronald Kilcarr
1963	Louis Bloom	1994	Jerald Griliches
1964	Milton Maxwell	1995	Walter Stark
1965	Will Reichenback	1996	Joe Marino
1966	Joseph Minton, PE	1997	Norm Maxwell, PE
1967	Irwin Miller	1998	Alan Goerke, PE
1968	Walter Gilroy	1999	Frank Morgigno
1969	Charles Henry	2000	Michael Gerazounis, PE, LEED AP
1970	William Wright	2001	Ray Schmitt
1971	Louis Lenz	2002	Steven M. Stein, PE
1972	Ronald Levine	2003	Andrew Braum, PE
1973	Henry Schulman	2004	Claudio Darras, P.E.
1974	Myron Goldberg	2005	Craig D. Marshall, P.E.
1975	John N. Haarhaus	2006	John Nally
1976	Richard K. Ennis	2007	Peter Gerazounis, PE, LEED AP
1977	Kenneth A. Graff	2008	Steven Friedman, PE, HFDP, LEED AP
1978	Evans Lizardos, PE, LEED AP	2009	Steven Giammona, P.E., LEED AP
1979	Albert Edelstein	2010	Nancy Román
1980	Ralph Butler	2011	Carolyn Arote
1981	Robert Rose, PE	2012	Brian Simkins, LEED AP
1982	Timothy Murphy, PE	2013	Andrew Manos, LEED AP BD+C
1983	Leon Taub, PE	2014	Richard L. Rosner, P.E.
1984	Raymond Combs	2015	Thomas J. Fields, P.E., LEED AP
1985	Edward W. Hoffmann	2016	Donald Kane, P.E.
1986	Jerome T. Norris, PE	2017	Andrew Dubel, P.E., LEED AP
1987	Abe Rubenstein, PE	2018	Richard Halley
1988	Michael O'Rourke		

PAOE POINTS FOR 2019/2020

Chapter Members	Chapter Operations	CTTC	Communi-cations	GGAC	History	Member-ship	Research Promotion	Student Activities	YEA	Chapter PAOE Totals
282	200	400	50	950	355	350	950	350	450	4,055

Student Activities

Spring has finally arrived!

Congratulations to NYIT for being awarded a ASHRAE's Undergraduate Program Equipment Grant for $4750. There were two submissions from the LI chapter territory and one award. The project that received this grant was titled “Modular Multi-Purpose Workbench: Temperature Regulation with Phase Change Material and Ductless Mini Split Heat Pump”. ASHRAE offers a variety of Grants and support to students and student chapters. Please see the links below for information on what is available.

Undergraduate Equipment Program and Grants

https://www.ashrae.org/communities/student-zone/scholarships-and-grants/about-undergraduate-program-equipment-grants

ASHRAE Society Scholarships:

https://www.ashrae.org/communities/student-zone/scholarships-and-grants/ashrae-scholarship-program
Local Chapter Scholarships:

The Long Island Chapter will be issuing local scholarship applications this month. Please reach out to me if you are interested.

Elizabeth Jedrlinic
Student Activities Chair
Elizabeth.jedrlinic@trane.com

Research Promotion

I would like to thank the companies who have participated in the annual 2020 Product Directory of Manufacturers and their Representatives. The Product Directory has been prepared as a service to all its members and as a service to the local HVAC industry. It will be will be made available to all ASHRAE and non-ASHRAE members at no-cost and can be obtained from our monthly meetings or directly from our web-site.

There's still time if you would like your company listed in the directory please contact me. The Directory is intended to provide better communications between manufacturers and their sales representatives; engineers who specify products; contractors who purchase and install the equipment; and other interested parties. Product Directory listings are not limited to ASHRAE members and the listings are not to be considered as advertising or endorsement by ASHRAE of any product, manufacturer or representative.

This year's overall resource promotion goal is $2,600,000 with over 75 research projects on board. Our chapter is expected to raise approximately $20,400 towards the overall goal of which we have already raised $8370. I am hoping I can count on the continued support of all of our past contributors who have generously supported us over the years. I also look forward to gaining the support of new contributors this coming year. Please help support ASHRAE in any way you can.

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

INDIVIDUALS

Brian Simkins
Peter Gerazounis, PE
Michael Gerazounis, PE
John D Nally
Andrew E Manos
Mordechai Chetrit
Evan Lizardos
Elizabeth Jedrlinic
Frank Paradiso
William Artis
Murat Bayramoglu
Matthew Vitrano
Michael Nigro
James Hanna
Richard Halley
Mike Razzano
Andrew Blom
Matthew Catan
Liset Cordero
Donald Kane, PE
Robert Fuchs
Anthony Rosasco Sr

COMPANIES

Catan Equipment Sales
Accuspec, Inc
Gil-Bar Industries, Inc.
KLIMA - NY
Ultimate Power

CONTRIBUTIONS CAN BE MADE IN THE FOLLOWING WAYS:

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

Andrew Manos, LEED AP BD+C
ASHRAE Research Promotion Chair
c/o Stony Brook University
Campus Planning, Design and Construction
Research and Support Services, Building 17, Suite 160
Development Drive, Stony Brook, NY 11794-6010

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

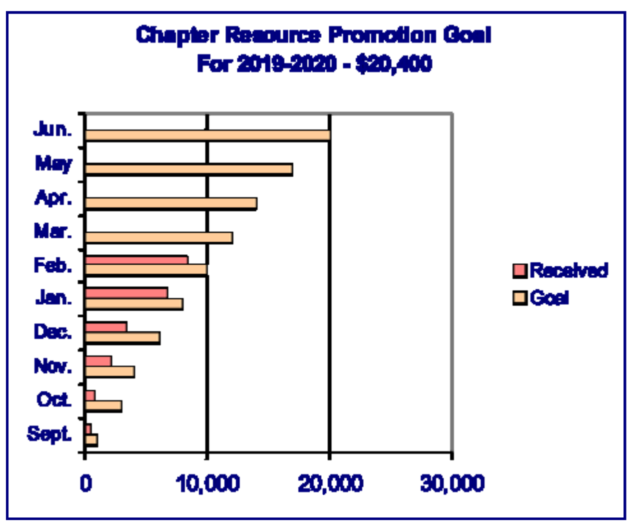
3) You can contribute via PayPal from the ASHRAE LONG ISLAND web site, just click on the donate button.

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 Manos, LEED AP BD+C - Research Promotion Chair



YEA

Thank you to everyone who made it to the Ashrae LI/NYC/NJ YEA joint social event at Stout NYC. We had a great turnout of over 50 guests. These are great networking opportunities to speak to all different members of the HVAC community in the tri-state area. I will keep everyone posted for the next joint event which is in the planning stages now for when the weather gets warmer.

YEA Leadership Weekend 2.0

There are still a few spots left open for the YEA 2.0 Leadership weekend (link below)

This event is open to any current ASHRAE member who has previously attended a YEA 1.0 Leadership Weekend event and has not already attended YLW 2.0. Please reach out to anyone who may have interest in attending.

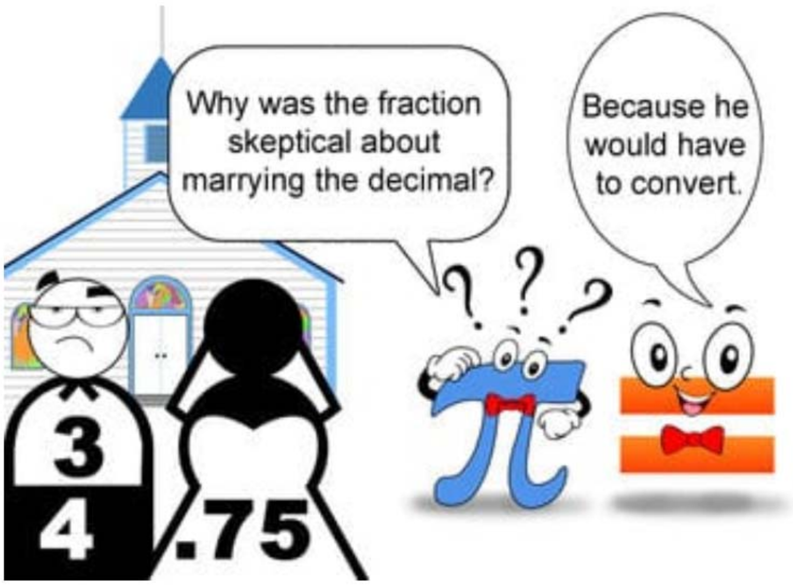
https://www.ashrae.org/communities/young-engineers-in-ashrae-yea/yea-events-and-programs/yea-leadership-weekend-2-0

Michael Nigro
YEA Chair

CTTC

We hope everyone is had a nice Valentine's day! Looking forward to seeing everyone at our March meeting. We have an exciting speaker with PDH credits that you do not want to miss!

Joke of the Month: Valentine's Day Fractions



ASHRAE Certification Review: HBDP – HIGH-PERFORMANCE BUILDING DESIGN PROFESSIONAL

Developed with the participation of the Illuminating Engineering Society (IES) and the Mechanical Contractors Association of America (MCAA) and with input from the Green Building Initiative (GBI) and the U.S. Green Building Council (USGBC), the HBDP certification, an ANSI-Accredited Personnel Certification Program under ISO/IEC 17024 – Accreditation #1139, validates competency to do the following:

Design and integrate sustainable HVAC&R systems into high performing buildings.

Chapter Technology Article of the Month: ***(Following Pages)***

Matthew K. Catan
CTTC Chairman

CTTC (Cont'd).

Inventing the Ammonia Refrigeration Compressor

Excerpt from *Adventures in Heat and Cold*, "Selling Lemonade to the Yankees and Inventing Ammonia Refrigeration with the Help of My Wife"

Many historical sources say that the ammonia refrigeration compressor was invented by David Boyle. We can argue for and against that claim, but Boyle is legitimately a refrigeration pioneer whose career is much more interesting when you consider his arduous journey to success—with the help of his wife!

David Boyle began that journey in Johnstone, Renfrewshire, ten miles west of Glasgow, Scotland, where he was born in 1837. His father was a grocer and liquor dealer who enjoyed tinkering with mechanics, and even building a cork-cutting machine. David Boyle was said to enjoy playing around machine shops and cotton factories and enjoyed reading *The Glasgow Mechanics' Magazine*. His budding technical interests were thwarted by his father who insisted that he go into the grocery business, which he did, ultimately rising to foreman of a wholesale grocer. He emigrated to Mobile, Alabama, desiring to start a grocery business. The American Civil War ruined his progress and, by the end of the war, he only had 250 dollars to his name. By that time, he was living in Demopolis, Alabama, and had recently married Margaretta (Margaret) Henry, who was from Ireland. Northern soldiers were stationed in Demopolis, and Boyle seized the moment by selling iced lemonade to them.[1] Boyle later recalled the event:

David Boyle | 1837 – 1891

"I was keeping store and making and selling ice cream and lemonade. A brigade of Federal troops were stationed there and were a bonanza to me. I had a shipment of ice from New Orleans.... The weather was hot and it did not take long to get rid of it. I used it to cool lemonade and sold it at a good profit to the Yankee soldiers. The unreliability of transportation, the high cost, and the absolute need of ice at Demopolis set me to thinking and determined me to attempt the making of a machine to supply the wants of Demopolis. Just think of it! The wants of Demopolis! And that was my idea."[2]

Boyle's lemonade business was so successful that he made eight thousand dollars in four months. During the War, he had heard of an ice-making machine operating in Augusta, Georgia, so he went to see it in 1865, but decided it would be too expensive to pursue, so he spent the next four years trying to find out what other machines might be available. Nothing was found until 1869, when he heard of an ice machine in New Orleans. After investigating it, he sold his store

CTTC (Cont'd.)

An example of plate ice. Ice made by the plate method was known for its transparency. (From *Ice and Refrigeration*, June, 1905, ad section p. 73)

PICTURE OF ICE CAKE MADE BY OUR SYSTEM

and property and purchased a machine that was being made under the VanderWeyde patents.[3] The machine proved to be a failure. A disappointed Boyle moved his family to San Francisco in the summer of 1869, where he began to study anything possibly related to refrigeration machines at the library of the Mechanics' Institute. During his stay in California, he purchased a machine from London, had to sue for return of his money when the machine never arrived, and finally decided the only solution was to design and build a system of his own design.[4]

He built two experimental machines and applied for a U.S. patent, receiving U.S. Patent #128448 in 1872.[5] His patent describes an ice-making system, where the ice was frozen in horizontal sheets or plates, unlike other ice-making proposals, where the ice was frozen in cans. This method was adopted by some manufacturers later because ice made this way had superior transparency, lending more visual appeal than ice made by freezing in cans.

By 1872, Boyle had almost run out of money so he moved again, this time to New Orleans, where he thought he could sell his improvements in ice making. Although he had a patent, his system was still experimental and only partly constructed. He moved again, this time to Jefferson, Texas, where he completed the

CTTC (Cont'd).

ice-making system.[6] Boyle erected the machine in the nearby town of Marshall, using up his remaining funds. Soon after starting the equipment, numerous splits and leaks developed, preventing continued operation. Total failure and no more money apparently stretched Boyle to his mental limits. As he tells the story:

"My brother and I sat down on the wood pile to cool off. We were worn out with worry and disappointment and the machine was a wreck. All was gone and I was at the end of my tether. I had success within reach but lacked the means to secure it. My wife joined us and after listening to any complaints, made a most astounding statement. She could furnish me with money—money that she (cramped financially as we were) had managed to lay by for darker days. The amount was not large, but it was enough to start me on the path to success."[7]

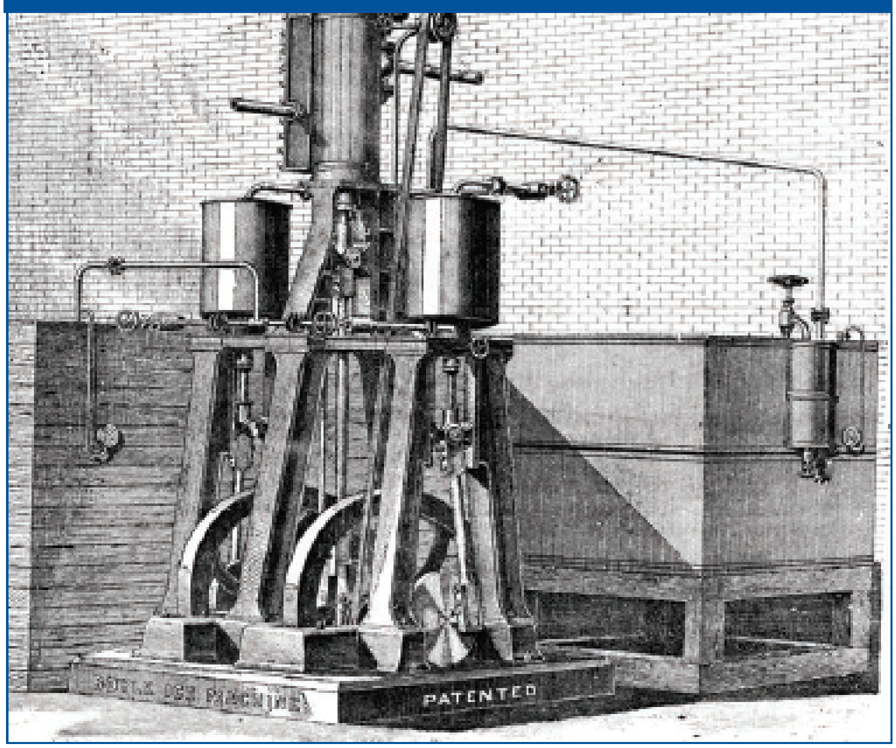
That path was not easy. As Boyle explains:

"…every joint of the machine had to be taken apart and remade. From sunrise to sunset seven days in the week he worked with the energy of desperation but it was October before the machine turned out its first batch of ice. It proved a perfect success at last but the ice season was over, he was taken sick and was deep in debt. After a winter of poverty and hardships to himself and family the machine was started up in spring of 1874, and it produced its full quantity of the finest transparent ice."[8]

Historical marker for site of David Boyle's ice plant near Jefferson, Texas. (From Jeffersonian, Fall-Winter, 2014-2015, p. 10)

Hearing of Boyle's ice manufacturing, some parties sought out Boyle to purchase an interest in his patent. Boyle secured backing in Quincy, Illinois, and moved there in the summer of 1874. He built two ice machines and sold them in Texas. Shortly thereafter, he established the Boyle Ice Machine Company and approached Crane Brothers Company of Chicago, manufacturers of fittings, valves, and piping, to contract their facilities to build his ice machines. Around 1877, Boyle Ice Machine Company expanded into refrigeration and began selling to breweries.[9] More than 75 refrigeration and ice machines had been sold by 1885.[10] Considering that commercial refrigeration and ice making was in its infancy in the period

Boyle Ice Machine, ca. 1877. (From 1880 catalog: The Boyle Ice Machine and Refrigerating Apparatus, Boyle Ice Machine Co.)



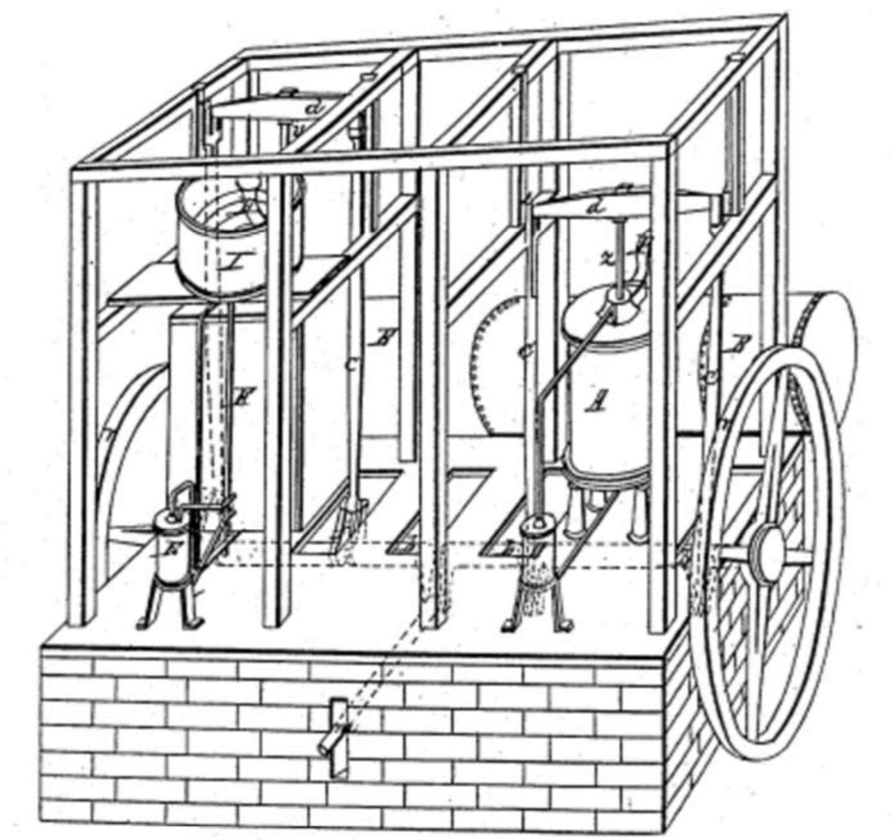
CTTC (Cont'd.)

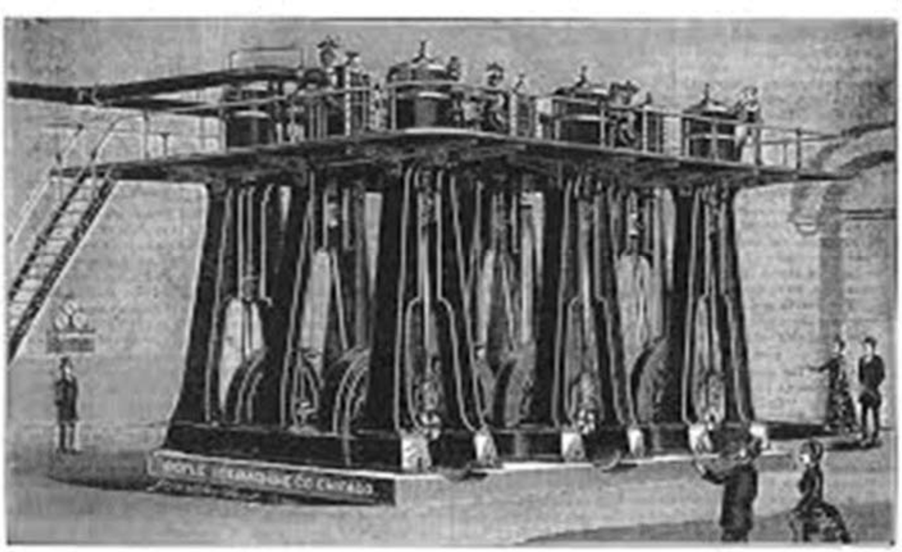
between 1873 and 1885, selling more than 75 machines proved the persistence and final success of David Boyle.

David Boyle passed away at the young age of 54 in 1891. Perhaps he was just worn out. His wife Margaret lived until 1929, dying at age 85 in Chicago.[11] The trade journal *Ice and Refrigeration* wrote: "Personally David Boyle was a man of sterling integrity, quick, sensitive and eager to succeed. His every thought was toward the advancement of the world's knowledge of the science of artificial ice making and refrigeration."[12]

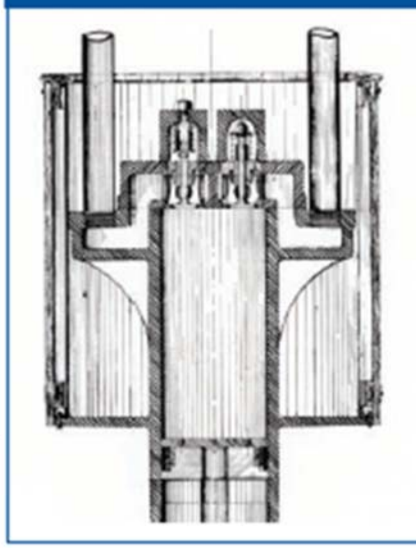
Often we know only the specific accomplishment of an industry pioneer. But what is required to get there? Persistence and intelligence surely are needed, and David Boyle certainly displayed those qualities. But his story also shows that a great loyalty and love not only helped, but ultimately cemented success. There was not much money, but through it all, as Boyle moved all over the United States devoting "every thought" to his dream and placing a great strain on his family, his wife stayed with him. Through it all, and especially in the end, she was responsible for the difference between failure and success. There is a common saying that behind every successful man is a woman. This was certainly true for David Boyle.

Fig:1.





Cross-section of David Boyle's compressor design. This design, using poppet-type suction and discharge valves above the piston, became known as the "Boyle Pattern," which was copied by later manufacturers. (From 1895 catalog: Ice Making and Refrigerating Machinery, Pennsylvania Iron Works Co., p. 20)

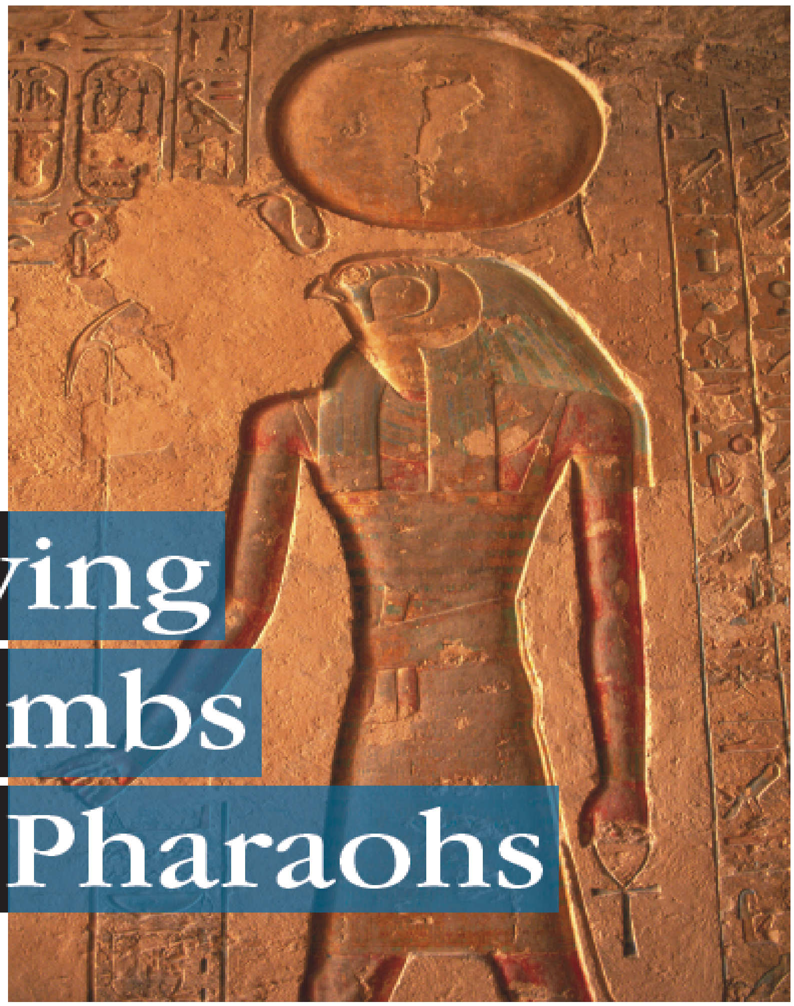


Notes

1. "David Boyle, Esq.," *The Western Brewer* (October 15, 1885): 1731.

History

Matthew Vitrano
History Chairman



Preserving The Tombs Of the Pharaohs

By Essam E. Khalil, Ph.D.,
Member ASHRAE

Visitor traffic in the pharaohs' tombs within the Valley of the Kings in Luxor, Egypt, is contributing to the deterioration of the tombs' interior wall paintings. Contributing factors include excessive humidity, high temperature, lighting effects, pests, shock and vibration, and pollution.[1] To preserve the tombs and contents, as well as provide for visitor comfort, a proper ventilation system is needed to control indoor climate conditions.

Design guidelines for preserving the tombs and archaeological contents include:[2]

- Ensure the humidity ratio is not higher than 55%;
- Ensure the air velocity near the paintings is not higher than 0.12 m/s (24 fpm);

About the Author

Essam E. Khalil, Ph.D., is professor of mechanical engineering at Cairo University in Cairo, Egypt. He is an ASHRAE Distinguished Lecturer.

History

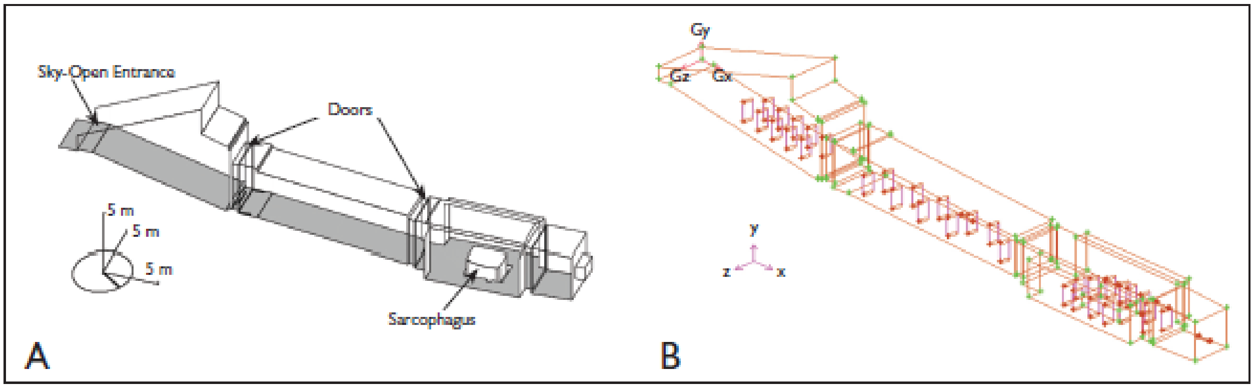


Figure 1a: Geometrical configuration of Ramsis VII's tomb, Valley of the Kings. Figure 1b: Typical visitors' locations in the tomb.

- Avoid mechanical vibrating installations; and
- Avoid permanent installations.

This article attempts to address the optimum ventilation system design through better understanding the problem with the aid of experimentation monitoring and numerical simulation.

To adequately understand the airflow, heat transfer and relative humidity patterns in the tombs, proper experimentation and field monitoring are underway, including measuring CO, temperature, relative humidity, CO_2, total VOCs and differential pressure.

To preserve the tombs, archaeologists have set important guidelines for the airflow pattern. The airflow velocity should not exceed 0.12 m/s (24 fpm) in the vicinity of the walls and artifacts. Furthermore, relative humidity should be limited to 60% to prevent biological activity. The temperature profile should be controlled to prevent severe temperature cyclic variations if an air-conditioning system is proposed. Careful selection of near-wall velocities is necessary to avoid any wear or aberration of the tomb wall paintings.

Computational fluid dynamics (CFD) can help predict air movement within enclosures, providing a strong tool for designing for inlet and outlet positions in closed ventilated spaces. Furthermore, these predictions can be used to study the effect of the number of visitors inside the tombs, and suggest the appropriate number of visitors inside a given tomb.

The airflow distribution under a steady flow pattern is a result of different interactions such as the airside design, visitors' locations, thermal and humidity effects, occupant movements, etc. The airside design and internal obstacles are the focus of this article.

Free air supply and mechanically extracted air was suggested for this site, which plays an important role in the main flow pattern and creation of main recirculation zones. More than 20 of the restored tombs in the Valley of the Kings are open for visitors at times that change depending on the time of day and relative humidity in the tomb. Attempts were made to systematically investigate and assess the flow pattern, heat transfer and relative humidity in theses tombs.

The tomb of Ramsis VII is simple in construction in a single axis as shown in *Figure 1a,* which shows three clearly identified zones. The total length of the tomb is 44 m (144 ft), of which the sky-open entrance zone extends to more than 12 m (40 ft). A door locks the second zone, which descends down via steps to another door locking the burial place where the sarcophagus is located. The tomb average cross section is about 4 × 4 m (13 × 13 ft). *Figure 1b* denotes the most likely locations of visitors near artifacts and wall paintings in the tomb.

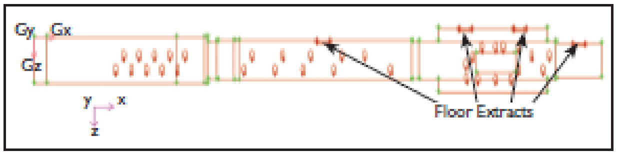


Figure 2: Proposed extract air grille locations in the raised floor.

Airflow and Thermal Pattern Simulations

A numerical simulation program solves the differential equations governing the transport of mass, three momentum components, energy, relative humidity, and the air age in 3-D configurations under steady conditions. The different governing partial differential equations typically are expressed in a general form as:

$$\frac{\partial}{\partial x}\rho U\Phi + \frac{\partial}{\partial y}\rho V\Phi + \frac{\partial}{\partial z}\rho W\Phi =$$

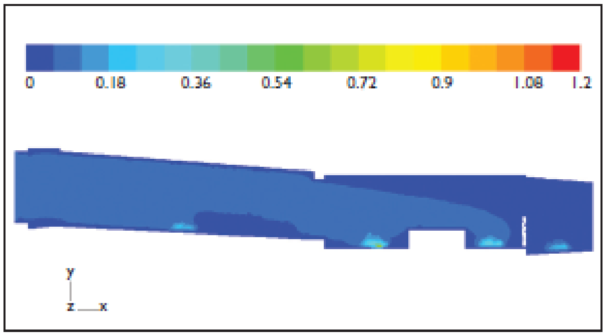
$$\frac{\partial}{\partial x}\left(\Gamma_{\Phi,\,eff}\frac{\partial\Phi}{\partial x}\right) + \frac{\partial}{\partial y}\left(\Gamma_{\Phi,\,eff}\frac{\partial\Phi}{\partial y}\right) + \frac{\partial}{\partial z}\left(\Gamma_{\Phi,\,eff}\frac{\partial\Phi}{\partial y}\right) + S_{\Phi}$$

where

ρ = air density, kg/m^3
Φ = dependent variable
S_{Φ} = source term of Φ
U, V, W = velocity vectors
$\Gamma_{\Phi,\,eff}$ = effective diffusion coefficient

The effective diffusion coefficients and source terms for the various differential equations and details of the incorporated two-equation turbulence model are listed in the works of Khalil[3] and Abdel Aziz, et al.,[4] where further mathematical details can be found. The program also is designed to simulate the airflow domain using 690,000 cells to obtain grid-independent predictions. The computational number of iterative steps is selected according to space cell (spatial difference) to yield converged solutions. Simulation of actual airflow patterns and

History



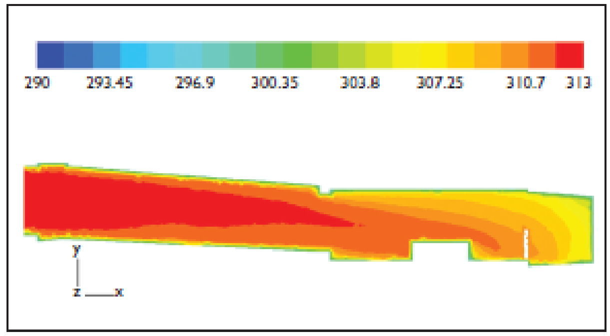


Figure 3 (left): Predicted air velocity contours, m/s, at X-Y plane, Z = 1.8 m, (2nd and 3rd zones). Figure 4 (right): Predicted air temperature contours, K, at X-Y plane, Z = 1.8 m, (2nd and 3rd zones).

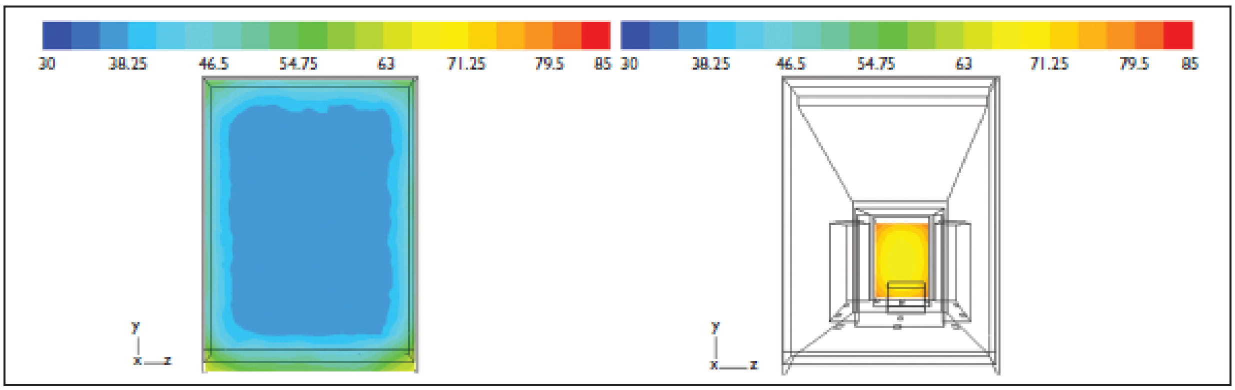


Figure 5: Transverse contours of percent relative humidity in a Y-Z plane at 1 m (3 ft) downstream from the door and at sarcophagus.

heat transfer behavior resulted in a proposed simulated design to extract air through floor-mounted ports each 1 × 0.15 m (3 × 0.5 ft) at four locations, with air freely entering the tomb as shown in *Figure 2*, denoting 34 visitors located along the tomb length with 24 visitors in the second and third zones.

The air freely enters from the left at 313 K, the air specific mass fraction is 0.0139 kg_w/kg_{da}, while a visitor's body is assumed at 310 K. Human activity level is assumed to be medium, and visitors' respiration is 0.0411 kg_w/kg_{da} (H_2O mass fractions).[2] Walls are kept at 295 K, which corresponds to the measured value. Abdel-Aziz and Khalil[4] performed grid independency checks for grid sizes that varied from 600,000 to 890,000 computational cells. Clearly, the solver is robust, because the variations in velocity distributions are all within 10% and all demonstrated the same trend.

Present Computations

The validity of such numerical technique to adequately represent the actual physical situations was assessed by way of comparisons with experimental measurements in a variety of three-dimensional flow configurations.[3,5,6,7] *Figure 3* indicates the velocity contours at $Z = 1.8$ m (6 ft). The predicted velocities in the core are less than 0.15 m/s (30 fpm), while in the wall vicinities, the velocities are less than 0.06 m/s (12 fpm) except near the extract openings in the artificial raised floor. It should be emphasized that the present locations of extract grilles were selected to avoid any excessive near-wall velocities.

The corresponding local air temperature distributions are shown in *Figure 4* at the middle longitudinal plane when the wall temperature was kept at 295 K, simulating the summer climatic conditions. The wall and contents of the tombs should not be subjected to daily temperature differences of more than 5°C (9°F) to preserve the quality of the paintings, colors and composition of wooden articles. The effect of the fresh incoming hot air is dominant in almost 45% of the tomb length in the core area after which temperatures generally cool off to nearly 29°C (84°F). The relative humidity contours are shown in *Figure 5* at 1 m (3 ft) downstream of the first door and at the sarcophagus. Notice the increase of water content near the corners.

The main flow pattern of the free supplied air and floor-mounted extracts is influenced slightly by the extraction ports locations.[8] For each visitor group location, a corresponding proper airside design is suggested to provide the optimum use of the supplied air. The optimum use of air movement to ventilate and reduce temperature and relative humidity can be attained by locating the floor-extraction ports to minimize the recirculation zone and prevent air short circuits.

Conclusions

The following main conclusions can be drawn from this preliminary work.

- The optimum usage of the air movement to ventilate and reduce temperature and relative humidity can be attained

History

by locating the extraction ports to minimize the recirculation zone and prevent air short circuits.[9]

- All of the predictions here clearly indicate the practical usefulness of raised floor extracts that do not disturb the archaeological value of the tomb and do not involve installing any artificial materials in the tombs. The influence of air movement on the visitors' occupancy zone and on the fresh supplied air is clearly apparent.
- To reach optimum airside system design, the proper air-conditioned setpoint should be selected close to the average wall temperature to minimize the temperature gradient near the wall. This setup is important to preserve the tomb.
- Future work should include field monitoring of airflow velocities, air quality and relative humidity to investigate the effect of the number and distribution of visitors on the airflow and thermal characteristics. This time-sensitive research is needed to allow the maximum possible quantity of visitors that will not adversely affect the climate inside the tomb.

Acknowledgments

The author would like to acknowledge the technical support of the Supreme Council of Antiquities, Ministry of Culture, ARE, Dr. Zahi Hawas and CAPSCO of Cairo University. Thanks and gratitude are due to Fluent UK for its permission to use its software in the present investigation. Appreciation is also due to Eng. Omar Abdel Aziz for performing the computations.

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Grassroots Government Activities Committee (GGAC)

I'm looking forward to seeing everyone at the next meeting. I'd like to remind everyone that we are actively in the process of planning an event for GGAC called a "Day on the Hill". We'd love to have a few volunteers to come by and get involved. If you're interested, please let me know as soon as you can. We're planning this with several regional chapters and I would greatly appreciate any participation. Details are still being ironed out.

DOE Funds Geothermal Technology Research

The Department of Energy has made a series of announcements regarding geothermal technology:

- $25 million to promote the advancement of Enhanced Geothermal Systems (EGS) technologies and techniques. The Funding Opportunity Announcement (FOA), entitled Wells of Opportunity (WOO), supports research and development (R&D) that complements DOE's **Frontier Observatory for Research in Geothermal Energy (FORGE)**.
- $18.8 million toward the research and development of innovative subsurface geothermal technologies. DOE's Geothermal Technologies Office will fund up to **six projects focused on two topic areas**.
- $3.25 million for the **American-Made Geothermal Manufacturing Prize**. This prize is designed to address manufacturing challenges fundamental to operating in harsh geothermal environments. "This prize further supports the ability of the geothermal industry to reach the target of 60 Gigawatts electric of geothermal capacity by 2050 as outlined in the recently released **GeoVision study**."

Energy Storage Grand Challenge Announces Initial Series of Public Workshops

The Department of Energy (DOE) will be holding a series of workshops to receive comments on DOE's Energy Storage Grand Challenge (ESGC), a program to accelerate the development, commercialization, and utilization of next-generation energy storage technologies. DOE has announced that workshops will be held in the following locations:

- Austin, Texas on March 10, 2020 (registration deadline: February 24)
- Seattle, Washington on March 6, 2020 (registration deadline: February 27)
- Chicago, Illinois on March 17, 2020 (registration deadline: March 2)
  Additional manufacturing session on March 16, 2020
- Washington, D.C. on March 26, 2020 (registration deadline: March 11)

Click **here** to learn more.

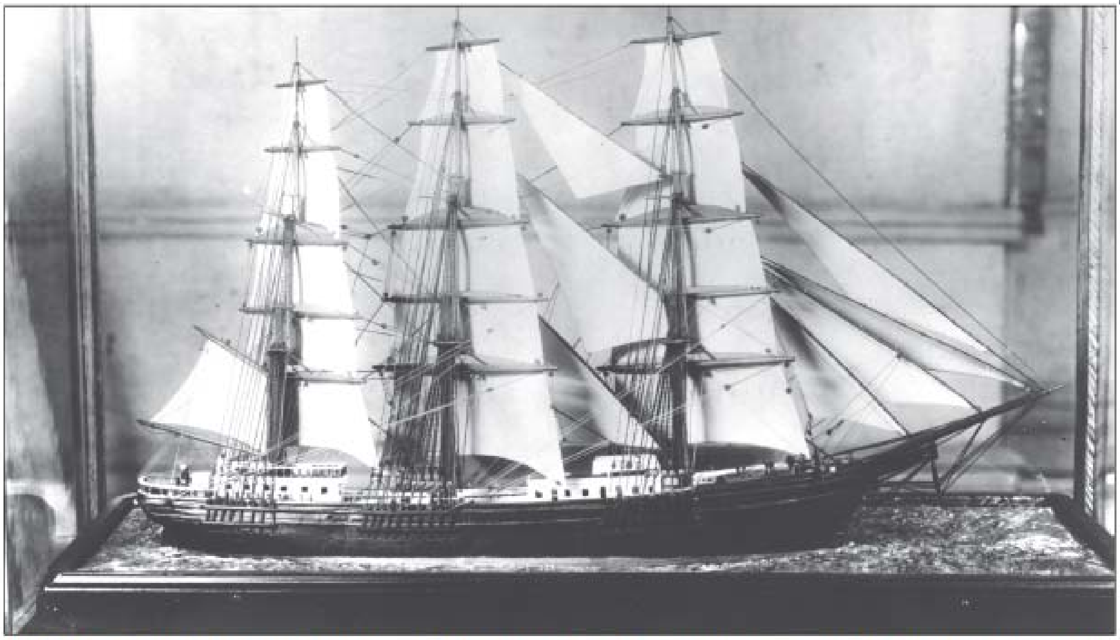
Andrew Blom

Grassroots Government Activities Chair

Refrigeration

Murat Bayramoglu
Refrigeration Chair

100 Years of Refrigeration



Model of Frederic Tudor's ice ship, the Ice King. Ice shipments were not always warmly received. About 1820, the New Orleans mayor shocked the crew of the first sailing vessel to deliver ice to the city. He ordered the ice to be thrown into the sea.

A History of Refrigeration

By **George C. Briley, P.E.,** Fellow/Life Member ASHRAE

In the 1800s natural refrigeration was a vibrant part of the economy. Natural ice harvested from the pristine rivers and lakes of the northern United States, particularly those in New England, was in demand. Harvested ice was stored in large quantities in ice houses and covered with sawdust for insulation.

Later, merchants loaded the ice in sailing ships as ballast. Again, the ice was covered with sawdust. Ice was delivered to as far away as India, where it was welcomed, and to England, where interest was low. The supply of harvested ice was erratic, depending on the weather where it was harvested.

During the 1800s many mechanical-type refrigeration systems were being invented and used refrigerants such as sulphur dioxide, methyl chloride, ether, carbon dioxide, as well as wine, brandy, vinegar, etc.

The early refrigeration systems designed between 1850 and 1920 produced ice year-round to compete with harvested ice. The harvested ice producers advertised that—when it was available—their natural refrigeration did not fail like the early mechanical systems.

Several approaches existed for ice manufacturing during the early days. A very labor-intensive method used a series of 10 × 14 ft* plates immersed in water with a refrigerant of ammonia or circulated brine. Ice formed on both sides of the plates. This approach provided ice without any air bubbles and used potable water. The ice was harvested with warm brine or hot gas and cut to size for sale.

The other approach, still used today, was the can ice system. The complaint

* ft × 0.3048 = m

Refrigeration

100 Years of Refrigeration

then was that it required distilled water to prevent air bubbles in the ice. This ice manufacturing method prevailed because it was simple and less labor-intensive than the plate method. As in the early days, 300 lb** cans are used today to manufacture ice.

As early as the 1880s, Carré ammonia absorption systems operated in south Texas. They were used to manufacture 1,000 lb of ice per day. The absorption machine was fired with wood. According to one author, O. Anderson, this ice competed with harvested ice shipped to Texas from Boston. The machine was in Austin where two ice plants existed, one a plate ice machine and the other a can ice machine. In Chicago a company built several plate ice machines that were shipped to the King Ranch in south Texas. These plants eventually were converted to can ice. The refrigeration system was a mechanical compressor with a steam drive.

The ice industry continued to grow, and large plants with ice capacities to ice 20 railcars at a time were installed from the Rio Grande valley to the east coast. The plants made ice in 300 lb cans and crushed the ice before blowing it into the railcar's bunkers. Most used steam-driven ammonia compressors. Atmospheric condensers also were appearing, as the supply of well water or river water was insufficient.

The condenser water was cooled by a spray system on the roof of the ice plant or sprayed over a pond. Gas engines and diesel engines replaced some of the steam drives as time went on and fuel prices became affordable. A number of block ice plants were installed as late as the 1950s. The last block ice plant installed in the country was in Houston during the early 1980s. It was a 100 ton/day** plant.

Some refrigeration systems installed in the early 1900s used carbon dioxide (CO_2) as the refrigerant. The systems required condenser water cold enough to prevent the system from operating in the supercritical area (under 750 psig**). CO_2 was available from the brewing industry at a lower cost than ammonia.

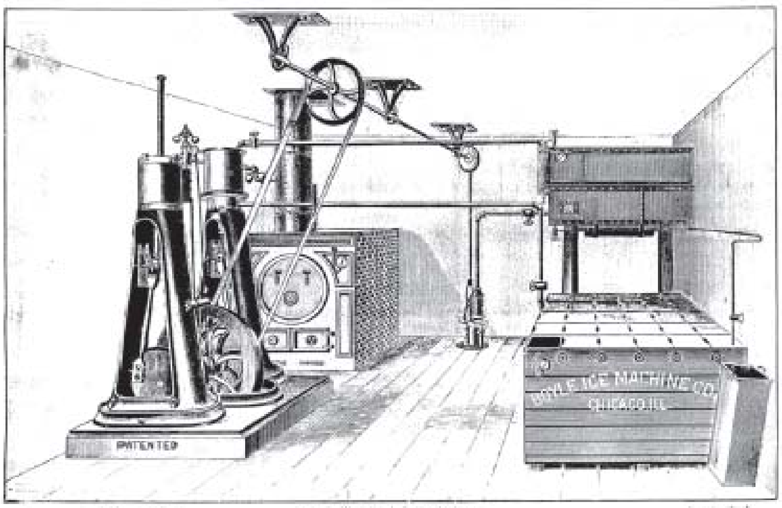
The condenser water usually came from a well or from a river. The compressors were adaptations of ammonia compressors that were modified with smaller diameter pistons to account for the much lower specific volume of CO_2. Further use of CO_2 occurred in the 1930s when it was used as a cascade refrigerant with ammonia as the high side to obtain low temperatures for freezing foods and to provide refrigeration for cold storages. CO_2 is used the same way today to obtain temperatures to –66°F**, while reducing ammonia charges and decreasing the size of the low-temperature compressors.

Ammonia absorption systems, the first systems to use ammonia as the refrigerant, still are used despite their inefficiency and high capital cost. These systems were viable into the 1950s and 1960s where waste heat, process heat or waste steam was available. This type of system was used in the very early days to obtain lower refrigerant temperatures than mechanical systems.

The classic ammonia absorption system was refined in the 1930s and 1940s to produce nearly pure ammonia. Most of these systems were installed in petrochemical or gas plants. They have been installed in the last few years in conjunction with gas turbine generating systems to satisfy government regulations. New versions of ammonia absorption systems are being designed today with much better efficiencies.

In the early 1900s reciprocating compressors were refined. However, they still operated at low revolutions per minute. They were driven by reciprocating steam engines, which were integral with the compressor. These compressors were called open compressors, as each connecting rod had a packing to prevent ammonia from escaping. Most compressors were vertical with the steam engine horizontal. Speeds were gradually increased, and synchronous motors eventually were used instead of the steam engines. Some horizontal slow-speed ammonia compressors were built in these years. In the 1980s some of these compressors were still being operated successfully. They were motor driven with flat belts.

In the 1920s/1930s, more advances occurred in the ammonia compressor area. Most of the machines had crankcases and were considered closed compressors. The only seal involved was one on the crankshaft. These machines were more compact and generally more efficient.



ONE-TON SIZE, BOYLE ICE MACHINE.

A can ice machine by Boyle Ice Machine Co., 1879.

** lb × 0.4536 = kg; ton × 0.907 = Mg; psig × 6.895 = kPa; (°F – 32) ÷ 1.8 = °C

100 Years of Refrigeration

They were driven by synchronous motors at speeds to 360 rpm and belt-driven. Several U.S. and European manufacturers produced such machines.

During these years the cold storages and freezers used bare-pipe coils, usually 1¼ in.† steel pipe, along the walls and in bunker form on the ceilings.

Defrosting the coils was difficult in freezers as removing the ice from the rooms was strictly manual labor. The coolers' condensate drains also were numerous. The coils fouled with oils from the compressors because oil separation systems were not perfected. This type of evaporator was still in use in the 1980s. In the late 1930s and 1940s, finned surface evaporators began to displace the bare-pipe coils. Most of the finned surface evaporators were originally water defrost. Most of the refrigeration systems still were using hand expansion valves to feed ammonia to the generally flooded evaporators. The condensers were either vertical or horizontal shell-and-tube type with spray ponds or roof spray systems to cool the condenser water.

In the late 1930s and early 1940s new compressor development produced a v/w-type compressor that operated at rotating speeds to 1,200 rpm and in sizes from 20 to 300 hp.† These machines were smaller, lighter, and less expensive than the older vertical compressors, which were discontinued by some manufacturers in the 1950s.

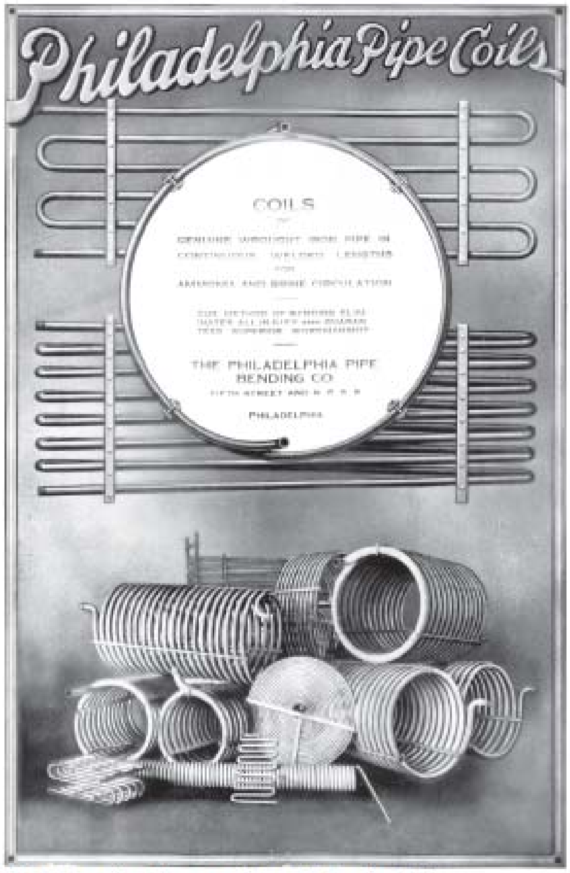
Slightly better oil separators also were developed. These machines have been improved engineering-wise over the years and are still viable compressors for smaller refrigeration systems. Most manufacturers of this type of compressor have ratings for all refrigerants including ammonia, halocarbons, hydrocarbons, and CO_2.

For low-temperature applications, the v/w compressors performed well until refrigeration systems became larger and required increased compressor displacement. Thus, in the l940s and 1950s, the rotary air compressor was converted to refrigeration applications as a low-stage or booster compressor. These machines were fixed Vi and not very efficient, but could pump a lot of gas. The only capacity control was by varying speed.

These compressors were used for various refrigerants in low-temperature applications. Most of those applied in ammonia systems have been replaced by helical screw compressors.

In the late 1940s and even into the 1950s, automatic hot gas defrost systems started to replace water defrost for air units in freezer applications. And the days of electric defrost and air defrost also were numbered.

The l950s and 1960s saw a major increase in the frozen food industry, which had been given its impetus when Clarence Birdseye learned how to process vegetables for freezing. Larger plants became plentiful. The refrigeration systems' demands became larger, making the rotary compressor and the v/w compressor displacements inadequate. The huge equipment rooms and multiple compressors posed a major concern for food plant engineers. Then, use of the liquid overfeed (liquid recirculation) system came into its own. It had been patented in 1925 but rarely seen until the systems became large enough to justify its application. Evaporative condensers took the place of the shell-and-tube and cooling tower systems. The evaporative condenser had been around since the late 1930s, but its use had been limited.



1919 ad for pipes for ammonia and brine circulation.

In the late 1960s, the helical screw compressor, invented in Sweden in 1935, was being manufactured in several countries, but not in the U.S. A small design/build contractor brought the first ammonia screw compressor into the country and packaged it as a booster compressor. This was a major addition to the industrial refrigeration compressor field. These efficient compressors had far more displacement than the available reciprocating compressors. This compressor type was being imported by a company that was using them on R-22 air-conditioning water chillers. Helical screw compressors can be used for almost any high-pressure refrigerant.

The early screw compressor packages had relay logic controls, some of which still are operating today. Microprocessors

† in. × 25.4 = mm; hp × 0.746 = kW

Refrigeration

100 Years of Refrigeration

1906 Ice and Refrigeration *ad for ammonia.*

replaced the relay logic controls in the late 1970s. Programmable controllers also are used to control these compressors. These controls and the many advances in screw compressor design provide excellent screw compressor control.

During the last 30 years, screw compressor designs have improved in the following ways:

- from the original handwheel slide valve (capacity reduction) adjustment to a hydraulic system,
- from symmetric to asymmetric profiles for better efficiency,
- to roller bearing systems from sleeve bearings for better efficiency,
- from fixed Vi to variable Vi to increase system efficiency,
- from mesh-type oil separators to coalescing oil separators to reduce oil carryover,
- to better internal designs to reduce noise, and
- to much larger displacement machines to satisfy the demand for larger refrigeration systems.

In the late 1970s, a single screw compressor was introduced into the global market to compete with the twin helical screw compressor in the smaller displacement area.

Food freezing system designs have changed dramatically since Clarence Birdseye's day. The initial freezing system was a horizontal plate device that froze vegetables in packages. The refrigerant was usually ammonia, and the units were quite small. They were great at the time but were quickly outgrown. Plate-type freezers, both horizontal and vertical still are used today to freeze vegetables and other items, such as TV dinners in packages or various commodities in bulk blocks.

In the late 1930s through the 1950s, belt freezers were used to freeze vegetables such as peas, cut corn, lima beans, etc. Most used downdraft air onto a thin layer of the vegetables. Various attempts were tried to keep the products individually quick frozen (IQF). Nearly all did not work and "cluster busters" broke up the product that often was frozen in sheets.

In the 1960s, fluidized freezing was introduced. The major difference was that the air was blown from under the belt and at a velocity that would fluidize the product (keep it in suspension).

Various methods of initiating fluidization were tried. Some worked much better than others. Later, a dual-belt system was devised. The first belt was loaded with a thin layer of product to be frozen. Most vegetable and fruit products have a thin layer of water on them when introduced into the freezer. The first belt is used to quickly freeze the thin layer of moisture when it is introduced to –20°F** air. The product is then lowered onto the fluidizing belt where it can be 6 to 10 in. deep and can be frozen in usually eight to 10 minutes, depending on the product. Many variations of IQF freezers are available today. This type of system has been applied to freezing 100,000 lb of french fries an hour.

Larger products that require longer freezing times are usually frozen on spiral freezers. This freezer usually handles such products as hamburger patties, poultry parts, pies, cakes, packaged items, etc. Several variations of spiral freezers exist, some having more than 3,000 ft of belting to provide freezing times as long as an hour.

All of these technological advancements have led to today's efficient freezing methods for making ice and producing frozen foods.

Acknowledgments

Art for this article is from ASHRAE's "Heat & Cold: Mastering the Great Indoors" by Barry Donaldson and Bernard Nagengast.

George C. Briley, P.E., is president of Technicold Services, San Antonio.

Membership Promotion

Did you know that there are four membership grades with different benefits, and that they are based on your time in ASHRAE? Many people enter ASHRAE as students. At the student level, they may not hold office in ASHRAE, BUT can participate in technical committees that essentially shape the industry. In addition, students can begin to network with HVAC professionals and build bridges that will serve them well when they are ready to enter the workforce. In terms of building a solid resume, there is no better way to spend $25!

After graduation, students can move into an Affiliate Members through the Smart Start Program. For three years this level of membership allows them to keep their fees relatively low while they build their social and professional networks and advance their careers. Another key benefit is they gain access to discounted ASHRAE publications and are eligible for various products.

Affiliate members naturally advance to Associate Members after 3 years. Now that you have experience you are ready to get involved and change the world. Associate Members can participate in the governance of their chapters and take advantage of leadership opportunities all over the globe.

Progressing 12 years forward, you become a Member. At this point, you’re confident in your professional skills, comfortable in leader-ship positions, and well established in the industry. Even better, you are eligible to hold office and vote all the way up at Society level. As an ASHRAE Member, you really can change the world through ASHRAE’s global reach.

Unfortunately, none if this is possible if you **allow your membership to lapse**. Even if you’ve been a member for 20 years, if you allow your membership to expire (90 days past due) you lose your seniority, and the clock goes back to zero when you come back. Don’t let this happen to you! Don’t lose what you’ve worked so hard for. Renew your membership and hold your esteemed place in the conversation. Don’t forget to check our website at www.ashraeli.org for the most current information about your Long Island chapter.

I would like to informally welcome our new members this month:

1. Mansoor Ahmed
2. Ronnie M Prager
3. Thomas D Van Dyke
4. Stephen D DeBoer Jr
5. Gabriel Vilar

Looking forward to another great month and thank you in advance for your support, time & guidance.

Michael Razzano
Membership Promotion Chair

Elizabeth Jedrlinic & Michael Nigro
Membership Promotion Co-Chair

ASHRAE Golf Outing - Monday, May 4, 2020

ASHRAE Long Island Chapter

21st Annual LI ASHRAE GOLF OUTING

Monday – May 4, 2020

Place: Cherry Valley Club
Brunch: 11:00 am
Shotgun: 12:30 pm
Reception: 5:30 pm
Dinner: 6:30 pm

This Event fills up fast, to guarantee a spot RSVP Soon.

(2) Foursome Limit Per Company.

Proper golf attire and shoes are required. Locker room and shower privileges are included.

CHECKS MUST BE IN BY APRIL 10, 2020 (No Exceptions)

Fax, Email or Mail entire sheet or cut this half and return

Name: ____________________ Company: ____________________
Address: ____________________ Phone: ____________________
City, State, Zip: ____________________ Fax: ____________________

I have read and understand the Cherry Valley Rules and Regulations (Signature): ____________________

Guest 1: ____________________ Company: ____________________
Guest 2: ____________________ Company: ____________________
Guest 3: ____________________ Company: ____________________

Please make check payable to:
ASHRAE – Long Island Chapter
Mail Checks To:
MG Engineering D.P.C.
Attn: Peter Gerazounis, P.E. LEED AP
116 West 32nd Street
New York, NY 10001
Fax No.: (212) 643-0503
Email: peter.gerazounis@mgedpc.net

Fund raising is primarily through the contributions of our sponsors.
Please consider our sponsorship opportunities listed below.

Golf & Meals:	**$ 375 pp x ____**		**= $__________**
Reception & Dinner:	**$ 150 pp x ____**		**= $__________**
Sponsor Dinner:	**$1,000**	☐ **Yes**	**= $__________**
Sponsor Lunch:	**$ 500**	☐ **Yes**	**= $__________**
Sponsor Reception:	**$ 500**	☐ **Yes**	**= $__________**
Sponsor Prizes:	**$ 500**	☐ **Yes**	**= $__________**
Sponsor Beverage Cart:	**$ 500**	☐ **Yes**	**= $__________**
Sponsor Hole:	**$ 200**	☐ **Yes**	**= $__________**

ASHRAE Golf Outing - Monday, May 4, 2020

Cherry Valley Club

28 Rockaway Avenue at Third Street

Garden City, NY

Telephone: (516)746-4420

Fax: (516)746-4421

Program:

11 a.m. Brunch in the Clubroom & Lounge – including Omelet station, deluxe deli board with rolls, chicken scarpiello, danish, croissants, bagels & cream cheese, sliced nova, fresh fruit and cheeses, Good Humor ice cream cart.

12:30 p.m. Shotgun Start Golf – Playing individual scores. Prizes for long drive, closest to the pins, low gross and callaway. Refreshments at the halfway house will include packaged snacks and whole fresh fruit, hot dogs, beer & soda. A snack cart will also be on the course. Carts, forecaddies, driving range, locker room and showers are all included in the price.

5:30 p.m. Following Golf - Open Bar with hot and cold horsd'ouvres in the Main Lounge. Fresh mozzarella with sundried tomatoes, cajun chicken, spring rolls, baby lamb chops, sesame chicken, turkey canapés, fried oysters, cheeses, fresh fruit, lobster halves, fresh clams & oysters, shrimp and crab claws.

6:30 p.m. Reception Dinner – Awards and raffle in the Main Dining Room. Carving stations of beef tenderloin & turkey breast. Chafing dishes of chicken & salmon featuring the chef's specialty, pasta station with marinara or vodka sauce, and choice of tossed or Caesar salad. Viennese dessert table following the dinner featuring pastries, fruit, cookies, assorted cakes and pies. Full beverage service throughout is included.

Women are also invited to attend and participate. There are locker room facilities available. The Cocktail hour and Dinner will also be available for those who cannot attend during the day for the golf.

Note: We are limited to 128 golfers. Openings will be filled on a first come-first serve basis. Corporate sponsorships will be available and raffle items will be welcome. Proper golf attire is a requirement for the golf course. Soft spikes are required. Please wear a jacket for the dinner.

Directions:

From the North Shore of Long Island: Take the Long Island Expressway to Exit 34 South (New Hyde Park Road Southbound), Grand Central Parkway (Northern State Parkway) to Exit 26 South (New Hyde Park Road Southbound) or Jamaica Avenue (Jericho Turnpike) Eastbound to New Hyde Park Road. Travel Southbound on New Hyde Park Road for approximately 5 to 7 miles to Stewart Avenue (You will cross over a set of railroad tracks). Take Stewart Avenue eastbound for approximately 1-1/2 miles to Cherry Valley Avenue. Travel Southbound on Cherry Valley Avenue for 1/2 mile, Cherry Valley Avenue becomes Rockaway Avenue. Continue on Rockaway Avenue and the entrance to Cherry Valley Club will be on your right.

From Local Points North: Take Old Country Road or Stewart Avenue to Franklin Avenue. Travel Southbound on Franklin Avenue to Fourth Street (just after crossing over railroad tracks). Turn right on Fourth Street and continue until it ends (Rockaway Avenue). Cross over Rockaway Avenue into the Cherry Valley Club's parking lot.

From the South Shore of Long Island: Take the Southern State Parkway to Exit 19 (Peninsula Boulevard-Hempstead/Garden City). Travel Northbound on Peninsula Boulevard for approximately 1/2 mile to President Street. Bear left on President Street (Northbound) for approximately one mile and cross over Hempstead Turnpike. President Street will become Cathedral Avenue. Continue on Cathedral Avenue for one mile to Fourth Street. Make a left on Fourth Street (Westbound) and continue until it ends (Rockaway Avenue). Cross over Rockaway Avenue into the Cherry Valley Club's parking lot.

From Local Points South: Take Hempstead Turnpike to Franklin Avenue. Travel Northbound on Franklin Avenue to Fourth Street. Turn left on Fourth Street and continue until it ends (Rockaway Avenue). Cross over Rockaway Avenue into the Cherry Valley Club's parking lot.

ASHRAE Golf Outing - Monday, May 4, 2020

Cherry Valley Club
Golf Outing Guidelines

To add the enjoyment of your day, we ask that you abide by Cherry Valley Club's basic rules of The Club, dress, golf etiquette & safety, golf carts, and care of the course.

Club Rules

1. **Smoking is not permitted in the Club House.**
2. **Cell Phones are permitted in the parking lot only. Use of Cell Phones beyond the parking lot is strictly prohibited. This includes the Golf Course.**

Dress Code

1. Jeans, designer or otherwise, are not acceptable on club property. This not only includes pants, but skirts, and cut-offs.
2. T-shirts and tank tops are not in keeping with the atmosphere of the club and as such, are not acceptable. The definition of T-shirt includes those with psychedelic coloring or suggestive printing.
3. If the Main Dining room is going to be utilized for any purpose, jackets are required.
4. Short shorts are not permitted on the golf course, practice tee or putting green by either male or female. Bermuda shorts of acceptable length are permitted. Jogging attire and denim pants are not considered proper attire for the golf course.
5. **Soft spikes** are mandatory at all times on our fine golf course. If your shoes need soft spikes, arrive early so we can change them. There is a nominal fee. There is **no** exception to this rule.

Golf Etiquette and Safety

1. Slow play shows lack of consideration for the players in your group and, more important, for the players behind you. Golf is made much more enjoyable if all players adhere to the following points in the conduct of play:

   - Minimize the time spent looking for balls by watching the flight of balls hit by everyone in your group. If a ball appears to be lost or out of bounds, hit a provisional ball before leaving the tee.
   - Signal the players behind you to play through if it becomes apparent that a ball will not easily be found and you are holding up play.
   - Don't rush addressing and striking the ball but move briskly between shots.
   - If your ball is some distance from the golf cart and the exact club selection is in doubt, take several clubs with you when you leave the cart to walk to the ball.
   - When play reaches the area of the green, park the golf cart(s) behind the green or adjacent to the next tee. Walk briskly off the rear or side of the green after putting out. Mark your score cards after your group is off the green.
   - Once a score of double par has been posted, pick up and move on to the next hole.

2. No player should play until the players in front are out of range.
3. If your ball appears headed for a player or group of players immediately shout "fore" in a loud clear voice.
4. No one should move, talk or stand close to or directly behind the ball or the hole when a player is addressing the ball or making a stroke.

EHE Pandemic Technical Information ASHRAE CDC

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Newton, MA 02459
TEL 800-825-5343
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TECHNICAL ADVICE ON FACILIITES MANAGEMENT FOR PREPARING AND RESPONDING TO THE COVID-19 PANDEMIC

In support of preparations in response to the CORVID-19 conditions, ASHRAE has released an update to the brief, *ASHRAE Position Document on Airborne Infectious Diseases*. As noted in the Executive Summary, the document has been written to provide *practical* information on:

- Health consequences and modes of transmission of infectious disease, via droplets and aerosols
- Implications for the design, installation, and operation of heating, ventilating, and air-conditioning (HVAC) systems and potential role of mechanical systems in disease transmission
- Means to support facility management and planning for everyday operation and for emergencies

In addition to practical advice on enhancing and maintaining outdoor air ventilation, humidification, and pressurization, pertinent to healthcare facilities, it references the document, *Airborne Infectious Disease Management Methods for Temporary Negative Pressure Isolation*, from the Minnesota Department of Health. This guide assists hospital plant maintenance and engineering staff, in coordination with infection control professionals, to prepare for an infectious agent transmitted by airborne droplet nuclei.

CDC has released the CDC CORVID-19 Hospital Preparedness Checklist for review.

Building owners and manager are being besieged with new products making wide-reaching claims. We are advising facilities on *reasonable and practical* air and surface cleaning technologies and appropriate cleaning products as well as confirming proper ventilation and pressurization systems performance.

Farrell Melnick, Ph.D.
Consulting Scientist
EH&E, Inc.
516.551.9662

BOG Meeting Minutes

BOG February Meeting Long Island Chapter
February 11, 2020 / 5:00 PM / Location: Westbury Manor

Board of Governors		
President	Frank Paradiso	X
President Elect	James Hanna	X
Financial Secretary	Mathew Vitrano	
Treasurer	Murat Bayramoglu	X
Secretary	Michael Nigro	X
BOG-1	Elizabeth Jedrlinic	X
BOG-2	Andrew Blom	X
BOG-3	Mathew Catan	
BOG-4	Michael Razzano	
BOG Immediate President	Richard Halley	
Committee Member	Matthew Catan	X
Committee Member	Brian Simkins	X
Committee Member	Andy Manos	X

President (Frank Paradiso) Chapter Operations [min-600/Par-1200) Total Points: 150

- Review Minutes.
- Bill Artis' Remembrance.
- Board agreed to name yearly high school/college student scholarship "Bill Artis Memorial Scholarship"
- Board agreed to send pin and plaque to Bill Artis Family "Honorary Long Island President" exclusive of year.
- James Hanna to coordinate plaque purchase
- Newsletter: Newsletter and meeting notice separate.
  Please try to have your articles to Liset by Friday February 28th.

Programs (James Hanna)

- Fundraising opportunities for cocktail hour sponsorship
- Field Trip: Early thoughts with Membership committee
  Sterilization Plant , May 2020
  Brewery
  Dry-aging Room

Chapter Technology Transfer (Matthew Catan, Murat Bayramoglu) [min-550/par-1050) Total Points: (50)

- Work with James (Programs) for PDH certified presentations
- PDH Sign in sheet and Presentation Survey sheets

Financial Secretary (Matthew Vitrano)

- Develop Monthly finance report with using actual bank statement with all the credits and debits accounted for.
- Review at BOG meetings - monthly income and spending.

Treasurer (Murat Bayramoglu)

- Account status? Received Treasurer's financial report
- 2019-2020 Long Island Chapter Assessment by December 31, 2019. (Paid as of Nov/Dec 2019)
- CRC payment to Region discussion.
- Invoice/update Newsletter Advertisements early in the chapter year (Andy with help from Matthew V. & Michael N.)
- Cut check to Elizabeth Jedrlinic for last year's stout event

Government Affairs (Andrew Blom) [min-500/par-650] Total Points (0)

- Activities:
- Update local Politician list
- Public relations Andy Manos
- Engineer's Week - February - Topic: Commissioning
- Day on the Hill

BOG Meeting Minutes

Historical (Matthew Vitrano) [min-100/par-300] Total Points (355)
- Articles/interviews of past president's Potential life-members/fellows or historical journal articles.
- Boards are going to be updated.
- Matt to add pictures of Bill Artis to history board
- Elizabeth Jedrlinic to hand over history boards to Matt Vitrano

Honors and Awards Chair (Brian Simkins)
- Service awards/Technical Awards – Distinguished service award for Bill Artis
- Candidate Projects
- If there are any projects let Brain know

Research Promotion (Andy Manos, Michael Nigro, Matthew Vitrano) [min-800/par-1050] Total Points (950)
- Vendor Book status.
- 50/50, (other ideas to increase raffle purchases)
- We have achieved full circle, Thank you to everyone for their generous donations.
- RP Goal is $20,400.
- 30% by December 30th

Refrigeration (Murat Bayramoglu)
- Northrop Grumman visit (Mike R)

Membership Promotion (Michael Razzano, Co-chairs, Elizabeth Jedrlinic, Michael Nigro) [min-500/par-800] Total Points (200)
- Membership Upgrades: 10 new members this year.
- Discussion/suggestions on increasing chapter meeting attendance & Increase chapter membership:.
- Plan additional social events with YEA?
  - Last month's event at Plattduetsche Park Nov 22nd went well
  - Another Social event (YEA + Membership?)

Student Activities (Elizabeth Jedrlinic) [min-500/par-800] Total Points (350)
- Stony Brook, Suffolk Community College, Hofstra, NYIT and others.
- Discuss which local universities/colleges student chapters are active and which can be re-activated.
  - Update on Stonybrook student chapter?
- Any ideas for social events that can include students
- Liz to begin working on presentation on STEM
- Start thinking about Student Scholarship applications

YEA (Michael Nigro) [min-300/par-800] Total Points (450)
- 2019 Collaborate with Membership Promotion and Student Activities for Social events throughout the year in order to interest new chapter involvement, volunteers etc.
- Thoughts on springtime BBQ? Mike Nigro to begin coordinating
- Upcoming Joint February YEA event – February 13th NYC/LI/NJ YEA Joint chapter happy hour
- Brewery YEA event - Great South Bay – Frank Paradiso to send contact to Mike Nigro to coordinate.

Reception & Attendance (Matt Catan, Michael Razzano)
- Crushing it 1.0 :
  - Actively monitor membership list at reception.

Electronic Communications [min-250/par-650] (50)
- Recovery of old address (Still Ongoing)
  - Email from Tom Fields, will investigate
- Add Historical Newsletters to website (2018-19 Chapter year)
- E-Communication committee
  - Webcasting meeting idea for LI chapter (Society hosts go to meeting.)
  - Looking for consultant ~~to learn~~ to maintain:
    - Email service / Weebly website / Linked In

Golf (Peter Gerazounis/Tom Fields)
- May 4th 2020: Cherry Valley Golf event.

Next BOG Meeting: 3/10/20 @ 5:00 PM
Location: Westbury Manor

Join ASHRAE on Social Media!

ASHRAE Social Media

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Does It Cost More To Build Green? Benefits include reduced operating costs & construction waste.

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The November issue of the Journal is tested for binding strength to see how many times a page can be turned before the binding would fail.

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If you would like to place an advertisement in the Long Island Sounder, please contact our Chapter Financial Secretary, James Hanna @ 718.269.3768 or by email at finsec@ashraeli.org for further details. Thank you.

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