ASHRAE Philadelphia Chapter

December 2018
Volume 54, Issue 4

INSIDE THIS ISSUE:

COSTS

Fees are based on online reservations and prepayment.

Philadelphia Chapter Members:
$30

ASHRAE Society Members - Non-Chapter Members:
$40

Non- ASHRAE Member:
$50

Life member
No Charge

YEA Member (35 & under):
$25

Students:
$10

QUAKER CITY CLIMATE

Thursday, December 13, 2018

Breakfast Meeting

"Microgrids"

presented by

Philip Gonski
Burns Engineering
and
Gary Fechter
UGI Performance Solutions

Click here to Register

Registration Begins: 7:00 AM
Breakfast Served: 7:30 AM
Presentation: 8:00 AM to 9:00 AM

See page 8 for more information on the presentation and speaker.

LOCATION
The Union League
140 South Broad Street
Philadelphia, PA 19102
215-563-6500

For directions and parking information, check The Union League's web site at www.unionleague.org.

The Union League Dress Code

Please see page 5 for the dress code.
The Union League reserves the right to refuse admittance to anyone not adhering to the dress code

2018-2019

President
Mike Radio, PE, CEM, BEMP, LEED AP

President-Elect
Michael Calabrese, PE, CEM, LEED AP

Vice President
Tim Reinking

Treasurer
Eric Feinschil

Secretary
Judd Vail

Senior Governor
Jeff Crozier, PE, CEM, LEED AP

Governors
Dan Brown
Sean Hughes, PE
Mike Magee

Electronic Communications
James Piscopo, PE, LEED AP

Chapter Technology Transfer Committee Chair
Henry Hoffman

Research Promotion Chair
Gary Debes

Basic School Coordinator
James Lill, PE

Refrigeration
Chris Moore

Membership Promotion Chair
Kevin Clare

Student Activities Chair
Mike Magee

Program Committee Chair
Michael Calabrese

Chapter Historian
Sean Hughes

Young Engineers in ASHRAE
Dan Brown

Publicity
Mike Radio

Grassroot Government Activities
Anthony Scaccia

Special Events
Tim Reinking

Honors and Awards Committee
Jeff Crozier

PRESIDENT'S MESSAGE

Our November lunch meeting at Fogo De Chao was quite an event. I would like to that Larry Spielvogel for presenting "Green Buildings Can Waste Energy Efficiently". The presentation shed light on the complications that are keeping a number of green buildings from meeting their energy expectations. I think only Larry would be daring enough to highlight the ASHRAE Headquarters as an underperforming building with Past Society President Tom Watson in attendance! Lunch meetings continue to be a success, as we are more than doubling attendance as compared to previous year's dinner meetings. I apologize to anybody that had trouble hearing the presentation in the open space that we were seated at Fogo. Originally, we planned for an enclosed room with maximum capacity of 70 people. However, with the demand for the meeting we decided to move out of this room and not turn any attendees away. I hope that the food made up for the sound issues!

At the November Chapter Meeting, we announced a scholarship fund intended to encourage female college students to pursue studies in engineering. The ASHRAE Philadelphia Debra H. Kennoy Scholarship Fund will be awarded to a full-time student in the Philadelphia area interested in a profession in the heating, refrigerating and air conditioning industry. Debra's work at in the refrigeration market was transformational in fighting global warming. We are honored that ASHRAE Philadelphia can help fulfill her desire to promote engineering careers among women.

Current ASHRAE Society President Sheila Hayter outlined her theme for the 2018-2019 year "Building Our Energy Future". In her message, she stated, "We are at the front end of a major evolutionary change in how energy systems interact." She highlights how the 21st century electric grid with impact the future of building design, construction, commissioning, maintenance and operation. She believes electricity flow with be bi-directional and that building owners might decide to get into the electricity business. Our December breakfast meeting hosted at the Union League of Philadelphia will touch on Sheila's vision. I consider this annual meeting to be one of our premier events for the year. I am very excited to host two engineers at the forefront of microgrid design and construction, Gary Fechter from UGI and Dave Smith from Burns Engineering.

I am looking forward to seeing you all at the next Chapter meeting! Follow us on Linkedin for further Chapter updates.

Mike Radio, PE
Philadelphia Chapter President
c021@ashrae.net

The 2018-2019 Directory is Available!

The latest edition of the Directory of Associations, Consulting Firms, and Manufacturers' Representatives in the Philadelphia Area is now available. It sells for $23 each.

Send your check to:
ASHRAE, 994 Old Eagle School Road, Suite 1019, Wayne, PA 19087.
If you prefer to pay by credit card, please call Hope at 610-971-2169 or email her at hope@mmco1.com.

PHILADELPHIA CHAPTER PROGRAMS CALENDAR 2018-2019

Date	Time	Venue	Session Topic	Theme
Thursday, December 13, 2018	7am - 8:30am *"Breakfast Meeting"*	The Union League	"Microgrids"	Research Promotion
Wednesday, January 16, 2019	5pm - 10pm	Wells Fargo Center	Social Event - Hockey Flyer vs Bruins	Membership Promotion and YEA
Thursday, February 21, 2019	5pm - 8pm	Mummers Museum	"Codes / Standards"	SMCA / Student Night
Thursday, March 14, 2019				ASHRAE History Night
Thursday, April 11, 2019				
Thursday, May 09, 2019				Employer Recognition Past Presidents Research Promotion
Monday, May 13, 2019	11am - 7pm	DuPont CC	Annual Golf Outing	Fun and Relaxation

Program calendar is tentative and subject to change. Please refer to ASHRAE Philadelphia Website for up to date information. Advance registration and pre-payment are required before the meetings.

We need your attendance!

If we are below our guaranteed level for attendees at our meetings, our treasury could be negatively effected. Our programs are designed around the membership's input and we all need to support these meetings to maintain a strong/informed association. We hope to see you at our next meeting. Please come out and support our Chapter!

Click here for info!

2019 ASHRAE Winter Conference & AHR Expo Atlanta, GA January 12–16, 2019

ASPE American Society of Plumbing Engineers

PHILADELPHIA CHAPTER PRESENTS:

Our 40th Anniversary Gala

Who is invited: You! Free for Members & Guests

What is it: Cocktail Style Dinner & Dessert Reception

Where: Sugar House Casino, Ballroom 'C'
1001 N. Delaware Avenue Philadelphia, PA 19125
Remember, free parking.

When: Thursday, December 13, 2018
Time: 6:00 – 9:00 P.M.

Why: To celebrate & enjoy friends, food, music, laughs, great views, holiday spirit, and a few surprises!

Send all reservations to Matt Martin: mmartin@james-martin.com
by 4:00 P.M. Monday, December 10th

From the CTT Committee

Send any comments to:

Henry Hoffman, PE
CTTC Chairman
c021cttc@ashrae.net

Brian N. Stehman
CTTC Refrigeration Subcommittee Chairman
bstehman@tristatehvac.com

Variable Frequency Drives and Harmonics

By Henry Hoffman, PE, CTTC Chairman

"This article is intended to be a crash-course on VFDs and harmonics, and the associated harmonic mitigation techniques. The intended audience includes all engineers and architects, but this report is especially geared toward Mechanical Project Engineers – those who will be writing the Div. 23 specifications and selecting mechanical equipment for a particular building HVAC project.

Variable Frequency Drives (VFDs) are commonly used in HVAC systems to control the speed of an AC induction motor, particularly those motors driving pumps and fans.

Although VFDs were invented in the late 1950s, their use did not become widespread until decades later. Prior to the use of VFDs, most fans and pumps ran at a constant speed.

In the United States, AC power is transmitted at a frequency of 60 Hz. When AC power at 60 Hz is applied to a motor without a VFD, it will run near its synchronous speed, which is typically 1200, 1800 or 3600 RPM and is directly related to the number of poles in the motor. (The induction motor will actually run at slightly less than the synchronous speed – we call this "motor slip".)

A VFD allows the speed to be varied, which can be very useful for reducing energy consumption in HVAC systems with varying loads. There are different types of VFD's available, but the most common type and what this bulletin will consider your "standard" VFD is a 6-pulse VFD. (Refer to the section below on "Addressing Harmonic Distortion" for descriptions of other types of VFDs). A 6-pulse VFD essentially takes the 60 Hz input frequency and converts it to DC power in the rectifier section using diodes. It then rebuilds the AC sine wave at a different frequency using an inverter.

VFDs are not without their drawbacks. They produce harmonic distortion which if left unchecked can cause numerous power system problems including transformer overheating…"

(click here to read the entire article)

The Union League Dress Code

It is the intention of the Dress Code to provide a set of guidelines within which it is expected that guests will demonstrate discretion and good judgment. **The Union League reserves the right to refuse admittance to anyone not adhering to the dress code.**

Jackets are not required at breakfast. Business casual dress is permitted in the private meeting rooms.

Men: Business casual attire is defined as a collared shirt and slacks.

Women: Pants should be tailored and are acceptable when worn with a jacket or other garments which would be appropriate if worn with a skirt.

Unacceptable Attire: The following attire is never acceptable on the first or second floors of the League: jeans, denim wear, tee shirts, athletic wear, tank, halter, or jogging tops, shorts, baseball caps, sneakers, casual or beach footwear.

Philadelphia Still Following Guidelines of Paris Agreement, Lags Behind Leaders

The Paris Agreement is an ambitious international accord formed at the United Nations Framework Convention. The goals of the accord are to combat climate change and provide capital for a sustainable, low carbon future. The agreement became effective in 2016, and only one year later President Trump announced the United States would leave the Paris Agreement stating, “In order to fulfill my duty to protect America and its citizens, the United States will depart from the Paris Climate Agreement.” The United States will not be able to fully exit the accord until 2021 as per article 28. The same day as Trump’s announcement Climate Mayors, a bi-partisan, peer-to-peer network of 400 mayors, including Philadelphia Mayor Jim Kenney released a statement of intent from 61 signatories, which has since grown to over 400, to continue to adhere to the Paris Agreement. Mayor Kenney, a major proponent of clean air, clean energy, and enhanced efficiency is one of the original signers of the statement. The group has since submitted an open letter to EPA Administrator Scott Pruitt, voicing their dissatisfaction on the EPA’s proposed repeal of the Clean Power Plan. Since, the EPA has attempted to begin the process of repealing the Clean Power Plan, though court challenges delayed the 2-year repeal process until October 9th when the Supreme Court rejected any further challenge to the repeal plans.

Realizing the projects and goals envisioned by community leaders and politicians requires outside financing to offset large costs. In 2017 Philadelphia saw an opportunity to acquire support, Bloomberg Philanthropies’ announced the American Cities Climate Challenge, a $70 Million contest open to any of the US cities that signed on to continue to progress with the standards set forth by the Paris Agreement. Bloomberg began announcing winners from the contest this fall. Philadelphia was selected as one of the 20 wining cities along with Pittsburgh, Washington DC and Boston on October 21st.

Philadelphia plans to use funds received from Bloomberg’s American Cities Climate Challenge to improve efficiencies in homes and large commercial buildings with various grants and programs available to citizens and businesses. Funds will be injected into institutional clean energy procurement programs, the City of Philadelphia Office of Sustainability’s Powering Our Future: A Clean Energy Vision for Philadelphia program is set to reduce carbon emissions 80 percent and have a carbon-free electric grid by 2050. South Eastern Pennsylvania Transit Authority, SEPTA will use funding in their ongoing 12 year $7.3B Rebuilding for the Future project. Philadelphia has pushed forward with legislation to advance the city’s building energy code to IECC 2018, ahead of the 2015 code required by Pennsylvania.

Despite being in the front of the pack, Philadelphia is not one of the leaders striving to progress towards meeting standards set in the Paris Agreement by banning hydrofluorocarbons (HFCs), greenhouse gasses used in refrigeration, insulation, and aerosols as they have in California, New York, Connecticut and Maryland. Philadelphia also still holds investments in fossil fuels, although other cities pursuing the Paris Agreement standards have already started divesting in fossil fuels such New York and London.

While Mayor Kenney and his team have proven to be major proponents of clean air, clean energy, and enhanced efficiency, Philadelphia can still do more to keep up with the other municipalities to lead way for sustainability and climate change. To keep its promise of adhering to the Paris Agreement, I would suggest Philadelphia pursue programs to begin divesting in fossil fuels similar to New York, London, and Ireland or banning of HFCs as California has. Philadelphia can go a step further and establish itself as an example by being the first municipality to totally divest from fossil fuels.

Anthony Scaccia
Philadelphia Chapter
Grassroots Government Advocacy Committee Chair
ascaccia@ballinger.com

Hello from Future City Philadelphia!

The program is going strong with 52 schools registered. It is now getting down to the wire. The first submissions, the Virtual City and the Essay, are due within the next couple of weeks. We are looking for volunteers to judge these two submissions. This is something you can do on your own time. The information will be emailed to you couple of days after the submission due date. Judging is to be completed by mid January.

Virtual City Judges: Evaluate a slideshow presentation about each team's Virtual City (created with SimCity). The instructions for accessing and judging the presentations will be included in the email.

City Essay Judges: Evaluate a 1,500 word essay describing each team's city and response to the "Age-Friendly City" engineering challenge. The instructions for accessing and judging the essays will be included in the email.

For more information about judging, please click on the following link, **http://www.futurecityphilly.org/fcvolops.html**

Mentors:
There are still some schools that need a mentor. Even with only a little more than a month to go, it is always helpful to have a mentor to make that final push. The following schools can use a mentor.

Agora Cyber Charter School - Phoenixville, PA
Centennial School District - Southampton, PA
Fleetwood Area Middle School - Fleetwood, PA
Gwynedd Mercy Academy Elementary School - Spring House, PA
Howard Gardner MI Charter School - Scranton, PA
Little Town Christian Robotics Academy - Chester, PA
Mill Creek Elementary - Warrington, PA
Mount Aviat Academy - Childs, MD
New Hope Solebury Middle School - New Hope, PA
St. Albert the Great School - Huntington Valley, PA
St. Elizabeth Parish School - Uwchlan, PA
St. Katherine of Siena School - Philadelphia, PA
St. Peter's School - Philadelphia, PA

If you are interested in working with any of the schools listed above, please let me or Mike McAtee (Mentor Coordinator) **mjmcatee@urbanengineers.com** know as soon as possible. We will get you in touch with the team's teacher.

Additional Volunteers:

We need more preliminary judges, special awards evaluators and general volunteers for the day of the competition, which is Saturday, January 19th at Archbishop Carroll High School in Wayne, PA. Preliminary judges and special awards evaluators are needed for the morning session of the competition. General volunteers are needed throughout the day to help organize the schools, get the schools to the judging rooms, collect scorecards, etc.

Please visit our website at **www.futurecityphilly.org** and "Click here to sign up as a Volunteer" on the top left of the page. There you can register to be a mentor, judge, or general volunteer.

Any questions please contact me via e-mail or phone. Please feel free to forward this e-mail to your friends, co-workers, and technical society members.

Karen R. McManuels, PE
Philadelphia Regional Volunteer Coordinator
kmcmanuels@aeceng.net / 610-688-3980 x132

December Meeting
Thursday, December 13, 2018

Presentation

"Microgrids"

The past few years have brought a dramatic shift in how energy is both utilized and distributed. With power outages negatively impacting critical commercial and industrial customers bottom line, microgrids have become a key solution. These resilient, on-site, energy production facilities offer both energy security, additional revenue streams, and a means for customers to develop clean energy solutions. Thermal recovery with heating and cooling applications will be discussed. The presentation will cite concrete examples of how microgrids helped solve a critical need, as well as the drivers for what leads to project development. Real world examples will include the Philadelphia Navy Yard, New Jersey Transit, New York Prize, and New Jersey Town Center programs.

Speaker Bios

Philip Gonski, Project Manager at Burns Engineering, PGonski@burns-group.com

Philip M Gonski, P.E has been active in both the volunteer and professional community in the Philadelphia Area. After graduating from the University of Illinois – Urbana, Philip started his career at Sargent & Lundy, LLC, designing new power plants. Among his notable projects were the design of the country's largest biodiesel power plant on the island of Oahu, and later in the design of one of the largest combined cycle power plants in the world in Saudi Arabia. While working at S&L, Philip took courses in Energy and Power Engineering in the evenings and earned a Master's Degree from University of Illinois-Chicago. Philip is currently a Project Manager at Burns Engineering in downtown Philadelphia serving industrial and energy clients, with a focus on advanced microgrids. His projects include various Grid Modernization at the Philadelphia Navy Yard, including a 10 MW Substation, 8 MW Natural Gas Plant, and a Battery Energy Storage System presently being finalized. Additionally, Philip is involved in microgrid feasibility and design projects across the United States. Aside from his professional involvement, Philip is a past Chair of the Philadelphia IEEE Section, Current IEEE Region 2 East Area Director, and will be the IEEE Region 2 Treasurer in 2019. Philip has also been involved in the technical development of IEEE standards focused around microgrids and distributed energy.

Gary Fechter, General Manager, Performance Solutions & Engineering Services at UGI Performance Solutions, gfechter@ugihvac.com

Mr. Fechter leads the Combined Heat and Power (CHP) Design and Implementation team for UGI HVAC. His team is currently working on multiple CHP projects. Mr. Fechter has more than 35 years of experience in energy, engineering, and project management. He is a Certified Energy Manager, LEED Accredited Professional Operations and Maintenance, and Certified Demand Side Management Professional. He has managed energy professionals, and has designed, implemented and operated energy projects that combined sustainable practices, clean on-site generation systems, and advanced efficiency technologies to help customers achieve their energy, economic, and environmental goals. These projects included cogeneration and combined heat and power systems (conventionally, biomass and biogas fueled), district energy and community energy systems, solar (photovoltaic) electric generation, solar thermal, and facility optimization. Prior to joining UGI HVAC, Mr. Fechter served as a Principal in Enerval Advisors, Vice President of Technical Development and Alternative Energy at Lime Energy Company, President and CEO of Princeton Energy Systems and was a Senior Executive with Trigen Energy Corporation. He also served with the US Army in various roles including Associate Professor of Physics at the US Military Academy at West Point. Mr. Fechter has a Bachelor of Science in Applied Science and Engineering from the United States Military Academy at West Point and a Master of Science in Nuclear Engineering from Rensselaer Polytechnic Institute.

Click here to Register

The Philadelphia Chapter
of the
American Society of Heating,
Refrigerating and Air
Conditioning Engineers, Inc.

994 Old Eagle School Road
Suite 1019
Wayne, PA 19087-1866
P 610-971-2169
F 610-971-4859

Visit
our web site at:

www.ashraephilly.org

 Any member with material to submit for inclusion in the *Climate* can send the information to:

Hope Silverman
P 610-971-2169
hope@mmco1.com

Material can include letters to the editor, member news, upcoming events, comments on chapter programs or issues, etc.

November Meeting Photos

November 8, 2018

Philadelphia Chapter President Mike Radio (left) presents speaker Larry Spielvogel with a Liberty Bell to thank him for his presentation on “Green Buildings Can Waste Energy Efficiently”.