

**April 2017**  
**Volume 52, Issue 7**

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**COSTS**

Fees are based on online reservations and prepayment.

Philadelphia Chapter Members:  
**\$30**

ASHRAE Society Members -  
Non-Chapter Members:  
**\$40**

ASHRAE Life Members:  
**No Charge**

Non- ASHRAE Member:  
**\$40**

YEA Member (35 & under):  
**\$25**

Students:  
**\$10**



# QUAKER CITY CLIMATE

**Thursday, April 6, 2017**

**CHOP - Energy Initiative Overview and Lessons Learned**

*presented by*

**Rachel McCarthy**  
**CHOP**

5:00 PM to 6:00 PM	Social Hour/Cash Bar
6:00 PM to 7:00 PM	Dinner
7:00 PM to 8:00 PM	Presentation
8:00 PM to 9:00 PM	YEA Social

**This is a Student Night and Membership Promotion Night!**

**[Click here](#) to Register**

**Location**

Dave & Buster's  
325 N Columbus Boulevard  
Philadelphia , PA 19106

**For directions, [click here](#).**

Parking: \$12 (\$5 drink coupon)

**2017 Annual Golf Outing**

May 15, 2017

See [page 3](#) for more information and to register!

**YEA Outing - Union Soccer Game**

May 17, 2017

See [page 4](#) for more information!

2016-2017

**President**

Casey Younkins, PE

**President-Elect**

Jeff Crozier, PE, CEM, LEED AP

**Vice President**

Mike Radio, PE, CEM, BEMP, LEED AP

**Treasurer**

Michael Calabrese, PE, CEM, LEED AP

**Secretary**

Tim Reinking

**Senior Governor**

Ashley Lester, PE, LEED AP

**Governors**

**Dan Brown**

**Eric Feinschil**

**Sean Hughes, PE**

**Tim Reinking**

**Newsletter & Website Editor**

James Piscopo, PE, LEED AP

**Chapter Technology**

**Transfer Committee Chair**

Eric Feinschil

**Research Promotion Chair**

Gary Debes

**Basic School Coordinator**

James Lill, PE

**Refrigeration**

Adam Ryan

**Membership Promotion Chair**

Jeff DeSipio

**Student Activities Chair**

Mike Magee

**Program Committee Chair**

Jeff Crozier, PE, CEM, LEED AP

**Chapter Historian**

Sean Hughes

**Young Engineers in ASHRAE**

Dan Brown

**Public Relations**

Ashley Lester, PE, LEED AP

**Grassroot Government Activities**

Edward Decker

**Golf Outing Director**

Tim Reinking

**Honors and Awards Committee**

Eric Feinschil

## **PRESIDENT'S MESSAGE**

Spring is here! We're in the final stretch of ASHRAE events for this year and are looking forward to closing the year strong with two more dinner programs, the golf outing at DuPont Country Club, a YEA social at a Union soccer game, and another CTTC tour.

Our March meeting was our annual table top show at Fisher's. We had over thirty vendors present their latest products and technologies, and dozens of engineers in attendance to learn. It was a successful night for all that participated.

Our April meeting will be on Thursday April 6<sup>th</sup>, a little earlier in the month than usual to avoid conflicts with Easter, and will feature a presentation by Rachel McCarthy from CHOP, presenting on her experience with Optisine and lessons learned, and all the energy upgrade projects and results from their work over the years. Rachel is one of the top facility energy managers in the country, and we're honored to have her speak to our chapter.

In May, we'll be hosting "Philadelphia ASHRAE Week" the week of May 15<sup>th</sup> – this one week will feature our annual golf outing, our YEA social at the Philadelphia Union, and our final dinner meeting of the year. We hope you're able to attend as many events as possible with us! We'll start advertising these events in April, keep an eye out for invitations.

Lastly, we're amid building up our board and committee chairs for the 2017-18 ASHRAE year. We strive to add a few new volunteers to committees each year. If you are interested, please contact me. We'd be happy to host you at an upcoming board meeting so you can learn what the various roles are.

Thanks as always for your continued support of ASHRAE. I look forward to seeing you all at our meeting this month.

**Casey Younkins, PE**  
Philadelphia Chapter President  
[c021@ashrae.net](mailto:c021@ashrae.net)

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We are accepting nominations for the  
Philadelphia Chapter's Board of Governors for the 2017/2018 year.

Any interested parties should reach out to Mike Witkowski,  
Nominating Committee Chair, at [mwitkowski@mchugheng.com](mailto:mwitkowski@mchugheng.com).

The initial slate will be announced at the chapter meeting  
On April 6, 2017.



**Philadelphia Chapter ASHRAE  
2017 Annual Golf Outing**

**Monday, May 15, 2017  
11:00 AM to 7:00 PM**

**DuPont Country Club  
1001 Rockland Road  
Wilmington, DE 19803**

[REGISTER HERE](#)

[Click here](#) for directions.

**Schedule:**

11:00 am - Registration begins  
11:30 am - Boxed lunches available  
12:30 pm - Shotgun start  
5:30 pm - Dinner and prizes

**Costs:**

\$35.00 Golf Outing 2017 - Dinner Only  
\$200.00 Golf Outing 2017 - Golf & Dinner (one golfer)  
\$200.00 Golf Outing 2017 - Single Hole Sponsor (does not include golf or dinner)  
\$350.00 Golf Outing 2017 - Two Hole Sponsor (does not include golf or dinner)  
\$450.00 Golf Outing 2017 - Three Hole Sponsor (does not include golf or dinner)

**We hope to see you there!**

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**APRIL DINNER MEETING**

**CHOP - Energy Initiative Overview and Lessons Learned**

*presented by*

**Rachel McCarthy  
CHOP**

Ms. McCarthy will provide an overview of energy initiatives that are being implemented at CHOP and a summary of the energy savings obtained by them. In addition, Ms. McCarthy will discuss lessons learned from a large electrical project to implement power correction that did not go right from the start but ended up being a huge success.

**YEA Social**

Thursday, April 6, 2017

8:00 PM to 9:00 PM

Dave & Buster's

(following the dinner meeting)



If you are 35 years old or under, stick around after the meeting for time hanging out and playing pool with other young engineers.

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**YEA Soccer Night**

**Sponsored by Mitsubishi**

May 17, 2017

5:00 PM to 10:00 PM

Talen Energy Stadium

*(formerly PPL Park)*

One Stadium Drive

Chester, PA 19013

[www.philadelphiaunion.com](http://www.philadelphiaunion.com)

Philadelphia Chapter ASHRAE invites all members 35 and under to a night of fun with the Philadelphia Union as they play the Houston Dynamo. Tickets are limited and are \$15 for YEA members, student members, and guests.

Join us at 5:00 PM to socialize and tailgate before the game and get your tickets.

Exact meeting location is TBD. The game begins at 7:00 PM.

Contact Dan Brown at [c021yea@ashrae.net](mailto:c021yea@ashrae.net) with questions.

**Tickets are limited! Sign up today!**

Click [here](#) to register.

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**YEA Scholarship**

We are asking that working professionals nominate young engineers at your firms for a YEA scholarship. These individuals should have shown outstanding performance in the HVAC&R industry and show an active involvement and interest in ASHRAE. We will be providing criteria to judge the nominees, and a winner will be selected to receive an award. Nominations should be sent to Dan Brown at [c021yea@ashrae.net](mailto:c021yea@ashrae.net). More details to come.

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**PHILADELPHIA CHAPTER PROGRAMS CALENDAR 2016-2017**

Date	Location	Topic	Theme
<a href="#">4/6/2017</a>	Dave & Buster's	Presentation by Rachel McCarthy, CHOP	Students and Membership
<a href="#">5/15/17</a>	DuPont Country Club	Golf Outing	
<a href="#">5/17/17</a>	Talen Energy Stadium	Union Soccer Game	YEA Outing
5/18/2017	The Wyndham	Presentation by Tom Watson, Daikin	Past President's Night

*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!

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**Advertise Now in the 2017-2018 Directory!**

Are you interested in advertising in the 2017-2018 Philadelphia Area Directory of Associations, Consulting Firms, and Manufacturers' Representatives?

This directory is published annually by the Philadelphia Chapter of ASHRAE.

Current directory circulation exceeds 1,400 copies and is growing.  
Users include engineers, contractors, purchasing agents, suppliers  
and over 900 ASHRAE members.

Now is the time to have your firm receive the exposure that only the ASHRAE Directory can offer!

Email [hope@mmco1.com](mailto:hope@mmco1.com) if you would like more information.

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Did you know there are free design guides available on the ASHRAE web site?  
The regular technical article is not the only place to get great free information each month.  
Take a few minutes to log on and see the variety of design guides available to download at no cost.  
The design guides can be located by using the link below.

<https://www.ashrae.org/standards-research--technology/advanced-energy-design-guides>

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Please submit articles highlighting novel HVAC technologies to Chapter Technology Transfer Committee Chair Eric Feinschil ([c021cttc@ashrae.net](mailto:c021cttc@ashrae.net)) for consideration in future newsletters.

## **Large-Capacity, Water-to-Water Heat Pumps for Centralized Plants**

**By Craig R. Campbell, Joseph A. Catrambone and Christian P. Paraskevacos**

A large-capacity ( $\geq 1,500$  MBH [440 kW]) water-to-water heat pump (WTWHP) is a water-cooled chiller that has been adapted to produce hot water at a specified temperature. Heat is extracted from one low-temperature water flow, and its temperature is raised to a level that is useful, before being transferred to a second water flow.<sup>1</sup> It consists of evaporator and condenser shells, a compressor, and an expansion device. Unlike residential and light-commercial heat pumps, it does not contain a reversing valve.

The WTWHP has recently become more popular due to its economic and environmental benefits, including: higher efficiency than hot-water boilers; attractive payback periods; reduced quantity of makeup water for cooling towers and boilers; and reduced greenhouse gas emissions.

This article provides guidelines for building owners and designers interested in applying large-capacity WTWHPs in their facilities. This article does not contain an economic analysis of WTWHPs. That topic can be found in a previous *ASHRAE Journal* article by Hubbard.<sup>2</sup>

### **Selections and Economics**

As a starting point, it is important to consider factors that can impact the selection of large water-to-water heat pumps.

**Hot-water temperature.** The maximum leaving hot-water temperature (LHWT) of a given heat pump is typically limited by the design working pressure of the unit for a given refrigerant. Sufficient cooling for the compressor motor can also be a limiting factor. The manufacturer should ensure that the unit will operate reliably at the selected conditions.

While higher LHWTs reduce the size of the airside heat-exchange equipment (coils), the operating cost, and possibly the capital cost, of the heat pump will increase. For each application, the best balance between airside and waterside capital costs will differ. For the highest efficiency, use the lowest possible LHWT.

The difference between the LHWT and the leaving chilled-water temperature (LCHWT) is an indication of the pressure difference, or lift, against which the compressor must work. For centrifugal heat pumps, each stage of compression can provide about 70°F (40°C) of lift. A single-stage centrifugal heat pump is sometimes called a “low-lift” unit, while a centrifugal heat pump with two or more stages is referred to as a “high-lift” unit. Scroll and screw heat pumps can provide about 85°F to 150°F (47°C to 83°C) of lift.

**Fouling.** Water chillers are normally designed for waterside fouling factors of 0.00010 and 0.00025 ft<sup>2</sup>·hr·°F/Btu in the evaporator and condenser, respectively, assuming the condenser operates in an open cooling-tower loop. In a heat pump, however, the condenser loop is normally closed, while the evaporator loop may be closed or open. Therefore, 0.00010 fouling should be used for the heating loop, and the evaporator should be assigned an appropriate factor, based on the water quality.

**Turndown.** Because heat pumps operate at essentially constant lift (the entering chilled-water temperature and LHWT remain relatively constant), the turndown (available load reduction) can be significantly less than the turndown for water chillers. This is especially true for centrifugal compressors, where minimum capacity may be only 40% to 50% of the design heating load, before the refrigerant flow may become unstable; this is known as “surge.” Surge is not an issue for

[\(click here to read the entire article\)](#)



The Philadelphia Chapter  
of the  
American Society of Heating,  
Refrigerating and Air  
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994 Old Eagle School Road  
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Visit  
our web site at:

[www.ashraephilly.org](http://www.ashraephilly.org)

Republication of material  
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not speak or act for the Society.  
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](mailto:hope@mmco1.com)

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

## **NEW PHILADELPHIA CHAPTER MEMBERS**

### **New Members:**

Shaun Campbell  
Phillip DeFazio  
Kevin Frazee  
David Mulrooney  
Gustavo Rolotti

### **New Students:**

Dimitri Kustas  
Aiman Omar  
Terri-Ann Sidberry  
Christian Stabelli  
William Thompson

### **New Associates:**

Paul Adams  
Berk Ayranci  
William Burris  
Caroline Dougherty  
Andrew Foley  
Walter Hackett III  
Sebastian Hollabaugh  
Blake M Larson  
Rob Moran  
Dale Mull  
Jordan Rolon  
Andrew Staehle  
Cheuk Tsang

## **Membership Advancement**

If you are currently an ASHRAE Associate Member, becoming a full Member is easier than you think! The following count toward the required **12 points** to advance to full membership status. You must update your ASHRAE online biography and send an email to [membership@ashrae.org](mailto:membership@ashrae.org) to advance.

Non-accredited degree = 4 points  
Accredited degree = 6 points  
PE = 4 points  
Industry experience = 1 point/year

## **The 2016-2017 Directory is Still Available!**

The 2016-2017 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 Hope Silverman, 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](mailto:hope@mmco1.com).