

December 2014
Volume 50, Issue 4

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COSTS

Fees are based on online reservations and prepayment.

Philadelphia Chapter
Members:
\$30

ASHRAE Members -
Non-Chapter Members:
\$40

Non-ASHRAE Member:
\$40

Life Member:
No Charge

Young Engineers
(35 & under):
\$25

Students:
\$10



QUAKER CITY CLIMATE

Thursday, December 18, 2014

Breakfast Meeting

"The ASHRAE Building Energy Labeling Program"

presented by

Dr. William Bahnfleth, PE

Professor, Architectural Engineering
Director, Indoor Environment Center
The Pennsylvania State University

[Click here](#) to Register

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

See [page 3](#) 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

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.

2014- 2015

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PRESIDENT'S MESSAGE

Welcome to the December newsletter!

What a fabulous time of year. There is always a lot of excitement as the year comes to an end. It feels like much time has passed since our last meeting. In early November, we had both a dinner seminar and half day technical seminar. These events were held a couple of weeks earlier than normal to accommodate our speaker. Both were well attended. Thank you to all who joined us and, more importantly, helped fill out the topic review forms. As always, whether we have the review forms or not, we want to hear feedback on the seminars so that we can better plan our future events. I was personally fascinated with the concept of capturing sensor error by using a single sensor at a central location as opposed to using multiple sensors and trying to account for the statistical error of both sensors. To me, it seems like such a simplistic approach to what could be a complex statistical analysis.

Our December meeting is not only our traditional holiday breakfast meeting at the Union League, but we are featuring our Society past president, Dr. Bahnfleth, who is coming to speak about the ASHRAE Building Energy Labeling Program. This is a great firsthand look into the energy labeling concept and what the future may hold for the industry. And if the topic doesn't do it for you, it's our one event of the year where there is bacon...

Position Highlight – Chapter Technology Transfer Chair (CTTC) - The position title sums it up, transfer technological information from one part of our organization to another so that all members can increase their knowledge base. In our chapter, the position is responsible for creating our tours and seminars along with collecting our members technologically advanced projects and submitting them to ASHRAE for awards. The position for the past year has been manned by newcomer Chris Gale. Chris has been doing a fabulous job getting himself involved, taking on more responsibility and learning the ins and outs of the position. For the past year, Chris has really become a person you can count on to get the job done on his own initiative. He has made my job easier because I know he will run with the task at hand. This year, he is looking to set up a tour of a sheet metal shop, setting up two half day seminars, collecting award applications and submitting an application to the Philadelphia CANstruction competition. Thank you, Chris, for making my job easier.

-Mike

Mike Witkowski

Philadelphia Chapter President

c021@ashrae.net

Membership Advancement

If you are currently an ASHRAE Associate Member,
becoming a full Member is easier than you think!

See [page 8](#) for details.

Thursday, December 18, 2014

Breakfast Meeting

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presented by

Dr. William Bahnfleth, PE

Professor, Architectural Engineering
Director, Indoor Environment Center
The Pennsylvania State University

Whether voluntary or mandatory, the rating of the energy use and indoor environmental quality of buildings is a growing trend worldwide. In 2009, ASHRAE introduced its own "Building Energy Quotient" (bEQ) labeling program for new and existing buildings and is now in the process of implementing it. It is a comprehensive and rigorous program comprising not only an energy use performance scale, but also tools and procedures for performing ratings and certifications for the qualified energy modelers and building assessors who will use them. This presentation provides an overview of the bEQ program, compares it to other building certification programs, identifies the benefits of certification, and summarize the current status of the bEQ program and plans for the future.

William Bahnfleth was the ASHRAE society President for 2013 -14. He is Professor and Director of the Indoor Environment Center in the Department of Architectural Engineering at the Pennsylvania State University (Penn State) in University Park, PA, where he has been employed since 1994. Previously, he was a Senior Consultant for ZBA, Inc. in Cincinnati, OH and a Principal Investigator at the U.S. Army Construction Engineering Research Laboratory in Champaign, IL. He holds BS, MS, and PhD degrees in Mechanical Engineering from the University of Illinois, where he also earned an undergraduate degree in music (pipe organ performance), and is a registered professional engineer.

At Penn State, Dr. Bahnfleth teaches undergraduate courses in HVAC fundamentals and controls and graduate courses in chilled water systems, hot water and steam systems, and indoor air quality. His research interests cover a wide variety of indoor environmental control topics, including chilled water pumping systems, stratified thermal energy storage, protection of building occupants from indoor bioaerosol releases, ultraviolet germicidal irradiation systems, and others. He is the author or co-author of more than 100 technical papers and 11 books and book chapters. He consults regularly on the design of chilled water thermal energy storage systems and has been involved in more than 20 projects world-wide.

Dr. Bahnfleth is a fellow of both ASHRAE and the American Society of Mechanical Engineers (ASME) and is also a member of the International Society for Indoor Air Quality and Climate (ISIAQ), the International Building Performance Simulation Association (IBPSA), Sigma Xi, the American Society for Engineering Education (ASEE), and the Society of Building Science Educators (SBSE). He has served ASHRAE in a variety of capacities, including Student Branch Advisor, Chapter Governor, Technical Committee and Standing Committee Chair, and as Director-at-Large, Vice President, Treasurer, and 2013-14 Society President. He is the recipient of a 1st place ASHRAE Technology Award, Transactions Paper Award, and Distinguished Service and Exceptional Service Awards.

[Click here](#) to Register



Join ASHRAE at its **Winter Conference** in Chicago, Jan. 24–28 **and AHR Expo** Jan. 26–28

Special first time attendee registration fee available! Advanced registration, offering the lowest rates, ends Nov. 3.

REGISTER EARLY!

- Gain personal and career excellence through peer contact, exchange of technical information and continuing education.
- 20 high-quality, authoritative Professional Development Seminars and Short Courses presented by the ASHRAE Learning Institute.
- Visit the World's Largest HVAC&R Marketplace. The AHR Expo brings the entire industry together to see the latest products and technology, learn about innovations and trends that are shaping the future, and build new relationships.
- With the Conference being held in the big city of Chicago, the Technical Program itself is going big with a focus on big projects, the big picture and big impacts. Eight tracks are featured.
- Gain valued credentials held by top engineers via ASHRAE's six Certification programs.
- See the technology you help create first-hand via a Technical Tour.



www.ashrae.org/chicago | www.ahrexpo.com

ASHRAE Philadelphia Corporate Sponsorships Available

The Philadelphia Chapter invites your company to join as a Corporate Sponsor for the 2014-2015 year. Your firm's participation in this program would enable us to make a wonderful donation to ASHRAE Research Promotion which includes over \$ 1.5 million in local research funding. Corporate Sponsors are listed on our web site, in our newsletter, and in our annual directory. They receive free copies of our directory and recognition at all of our events. With the ease of one payment, you may get all this, as well as free dinner tickets good for our monthly meetings, and make a valuable contribution to ASHRAE Research at the same time. Since not all companies have the same financial capabilities or quantity of employees, we offer a few different levels of corporate sponsorship. Each level will receive the same types of benefits, with some differences in quantities and discounting.

We hope you will decide to join us as a Corporate Sponsor. If you are interested, please email us at philachapter@mail.ashrae.org. The Board of Governors thanks you for your continued support of ASHRAE. We hope that this year is successful for your firm.

Future City 2015

Greetings from Future City Philadelphia! Hope everyone had a good Thanksgiving.

The program is going strong with 49 schools registered. There are still some schools that need a mentor:

Beverly Hills Middle School	Upper Darby, PA
Penn Wood Middle School	Darby, PA
Serviam Girls Academy	New Castle, DE
Seven Generations Charter School	Emmaus, PA
St. Aloysius Academy	Bryn Mawr, PA
St. Ignatius	Yardley, PA

If you are interested in working with any of the schools listed above, please let me know as soon as possible. I will get you in touch with the team's teacher. As a mentor, you can be that person asking the questions to get the team back on the right track. Just 1 or 2 hours a week can make a big difference in how students approach their project.

Also, we regret to inform you that the mentor for Holy Angels is deceased. Our condolences go out to his family and friends. If anyone is interested in mentoring Holy Angels, please let me know.

The competition is getting down to the wire. The Virtual City portion of the competition is due December 8th and the Essay/Narrative is due December 15th. We are looking for volunteers to judge these submissions. Judging is to be completed by January 7th. The information is emailed to you so you can review and judge on your own timing.

We are also in need of volunteers for the day of the competition, which is Saturday, January 25th at Archbishop Carroll High School in Wayne, PA. The day of the competition volunteers are needed 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.

Thank you for your support.

Karen R. McManuels
Philadelphia Regional Volunteer Coordinator

Manager, Operations
Associated Engineering Consultants, Inc.
485 Devon Park Drive, Suite 113
Wayne, PA 19087
610-688-3980 x132
610-389-5692 cell
kmcmanuels@aeceng.net

PHILADELPHIA CHAPTER PROGRAMS CALENDAR 2014-2015

Date	Location	Topic	Theme
12/18/2014 Breakfast	Union League	The ASHRAE Building Energy Labeling Program by Dr. William Bahnfleth, PE	Research Promotion
1/15/2015	Wells Fargo Center	Philadelphia Flyers vs. Vancouver Canucks	Social
2/12/2015	Dave & Buster's	Seismic Restraint and Intro to SMACNA's Duct App by Eli Howard	Student Night and YEA
3/19/2015	Wyndham Hotel	Data Center Energy Efficiency by Don Beaty, PE of DLB Associates	Membership
4/9/2015	Fisher's Tudor House	Trade Show	Student Night
TBD	TBD	Golf Outing	
5/14/2015	TBD	TBD	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!

ASHRAE Winter Conference

January 24-28, 2015

Chicago, Illinois

[Click here for more information.](#)

YEA Update
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 Jeffrey Pisarek at c021yea@ashrae.net. More details to come.

Social

Our last YEA Social was held at Luck Strike Bowling Alley in Center City in November. The event was a success. There were 13 people in attendance, and everyone had a good time. We look forward to another social event next year!

Please submit articles highlighting novel HVAC technologies to Chapter Technology Transfer Committee Chair
Chris Gale (c021cttc@ashrae.net) for consideration in future newsletters.

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>

HVAC Fault Detection

By Matthew Wiggins, Ph.D. and James Brodrick, Ph.D., Member ASHRAE

A significant amount of energy is wasted by malfunctioning or ill-maintained building systems. Faults relating to HVAC systems represent between 1% and 2.5% of total commercial building consumption. Owners/operators are often unaware when units are malfunctioning and wasting energy.

The average commercial AC unit has an evaporator airflow 15% to 25% less than optimum commissioned values,¹ 34% of residential air conditioners are undercharged and 28% are overcharged,* 35% of commercial rooftop units' dampers fail within several years of installation,¹ and 50% to 67% of air conditioners (residential and commercial) are either improperly charged or have airflow issues.^{2,3}

Despite the performance seen when a system is first commissioned, efficiency over time decreases. Though scheduled maintenance is purported to maintain a system at its peak performance level, the typical maintenance person cannot do the in-depth tests required to deliver this performance without lengthy service calls. Such calls are often prohibitively expensive.

Automated fault detection and diagnostics (FDD) systems attempt to address these issues by identifying faults when they occur and, if they are of sufficient severity, communicating the fault to the owner or maintenance personnel. This can eliminate scheduled maintenance costs, reduce diagnostic labor, reduce wasted energy, reduce peak electricity demand, and minimize downtime.

Residential and commercial HVAC systems are excellent systems for application of FDD. Units that tend to be under-maintained (such as many small-and medium-sized commercial/industrial building's rooftop or other packaged air conditioners) have the potential for the shortest payback periods.

Technology

Generally FDD works by measuring a subset of temperatures, pressures, and humidity levels in several stages of the HVAC system. Automated comparison of what these values should be for a given system with what they actually are can provide strong indicators of fault conditions.

Targeted faults include:

- Low refrigerant charge;
- Refrigerant overcharge;
- Noncondensable gas in the refrigerant;
- Liquid-line restriction;
- Compressor valve leaks; and
- Condenser and evaporator fouling.

Several types of HVAC FDD devices exist.

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



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

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Wayne, PA 19087-1866
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F 610-971-4859

Visit
our web site at:

www.ashraephilly.org

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authorization. The Chapter does
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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.

NEW PHILADELPHIA CHAPTER MEMBERS

Daniel Brown
Zhelun Chen
Abdul Muneem
George VanEmburch
Stephen Ziga

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 to advance.

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

The New 2014-2015 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 Emily Albert, ASHRAE, 994 Old Eagle School Road,
Suite 1019, Wayne, PA 19087.
If you prefer to pay by credit card, please call Emily at 610-971-2169
or email her at Emily@mmco1.com.



Happy Holidays
from the
Board of Governors
of the
Philadelphia Chapter
of ASHRAE