American Society of Heating , Refrigerating, and Air-Conditioning Engineers

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March 2010

QUAKER CITY CLIMATE

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Fisher's Tudor House

1858 Street Road
Bensalem, PA 19020
(215) 244-9777
For Directions :
Click Here

Parking is FREE, and available on site.

Dinner Fees:

- Philadelphia Chapter Members with online reservation and prepayment: $30
- ASHRAE Members - Non-Chapter Members : $40
- Non- ASHRAE Member : $40
- Young Engineers (35 and under) with online reservation and prepayment: $25
- Students with online reservation: $10

TABLETOP VENDOR SHOW & LEED MEASUREMENT & VERIFICATION

Our next dinner meeting is scheduled for March 11, 2010 at Fishers Tudor House. The event registration can be found here for both vendors and guests.

The event schedule is as follows:

- Tabletop Vendor Show: 4:00-6:00pm
- Social Hour with cash bar 5:00-6:00pm
- Dinner : 6:00 - 6:30pm
- Presentation: 6:30pm—7:30pm

The USGBC's latest update to its LEED rating system in 2009, LEED v3, has tripled the point impact of Measurement and Verification (M&V) and is a clear indication that the USGBC is focused on insuring LEED has impact beyond the initial construction process.

Additionally, the next generation of utility infrastructure will use customer owned distributed resources as clean, reliable alternatives to traditional power supply. At times called virtual generation, micro-grids and dynamic demand response, the ability of consumers, in coordination with utilities, to use these resources as alternatives to traditional generation signals a transformational change in the utility industry. In this follow-up presentation, advanced energy and grid technologies will be linked to the output of Measurement & Verification in relation to dynamic demand response.

MATT DUGAN President of DVL Automation the regional representative of Automated Logic Corporation, division of United Technologies. DVGBC Platinum Sponsor demonstrating Leadership in Sustainable Design of Building Energy Systems with several unique innovations including:

Developed low cost Measurement & Verification tools for LEED-NC, CS, & EB requirements utilizing BAS monitoring of HVAC equipment on point of uses basis rather than collective meters

Optimized LEED-NC Gold project to achieve HVAC energy cost 32% lower than design target by utilizing remote monitoring & diagnostics from 2000 miles away

HVAC collaborator on LEED projects: 6-NC, 8-CS, 10-CI, & 2-EB. Total of 14 complete to date with 9 Silver, 3 Gold, & 2 Platinum

DVGBC support since inception: Liaison to ASHRAE, Education Committee (In-Depth Sub-group), Development/Sponsorship Committee, NE Corridor Regional representative to USGBC

Developed Network Operations Center (NOC) to support LEED projects nationally with Failure Detection & Diagnosis (FD&D) support for any energy use inconsistent with M&V plans

PRESIDENTS MESSAGE:

The board of governors would like to thank the membership for their understanding in the cancellation of the February meeting due to the weather, venue schedule and the speaker's schedule. Please refer to future announcements on the rescheduling of this speaker.

Our annual balancing class at the sheet metal workers facility on Saturday, February 20 seems to be well received again.

Please refer to articles by our CTTC and YEA chairpersons for future seminars and events.

Make sure that if you are unemployed that you resume is posted on our website so that you may receive your $10.00 discount.

If anyone is interested in volunteering to help out the board and chapter please contact any board member.

Make sure that you sign up as an exhibitor for our table top trade show and support our designers and engineers.

Hope to see you at our March meeting.

Bill Hart
chick300@aol.com
609-238-2585

Hybrid Hydronic Boilers

This technical article was submitted by Delval Equipment Corporation behalf of Raypak, a manufacturer of boilers and hot water heating equipment. Please submit articles highlighting novel HVAC technologies to mmaguire@klingstubbins.com for consideration in future newsletters.

Hybrid Hydronic Boilers

Demand for higher efficiency in hydronic heating systems is ever-increasing. Specific goals are to reduce heating bills, reduce greenhouse gas emissions, preserve natural resources, comply with legislation, gain utility rebates and accumulate LEED points.

Steady-State Efficiency

Many boiler manufacturers offer condensing boilers which condense water vapor in flue gas products to capture latent heat. Much of that can be captured, bringing rated efficiencies well above 90%. Flue gas products must be cooled below their dewpoint in order to operate in condensing mode. Incoming water to the heat exchanger must enter below the dew-point of the flue gas products. With normal levels of excess air needed to ensure complete combustion of natural gas, this is about 130°F: for any condensation, water entering the heat exchanger must be 130°F or lower before ultra-high efficiency operation can even begin.

Historically, hydronic systems were designed to operate at 180°F supply and 160°F return, making the 90% plus efficiencies unattainable. Today, by designing with lower temperature system components and utilizing aggressive outdoor reset, the high-efficiency condensing mode can be achieved for much of the heating season. Variable-volume, variable-speed pumps achieve higher temperature drops across the system to further reduce return water temperatures.

Cost Considerations

High-efficiency condensing boilers cost significantly more than their non-condensing counterparts. It is not cost-effective or energy-saving to apply them to systems operating at elevated water temperatures. For multiple boilers, an alternative is to have a hybrid system. This design utilizes condensing boilers as lead boiler(s) to carry the load during mild weather or during warm daytime temperatures when condensing can be achieved. Then additional non-condensing boilers can be incorporated as needed to meet the balance of the load. On colder days when system temperatures are high, the non-condensing boilers become the lead boilers.

Changing from all condensing multiple boiler systems to this hybrid concept allows projects to come within cost guidelines, while maintaining benefits of the condensing design.

Typically, lower heating loads present the opportunity to lower the system water temperature during approximately 50% of the total season. Full advantage of the opportunity to operate in the high-efficiency condensing mode but balance the operation of all boilers can be achieved by using condensing boilers first for mild times, and non-condensing boilers first for cold times. On mild days, only the condensing boilers will be operating. On cold days, the condensing boiler still can contribute to meeting the total load. Then non-condensing boilers can be utilized for 50-75% of the total load with a significant first reduction and little sacrifice of total seasonal efficiency.

High-recovery low-mass boilers can rise to operating temperature within a minute without thermal shock concerns with proper system and control design. They do not need to be kept hot, avoiding standby losses that can be substantial with low-recovery high-mass boilers.

How It Works

The piping arrangement facilitates keeping unfired boilers out of system until required. Each boiler modulates and shuts off sequentially, as needed. Typical multiple boiler system turndown becomes approximately 20:1 using this methodology. Convenient and simple staging comes naturally to high-recovery boilers. Their ability to accept return water temperatures from 50°F to 120°F also contributes to significantly lower temperature operation and further maximizes condensing benefits.

The hybrid boiler concept has been in use for over fifteen years.

System Control

To achieve the best results, controls that can sense seasonal water temperature requirements and switch lead boilers to achieve balanced usage while optimizing efficiency are needed.

BALANCING SEMINAR

Twenty-two ASHRAE Philadelphia chapter members accepted the offer to receive a "behind-the-scenes" tour of the Sheet Metal Workers Local 19 balancing training center on Saturday, February 20. The half-day workshop consisted of presentations of the biosafety cabinet and fume hood testing lab, the variable volume box/DDC station, the water balancing station and the duct-leak testing area.

Instructors demonstrated the training that members receive as part of a two-year course. President and business manager Joe Sellers made a plenary address which stressed the involvement of the local as experienced and ready to participate in sustainable-building upgrades.

Mary Coffey demonstrated the SMACNA test protocol of pressurizing a section of ductwork and measuring the flow rate of air to maintain the pressure; removing even small plugs from the duct caused a measurable increase in duct leakage. Mary also showed the water-balancing station, in which students measure water flow rates by different measurement techniques.

Brenden Finn led a discussion of the state-of-the-art biosafety cabinet/fume hood testing area. This area is one of the largest cleanroom training facilities in the country. Allan Rhodes reinforced the interface between balancers and control vendors in adjusting variable-volume air systems.

The attendees came away impressed with the extent and quality of training that Local 19 balancers receive. ASHRAE appreciates the tour that Local 19 assembled.

Upcoming SMCA Events

The Deregulation of Pennsylvania Utilities and the Anticipation of Price Hikes in 2011

Thursday, March 11, 2010
08:00 AM - 10:00 AM (Doors open at 7:30 a.m.)
Local 19 Office
1301 S. Columbus Blvd
Philadelphia, PA 19147
Admission: Free

Consumers can expect to see a jump in their electric bills when the Pennsylvania Utilities' rate cap expires at the end of 2010. According to PECO, consumers can expect to see an increase between 10 and 15 percent in their electric bills beginning in January 2011.

One of the biggest consumers of energy is heating, ventilation and air conditioning (HVAC) systems. According to the U.S. Department of Energy, HVAC systems account between 40 and 60% of the total energy use in commercial and residential buildings. The city of Philadelphia alone spent an estimated $48 million on electricity, heating oil, and natural gas during its '08-'09 fiscal year. Andrew Rachlin, Deputy Chief of Staff with the Office of the Deputy Mayor for Planning and Economic Development will speak about green building policies the City has put in place over the last year.

Retrofitting Fume Hoods for Energy Savings

Thursday, April 8
08:00 AM - 10:00 AM (Doors open at 7:30 a.m.)
Local 19 Office
1301 S. Columbus Blvd
Philadelphia, PA 19147
Admission: Free

If your facility has one or more fume hoods then you don't want to miss this presentation! A fume hood's primary purpose is to protect workers from breathing in harmful gases or particles, operating continuously in chemical laboratories across the region, replenishing rooms with breathable air. This constant usage of exhaust fans within the fume hoods requires significant amounts of energy, resulting in high energy costs.

As the citywide Greenworks effort to reduce citywide building energy consumption by 10 percent and greenhouse gas emissions by 20 percent continues to build momentum, one of the ways to help attain these goals is to retrofit fume hoods, which can result in 50% energy savings or more.

Join Robert Morris, one of the pioneers on indoor air quality issues, for a special presentation. Morris will discuss:

- The impact of faulty fume hoods on the environment and facility budgets
- New technologies that facilities can incorporate to reduce energy use in fume hoods and increase cost savings
- Steps you can take to retrofit your facility's fume hoods
- How SMACNA standards are used in retrofitting fume hoods to meet today's standards

About Robert Morris

Morris is considered an expert on airflow and containment control issues by the Federal Court, and has received patents on applications for airflow measurement instruments, fume hood controls, linear control valves, linear mechanical actuators, and ultra low pressure transducers.

Morris is a member of the National Society for Professional Engineers, the Instrument Society of America, and the American Society of Heating Refrigeration and Air-Conditioning.

Building and Maintaining Effective Life Safety Systems in Commercial and Municipal Buildings

Wednesday, May 19
08:00 AM - 10:00 AM (Doors open at 7:30 a.m.)
Local 19 Office
1301 S. Columbus Blvd
Philadelphia, PA 19147
Admission: Free

According to a report by the National Fire Protection Association, between 2003 and 2006, 13,400 reported structure fires in high rise buildings per year, resulting in 62 civilian deaths, 490 civilian injuries and $179 million dollars in property damage.

During this presentation, speakers will discuss:

Leading causes of injury and property damage due to outdated systems

- Factors to consider when it comes to building and maintaining effective life safety systems,
- Short and long term investments you can to ensure that your building standards are up to date
- Best practices on how to maintain your building's life safety system

For more information about these presentation, contact Jim Shields at 610-828-4055 or e-mail him at jshields@smca.org

ASHRAE PHILADELPHIA CHAPTER PRESENTS A WORKSHOP

DATA CENTER ENERGY EFFICIENCY

WHEN: MARCH 15, 2010
9 AM – 4PM
WHERE: DREXEL UNIVERSITY

8 CEUS
(CONTINUING EDUCATION UNITS)
AVAILABLE

THE $200 FEE INCLUDES THE DAYLONG SEMINAR, SPEAKER NOTES, ONE PUBLICATION OF ASHRAE TECHNICAL COMMITTEE TC-9.9 AND AN OPPORTUNITY TO PURCHASE ANY OF THE OTHER SEVEN COMMITTEE PUBLICATIONS AT A 50% DISCOUNT.

TO REGISTER PLEASE CONTACT

MARK MAGUIRE, PE, LEED AP
MMAGUIRE@KLINGSTUBBINS.COM
215-569-5963



With Don Beaty and Dr. Roger Schmidt presenting on:

Thermal Guidelines for Data Centers

Datacom Facility Energy Best Practices

High Density Data Centers – Case Studies and Best Practices

Next Steps - Tracking Results

Roger Schmidt is an internationally recognized expert in the fields of electronic cooling and data center thermal management, with more than 100 patents (granted or pending) in those areas. He has made sustained contributions in cooling IBM's supercomputers, high performance servers, client/servers, parallel processors and test equipment through the innovative use of air, water and refrigerants. Under his guidance, a consortium of leaders in data center thermal management was formed. He was inducted into the prestigious National Academy of Engineering (NAE) in 2005. In recognition of his accomplishments and leadership, IBM is appointing Roger as IBM's Chief Engineer for Data Center Energy Efficiency.

Don Beaty started DLB Associates Consulting Engineers in 1980. Don was Chair of ASHRAE Technical Committee TC 9.9 (mission critical facilities, technology spaces, & electronic equipment) from its inception through June 2006. His interest in educating the industry about ASHRAE being the unbiased source of data center cooling material has resulted in Don publishing over 50 technical papers and articles. He also is a frequent presenter on the subject, having presented in 13 countries on the topic of data center cooling. Don is currently International Chair TC 9.9 Committee-Liaisons, Alliances and International Activities. Previously, Don served on ASHRAE TC 90.1 (energy standards committee) from 1993 to 2007 serving in various roles and as Vice-Chair.

http://phila.ashraechapters.org/

CHAPTER TECHNOLOGY TRANSFER COMMITTEE

ASHRAE offers three competition-based award programs to showcase innovative designs and communicate that technology to other members: the Technology Award, the Garland Award (for non-comfort refrigeration systems) and the Refrigeration Comfort Cooling Award (for comfort-cooling refrigeration systems).

The Technology Award Program recognizes members for innovative designs, communicating that technology to other members, and highlighting achievements to other professionals.

The Chapter Technology Transfer Committee is accepting applications for the 2010 Chapter Level competition in March 2010 in the following categories:

- Commercial Buildings, New and Existing
- Institutional Buildings, New and Existing
- Health Care Facilities, New and Existing
- Industrial Facilities or Processes, New and Existing
- Public Assembly Facilities, New and Existing
- Residential Buildings, New and Existing (Single Family and Multi-Family)

Alternative or Renewable Energy Use

Entries are judged on energy efficiency, indoor air quality and thermal comfort, innovation, operation and maintenance, cost effectiveness, environmental impact and quality of presentation.

The process for the ASHRAE Technology Awards starts at the Chapter level: chapter competition winners advance to the Regional Technology Award Competition. Regional winners then submit a long form application for the Society Technology Award Competition. Winners of the Society Competition will be featured in the ASHRAE Journal.

For more information on the Technology Award Program, including application forms please visit the CTTC section of the chapter Website http://www.ashrae-phila.org/storage/cttc.htm

Also, ASHRAE offers two competition-based awards encouraging the design of innovative refrigeration system awards. The Milton W. Garland Commemorative Refrigeration Award for Project Excellence recognizes non-comfort refrigeration systems. The Refrigeration Comfort Cooling Award for Project Excellence is oriented toward comfort refrigeration systems.

The Philadelphia Chapter Technology Transfer Committee is currently accepting applications for these competitions for 2010.

The Garland Award competition is open for the design of mechanical refrigeration machinery for applications other than human comfort: e.g., food processing/preservation, industrial/manufacturing processes, life support in extreme environments, recreational facilities.

The Refrigeration Comfort Cooling Award competition is open for the design of mechanical refrigeration machinery for human comfort applications.

Both submissions must be made within 36 months of the initial operating date of the system, and will be judged on the following criteria:

- Complexity of Problem
- Solution Concept
- Architectural Integration
- Originality
- Achievement of Performance Criteria
- Energy Effectiveness
- Budget Compliance

Ease of Maintenance

Additional information can be obtained from Mark Maguire (mmaguire@klingstubbins.com), Chapter Transfer Technology Chair, or by visiting the Website:

http://www.ashrae.org/members/page/797.

ASHRAE Certifications

by Rick Piecara

ASHRAE offers certification programs in five areas:

- Healthcare Facility Design
- High-Performance Building Design
- Operations and Performance Management
- Commissioning Process Management

Building Energy Modeling (coming in March 2010).

Rick Piecara from Heery International has achieved ASHRAE certification in healthcare facility design and talks about the process:

I have worked on the design and engineering of healthcare HVAC systems for longer than I care to admit. There are some special considerations in this type of facility that the HVAC systems impact directly and significantly. I have learned that being familiar with what healthcare providers do and how they do it leads to a better understanding of the environment in which these services are performed. Having this knowledge enables me to be better equipped to evaluate design solutions, solve application problems and anticipate the needs of the facility managers that are charged with operating and maintaining the facility.

ASHRAE has introduced a certification program that acknowledges a professional's understanding of healthcare systems design known as the Healthcare Facility Design Professional (HFDP) certification. The program has eligibility requirements and you must successfully pass an exam to demonstrate your knowledge of healthcare terminology and operations.

I enjoyed preparing for this certification since it filled-in the gaps that experience did not provide and it formalized my already gained knowledge base. Armed with this certification, I'm able to credibly offer my services to sophisticated healthcare clients knowing that they have a higher level of confidence in the work I do for them. Anyone who is involved in the design of HVAC systems for hospitals and healthcare related facilities should seriously consider earning the HFDP certification.

There is a study guidebook published by ASHRAE that's helpful, and being familiar with the AIA Design Guidelines for Healthcare Facilities will give you a good start. But the single most valuable study tool is ASHRAE's HVAC Design Manual for Hospitals and Clinics, publication ISBN 1-931862-26-5. This manual covers a multitude of topics and can appear to be overwhelming at first, but as you begin to dig into it, you'll discover that healthcare design is logical and builds on fundamentals of temperature and humidity control and especially ventilation practices. The manual briefly describes some of the healthcare modalities in diagnostics and treatment that are relevant to HVAC system design allowing you to discuss design concerns more effectively with healthcare providers and user groups.

If you're working in healthcare facilities or wish to do so, you should endeavor to achieve this certification. You'll be happy you did; good luck!

PHILADELPHIA ASHRAE CHAPTER
ANNUAL SPRING GOLF TOURNAMENT



when: Friday, June 4, 2010 -- 1:00 pm Shotgun
Lunch will be provided at Noon; Dinner will be immediately after golf

where: Northampton Valley Country Club
Richboro, PA (near I-95 and Newtown-Yardley Exit)

cost: Golf, Lunch & Dinner: $125.00 per person

hole sponsorships are available

Prizes include First, Second and Third Place Awards plus Longest Drive and Closest to the Pin Awards.

** Scramble Format – Singles and Foursomes are welcome! **

REGISTER ONLINE AT

http://guest.cvent.com/i.aspx?4W%2cM3%2cb063f601-3d0f-4128-b64a-ce4716b4c8d2

or contacting via email Jared Johnson at jjohnson@schillerhersh.com if you would like to pay by other means than a credit card.

Also contact Jared Johnson at jjohnson@schillerhersh.com if you have any questions or problems.

PHILADELPHIA CHAPTER PROGRAMS CALENDAR 2009-2010

Date	Location	Topic	Theme	Joint Meeting
2/20/2010	Local 19	Annual Training session with Local 19		
3/03/2010	Temple University Center City Campus	Energy Star and LEED EBOM: A Toolkit for Existing Buildings Click Here for more info	DVGBC Event	
3/11/2010	Fishers Tudor House	LEED Measurement & Verification	Tradeshow	
3/15/2010	Drexel University	Data Center Energy Efficiency Workshop		
4/14/2010	Union League	Std. 189.1 High Performance Buildings	Student Night	SMCA
4/20/2010	Drexel University	62.1 and 90.1 Seminar		
5/13/2010	Dave and Buster's	Energy Mgmt. in existing buildings	Past Presidents, Membership Promotion, YEA Social	
6/4/2010	Northampton Valley CC	Golf Outing		
Mid June 2010	Temple University	2010-2011 Planning Meeting		

FUTURE CITIES: PHILADELPHIA COMPETITION

By Rick Piecara

With their submission at the 2009 Future City Regional competition, the Springside School of Philadelphia earned ASHRAE's award for "Best Indoor Environment that Encompasses Occupant Comfort, Productivity, Energy Efficiency or Air Quality".

This year's theme for the competition's research and written essay was on "Providing an affordable green living space for people who have lost their home due to a disaster or financial emergency." The Springside team in particular exhibited a thorough understanding of the indoor environment by including many features in their housing unit design that contribute to an efficient and high quality living space. Provisions for daylight harvesting and solar energy glazing as well as indoor gardens that help reduce CO2 pollution, arrangement of multiple floor levels accommodating natural ventilation, increased thermal insulation and the use of Low VOC materials were all included as integral to the success of their city's quality of life.

The presenting team was enthusiastic about their housing systems and eagerly presented flip-chart diagrams, floor plans and building sections showing how they all worked and were efficiently packaged. They must have had a great engineer mentor! I was happy to have played a role in the selection of this team to receive our ASHRAE award. Congratulations to Springside School for a job well done!!



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

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ASHRAE Philadelphia Website

Republication of material contained herein is expressly forbidden without official Chapter authorization. The Chapter does not speak or act for the Society. Any member with material to submit for inclusion in the *Climate* can send the information to:

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c021ne@ashrae.net

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

Obituaries

Dear Clients, Business Associates and Colleagues:

It is with heavy hearts that we announce the death of Robert C. Brown, our founder, mentor and friend. Bob succumbed to his battle with cancer on Saturday night, February 13, 2010. He passed peacefully and without much discomfort.

Bob had been known for many, many years as *"Mr. Aurora Pump",* going back to his days with Maleson Company through the 60's and 70's. In 1984 Bob started Robert Brown & Associates, Inc. and in 1991, Bob went into semi-retirement. He worked with Robert Brown Associates, Inc. for another 10 years as a consultant but spent 5 months of the year in his home on his beloved Nantucket Island off Cape Cod.

Bob was an avid Barbershopper, as many of you know. Barbershop Quartet singing was his passion and it was how he discovered many of us working at the company both past and present. But most of all, Bob was just a great guy…there when you needed him. He will be greatly missed.

Bob is survived by his wife, Jan; his two sons Craig and Steven (wife: Melissa); his daughter Esther (Nims–husband: Josh); grandchildren: Madison and Ashley Brown; Tessa and Luke Nims. Your prayers and thoughts for them during this trying time are greatly appreciated.

A tribute to Bob can be found at the following link:

http://hosting-24437.tributes.com/show/Robert-Brown-87828510

MEMBERSHIP PROMOTION

New Members for March

Mr. Frederick J Southron – Associate
Mr. Anthony Conchado – Associate
Mr. Nathanael B Carleton – Associate
Ms. Robin B Martin – Member

New Students

Miss. Nicole Echols – Student
Mrs. Marta Jakiel – Student
Mr. Martin Squicciarini – Student
Mr. Marc Patricelli Jr - Student

ASHRAE is no longer accepting applications for grade advancement. To advance from associate to member, a member must update their ASHRAE bio online, and notify membership@ashrae.org they have an updated bio and wish to be considered for grade advancement. Tips for updating bios:

i. Go to www.ashrae.org
ii. Login
iii. In Member Central, Click "Update Your Bio"
iv. Go through each of the small blue tabs to enter demographics, contact information, education, professional registration, etc. It's very easy!

Bob Finkboner
Membership Promotion Chair