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

Volume 45, Issue 8

April 2010

QUAKER CITY CLIMATE

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The Union League of Philadelphia

140 South Broad Street

Philadelphia, PA 19102

(215) 563-6500

For Directions : Click Here

Parking is available nearby visit here

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: FREE**

ASHRAE STANDARD 189.1 HIGH-PERFORMANCE GREEN BUILDINGS

Our next meeting is breakfast meeting scheduled for **Wednesday April 14, 2010** at The Union League. This is a joint meeting with SMCA and is a Scholarship night. The event registration can be found here

The event schedule is as follows:

- Registration Begins: 7:00am
- Breakfast Begins: 7:30am
- Presentation: 8:00 - 9:00am

Please visit here for The Union League's Dress Code

ASHRAE has published a new Standard for the Design of High-Performance, Green Buildings (Standard 189.1). This session provides a detailed look at the standard, the background on its development and how it is foreseen that it may be applied and

Standard 189.1 provides a "total building sustainability package" for those who strive to design, build and operate green buildings. From site location to energy use to recycling, this standard sets the foundation for green buildings by addressing site sustainability, water use efficiency, energy efficiency, indoor environmental quality, and the building's impact on the atmosphere, materials and resources. Standard 189.1 serves as a jurisdictional compliance option to the Public Version 1.0 of the International Green Construction Code (IgCC) published by the International Code Council. The IgCC regulates construction of new and remodeled commercial buildings.

Thomas M. Lawrence is a Public Service Associate with the University of Georgia, and has over 25 years of professional experience in engineering and environmentally related fields.

He is currently Chair of ASHRAE Technical Committee 2.8, "Building Environmental Impact and Sustainability", in July of 2008 and is a member of the Special Project Committee 189 for the ASHRAE standard on high-performance green buildings. Dr. Lawrence has presented papers on building energy usage and indoor air quality at conferences in the U.S. and Europe, and has published papers on sustainable design and energy usage in buildings in journals such as ASHRAE Journal, Solar Today, and Buildings and Environment.

Dr. Lawrence has a B.S. with Highest Distinction honors in Environmental Science from Purdue University (1978), a M.S. in Mechanical Engineering from Oregon State University (1982) and a second M.S. degree in Engineering Management from Washington University earned in 1989. He received his Ph.D. in Mechanical Engineering from Purdue University in the spring of 2004 researching the impacts of demand-controlled ventilation on energy consumption and indoor air quality in smaller commercial buildings

PRESIDENTS MESSAGE:

I would like to thank all of the vendors and attendees of last months table top meeting and Matt Dugan for a successful meeting.

I would like to congratulate the following members of our chapter that have received awards from the society. These awards are presented to members that have served the Society faithfully and with distinction on committees or have otherwise given freely of their time and talent on behalf of the Society. These awards will be presented at the annul conference in Albuquerque, New Mexico in June. Those members are:

Mr. Gary Debes; Exceptional Service Award

Mr. Mark P. Hershman, P.E.; Distinguish Service Award

Mr. Thomas E. Werkema, Jr.; Distinguish Service Award

I would like to thank Arkema Inc. who opened their offices and provided phone lines for our research promotion call-a-thon on Friday, March 12. I would also like to thank all of the contributers who donated for ASHRAE research and to encourage those yet to contribute to do so.

Please be reminded that if you are unemployed and have your resume posted on our chapter web site that you will receive a $10.00 discount for attending our monthly meetings.

I hope to see you at the April 14 breakfast meeting at the Union League for our ASHRAE Standard 189.1 High Performance Building presentation.

We are still seeking volunteers to join our Board of Governors to help out on committees. And to move up on to the board. If you are interested please contact any board member.

We had a successful data center energy conservation seminar and will continue to bring similar

(Continued on page 4)

Philadelphia Chapter ASHRAE
2010 Nominating Committee

Slate of Candidates for 2010 – 2011 Chapter Year

The 2010 Nominating Committee is pleased to present the slate of Officers and Governors for the 2010-2011 Chapter Year. These candidates are to be voted on at the April 14th Meeting at The Union League. Nominations will be open for suggestions of candidates from the floor but will be closed just prior to the vote on the 14th. The Board of Governors will be installed at the May 13th Meeting. Please join us in congratulating these candidates.

President:	**John Pardekooper**
President-Elect:	**Robert Finkboner**
Vice President:	**James Piscopo**
Treasurer:	**Jared Johnson**
Governor:	**Mike Witkowski**
Governor:	**Ashley Kenyon**
Governor:	**Mark Maguire**
Senior Governor:	**Bill Hart**

Implementing Energy-Efficient Data Centers

By Neil Rasmussen (Senior Vice President of Innovation for APC)

The electrical power costs over the life of a data center may exceed the costs of the electrical power system including UPS, and also may exceed the cost of the IT equipment. The reasons for this situation are as follows:

- The billed electrical costs come after the charges are incurred and are not clearly linked to any particular decisions or operating practices. Therefore, they are viewed as inevitable.
- Tools for modeling the electrical costs of data centers are not widely available and are not commonly used during data center design.
- The billed electrical costs are often not within the responsibility or budget of the data center operating group.
- The electrical bill for the data center may be included within a larger electrical bill and may not be available separately.

Decision makers are not provided sufficient information during planning and purchasing decisions regarding the electrical cost consequences.

This paper will show that all of the above can and should be corrected, because substantial financial savings are available. The greatest advantage can be gained in the design of new facilities, but some savings are possible for existing and evolving facilities as well.

What is the cost of electrical power consumption?

A typical value for the cost of electrical power is $0.12 per kWh. Given this cost, the annual electrical cost per kW of IT load is approximately $1000. Over the 10-year life of a typical data center this translates to approximately $10,000 per KW of IT load.

As a general rule, approximately half of the energy used in a data center goes to the IT loads. The other half goes to the data center physical infrastructure (DCPI) equipment, including power equipment. This means that for each kW of IT load the 10-year electricity cost is approximately $20,000. For example, a 200 kW data center would have a 10-year electricity cost of $4,000,000

Where does the energy go?

Approximately half or less of the energy used in a data center goes to the IT loads. The other half goes to the DCPI equipment including power equipment, cooling equipment and lighting. Figure 1 shows the electrical power flow in a typical high-availability data center. Note that all the energy consumed by the data center ends up as waste heat which is rejected outdoors into the atmosphere. Figure 1 is based on a typical data center with 2N power and N+1 cooling equipment, operating at approximately 30% of rated capacity.

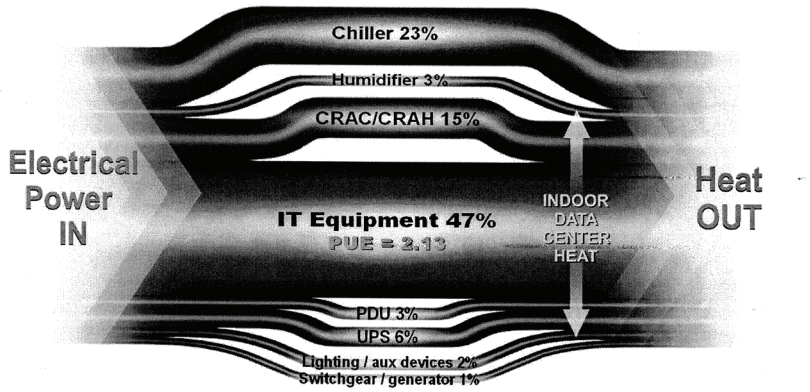


Figure 1

Power flow diagram in a typical data center

The remainder of the article can be found here.

DATA CENTER ENERGY EFFICIENCY SEMINAR

There were thirty attendees at the seminar hosted by the ASHRAE Philadelphia chapter on Data Center Energy Efficiency. The event was on March 15 on the Drexel University campus.
The workshop consisted of presentations by Roger Schmidt (IBM's chief engineer for data center energy efficiency) and Don Beaty (president of DLB Associates, consulting engineers). The topic is timely because data centers have an extremely high energy-use intensity (Btu/sf-year) and more attention has been focused on methods to reduce this consumption.
The information was developed by ASHRAE Technical Committee TC9.9 on mission-critical facilities. Roger Schmidt presented information about new trends in the design of data centers: widening the acceptable temperature and relative humidity envelope, directly cooling servers by water (rather than air) and increased interest in outdoor air quality delivered to data centers, particularly in developing nations.
Don Beaty presented on the unique nature of supply air distribution in data centers, the application of airside economizers and the effects of ASHRAE Standard 90.1-2010 on data center design and operation.

Thanks to Drexel University for hosting the event and to APC and Delaware Valley Liebert (DVL) for sponsoring the event.

(continued from page 1)

seminars to our membership. Please see our CTTC and C-Vent announcements.

I encourage all those who can to attend our 62.1/90.1 seminar on April 20. Please see our CTTC article and C-Vent invitation.

ASHRAE will be broadcasting there Commissioning for High Performance Buildings web cast on April 21. PDH credits and AIA Learning Units will be available. This web cast will be available at Temple University. Please see our C-Vent invitation for further details. I would like to thank Steve Ridenour at Temple for making this web cast available to our members.

If anyone attended the January winter meeting in Orlando please contact me of your attendance. Thanks you in advance.

See you at the April meeting

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

Upcoming SMCA Events

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

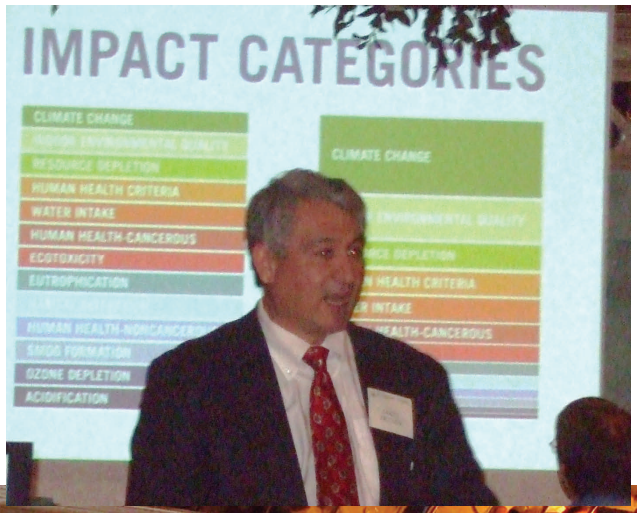
- Factors to consider when it comes to building and maintaining effective life safety systems,
- Short and long term investments you can to ensure that your building standards are up to date
- Best practices on how to maintain your building's life safety system

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

March Dinner Meeting

LEED Measurement and Verification / Tabletop Vendor Display









ASHRAE Philadelphia Chapter

presents a workshop on Tuesday, April 20 (9am – 5pm) at Drexel University on

ASHRAE Energy and IAQ Standards: Applications and a Lookahead to the 2010 Versions

Hoy Bohanon is a member of the ASHRAE 62.1 committee and will present on the "Ventilation for Acceptable Indoor Air Quality" standard.

Mack Wallace is a member of the ASHRAE 90.1 committee and will be presenting on the "Energy Standard for Buildings Except Low-Rise Residential Buildings" standard.

The fee for the daylong seminar to be held in Philadelphia is $250. Six professional development hours (PDH's) are available to attendees.

Both standards are referenced in prerequisites for the LEED-2009 rating system, underscoring the importance of these standards in designing buildings to meet sustainable goals.

Hoy Bohanon, PE, is owner of Bohanon Engineering, LLC, a company that focuses on sustainable improvement of the indoor environment in existing buildings. During his 32-year engineering career, Mr. Bohanon has worked at manufacturing corporations as a product design engineer, project engineer, facilities engineer, facilities manager, indoor air quality researcher, and environmental engineer. He has published papers and articles on indoor air quality and serves as a voting member of ANSI/ASHRAE Standard 62.1 committee, Ventilation for Acceptable Indoor Air Quality. He is a panel leader for the United States technical advisory group that is developing new international standards in ISO TC205 Building Environment Design.

Mack Wallace, P.E. has been a mechanical contractor, consulting engineer, and a registered engineer in Texas for over 30 years. Now registered in over 40 states, Mack has been the engineer of record for many award-winning projects, including the Historic Preservation of the Texas State Capitol Building. He has also served on the review team for the energy efficient buildings research projects supported by the Energy Research in Applications Program for the Texas Higher Education Coordinating Board. Mack is heavily involved on the front lines of the energy conservation industry, having served the past 12 years on the ASHRAE Standard 90.1. He also serves as the liaison between the mechanical and building envelope subcommittees, working with both committees to develop "whole-building approaches to energy savings and sustainable design.

ASHRAE Learning Institute
Spring 2010 Online Course Series

2 WAYS TO REGISTER

Internet: www.ashrae.org/onlinecourses
Phone: Call toll-free at 1-800-527-4723 (US and Canada) or 404-636-8400 (worldwide)
Note: You may register up to 24 hours prior to an online seminar. Courses are in US Eastern Standard Time.

CEU/PDH Credits Available!

Introduction to Thermal Energy Storage Systems for A/C
Wednesday, April 7, 2010 – 1:00 p.m. to 4:00 p.m. EDT

Complying with Standard 90.1-2007: HVAC/Mechanical
Monday, April 12, 2010 – 1:00 p.m. to 4:00 p.m. EDT

Energy Management in New & Existing Buildings: A Sustainable Activity
Wednesday, April 14, 2010 – 1:00 p.m. to 4:00 p.m. EDT

Complying with Standard 90.1-2007: Envelope/Lighting
Monday, April 19, 2010 – 1:00 p.m. to 4:00 p.m. EDT

Using Standard 90.1 to Meet LEED Requirements
Monday, April 26, 2010 – 1:00 p.m. to 4:00 p.m. EDT

Introduction to Cleanroom Design
Wednesday, April 28, 2010 – 1:00 p.m. to 4:00 p.m. EDT

District Cooling & Heating Systems: Central Plants
Monday, May 3, 2010 – 1:00 p.m. to 4:00 p.m. EDT

Complying with Requirements of ASHRAE Standard 62.1-2007
Wednesday, May 5, 2010 – 1:00 p.m. to 4:00 p.m. EDT

ASHRAE LEARNING INSTITUTE

Understanding & Designing Dedicated Outside Air Systems (DOAS)
Monday, May 10, 2010 – 1:00 p.m. to 4:00 p.m. EDT

Hot Products from ASHRAE

A leader in HVAC&R technology, ASHRAE publications cover topics that impact every facet of the environment, both indoors and out.

Latest Publications from ASHRAE!

- ❑ *Standard 189.1-2009, Standard for the Design of High-Performance Green Buildings* (A Jurisdictional Compliance Option of the IGCC)
- ❑ *ASHRAE Handbook Online* – Web-Based access to all 4 volumes
- ❑ *ASHRAE Pocket Guide* – Useful information that fits in a shirt pocket
- ❑ *IAQ Guide: Best Practices for Design, Construction and Commissioning*
- ❑ *Load Calculation Applications Manual*

Other Products from ASHRAE!

- ❑ *Energy Efficiency Guide for Existing Commercial Buildings*
- ❑ *Dampers and Airflow Control*
- ❑ *Building Information Modeling Guide*
- ❑ *Advanced Energy Design Guide for Small Hospitals and Healthcare Facilities*
- ❑ *Principles of Heating, Ventilating, and Air Conditioning* – Textbook based on the *2009 ASHRAE Handbook - Fundamentals*

Visit www.ashrae.org/bookstore to learn more about these and other outstanding ASHRAE publications!

Order Today From ASHRAE Customer Service

1-800-527-4723 (US/Canada) or (404) 636-8400 (Worldwide)
or visit: www.ashrae.org/bookstore



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Visit ashrae.org and Manage Your Membership

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.

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
3/11/2010	Fishers Tudor House	LEED Measurement & Verification	Tradeshow	
3/15/2010	Drexel University	Data Center Energy Efficiency Workshop		
4/8/2010	Drexel University	Drexel University Advanced Energy Leadership Conference		
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		
4/21/2010	Temple University	ASHRAE's Commissioning Webcast		
5/13/2010	Dave and Buster's	Energy Management 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		

ASHRAE CERTIFICATIONS

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 Spring 2010).

An ASHRAE certification lets employers and clients know that the certification earner has mastered a significant body of knowledge in a specific aspect of HVAC&R design. A firm that employs ASHRAE certification earners demonstrates a corporate commitment to the professional development of its employees and a dedication to providing the best possible resources for building design projects.

Each category has eligibility standards, which are a combination of educational and experience criteria. After filing an eligibility request and being approved by ASHRAE, a candidate takes an electronically-administered exam at an Applied Measurement Professionals (AMP) testing center. After passing the 2 to 2½ hour test (depending on the category), the candidate can then claim to be ASHRAE-certified in that area.

ASHRAE offers a recertification process, including an ethics statement and a continuing education requirement. Additional information, including a candidate guidebook, is at ashrae.org/certification.

ASHRAE

AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING ENGINEERS, INC. PHILADELPHIA CHAPTER

BASIC HVAC SYSTEM DESIGN COURSE

This is a demanding one-year course that introduces students to the fundamentals of HVAC design. Classroom activities will include lectures and problem solving sessions, supplemented by home reading and study assignments.

2010-2011 Course Subjects Include:

Fundamentals and Psychometrics

Load and Heat Transfer Fundamentals

Load Calculations

Pumps, Piping & Piping Systems

Basic Steam & Boilers

Fans, Air Distribution & Duct Design

Refrigeration

Controls & Instrumentation

Equipment Selection

The class is a great way to further, or even begin, a career in HVAC.

Classes will meet Tuesdays and Thursdays from 6:15 PM to 8:30 PM beginning in mid October and continue until the end of March. All classes will be held in Philadelphia.

Class size is limited to 30 students.

If you would like to receive further information, please contact the Basic Class Coordinator:

James K. Lill, PE
337 David Drive
Havertown, PA 19083
Phone: (610) 645-1956
E-mail: LILLJK@comcast.net

ASHRAE

AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING ENGINEERS, INC. PHILADELPHIA CHAPTER

ADVANCED HVAC SYSTEM DESIGN COURSE

This is a demanding course that is designed to help students, draftspersons, designers, engineers, construction managers, etc. gain an in-depth understanding of HVAC design and engineering.

2010-2011 Course Subjects Include:

Code Evaluation
Load Calculation
Psychometrics
Duct Design
Piping Design
Pumping
System Evaluation & Selection
New Technologies
LEED
Controls

The class is a great way to further your career in HVAC.

Classes will meet Wednesdays from 6:15 PM to 8:30 PM beginning in September and continue until the end of April. All classes will be held in Philadelphia.

Class size is limited to 15 students.

If you would like to receive further information, please contact the Advanced Class Coordinator:

Jeff Crozier
The Procz Group
10 North Main Street, Suite 301
Yardley, PA 19067
Phone 267-614-6446
jcrozier@proczgroup.com

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

phone 610.971.2169
fax 610.971.4859

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:

Matthew Trinsey
Clive Samuels & Associates, Inc.
1 Independence Way
Princeton, NJ 08540
(P) 609-627-7983
(F) 609-520-0974
c021ne@ashrae.net

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

You're Invited to ASHRAE's Commissioning Webcast

Wednesday, April 21, 2010
1-4 p.m. EDT

Hear from leading commissioning experts about how commissioning supports a smoother construction process, maximizes energy and cost reductions, and provides a facility that operates as intended. This program will define the "what, why, when, and who" of the commissioning process and provide you with tools to commission your high performing building. This free webcast is sponsored by the ASHRAE Chapter Technology Transfer Committee with support from ASHRAE's High Performing Buildings Magazine.

How to Participate

You may host a webcast site for your colleagues.
You may register to view with others at a site near you.
You may register to view the Webcast on your PC.

PDH Credits

Three (3) Professional Development Hours or three (3) AIA Learning Units may be awarded to viewers who complete the "Participant Reaction Form" online by April 30, 2010.

About the Presenters Visit www.ashrae.org/CxWebcast for complete details

Richard Casault
H. Jay Enck
Ronald Wilkinson

Registration

Online registration begins now at www.ashrae.org/CxWebcast. There is no fee for registration. If you have questions, call 678-539-1200 or email ashrae-webcast@ashrae.org.

ASHRAE Philadelphia is hosting this webcast at Temple University. More details can be found here

MEMBERSHIP PROMOTION

New Members April

Mr. Ryan Deyne Lancaster – Associate
Mr. Vincent M McGilloway – Associate
Mr. Robert M Hesley – Associate
Mr. Brian Thomas Umile – Associate

New Students

Mr. Ronald Joseph Conrad III
Mr. Joseph Martin
Mr. Philip Hake

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