



QUAKER CITY CLIMATE

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THE RITTENHOUSE

210 West Rittenhouse
Square
Philadelphia, PA 19103
Phone: (215) 546-9000
For Directions:

[Click Here](#)

- The dinner fee for this meeting is free for all consulting engineers and students
- The fee for all other ASHRAE members or non-members is \$175

The deadline for registration for this meeting is past due. All members should have received a flyer from Hope Silverman with registration information

2009 ENGINEERS' NIGHT: JOINT MEETING WITH SMCA

Our next dinner meeting is scheduled for October 8, 2009 at The Rittenhouse. The event schedule is as follows:

- Vendor Display: 5:00-6:30 pm
- DVD & Dinner: 6:30-7:30 pm
- Presentation: Fan and Vibration: 7:30pm

Fan and Vibration

System designers, mechanical contractors and fan manufacturers often encounter problems with fans and mechanical systems, asking themselves why a fan, which has been tested in accordance with the Air Movement and Control Association standards, sometimes vibrates excessively when installed in a building.

SMCA of Philadelphia and

Vicinity's 2009 Engineers Night will feature a presentation based on the AMCA published "Balance Quality and Vibration Levels for Fans", providing information on how fans are tested in lab conditions and how design engineers should apply the test data to jobs.

The program will include a short explanation on understanding factory vibration test procedures, and review equipment base and vibration isolation selection from the ASHRAE handbook.

PRESIDENTS MESSAGE:

I would like to thank everyone who attended our September meeting. We had a good turnout for our first meeting and a good turnout at our YEA event afterwards. I would also like to thank Clapp Associates for helping sponsor the meeting and to our speakers.

Our next meeting is a joint meeting with SMCA being held on October 8, 2009 at the Rittenhouse. We continue our relationship with SMCA which has been strong in past years and will continue to be in the future. You can register through SMCA as indicated on the insert within the newsletter.

The chapter is still offering

for our November thru May the \$10.00 discount for any member that is unemployed and has their resume posted on our website as indicated in the September newsletter.

Our basic design school is set to start mid October and openings are still available. Our advanced school is being finalized and openings are still available. We are looking at a start date in January.

We will continue to provide Young Engineers in ASHRAE (YEA) events. We are planning an activity in late October as indicated within the newsletter.

We are planning a seminar on energy conservation in

data centers and a 90.1 seminar. Dates and locations are being worked out and we will keep you posted

Our chapter needs volunteers to assist our board members and committee chairs. Please contact any board member if you are interested. Specific needs are for YEA, membership and student activities but all committees are open for volunteers.

I hope to see you at our next meeting.

Bill Hart

chick300@aol.com

609-238-2585

BALANCING FOR VARIABLE FLOW A CASE FOR PRESSURE INDEPENDENT CONTROL

Many articles have been written that champion various new approaches to water side balancing. All for the most part have been initiated as a result of our attempts to control energy costs as well as provide creature comfort.

ASHRAE's original definition of a balanced system goes like this:

"A balanced system in water side terms can be defined as one in which the terminal unit flow rates are **adequate** under **design** circumstances, to maintain **satisfactory** heat transfer capability".

There are only two issues in this definition that no longer seem appropriate when we are discussing a variable flow system.

First, a building is rarely at design conditions. Most commercial buildings operate at less than design. In fact 75% of the time commercial buildings may be operating at 50 % design load.

Second, the words adequate and satisfactory might lack specificity.

If we are truly going to address the issue of balancing for variable flow let's define a balanced system this way:

"A balance system in water side terms can be defined as one in which the terminal units receive the **required** flow rates under **all operating conditions** to maintain **maximum** heat transfer capability".

In other words, our objective is to:

Match the Flow to the Load in Every Heat Transfer Device at All Operating Points Without Excess Flow.

Most systems attempt to accomplish this with variable speed drives, sensors and the following at the terminal

units:

A modulating control valve in series with an automatic balance valve.

A modulating control valve in series with a manual balance valve.

OR

Allow the modulating control valve at the terminal unit to react alone to all dynamic pressure changes and reset.

An automatic balance valve may have exhibit some degree of pressure control but only at design flow. It does not control once the modulating control valve assumes authority which is anytime the coil is operating at part load. None one of these solutions appear to meet the criteria of our objective, because these components, for the most part, are pressure dependent and cannot reset themselves automatically as dynamic pressure changes occur in a building.

If the modulating control valve is in control of a specific circuit, and we have pressure fluctuations in the building that changes the inlet pressure to the coil, the flow through that coil will change. This change in flow will remain until the heat transfer through that coil is impacted significantly enough to have a sensor react to tell the control valve to throttle more or open up.

We can minimize effects of pressure variations in a building and better control differential pressure by:

Using equal percentage modulating control valves

Take as much pressure drop across the control valves as possible to maximize valve authority

Size control valves to close off against at least design pump head.

Minimize pressure drops in

distribution piping

But even all these design considerations will not allow us to necessarily meet our objective.

The Pressure Independent control valve replaces the balance valve, the modulating control valve, and provides a built in differential pressure controller downstream of the control valve section as shown below.

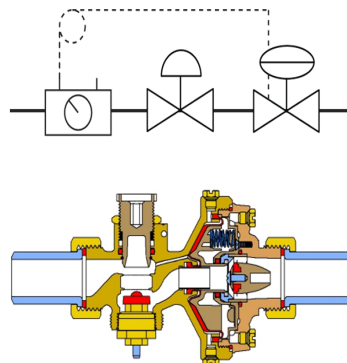


FIGURE 1
PRESSURE INDEPENDENT CONTROL VALVE

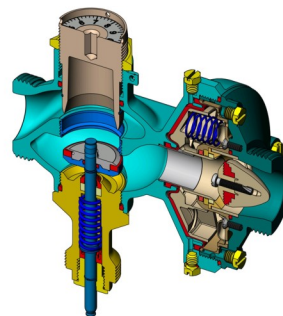


FIGURE 2
PRESSURE INDEPENDENT CONTROL VALVE

The differential pressure controller absorbs those pressure fluctuations in the system which allows the circuit to maintain the required flow. If the design flow to the coil is 10 gpm and the coil is throttled by the modulating control to 5 gpm, the flow will stay at 5 gpm even if the inlet pressure increases due to fluctuations in control valve settings downstream of the coil

we are controlling. The valve in fact does:

Match the Flow to the Load in Every Heat Transfer Device at All Operating Points without Excess Flow

Other advantages include:

Eliminate the need for additional balance valve

Eliminate the need to size the control valve based on valve authority as the control valve never sees pressure fluctuations

Eliminate the concern about close off pressure as the actuator never sees more than pressure across the control valve which is usually less than 5 psi.

ASHRAE CORPORATE SPONSOR

Siemens Industry

In the last two years, Siemens has realigned its business into three Sectors to make the company faster, simpler and more customer-focused. The launch of Siemens Industry completed the process for the Industry Sector.

Siemens Industry began operations at the start of October 1, 2009 with five integrated divisions in the United States, the company's largest individual market.

The five divisions in Siemens Industry are Drive Technologies, Industry Automation, Industry Solutions, Mobility, and Building Technologies. Siemens Water Technologies will be fully integrated into Industry Solutions on October 1, 2010. Siemens Industry, Inc. employs about 18,000 people in the US.

Building Technologies (BT)

BT is a leading provider in North America of systems, solutions and services for building automation, (continued on page 5)

SEPTEMBER MEETING: ENGINEERING OOPS!!, ADVANCED WATER TREATMENT, AND YEA SOCIAL



CHAPTER TECHNOLOGY AWARD COMPETITION 2010

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

The Chapter Technology Transfer Committee will be 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 will be 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 right here at the Chapter level. Chapter Competition winners will be judged in the Regional Technology Award Competition. Regional winners will then submit a long form application for the Society Technology Award Competition. Winners of the Society Competition will also 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](#).

Mark M. Maguire, PE
Chapter Chair – Technology Transfer
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YOUNG ENGINEERS IN ASHRAE HALLOWEEN BOWLING NIGHT

ASHRAE members 35 years or under, don't miss the second YEA Bowling Night! On Thursday October 29th at 6:30 pm come out to Lucky Strikes in Center City for a fun time of bowling, food and hanging out! Costumes are encouraged, but not required. There will be a prize for the best costume!

Invites will be sent out via Cvent next week. If you do not receive one and are interested, please contact Ashley Kenyon at: akenyon@klingsstubbins.com

YEA Philadelphia has setup a Facebook group for you to join to keep you updated on all the latest information including YEA specific meetings and a forum for young engineers to discuss amongst one another.

The group is located [Here](#)



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.

2009-2010 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 at Drexel University's Center for Automated Technology – located at 3101 Ludlow Street (near 31st and Market Streets).

The Basic Class tuition is \$1,100.00, which includes all reference materials. For registration forms [Click Here](#)

Class size is limited to 30 students. To enroll, complete and submit the application including a **non-refundable** deposit of \$200.00 payable to "Philadelphia Chapter ASHRAE". Balance due at first course session.

Please mail the application and deposit to the Basic Class Coordinator:

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

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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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Matthew.Trinsey@Emerson.com

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

PHILADELPHIA CHAPTER PROGRAMS CALENDAR 2009-2010

Date	Location	Topic	Theme	Joint Meeting
10/8/2009	The Rittenhouse	Joint Meeting with SMCA		SMCA
11/12/2009	Maggiano's Center City	Std. 52, 62, & Advanced Water Treatment	Donor recognition and Research Promotion	
12/10/2009	Union League	Std. 189.1 High Performance Buildings	Sustainability	
1/14/2010	Maggiano's Center City	Philly Sustainability / Clinton Climate Initiative / 90.1-2007	Sustainability	
2/11/2010	Dave & Busters	Energy Mgmt. in existing buildings	Student Night	SMCA
3/11/2010	Crown Plaza - King of Prussia	LEED Measurement & Verification	Tradeshow	
4/8/2010	Comcast tour	Comcast Tour / Scholarship presentation / Research Presentation		
5/13/2010	Maggiano's Center City	BIM and CFD	Past Presidents	

(from page 2)

energy management, fire safety and security. BT improves facilities by making them more comfortable, safe, secure, energy efficient and less costly to operate. BT's business units are: Building Automation; Energy and Environmental Solutions; Security Solutions; Fire/Life Safety Systems; Siemens HVAC Products and Services; Low Voltage Controls and Distribution.

Drive Technologies (DT)

The Drive Technologies Division offers its customers solutions for electronics manufacturing as well as complete systems, including standard and large drives applications across the entire drive train. These solutions, comprised of numerical control systems, converters, motors and drives, are tailored to the respective application.

Industry Automation (IA)

The spectrum of offerings at Industry Automation extends from standard products to system solutions for energy and automation technologies used in manufacturing and process industries. As the leading provider of industry software, the Division optimizes entire value-added chains of manufacturing companies – from product design and development, to production, sales and service.

Industry Solutions (IS)

Industry Solutions is the systems and solutions integrator for plant business, and covers everything from planning and construction, to operation and maintenance over a plant's entire life-cycle. The Division has the process know-how for increasing the productivity and competitiveness of enterprises in various industries, and meets the need for environmentally compatible solutions with its water processing and raw material processing systems.

Mobility (MO)

MO offers a "complete mobility" approach to transportation solutions and services by providing its customers with integrated traffic and logistics solutions from a single source. These include passenger and goods transport; traffic management; rail infrastructure, airport logistics, and postal and cargo automation.

Water Technologies (WT)

WT works to help municipalities and industries use water in the smartest, most efficient ways possible while minimizing waste. WT is an industry leader in innovation in areas such as desalination; membranes for reuse; continuous deionization; double-pass reverse osmosis; reuse in the automotive industry; mobile water treatment; chlorination; and wastewater treatment.

MEMBERSHIP PROMOTION

New Members September 27, 2009

Mr Andrew Doble , Associate
Mr Justin Gibides, Associate
Mr Patrick D Keeny, Affiliate
Mr Stephen N Playo , Memeber
Mr Marc K Pisarek
Mr Robert M Hughes
Mr Jarred M Pollock
Miss Quita N Jainarine
Mr Thomas J Kirk
Mr Andrew F Remington
Mr Jordan S Weaver
Mr Gaurang A Makadia
Mr Isak Catic
Miss Brandi R Heard
Mr Thomas S Genevieve
Mr Xi Lin Li
Mr Mustafa M Attalla
Mr Walter Johnson
Mr Phillip Chan
Mr Andrew Meroulis
Mr Talal H Alrashidi