

OCTOBER
2009 EDITION



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"THE GEE CHEE"

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THE OFFICIAL PUBLICATION OF THE REGION 4 CHARLESTON CHAPTER 113 AMERICAN SOCIETY OF HEATING, REFRIGERATING, AND AIR CONDITIONING ENGINEERS, INC.



MEETING SCHEDULE

OCTOBER 13, 2009

LOCATION: NORTH CHARLESTON
RADISSON HOTEL

B.O.G MEETING: 5:00-5:30PM

"HAPPY HALF HOUR": 5:30-6:00PM

TECH PROGRAM: 7:00-8:00PM

8:01.....SEE YOU NEXT MONTH!

COST: \$20 / PERSON + \$5 OPEN BAR

THIS MONTH'S PRESENTATION BY:

DR. EMAD AFIFI

TOPIC:

URBAN SHED DESIGN COMPETITION

This Month's Articles:

- **Presidential Message**
- **Monthly Topic and Speaker**
- **The CTT Corner**
- **Student Activities**
- **Member News**
- **Sponsorships and Investors**
- **The Wall of Honor**
- **Upcoming Events**
- **Get Involved**

Presidential Message

This month we are highlighting Student Activities. Our chapter has always had a strong student chapter thanks to the work of our Student Activities Chair, Carl McGartlin, and our Student Advisor, Dr. Emad Affifi. Both have been awarded on a regional level this year in recognition of their efforts.

But is this where student activities should end? We are in one of the most widely reaching professions, where our work in areas such as air quality, climate control, refrigeration, and energy efficiency affect us in our homes, work places, schools, health care facilities, and practically every space we occupy. It is not always a very glamorous profession, but it can be very rewarding. Sharing our work and ideas with students in K-12 as well as trade schools and universities will ensure that we continue to bring a diverse collection of people, ideas and new technologies into our profession.

So take an opportunity to speak at your child’s school, or attend an engineering competition, or become a business partner. You can show our students and future engineers how they can become involved in what we all know to be a rewarding career in engineering.

Pete Conroy
Chapter President

Monthly Topic and Speaker

This month’s topic is:

Urban SHED Design Competition—A BSI+P Studio Project

The UrbanSHED International Design Competition challenges the global design community to re-think the current sidewalk shed standard and create a prototype worthy of today’s New York City.

The competition invites engineers, architects, designers and students from all related fields to compete. Competitors will generate innovative, compelling and environmentally friendly proposals to thoroughly reimagine temporary sidewalk shed design while improving the pedestrian experience.

The New York City Buildings Department, American Institute of Architects New York Chapter, the New York Building Congress the Illuminating Engineering Society have partnered to create this open Competition.

Our Speaker Dr. Emad Afifi is a professor of Architecture at the Savannah College of Art and Design where he has taught environmental control systems and advanced design studio courses since 1990. He also served as architecture department chair and as Interim Dean.

His professional and academic career included international practice, consulting, and scholarship in the US, Germany, and the Middle-East. He earned his Doctoral degree in Architecture at the University of Michigan, Ann Arbor in 1994. Professor Afifi’s design studio is known for a high level of creativity and innovation in response to environmental factors and the principles of building performance and systems integration.

The CTT Corner

In September we had another great meeting. Dennis Knight told us that at any one time ASHRAE typically has \$8 million worth of research projects underway. Randy Jones gave us some insight into what goes on in ASHRAE tech committees.

Jamie Edmondson gave an outstanding presentation on energy efficient pump selection.

A suction diffuser should be used for most efficient pump operation and prevention of cavitation.

The pump curves for each pump include curves for different impeller diameters. The factory can reduce the impeller diameter to reduce horsepower requirement for a system with lower flow and head requirements. Trimming the impellers is something that gets missed a lot. Trimming the impeller may cause the pump to operate at a lower efficiency but actually save energy. If a pump efficiently produces more pressure than required, a valve must be used to throttle the flow, thus wasting energy.

To determine motor HP requirements, select a point below the BHP line. Do not extend operating range to the right of that shown by the curve. Do not choose a point which is close to the end of the curve. The engineer may have overestimated the pressure loss to be safe, so there may be more flow than anticipated.

There are systems with variable flow through the chiller. The flow must be very gradually changed. If flow is suddenly opened to a second chiller, this will cut the flow to the first chiller in half.

Do not select a pump too close to the right end of the curve. It could go off range. It is better to select a little to the left of the highest efficiency point. Very slightly to the right of highest efficiency is OK.

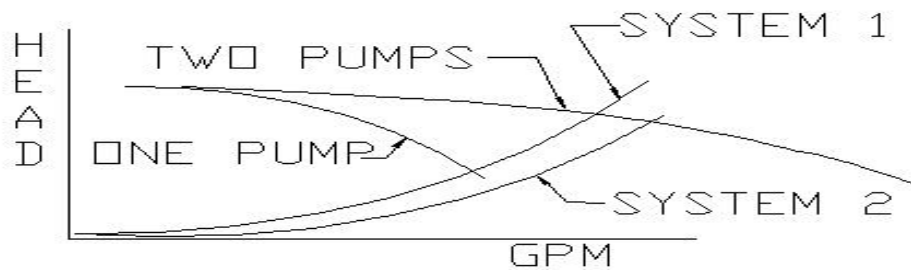
Curves show performance at constant RPM. For variable RPM, performance will be below the curves at times.

The control system should provide feedback at least twice per second so the variable frequency drive (VFD) will not hunt.

With VFD and constant GPM there can be a large reduction in head at a significant saving of money. There is a slight increase in cost for VFD but a very significant saving in operating cost.

The CTT Corner (CONTINUED)

With 2 pumps in parallel, be sure that one pump can operate by itself without operating past the end of the system curve and without being loaded above its horsepower rating. If there is not enough resistance to flow in the system and the single pump operates past the end of the curve, cavitation will occur, rapidly damaging the pump. Note that at any given head, the curve for two pumps shows twice the flow as the curve for one pump. In the illustration below the single pump intersects the curve for system 1 but not for system 2 so a two-pump installation would not work for system 2.



So sometimes a single pump with VFD will be cheaper to operate than two pumps. Operating conditions have to be analyzed to see which approach is the cheapest. Cost comparisons should be based on life cycle cost. This includes calculation of present value of an expense or saving projected for a number of years in the future. Using an interest rate of 10%, the present value of \$10,000 ten years from now would be $\$10,000 / (1.1^{10}) = \$3,855$.

Pump reps have software that can show life cycle analysis.

If the discharge valve has to be throttled way down, trim the impeller to save operating cost.

Anyone with questions can contact me at gene_brown_jr@yahoo.com.

Student Activities

This month is Student Activities Month.

Please speak to Carl McGartlin for ways you can get involved with our Student Chapter.

He can be emailed at:

cmcgartlin@spirax.com

" The Gee Chee "

Member News

If you have recently moved to the Charleston area and wish to transfer your membership, please contact our Membership Chair, **Charles Hipp**, or make the change online at www.ashrae.org.

Sponsorships and Investors

2009-2010 ASHRAE RESEARCH INVESTORS

Triad Mechanical Contractors



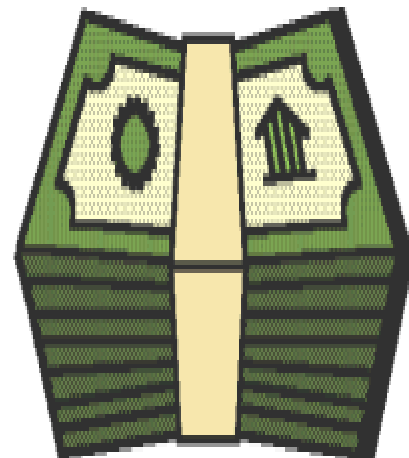
The Wall of Honor

Individual Donations of \$100.00 or More

**Pete Conroy
Pamela Phillips**

Much of ASHRAE Research funding comes in through individual donations, so please give.

CAN WE PUT YOUR NAME HERE?



" The Gee Chee "

Upcoming ASHRAE Events

"FALL RESEARCH PROMOTION" GOLF TOURNAMENT

LOCATION: THE LINKS AT STONO FERRY

DATE: OCTOBER 23, 2009

TIME: 1:00PM SHOTGUN START

COSTS: \$75 INCLUDES GOLF, CART, BOX LUNCH & PRIZES

PLEASE EMAIL PAMELA PHILLIPS TO REGISTER YOUR TEAM AT
PAMELA.PHILLIPS@ARCADIS-US.COM

PLEASE CALL PAMELA AT 375-5990 OR FAX YOUR REGISTRATION FORM
TO 375-5993

AHR EXPO

LOCATION: ORANGE COUNTY CONVENTION CENTER

ORLANDO, FLORIDA

DATES: JANUARY 25-27TH, 2010

ASHRAE CHAPTER MEETINGS

October Meeting

Student Activity Night
Tuesday October 13, 2009
Location: North Charleston Radisson Hotel
Speaker: SCAD Students & Professor Dr.
Emad Afifi

November Meeting

Donor Recognition Night
Tuesday November 10, 2009
Location: North Charleston Radisson Hotel
Speaker: SCEG

December Meeting

Oyster Roast
Tuesday December 8, 2009
Location: Trane Office
Speaker: Jeff Watcke

January Meeting

Membership Promotion Night
Tuesday January 12, 2009
Location: North Charleston Radisson Hotel
Speaker: Dwight Landry

February Meeting

National Engineers Week
Tuesday February 16, 2009
Location: Citadel
Speaker: **Dennis Knight (DL)**

March Meeting

Research Promotion Night
Tuesday March 9, 2009
Location: North Charleston Radisson
Hotel
Speaker: Mark Hegberg

April Meeting

History Night
Tuesday April 13, 2009
Location: North Charleston Radisson
Hotel
Speaker: **Dennis Knight (DL)**

May Meeting

Student Activity Night
Tuesday May 11, 2009
Location: North Charleston Radisson
Hotel
Speaker: **Paul Pieper (DL)**

June Meeting

Chapter Social
Tuesday June 8, 2009
Location: TBD
Speaker: No Speaker

" The Gee Chee "

GET INVOLVED

CONTACT ONE OF OUR COMMITTEE CHAIRS TO SEE HOW YOU CAN MAKE A DIFFERENCE

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