THE LONG ISLAND SOUNDER

October 2011

ASHRAE Long Island Chapter, Region 1...*Founded in 1957*

www.ashraeli.org

American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc.

Inside this issue:

President's Message

Hello everyone and a warm welcome to October! This happens to be one of my favorite months, filled with pumpkin picking, apple pies and costume parties. It's a great time to jump in piles of leaves you raked from the trees and feel like a kid again! As always I wish everyone a happy and healthy time of year with friends and family.

With that said, I'd like to take a quick look back at September and thank Leon Shapiro for his presentation on "Sustainable Cooling Water Treatment through Non-Chemical Technologies." His talk was an informative lecture that sparked some great questions and answers. For anyone that missed the presentation it can be found on our website www.ashraeli.org under the heading "presentations".

This year we decided to have a three part "back to basics" set of lectures given by our very own Past President Evans Lizardos. This series is designed mostly to give our YEA (Young Engineers in Ashrae) membership a chance to hear some fundamentals of our industry. Sometimes we focus on great detail, and forget about the overall basic picture. We did one of these lectures last year as a bit of a test run and it was a great success. Thank you Evans for putting your own personal time and effort into helping our future generation of HVAC professionals become more knowledgeable and successful.

CHAPTER MONTHLY MEETING

DATE:	**Tuesday, October 11, 2011**
TIME:	6:00 PM - Cocktails/Dinner 6:30 PM - Back to Basics #1 6:45 PM - Dinner Presentations 8:45 PM - Conclusion
LOCATION:	Westbury Manor South Side of Jericho Tpke. 25 Westbury, NY 11590
FEES: Members - Guest - Student -	 $40.00 $45.00 $15.00

Reservations requested, but not required.

Call (516) 333-7117

This month's presenter Tom Neill plans to speak about the "Application of Mixed or Hybrid Boiler Systems for Energy Efficiency." With Ashrae's focus on sustainability and our never ending hopes of a more energy efficient society, this topic promises to teach us a lot. Be sure to read this month's CTTC article about this topic. Don Kane makes some great points to consider while listening to this month's lecture.

As President of the chapter each month I take an hour long conference call with the other 14 Chapter Presidents of Region 1 along with the Regional Chairpersons. During this call we discuss "what's happening" in the current month. During last week's call I was informed that the LI chapter was first to complete Full Circle. This means all of our board members have stepped up to the plate and donated to research promotion personally. Thank you everyone, it's a great way to lead by example! Last year our chapter did such a great job in Resource Promotion that this year our goal is just a little bit higher. This month's meeting is a Resource Promotion Night, which means we will be honoring last year's donors and handing out coins to the top donors.

Continued on Pg. 3

Long Island Chapter Officers & Committees

ASHRAE 2011/2012 OFFICERS

POSITION	NAME	PHONE	FAX	EMAIL
President	**Carolyn Arote**	516.568.6550	516.568.6575	carote@adehvac.com
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Vice President	**Andrew Manos, LEED AP**	631.632.2791	631.632.1473	andym22@optonline.net
Financial Secretary	**Richard Rosner, P.E.**	631.737.9170	631.737.9171	rrosner@csfllc.com
Treasurer	**Thomas Fields, P.E., LEED AP**	212.643.9055	212.643.0503	thomas.fields@mgepc.net
Secretary	**Charles Lesniak, P.E**	516.484.1020	516.484.0926	charles.lesniak@leapc.com
Board of Governors	**Don Kane, P.E.**	631.737.9170	631.737.9171	dkane@csfllc.com
Board of Governors	**Andrew B. Dubel, P.E.**	212.967.7651	212.967.7654	andrew.dubel@leapc.com
Board of Governors	**Nancy Román**	516.568.6509	516.568.6586	nroman@adehvac.com

ASHRAE 2011/2012 COMMITTEES

COMMITTEE	NAME	PHONE	FAX	EMAIL
Programs & Special Events	**Brian Simkins, LEED AP**	203.261.8100	203.261.1981	bsimkins@accuspecinc.com
Membership	**Charles Lesniak, P.E.**	516.484.1020	516.484.0926	charles.lesniak@leapc.com
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Research Promotion	**Andrew Manos, LEED AP**	631.632.2791	631.632.1473	andym22@optonline.net
Historian	**Richard Rosner, P.E.**	631.737.9170	631.737.9171	rrosner@csfllc.com
Student Activities	**Andrew B. Dubel, P.E.**	212.967.7651	212.967.7654	andrew.dubel@leapc.com
Young Engineers in Training	**Charles Lesniak, P.E.**	516.484.1020	516.484.0926	charles.lesniak@leapc.com
Webmaster	**Thomas Fields, P.E., LEED AP**	212.643.9055	212.643.0503	thomas.fields@mgepc.net
Nominating	**Michael Gerazounis, P.E., LEED AP**	212.643.9055	212.643.0503	michael.gerazounis@mgepc.net
Reception & Attendance	**Rich Halley**	718.269.3809	718.269.3725	rchalley@trane.com
PR & Engineering Joint Council of LI	**Peter Gerazounis, P.E., LEED AP**	212.643.9055	212.643.0503	peter.gerazounis@mgepc.net
Golf Outing	**Peter Gerazounis, P.E., LEED AP** **Steven Friedman, P.E., HFDP, LEED AP**	212.643.9055 212.354.5656	212.643.0503 212.354.5668	peter.gerazounis@mgepc.net sfriedman@akfgroup.com

President's Message (Cont'd from Page 1)

On the conference call we were also asked to mention two exciting Centennials Region 1 of Ashrae is celebrating. This year it is New York City celebrating and next year will be Boston. This goes to show our roots run deep and we as a society continue to grow with each new year. Congratulations to these chapters on a successful One Hundred Years!!

It wouldn't be My Article if I didn't mention my goal for this year once again. I truly want to see some of our committees grow into more than just one person. If you happen to be approached by a chairperson this month, it only means they have paid attention and think you have what it takes. Don't be shy, give it a try!

As always I look forward to seeing all of you at this month's meeting…Who knows, maybe we will share some hot apple pie for dessert!

Carolyn Arote, President
Long Island Chapter

Long Island Chapter - Past Presidents

1958	H. Campbell, Jr. PE	1985	Edward W. Hoffmann
1959	Clyde Alston, PE	1986	Jerome T. Norris, PE
1960	Sidney Walzer, PE	1987	Abe Rubenstein, PE
1961	Sidney Gayle	1988	Michael O'Rouke
1962	William Kane	1989	Mel Deimel
1963	Louis Bloom	1990	Robert Rabell
1964	Milton Maxwell	1991	Gerald Berman
1965	Will Reichenback	1992	Donald Stahl
1966	Joseph Minton, PE	1993	Ronald Kilcarr
1967	Irwin Miller	1994	Jerald Griliches
1968	Walter Gilroy	1995	Walter Stark
1969	Charles Henry	1996	Joe Marino
1970	William Wright	1997	Norm Maxwell, PE
1971	Louis Lenz	1998	Alan Goerke, PE
1972	Ronald Levine	1999	Frank Morgigno
1973	Henry Schulman	2000	Michael Gerazounis, PE, LEED AP
1974	Myron Goldberg	2001	Ray Schmitt
1975	John N. Haarhaus	2002	Steven M. Stein, PE
1976	Richard K. Ennis	2003	Andrew Braum, PE
1977	Kenneth A. Graff	2004	Claudio Darras, P.E.
1978	Evans Lizardos, PE, LEED AP	2005	Craig D. Marshall, P.E.
1979	Albert Edelstein	2006	John Nally
1980	Ralph Butler	2007	Peter Gerazounis, PE, LEED AP
1981	Robert Rose, PE	2008	Steven Friedman, PE, HFDP, LEED AP
1982	Timothy Murphy, PE	2009	Steven Giammona, P.E., LEED AP
1983	Leon Taub, PE	2010	Nancy Román
1984	Raymond Combs		

Chapter Monthly Meeting - Program for 2010/2011

September 13, 2011 * At Westbury Manor Dinner Presentation – Cooling Tower Water Treatment Through Non Chemical Technologies Presenter - Leon Shapiro ****1 PDH****	**February 19-25, 2012** **NATIONAL ENGINEERS WEEK**
October 11, 2010 ** At Westbury Manor* Dinner Presentation – Application of Mixed or Hybrid Boiler Systems for Energy Efficiency Presenter - Tom Neill ****1 PDH**** **RESOURCE PROMOTION NIGHT** ***Back to Basic Session I*** *****1 PDH***** *Presenter - Evans Lizardos, PE, LEED AP*	**March 13, 2012** ** At Westbury Manor* Dinner Presentation - **TBD** **YEA NIGHT** ***Back to Basic Session III*** *****1 PDH***** *Presenter - Evans Lizardos, PE, LEED AP*
November 15, 2011 ** At Westbury Manor* Dinner Presentation - **TBD** Presenter - **JOINT MEETING WITH SMACNA** **STUDENT ACTIVITIES NIGHT** **MEMBERSHIP PROMOTION NIGHT** **YEA NIGHT** ** Meeting will be held on 3rd Tuesday of the month.*	**April 10, 2012** **ANNUAL FIELD TRIP - TBD**
December 13, 2011 Holiday Party - Westbury Manor	**April 30, 2012** ** Cherry Valley Club, Garden City, NY* **ANNUAL GOLF OUTING**
January 11, 2012 ** At Westbury Manor* Dinner Presentation - **TBD** Presenter - ****1 PDH**** ***Back to Basic Session II*** *****1 PDH*****	**May 8, 2012** ** At Westbury Manor* Dinner Presentation - **TBD** Presenter - **STUDENT ACTIVITIES NIGHT**
January 21-25, 2012 ASHRAE Winter Meeting Convention Center Chicago	**June 12, 2012** ** At Westbury Manor* **PAST PRESIDENTS & OFFICER INSTALLATION**
February 21, 2012 ** At Westbury Manor* Dinner Presentation- **TBD** Presenter- ** Meeting will be held on 3rd Tuesday of the month.* **JOINT MEETING WITH USGBC** **RESOURCE PROMOTION NIGHT** **MEMBERSHIP PROMOTION NIGHT** ****1 PDH****	
August 2012 - Chapter Regional Conference Region I	

PAOE POINTS FOR 2011/2012

Chapter Members	Membership Promotion	Student Activities	Research Promotion	History	Chapter Operations	CTTC	Chapter PAOE Totals
299	0	0	0	0	0	0	0

October Program

Dinner Presentation

"Application of Mixed or Hybrid Boiler Systems for Energy Efficiency"

Presented by

Thomas Neill
Mastek Inc.

Attendees Will Earn 1 PDH!

DATE:	**TUESDAY, OCTOBER 11, 2011**		
Time:	6:00 PM – Cocktails and Hors D'ouevres 7:00 PM – Dinner Presentation 8:45 PM – Conclusion	**Fee:**	$ 40.00 Member $ 45.00 Guest $ 15.00 Student
Location:	**WESTBURY MANOR** (516) 333-7117 Jericho Tpke (South Side), 3/10 of mile east from Glen Cove Rd., Nassau County, NY. **Directions are posted at @ www.ashraeli.org.**		
Presentation:	This month's presentation will consist of a review of traditional and modern boiler sizing methods as a function of building load and standby capacity. It includes a review of boiler efficiency definitions and measurement methodologies. The second segment discusses increasing boiler and system operating efficiency with reduced temperature operation and boiler base loading. The presentation includes information on the identification of boiler types, sensible and condensing, and the supporting control strategies for optimizing efficiency and energy reduction. The lecture concludes with selection and comparison of boiler equipment for hybrid systems, cost analysis and potential savings. **Participants will receive 1 PDH credit.**		
About our Speaker:	**Thomas Neill** is the Supervisor for Project Engineering in this position he supervises the engineering design staff of eleven engineers on projects for our Distributor Products Group including Smith Cast Iron Boilers, RBI Boilers and Water Heaters and Hydrotherm KN high efficiency condensing boiler. In addition he will also be supervising efforts on product design for the Sterling Gas fired as well as Hydronic products and Baseboard. He previously served as the Senior Application Engineer for Mestek covering their three boiler lines including Smith Cast Iron Boilers, RBI Copper Fin product and Hydrotherm. Tom has over 35 years in the heating industry. He earned his degree in Mechanical Engineering from Western New England College. He began his career with a Manufacturer's Rep organization in Denver Colo. Specializing in boiler room equipment and service. In 1979 he went to work for a boiler manufacturer as a Sales Engineer providing design support to consulting engineers on proper installation, application, and trouble shooting for Smith Cast Iron Boilers.		

Research Promotion

This is my third year as Resource Promotion Chair. This year's RP training, which was held in Chicago, was very insightful. I was able to interact with other RP Chairs in different regions and share ideas on how to better generate funds. Leaders from ASHRAE Headquarters also spoke to us about what the financial goals and research projects are for this coming year.

This year's overall resource promotion goal is $2,001,900 with over 75 research projects on board. Our chapter is expected to raise approximately $13,881 towards the overall goal. I am hoping I can count on the continued support of all of our past contributors who have generously supported us over the years.

I also look forward to gaining the support of new contributors this coming year. Please help support ASHRAE in any way you can.

I would like say 'thank you' to all the contributors listed below whom have already donated to ASHRAE this year:

INDIVIDUALS

Ms Carolyn Arote
Mr Andrew B Dubel
Mr Thomas Fields, PE
Mr Steven D Friedman, PE,HFDP,LEED AP
Mr Charles J. Lesniak
Mr Andrew E Manos
Mr Michael O'Rourke
Ms Nancy Roman
Mr Richard L Rosner, PE
Mr Brian C Simkins
Mr James R Tauby, PE

A Glance at What Your Resource Promotion Dollars Are Helping To Sponsor

NEW PROJECTS AWARDED

The following three projects were approved for award as follows:

• **1580-RP**, "*Study of Input Parameters for Risk Assessment of 2L Flammable Refrigerants in Residential Air Conditioning and Small Commercial Refrigeration Applications;*" Responsible Committee: **TC 3.1** (Refrigerants and Secondary Coolants); Co-Sponsor (s): None; Contractor: Navigant Consulting, Inc; Duration: 12 months; Cost to ASHRAE: $250,000; Supports Research Strategic Goals: D2, D3 (05-10) Plan

• **1613-RP**, "*Update Climatic Design Data in Chapter 14 of the 2013 Handbook of Fundamentals;*" Responsible Committee: **TC 4.2** (Climatic Information); Co-Sponsor (s): None; Contractor: Numerical Logics Inc.; Duration: 18 months; Cost to ASHRAE: $138,477; Supports Research Strategic Goals: A6, A7, B2, C7, D1 (05-10) Plan

• **1633-RP**, "*Data and Interfaces for Advanced Building Maintenance and Operation;*" Responsible Committee: **TC 1.4** (Control Theory and Application); Co-Sponsor (s): TC 7.5 (Smart Building Systems), TC 7.6 (Building energy Performance), and TC 7.9 (Building Commissioning); Contractor: KGS Buildings LLC.; Duration: 24 months; Cost to ASHRAE: $266,570; Supports Research Strategic Goals: A7, B2, C6 (05-10) #1 (10-15) Plan

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Research Promotion (Cont'd. from Page 6)

POTENTIAL PROJECTS FOR BID IN SPRING 2011

A portion (seventeen) of the following twenty-five tentative research projects that have been approved for bid are expected to be released for bid this spring.

Approved Work Statements to Release for Bid Spring 2011:

• **1399-TRP**, "*Survey of Particle Production Rates from Process Activities in Pharmaceutical and Biological Cleanrooms;*" Responsible Committee: **TC 9.11** (Clean Spaces); Status: **Ready to Bid.**

• **1410-TRP**, "*Effect of System Chemicals toward the Breakdown of Lubricants and Refrigerants*;" Responsible Committee: **TC 3.2** (Refrigerant System Chemistry). Status: **Ready to Bid.**

• **1413-TRP**, "*Developing Standard Procedures for Filling Climatic Data-Gaps for Use in Building Performance Monitoring and Analysis*;" Responsible Committee: **TC 4.2** (Climatic Information); Status: **Ready to Bid.**

• **1458-TRP**, "*Modeling Person-to-Person Contaminant Transport in a Mechanical Ventilation Space*;" Responsible Committee: **TC 4.10** (Indoor Environmental Modeling); Status: **Ready to Bid.**

The Research and Technical Activities Report – Las Vegas Meeting – February 11, 2011

• **1495-TRP**, "*Effect of Lubricant on the Distribution of Water Between the Vapor and Liquid Phases of Refrigerants;*" Responsible Committee: **TC 3.3** (Refrigerant Contaminant Control); Status: **Ready to Bid.**

• **1499-TRP**, "*The Effect of Humidity on the Reliability of ICT Equipment in Data Centers*;" Responsible Committee: **TC 9.9** (Mission Critical Facilities, Technology Spaces and Electronic Equipment); Status: **Ready to Bid.**

• **1504-TRP**, "*Extension of the Clothing Insulation Database for Standard 55 and ISO 7730 to Provide Data for Non-Western Clothing Ensembles, Including Data on the Effect of Posture and Air Movement on that Insulation*;" Responsible Committee: **TC 2.1** (Physiology & Human Environment); Status: **Ready to Bid.**

• **1550-TRP**, "*Thermal Performance of Insulating Coating*;" Responsible Committee: **TC 1.8** (Mechanical System Insulation); Status: **Ready to Bid**.

• **1557-TRP**, "*Lab Comparison of Relative Performance of Gas Phase Filtration Media at High and Low Challenge Concentrations*;" Responsible Committee: **TC 2.3** (Gaseous Air Contaminants and Gas Contaminant Removal Equipment); Status: **Ready to Bid**.

• **1564-TRP**, "*Measurement of Oil Retention in the Microchannel Heat Exchanger*;" Responsible Committee: **TC 8.4** (Air to Refrigerant Heat Transfer Equipment); Status: **Ready to Bid**.

• **1565-TRP**, "*Development of the ASHRAE Design Guide for Dedicated Outdoor-Air Systems;*" Responsible Committee: **TC 8.10** (Mechanical Dehumidification Equipment and Heat Pipes); Status: **Ready to Bid**.

• **1581-TRP**, "*Develop Alternate Set-up Guidelines for Unitary Air Conditioner Test Configurations Which Cannot Adhere to ASHRAE 37 /ASHRAE 116 specified Duct Dimensions and External Pressure Tap Locations*;" Responsible Committee: **TC 8.11** (Unitary and Room Air Conditioners and Heat Pumps) ; Status: **Ready to Bid. Potential $10k in co-funding from AHRTI**

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Research Promotion (Cont'd. from Page 7)

• **1584-TRP**, "*Assessment of Alternative Approaches to Predicting the Burning Velocity of a Refrigerant;*" Responsible Committee: **TC 3.1** (Refrigerants and Secondary Coolants). Status: **Ready to Bid**. **Potential $15k in co-funding from AHRTI**

• **1592-TRP**, "*CHP Design Guide – Update to the Cogeneration Design Guide (1996)*;" Responsible Committee: **TC 1.10** (Cogeneration Systems); Status: **Ready to Bid**.

• **1603-TRP**, "*Role of HVAC Systems in the Transmission of Infectious Agents in Buildings and Intermodal Transportation;*" Responsible Committee: **TC 9.3** (Transportation Air Conditioning); Status: **Ready to Bid**.

• **1604-TRP**, "*Demand Controlled Filtration for Clean Rooms;*" Responsible Committee: **TC 9.11** (Clean Spaces); Status: **Ready to Bid**.

• **1606-TRP**, "*Laboratory Testing of Flat Oval Transitions to Determine Loss Coefficients;*" Responsible Committee: **TC 5.2** (Duct Design); Status: **Ready to Bid**.

The Research and Technical Activities Report – Las Vegas Meeting – February 11, 2011

Approved Work Statements Still On-Hold for Bid:

• **1447-TRP**, "*Performance of Pressurized Stairwells with Open Doors*;" Responsible Committee: **TC 5.6** (Control of Fire and Smoke); Status: **Ready to Bid.**

• **1462-TRP**, "*Active Mechanisms for Enhancing Heat and Mass Transfer in Sorption Fluids*;" Responsible Committee: **TC 8.3** (Absorption and Heat Operated Machines); Status: **Ready to Bid.**

• **1491-TRP**, "*Literature and Product Review and Cost Benefit Analysis of Commercially Available Ozone Air Cleaning for HVAC Systems*;" Responsible Committee: **EHC** (Environmental Health Committee); Status: **Accepted for bid 11.01**. Work with MORTS to finalize RFP so project can possibly bid fall 2011.

• **1529-TRP**, "*Full-Frequency Numerical Modeling of Sound Transmission in and Radiation from Lined Ducts*;" Responsible Committee: **TC 2.6** (Sound and Vibration Control); Status: **Ready to Bid.**

• **1535-TRP-C**, "*A Heat Transfer and Friction Factor Correlation for Low Air-side Reynolds Number Applications of Compact Heat Exchangers*;" Responsible Committee: **TC 8.4** (Air-to-Refrigerant Heat Transfer Equipment); Status: **Conditionally accepted for bid 11.01**. Work with Research Liaison to resolve RAC's approval conditions by so that project can possibly bid in fall 2011.

• **1546-TRP**, *"Expansion and Updating of the Air Diffusion Performance Index Method;"* Responsible Committee: **TC 5.3** (Room Air Distribution); Status: **Accepted for bid 11.01**. Work with MORTS to finalize RFP by September 15th so project can possibly bid fall 2011.

• **1556-TRP**, "*Characterization of Liquid Refrigerant Flow Emerging from a Flooded Evaporator Tube Bundle*;" Responsible Committee: **TC 1.3** (Heat Transfer and Fluid Flow); Status: **Ready to Bid.**

• **1602-TRP**, "*Thermal-Fluid Behavior of Mixed Refrigerants for Cryogenic Applications;*" Responsible Committee: **TC 10.4** (Ultra-Low Temperature Systems and Cryogenics); Status: **Accepted for bid 10.10**. Work with MORTS to finalize RFP by September 15th so project can possibly bid fall 2011.

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Research Promotion (Cont'd. from Page 8)

CONTRIBUTIONS CAN BE MADE IN THE FOLLOWING WAYS:

1) You can mail your checks, made out to ASHRAE Research Promotion, to:

Andrew Manos
ASHRAE Research Promotion Chair
c/o Stony Brook University
Campus Planning, Design and Construction
Research and Support Services, Suite 160
Development Drive, Stony Brook, NY 11794-6010

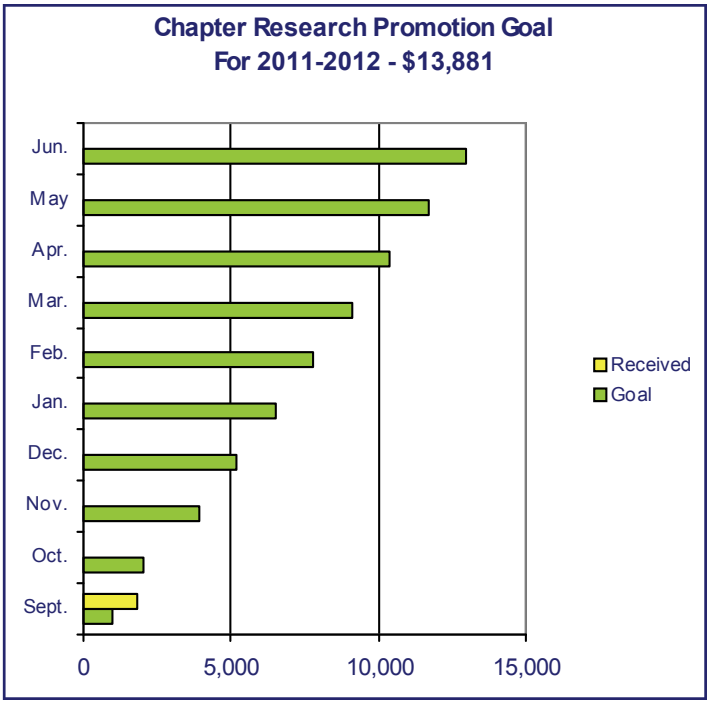
2) You can bring your check to any of the meetings and give it to me. I will mail it into headquarters.

3) You can contribute via paypal from the ASHRAE LONG ISLAND web site just click on the donate button.

4) You can contribute directly on-line. www.ashrae.org
**** Please make sure your accredit your contribution to the LONG ISLAND CHAPTER 006 ****

Thank you again for all your support!

Andrew Manos, LEED AP
Research Promotion Chair



CTTC

HYBRID BOILER SYSTEMS – COMPROMISE OR OPTIMIZE?

It is a normal part of human nature to always want "the best". Defining what constitutes "the best" can be more and, in the case of designing a boiler system, require due diligence with regard to data gathering, thermal analysis and last, but certainly not least, economic evaluation.

In the past, we might have identified the worst case design temperature for the geographical location, calculated heat losses for the building and specified a boiler sufficiently large to handle the design-day temperature heating load. Have we designed the best system for this application? Certainly the occupants will be warm when the weather is cold outside...but how about the majority of the heating-season days when the temperature is well above the design-day value, resulting in excess boiler capacity of perhaps 50% or more. Looking at ASHRAE "Bin Data" for most locations will reveal how little of the heating season is at the design-day condition. Unless other changes are made, there will be thermal overshoot in the heated spaces and short cycling of the boiler. These condition are obviously not desirable for either the occupants or the equipment. The building owner will not be too happy either when he has to pay the fuel bill, as operating under these conditions can incur a 20-30% penalty in boiler efficiency reduction.

Certainly, outdoor air temperature can be used as an input to reset the loop temperatures, however, at some point, with a non-condensing boiler we will have to worry about moving into the condensing region, below 130^{o} F. One could select one or more condensing type boilers sized to pickup, incrementally, the building load as it increases; however, in addition to a typically higher installed cost, using only condensing type boilers would, as the need to increase loop temperatures to meet design-day heating requirements, provide only marginally better operating efficiencies when in the non-condensing operating zone. The use of several smaller, staged boilers would substantially improve the plant operation with regard to short cycling and thermal overshoot but (except perhaps for an extremely well insulated, draft-free structure conditioned entirely with radiant heat) it is unlikely that the use of all condensing type boilers would prove economically justifiable, given the higher installed cost. How are we going to keep the accountants happy?

This is where we choose "one from column A and one from column B"…to get the optimum benefit from several technologies, a Hybrid system. By properly selecting and combining non-condensing boilers (low installed cost, cost efficient when operating with higher temperature loop temperatures, not-so-efficient when short cycling or when heating load is drastically reduced) with condensing type boilers (higher installed cost, operation at lower loop temperatures, extraction of "waste heat" by recovering the latent heat of vaporization within the heat exchanger). Typically, we would select sufficient non-condensing boiler capacity to handle the design-day "cold" days and sufficient condensing boiler capacity for the remainder of the heating season. The use of non-condensing boilers for 40-50% of the heating capacity will reduce the installed cost (versus all condensing) while the use of the condensing boilers during the times of reduced heat load will optimize the fuel usage.

In order to make this concept viable we need one more critical component….the control system. We need to have a control system technology (which, thanks to the wonders of digital electronics, is readily available) with the "intelligence" to monitor the inside and outside temperatures and make operational adjustments accordingly. At higher heating-season temperatures, one or more condensing boilers will be brought on-line at relatively low loop temperatures (to maximize condensing efficiency), gradually increasing loop temperatures until necessary it is necessary to segue into non-condensing operation at which point the non-condensing boiler(s) will be brought on-line and the condensing boilers taken off-line.

It seems that we now have the "best" of both worlds….or do we? The beauty of modern day electronic controls is that once you have the basic computational power (whether using PLCs or PCs) the incremental effort to add more features is minimal. Thus, consider taking the above hybrid system and adding sensors for mass flow and controllers for variable speed pump motors. Now, by measuring mass flow and temperatures we can fine-tune the operation to only provide the amount of BTUs required to comfortably heat the occupied spaces. Not only will this result in additional operational economies, but will improve the perceived comfort level as the conditioned space will not experience major temperature swings.

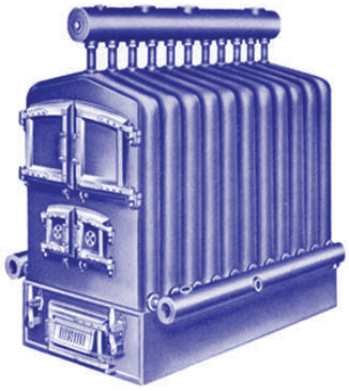
Have we now defined the "Best" solution to heating a structure? No, as there is no one "best" solution. What we have done is outlined the path to optimizing the various pieces of the heating puzzle and some of the technology available to do this.

Don Kane, P.E.
CTTC

History

THE HISTORY OF HEATING HOMES IN AMERICA

Smith Mercer Boiler 1880's



Wood was first used for heating homes and heaters consisted of centrally located direct radiating stoves such as the cast iron Franklin Stove invented in 1742. Wood burning brick fireplaces were used when the kitchen wasn't fired up. This kept the family unit sometimes huddled in the room where the fireplace was or in the kitchen and life was easy and simple. Sometimes rocks were warmed on the stove or in an open fire and then placed in the beds to warm them up. The only temperature control was to open or close the air vents on the fire to enrich it with air or to let it starve, or by the amount of wood you stoked in it. Additional control was had by opening and closing the windows.

Around 1885 the nation first saw coal take over as the main fuel to heat homes. At first it was used in the stoves in the same method as wood but it was so efficient it would last for hours with no tending or adjustments being made. I am sure people thought 'what could beat this." At about the same time, in 1885, Dave Lennox built and marketed the industry's first riveted-steel coal furnace.

From around 1850 to the end of the century the invention of low cost cast iron radiators brought central heating to America's homes with coal fired boilers in the basement delivering hot water or steam to radiators in every room. Without electricity and fans to move air, early furnaces transported heat by natural convection (warm heated air rising) through ducts from the basement furnace to the rooms above. These two methods would dominate home central heating until 1935, when the introduction of the first forced air furnace using coal as a heat source used the power of an electric fan to distribute the heated air through ductwork within the home. Controlling these heating plant miracles wasn't much worried about because just the delivery of heat to each room in the house was wonderful enough alone.

Shortly thereafter 1935, gas and oil fired versions of forced air furnaces relieved homeowners from the chore of "stoking the coal fire" and relegated coal furnaces and cast iron radiators to the dust bin of history. As the equipment evolved the control of it became possible and practical. Full automatic operation wasn't popular until the 1940's-50. One of the first electric room thermostats however was invented in 1883 by Warren S. Johnson. Early technologies included mercury thermometers with electrodes inserted directly through the glass, so that when a certain (fixed) temperature was reached the contacts would be closed by the mercury. These were accurate to within a degree of temperature. I wonder if people were as finicky about having the "right" temperature for them then as they are now.

They say that today about 60% of our homes are heated with gas fired heating plants and another 25% with oil fired units. In warmer climates, a quarter of our homes are heated by units using electric "heat pumps" to supply both heating and cooling energy. Believe it or not, many industry pundits in the 1950's thought that atomic energy would make electricity too cheap to meter. Nowadays, electricity costs are rising quickly in line with other fuel sources such as natural gas (natural gas is becoming the primary fuel source for many new electrical generation facilities).

Richard Rosner, P.E.
History Chairman

John Nally
Asst. Chairman

Please remember to send in any old ASHRAE photographs, papers, articles, and speeches of people who have been through the Long Island Chapter of ASHRAE. I would like to upload this information to our chapter's website. Everything sent in will be returned.

Student Activities

November 15th meeting will be our first student activities meeting. We encourage all students members to attend and enjoy an evening on ASHRAE. We will be having a back to basics lecture in addition to our main seminar. These are great ways to gain experience and do some networking. We also encourage you to check out the ASHRAE students zone at http://www.ashrae.org/students/. Information on society level design completions, scholarship and grant programs can all be found here.

The ASHRAE Senior Undergraduate Project Grant Program provides grants to engineering, technical and architectural schools worldwide with the goal of increasing student knowledge, learning and awareness of the HVAC&R industry through the design and construction of senior projects. Grants are to be used to fund equipment and supplies for senior projects and 2-year technical school projects that focus on ASHRAE-related topics. Grants may cover projects lasting from one academic term up to one year.
Learn More Here: http://www.ashrae.org/students/page/743

Our outreach to students should not be limited to colleges or students visiting us at our monthly ASHRAE meetings. We encourage our members to reach out to their local school districts and visit schools to discuss engineering. The society has produced a great deal of materials to assist you with lectures and project ideas. Please come talk to the board about any meeting which you have, the board may be able to support you with educational materials.

Andrew B. Dubel, P.E.
Student Activities Committee Chair

Donate your old Handbooks
Please bring your old handbooks to the meetings for donations to our student members who do not have complete sets at this time. Rich Rosner will be collecting them.

Membership

Our chapter will hold two Membership nights are and the will be during the November and the February monthly meetings. Please visit the ASHRAE website at http://www.ashrae.org to review and update your bios, and to check if you are up to date with your membership dues. We are always looking for new members to join and attend our meetings. ASHRAE is looking to retain more student members thru their smart start program. Student members should look into this program. It will help you adjust to the membership status. Please see the ASHRAE website for more information. I'm looking forward to seeing everyone after this summer break.

Charlie Lesniak
Membership Chairman

Young Engineers in ASHRAE (YEA)

Our Chapter will be having three Back to Basic sessions this year and the first one will be this month! And it will be hosted by Mr. Evans Lizardos. The topic will be FAN TYPES, APPLICATIONS, AND INSTALLATION GUIDELINES.

We are also having two YEA nights. Our first night will be during the November meeting, and the second one will be during the March meeting. We will be looking for other ideas for social events so please contact me if you have any ideas.

Nationally there are a few YEA events this year. There will be two YEA leadership conferences this year. The first one will be held in October at the ASHRAE headquarters from September 30th thru October 2nd, and the second one will be held in the spring son the west coast (location to be determined). All the spots for the October leadership conference have been filled up.

YEA will also be hosting Leadership U during the ASHRAE Winter and Annual Conferences in Chicago. During Leadership U, YEA members will be paired up with ASHRAE Society Officers and they will able to participate in the in events and board meetings. There are four positions available for Leadership U, and they will be determined by an application process.

YEA will be hosting a HVAC Design Essentials workshop this coming January. The workshop will be held from January 11th thru January 13th at the ASHRAE Headquarters in Atlanta, you need to register for the event by November 7th. The National YEA will offer 1 full scholarship to cover the cost of the workshop's registration. Please visit their website for more information.

Once again YEA is looking for the 2012 New Faces of Engineering for the National Engineers Week. National Engineers Week is held from February 19th to February 25th 2012. If you are or know someone who is 30 and under as of December 31st, 2011 please nominate them. Nominations must be into ASHRAE by October 21, 2011. Please find more information at www.ashrae.org/NewFaces

Charlie Lesniak
YEA Chairman

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