December 2014

THE LONG ISLAND

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

SEASON'S GREETINGS

Inside this issue:

President's Message

Welcome to the December issue of the "Long Island Sounder". We thank all those who attended last month's meeting, it was a nice turn out and we packed a lot into it. Lee Feigenbaum gave us an excellent program on the learning Curve, I for one had no idea that it had been reduced to formula and that results could be predicted so well. Seymour Zimbalist of the OJM Group spoke to us on some tax saving hints and opened all of our eyes when he explained how OJ Simpson's wealth was made bullet proof. He also generously sponsored our cocktail hour. Thank you again to our main speaker Eli Howard who spoke to us on "HVAC Air Distribution System Efficiency. We also noted those in the audience who had served in the armed forces being it was Veterans Day. There was a 50-50 held to donate to the Wounded Warriors Project and we collected over $350 for them. Our friends from SMACNA joined us as well as Region Representative Steve Sill. I really liked that the Manor had to bring in another table to accommodate the large turnout. It was student and YEA night and there was a lot of young blood in the group to offset the normal gray haired elders. Andy Manos thanked all who had donated to RP, gave out some coins, and encouraged the group to continue with their generous contributions to ASHRAE. New members and upgrades were recognized and many student members were signed up.

We will be taking a break from our programs and the December meeting will be all about relaxing and enjoying an evening with our friends and business associates. If you haven't attended our Holiday party before I suggest you don't miss this one. There is no charge for members and there is a wonderful buffet set out with an open bar. Speeches will be kept to a minimum and it will be a great time to network or just enjoy your friends. We have asked Joseph Furman, DRC, Director and Regional Chair of ASHRAE Region 1 to join us but haven't received his confirmation yet. Hopefully he will be there.

In January we will be back strong again and all business as we enjoy a lecture on "The Steam Kettle" which will certainly show us that steam is not dead and has its place in space heating and processing. Also Evans Lizardos will hold his 2nd back to basics seminar this time on Pipe designs for Control of Temperature and Flow in Water Systems. Don't forget the ASHRAE Winter meeting in Chicago as well as the AHR Expo the 24th through 28th of January.

Please check out our website www.ashraeli.org and take a look at the latest programs that Tom Fields, our Programs Chair, has scheduled for the chapter monthly meetings. Pencil in those dates on your calendar so you won't miss out on these great topics and events.

I wish you all a safe and joyous holiday season and a happy and healthy new year. Thank you to all the volunteers and board members, I appreciate all your time and dedication to our chapter and community. We look forward to seeing everyone at the December Holiday party and thank you for your continued support of the Long Island Chapter of ASHRAE.

Richard L. Rosner, P.E.
President - Long Island Chapter

CHAPTER MONTHLY MEETING

DATE:	**Tuesday, December 9, 2014** **ASHRAE Holiday Party**
TIME:	6:00 PM - 8:00 PM
LOCATION:	Westbury Manor South Side of Jericho Tpke. 25 Westbury, NY 11590
FEES:	
Member -	**No Fee**
Students-	**No Fee**
Non-Member-	**$45.00**

Reservations requested, but not required.
Call (516) 333-7117

Long Island Chapter Officers & Committees

ASHRAE 2014/2015 OFFICERS

POSITION	NAME	PHONE	FAX	EMAIL
President	**Richard Rosner, P.E.**	631.737.9170	631.737.9171	president@ashraeli.org
President-Elect	**Thomas Fields, P.E., LEED AP**	212.643.9055	212.643.0503	president_elect@ashraeli.org
Vice President	**Charles Lesniak, P.E**	516.484.1020	516.484.0926	vice_president@ashraeli.org
Financial Secretary	**Don Kane, P.E.**	631.737.9170	631.737.9171	finsec@ashraeli.org
Treasurer	**Andrew B. Dubel, P.E.**	212.967.7651	212.967.7654	treasurer@ashraeli.org
Secretary	**Richard Halley**	718.269.3809	718.269.3725	secretary@ashraeli.org
Board of Governors	**Lee Feigenbaum, LEED AP BD+C**	212.243.2555	212.924.7148	bog1@ashraeli.org
Board of Governors	**Frank Paradiso**	631.632.2791	631.632.1473	bog2@ashraeli.org
Board of Governors	**Ken Mueller**	201.395.3761	763.231.6924	bog3@ashraeli.org
Board of Governors	**Andrew Manos, LEED AP**	631.632.2791	631.632.1473	bog4@ashraeli.org

ASHRAE 2014/2015 COMMITTEES

COMMITTEE	NAME	PHONE	FAX	EMAIL
Programs & Special Events	**Thomas Fields, P.E., LEED AP**	212.643.9055	212.643.0503	programs@ashraeli.org
Membership	**Lee Feigenbaum, LEED AP BD+C**	212.243.2555	212.924.7148	membership@ashraeli.org
Chapter Technology Transfer (CTTC)	**Don Kane, P.E.**	631.737.9170	631.737.9171	cttc@ashraeli.org
Grassroots Government Activities Committee	**Charles Lesniak, P.E**	516.484.1020	516.484.0926	ggac@ashraeli.org
Newsletter Editor	**Liset Cordero**	212.643.9055	212.643.0503	editor@ashraeli.org
Research Promotion	**Andrew Manos, LEED AP**	631.632.2791	631.632.1473	rp@ashraeli.org
Historian	**Andrew B. Dubel, P.E.**	212.967.7651	212.967.7654	historian@ashraeli.org
Student Activities	**Richard Halley**	718.269.3809	718.269.3725	sa@ashraeli.org
Young Engineers in Training	**Frank Paradiso**	631.632.2791	631.632.1473	yea@ashraeli.org
Webmaster	**Richard Rosner, P.E.**	631.737.9170	631.737.9171	web@ashraeli.org
Nominating	**Michael Gerazounis, P.E., LEED AP**	212.643.9055	212.643.0503	nominating@ashraeli.org
Reception & Attendance	**James Hanna** **Ken Mueller**	718.269.3768 201.395.3761	718.269.3794 763.231.6924	reception@ashraeli.org
PR & Engineering Joint Council of LI	**Andrew Manos, LEED AP**	631.632.2791	631.632.1473	pr@ashraeli.org
2014 CRC Committee	**Richard Halley**	718.269.3809	718.269.3725	CRC@ashraeli.org
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	golf@ashraeli.org
ASHRAE LI, P.O. Box 79, Commack, NY 11725				

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BOG Meeting Minutes

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

BOG November Meeting, Long Island Chapter
Tuesday November 11th, 2014
5:00 – 6:00
Westbury Manor, Westbury, NY

Call to Order - At 5:07 by Chapter President Rich Rosner
First roll call showed 6 Members and one guest Present
Rich Rosner, Don Kane, Rich Halley, Andy Manos, Lee Fegenbaum, Frank Paradiso
In addition to the Long Island BOG, Steve Still from Region 1 was in attendance

Secretary (Rich Halley)
October Minutes were approved as submitted.

President (Richard Rosner)
Rich introduced our guest, Mr. Steve Sill RVC MP Region 1
Rich Reported that James Hanna will not be in attendance tonight due to a loss in the family.
Rich emphasized how important it is to keep PAOE points up to date. There are a few points deadlines coming up and he wants to make sure we don't miss them.

President-Elect/Programs (Thomas Fields)
Tom is continuing to work on filling the rest of the speaking slots and is almost complete.

Chapter Technology Transfer (Don Kane)
Don reported that the distinguished lecturer is scheduled for our May meeting.
We are still looking to book our April field trip, Don is requesting suggestions and lead from the board.
The existing building commissioning web cast will be available at Rich Rosner's office next Friday for anyone who is interested in participating, Rich will add this to his announcements tonight to help get the word out

Treasurer (Andrew Dubel)
Don and Andrew gave the report.
Balance in the General fund as of November 2014 $13,201.13 expense of $420. Ending Balance $12,781.13
Final budget is in review

Grassroots Government Activities (Charles Lesniak)
No Report

Historian (Andrew Dubel)
Past Articles and Pictures are being digitized and archived

Honors and Awards Chair (Brian Simkins)
Brian is working with Evans Lizardos on Katz and Rich Halley on the Campbell awards

Research Promotion (Andy Manos)
Full Circle is complete – Andy will Give RR info on the stretch goal for this year

Membership Promotion (Lee Feigenbaum)
Lee Reported that membership is at 282 with 20 delinquent this month.
New member pins are in and he will be recognizing new members tonight

Cont'd. on Page 4

BOG Meeting Minutes (Cont'd. from Page 3)

Student Activities (Richard Halley)
Tonight is Student Activities night and we are looking for a strong turnout, we have about 20 members that have indicated that the will be in attendance
Student Chapter Meetings were held in both Stony Brook and SCCC. Suffolk added 4 new members to the group and Stony Brook added 6 new members
I am requesting a check in the amount of $420 so that I can process all of our new members

YEA (Frank Paradiso)
Frank Reported that he is looking into special events to attract members

Web Master (Richard Rosner)
No Report

CRC 2017 (Richard Halley)
Rich Halley Reported that he has started the search for possible locations to hold the CRC
Looking for Region to give us the actual dates for 2017 so we can do some preliminary bookings

Golf (Steven Friedman, Peter Gerazounis)
No Report, next outing is scheduled for May 4th, 2015 Cherry Valley

Old Business
Look into chapter dues not being paid by some chapter members
Facebook page for ASHRAE LI

New Business
Going to List Links to formula and/or apps for phones in next newsletters, send in what you have
Newsletter articles due two weeks before next meeting or after last meeting.
Islander Game – February 16th

Second Roll Call
Second roll call showed 8 Members Present
Rich Rosner, Don Kane, Andrew Dubal, Rich Halley, Andy Manos, Lee Fegenbaum, Frank Paradiso and Tom Fields

Motion to Adjourn by Don Kane 2nd by Rich Halley @ 5:59pm

Time/Place of next BOG Meeting – December 9th, 2014. Westbury Manor

Chapter Monthly Meeting - Program for 2014/2015

September 9, 2014 * At Westbury Manor Dinner Presentation – New Advances in High Efficiency Cooling for Data Centers ****1 PDH**** Presenter - Dave Smith **Membership Promotion Night**	**February 2015** **NATIONAL ENGINEERS WEEK**
October 14, 2014 * *At Westbury Manor* Dinner Presentation – Variable Frequency Drives and Motor Considerations ****1 PDH**** Presenter - Gail O'Keefe ***Back to Basic Session I - Evans Lizardos*** *****1 PDH***** ***"Smoke Purge System Design"***	**March 10, 2015** * *At Westbury Manor* Dinner Presentation – Plate/Frames ****1 PDH**** Presenter - Chris Abbot **Joint meeting with LI-Geo / YEA Night** ***Back to Basic Session III – Evans Lizardos*** *****1 PDH***** **"Energy Requirements for Different Refrigerant Systems"**
November 11, 2014 * *At Westbury Manor* Dinner Presentation – HVAC Air Distribution System Efficiency ****1 PDH**** Presenter - Eli Howard **Resource Promotion Night** **Joint meeting with SMACNA** **Student Activities Night & YEA Night as well as Membership Promotion and Upgrade Night**	**April 14, 2015** **ANNUAL FIELD TRIP - TBD**
December 9, 2014 * *At Westbury Manor* **HOLIDAY PARTY** Free Buffet Dinner for Members	**May 4, 2015** * *Cherry Valley Club, Garden City, NY* **ANNUAL GOLF OUTING**
January 13, 2015 * *At Westbury Manor* Dinner Presentation – "The Steam Kettle" The Generation and Control of Steam for Space Heat and Process ****1 PDH**** Presenter - Paul Peck ***Back to Basic Session II - Evans Lizardos*** *****1 PDH***** **"Pipe Designs for Control of Temperature and Flow in Water Systems"**	**May 12, 2015** * *At Westbury Manor* Dinner Presentation – Responsible Use of Refrigerants Presenter - Julian de Bullet ****1 PDH**** **ASHRAE DISTINGUISHED LECTURER** **Student Activities Night / Refrigeration Night**
January 24-28, 2015 ASHRAE Winter Meeting Palmer House Hilton Chicago, IL	**June 9, 2015** * *At Westbury Manor* **Free Buffet Dinner for Members** **PAST PRESIDENTS NIGHT & OFFICER INSTALLATION** **STUDENT SCHOLARSHIPS TO BE AWARDED** **ASHRAE History Quiz and prize Give-A-Ways**
February 10, 2015 * *At Westbury Manor* Dinner Presentation – TBD ****1 PDH**** Presenter - TBD **Joint Meeting with USGBC and IFMA-LI** **Resource Promotion Night / Membership Promotion Night / Student Activities Night**	**August 2015** **Chapter Regional Conference (CRC) Region I** **Syracuse Chapter Hosting** **August 20-22, 2015**

Long Island Chapter - Past Presidents

1958	H. Campbell, Jr. PE	1986	Jerome T. Norris, PE
1959	Clyde Alston, PE	1987	Abe Rubenstein, PE
1960	Sidney Walzer, PE	1988	Michael O'Rouke
1961	Sidney Gayle	1989	Mel Deimel
1962	William Kane	1990	Robert Rabell
1963	Louis Bloom	1991	Gerald Berman
1964	Milton Maxwell	1992	Donald Stahl
1965	Will Reichenback	1993	Ronald Kilcarr
1966	Joseph Minton, PE	1994	Jerald Griliches
1967	Irwin Miller	1995	Walter Stark
1968	Walter Gilroy	1996	Joe Marino
1969	Charles Henry	1997	Norm Maxwell, PE
1970	William Wright	1998	Alan Goerke, PE
1971	Louis Lenz	1999	Frank Morgigno
1972	Ronald Levine	2000	Michael Gerazounis, PE, LEED AP
1973	Henry Schulman	2001	Ray Schmitt
1974	Myron Goldberg	2002	Steven M. Stein, PE
1975	John N. Haarhaus	2003	Andrew Braum, PE
1976	Richard K. Ennis	2004	Claudio Darras, P.E.
1977	Kenneth A. Graff	2005	Craig D. Marshall, P.E.
1978	Evans Lizardos, PE, LEED AP	2006	John Nally
1979	Albert Edelstein	2007	Peter Gerazounis, PE, LEED AP
1980	Ralph Butler	2008	Steven Friedman, PE, HFDP, LEED AP
1981	Robert Rose, PE	2009	Steven Giammona, P.E., LEED AP
1982	Timothy Murphy, PE	2010	Nancy Román
1983	Leon Taub, PE	2011	Carolyn Arote
1984	Raymond Combs	2012	Brian Simkins, LEED AP
1985	Edward W. Hoffmann	2013	Andrew Manos, LEED AP BD+C

ASHRAE Long Island Chapter

PAOE POINTS FOR 2014/2015

350Chapter Members	Membership Promotion	Student Activities	Research Promotion	History	Chapter Operations	CTTC	GGAC	Chapter PAOE Totals
282	375	245	555	0	0	600	0	1,775

December Program

ASHRAE Long Island Chapter's 2014 Holiday Party

"Member Appreciation Night"

Come and join us to celebrate a successful year.
We cordially invite you to a holiday cocktail party, featuring dinner, drinks, and holiday cheer…

DATE: **Tuesday, December 9, 2014**

TIME: 6:00 pm to 8:00 pm

LOC.: WESTBURY MANOR, Jericho Tpke. 25, Westbury (516) 333-7117

MENU: Hot and Cold Buffet, Coffee, Dessert and *"Open Bar"*

FEE: Complimentary Admission for ASHRAE Members & Students (FREE)!
Fee for Non-Members is $45.00 per person

RSVP: **By Friday, December 5, 2014 *(REQUESTED).***
Send your Name & Phone# to programs@ashraeli.org

Hope to see you there.
RSVP today!

Season's Greetings and Best Wishes for the New Year
from the ASHRAE Long Island Chapter

Student Activities

I would like to thank all those Members who helped make our first student night of the year a success. We had over 20 students from Suffolk County and Stony Brook. The feedback I received from the students is they enjoyed the entire event but especially the time the spent talking at the tables with the membership about the industry and getting a real feel for what we all do on a day to day basis.

The ASHRAE Senior Undergraduate Project Grant Program is still accepting applications. This 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. See the Student Zone for more information.

If you haven't seen it yet ASHRAE Student Zone http://www.ashrae.org/membership--conferences/student-zone is a great place for student to go on line and learn more about ASHRAE and the multiple resources available to you, The 2015 Student Design Competition, K-12 /STEM Resource Center and much more. Students who are currently enrolled or soon to be enrolled in an engineering undergraduate degree should take a look at https://www.ashrae.org/membership--conferences/student-zone/scholarships-and-grants.

There are 13 undergraduate scholarships available ranging from $3,000 to $10,000 dollars! If you would like more information take a look at the website or see me.

Richard Halley
Student Activities Committee Chair

Membership

Thank you so much for a fantastic turnout at our November meeting! I'd like to take this opportunity to remind everyone that students are welcome all of the time, not just on Student Night! We love to see new faces at our monthly meetings. On our first student night of the year we were glad to welcome more than 20 new students to our chapter. We appreciate the new student memberships we received that night, and we are still happy to accept new student members.

The www.ASHRAE.org webpage makes signing up quick and easy. You are also welcome to join us at our holiday party in December where we can sign you up on the spot.

Student Membership in ASHRAE is just $20! As aspiring HVAC professionals I can't think of anything that provides a better return on your student dollar investment. For less than the cost of a few of your favorite late night caffeine fixes you can get most of the same benefits as full paying members while building your brand as an up-and-coming HVAC professional. If you're a student in the HVAC field it just doesn't make sense NOT to come to our monthly meetings.

It was great meeting so many new people on our first Student Night, and we look forward to seeing you again. Bring a friend, and let's make EVERY meeting a Student Night!

Lee Feigenbaum, LEED AP BD+C
Membership Chairman

Research Promotion

Last month's meeting was Resource Promotion Night where we recognized last year's donors. I would like to say thank you again to all those that have contributed. I also would like to thank the companies who have participated in the annual 2015 Product Directory of Manufacturers and their Representatives.

There's still time if you would like your company listed in the directory please contact me. The deadline is December 31st.

The Product Directory has been prepared as a service to all its members and as a service to the local HVAC industry. It will be will be made available to all ASHRAE and non-ASHRAE members at no-cost and can be obtained from our monthly meetings or directly from our web-site.

The Directory is intended to provide better communications between manufacturers and their sales representatives; engineers who specify products; contractors who purchase and install the equipment; and other interested parties. Product Directory listings are not limited to ASHRAE members and the listings are not to be considered as advertising or endorsement by ASHRAE of any product, manufacturer or representative.

This year's overall resource promotion goal is $2,208,050 with over 75 research projects on board. Our chapter is expected to raise approximately $15,300 towards the overall goal of which we have already raised $4,250. 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

Mr Andrew B Dubel, PE
Mr Andrew E Manos, LEED AP
Mr Charles J. Lesniak, PE
Mr Donald Kane, PE
Mr Frank Paradiso
Mr John D Nally
Mr Kenneth T Mueller
Mr Lee Feigenbaum
Mr Marcel A Bally
Mr Michael Gerazounis, PE, LEED AP
Mr Richard I Halley
Mr Richard Pearson, PE, LEED AP
Mr Richard L Rosner, PE
Mr Ronald J Kilcarr, PE
Mr Thomas Fields, PE, LEED AP

COMPANIES

Accuspec Inc.
Building Cooling Systems
Catan Equipment Sales
Dagher Engineering
Gil-bar Industries
PVI / Riverside Hydronics
Technical Air Systems, Inc.

CONTRIBUTIONS CAN BE MADE IN THE FOLLOWING WAYS:

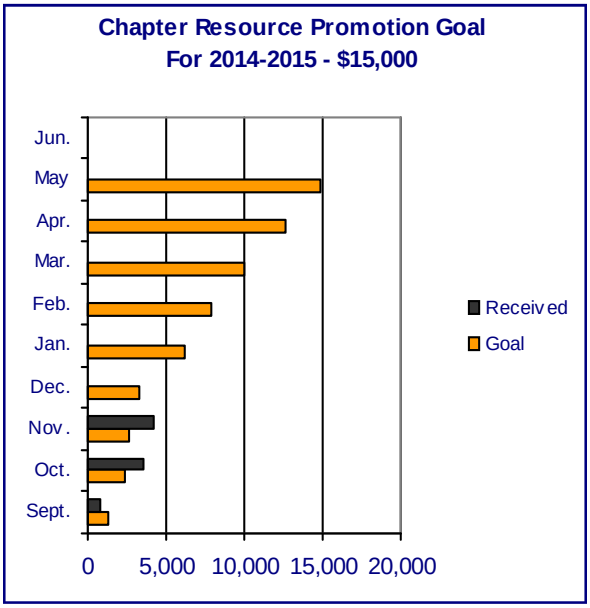
1) You can mail your checks, made out to ASHRAE Research Promotion, to:
Andrew Manos
ASHRAE Research Promotion Chair
c/o Stony Brook University
Research and Support Services, Suite 160
Development Drive
Stony Brook, NY 11794-6010

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 you accredit your contribution to the LONG ISLAND CHAPTER 006 ****

Thank you again for all of your support!

Andrew Manos, LEED AP BD+C
Research Promotion Chair



CTTC - Torn Between Two Louvers

In the course of designing an HVAC system, there are many decision points along the way requiring one to coordinate with other design professionals to ensure that the mechanical system components will “mesh” with the aesthetic vision of the architect. Grilles and registers, needed to effectively convey the conditioned air supplied by a system to the points of use, are highly visible examples. However, and not always thought about until later in the design process than preferred, when it comes to providing for outside air intake and exhaust air discharge more is required than merely specifying the minimum air flow and maximum restriction parameters. Selection of louvers must include concerns regarding mechanical strength, protection against weather conditions and, many times aesthetic concerns must be satisfied if the louver is going to be integrated into the building in a point of prominence (rather than being relegated to the loading dock, next to the dumpsters). Perhaps the louver itself will become an architectural element!

We should start with an overview of what it is that a louver does, how they are constructed and the choices available when selecting the appropriate louver. A louver is, simply put, a hole in the wall. Into this hole are placed the component parts of the louver, arranged to minimize restriction, prevent ingress of rain, reduce noise and, in some cases, inhibit the sightline through the louver elements. In some cases, if the architect wishes to incorporate the functionality of the louver into an architectural element, additional issues will have to be addressed to ensure compatibility of the design, especially with regard to rain ingress and resistance to physical damage from, for example, wind driven objects.

Broken down into its constituent parts, the louver comprises blades, jambs, a sill and a head. If the blades are of the drainable type, provision is made in the jambs for passage of the water channeled from the blades, much as the system of leaders and gutters on one’s house. Most louvers will be fabricated from galvanized or galvanealed steel; or aluminum.

Hot dipped galvanized steel, while highly resistant to corrosive environmental effects does pose some manufacturing issues, especially with regard to the relatively thinner sections utilized for the louver blades. In general, galvanizing is typically performed after all cutting, drilling, welding and punching operations have been completed. The “build-up” of the zinc coating has to be allowed for when sizing openings for moving shafts or parts as well as tapped openings to accept threaded fasteners. Galvanealed steel, essentially hot dip galvanized sheet which has been subjected to a post-dip heat treatment to alloy the zinc and iron content of the steel, lends itself well to manufacturing operations, including spot welding, but is generally intended to be further coated to prevent corrosion. This coating may include metal-flake or mica -flake additives for better appearance, though, due to the matte finish typical of the galvanealing process, coatings lacking these additives can provide suitable finishes.

Some specialized louver applications may incorporate stainless steel, due to its corrosion resistance. If stainless steel is utilized, care should be taken to design the pieces so there is always airflow to all parts, to permit the protective chromium oxide protective layer to maintain itself.

By and large, most of the louvers which we will be involved with are assembled from aluminum extrusions. This allows precise dimensional control and, generally, a more aesthetically pleasing assembly. Aluminum may be protected against the effects of the elements by painting, powder coating or anodizing. Anodizing is available as a clear coating or several colored finishes. Paint and powder coat offer more variety in color selection, which is helpful when necessary to match or complement architectural elements (the American Architectural Manufacturer’s Association has authored a number of standards for ”basic” coatings, “high performance” coatings and “superior” coatings – AAMA 2603, 2604 and 2605, respectively). For those architectural installations, where a long louver “blade” is needed, it may be necessary to add mullions at intermediate points, to provide mechanical support of the pieces making up this louver assembly. For those applications where aesthetics requires the appearance of long, uninterrupted blades, “concealed” mullions may be used. This relocates the mullions to the non-visible side of the louver; however, this complicates the task of inhibiting water ingress, requiring the additions of a sill pan to collect the rainwater that will find its way through the expansion gaps in the louvers at the point of support by the concealed mullion. It also, generally, results in a “deeper” assembly than those with visible mullions, due to the added supports and brackets on the rear of the louver.

Once it has been decided what material, color and configuration is needed to satisfy the architectural requirements, one can concentrate on the performance requirements needed to satisfy the system design including; maximum restriction,

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CTTC - Torn Between Two Louvers (Cont'd. from Page 10)

noise abatement issues, aspiration of rain into outside air inlets, ingress of driven rain into either intake or exhaust louvers and possible need for protection against projectile objects (if in a hurricane and/or tornado affected areas). These requirements will dictate the blade configuration (fixed/movable) and shape as well as the overall size of the louver. Drainable louvers will have (for the same physical dimensions) more effective face area (as the airflow is not blocked by cascading water, down the front face of the louver). If there is a need to attenuate equipment noise, so it does not radiate out of the building, or, perhaps, to limit incoming noise from the building's surroundings, an acoustical louver or separate sound attenuating devices may be incorporated.

Where it is necessary to inhibit airflow, at times, in either direction, movable blades or an operable damper may be needed. If flow merely has to be restricted to one direction only, an integral "backdraft" damper may be provided as part of the blade, closing off the flow path when the direction of flow reverses.

Blade angle then needs to be defined, typically the lower blade angles allowing for more airflow (and more water ingress) while "steeper" blade angles will be more restrictive to airflow, but also inhibit unwanted rain ingress better. If the required louver dimensions are larger than can be fabricated in a single unit, an assembly of smaller sections, using mullions, can be used. As noted earlier, if concealed mullions are specified, there may be a trade-off with regard to water ingress and louver depth.

In those areas, either coastal or in tornado alley, where there is a likelihood of the louver being impacted by a wind driven object additional requirements will be applied. These include those tests called out by the Air Movement and Control Association (AMCA), the Florida Building Code and the International Building Code. AMCA 540 and Florida's TAS 201 are frequently applied, though, in High-Velocity Hurricane Zones (HVHZ) testing to TAS 202 and 203 may be required. The International Building Code (IBC) utilizes similar criteria as the Florida Code (areas with wind velocities in excess of 140 mph and areas with greater than 130 mph winds within 1 mile of the coast). The testing to AMCA 540 and TAS 201 are similar, involving a 9 pound 2X4 launched at 50 feet per second (80 fps for use in "Florida Essential Facility" testing) from a distance of from 10.5 (AMCA 540) to 16 (TAS 201) feet. Louvers employing multiple sections are required to have impact tests conducted on the mullions joining the sections together.

We have covered required function, mechanical strength and aesthetics; now let's talk about rain ingress. The purpose of the louver is to provide a "hole in the wall" for airflow, while blocking rain from entering the building. This could occur due to aspiration of the rain due to the airflow into the louver or due to a driving wind. For rain "drawn" into a louver, one must know the "beginning point of water penetration" in terms of free-area-velocity. By multiplying this free-area-velocity by the available free area, one will determine the maximum allowable airflow for that particular physical configuration. It may be necessary to adjust louver size (to increase free area) in order to keep the airflow below the critical value. There are also variations in blade design to minimize the ingress of rain, with the trade-off again being increase in restriction (pressure drop).

For wind-driven rain, louver design becomes more critical and testing to AMCA Standard 500 will generally be required. One should expect that those designs more effective at blocking out wind driven rain will provide more restriction to the intended flow of air also. Some suggest that vertically oriented blades can be more effective in inhibiting wind driven rain. While candidate louvers can be tested by Nationally Recognized Testing Laboratories (NRTL), ultimate *approval* is the bailiwick of the local Authority Having Jurisdiction (AHJ). This AHJ approval should be obtained sooner, rather than later, in the construction process, as it is easier to revise the louver mounting provisions if they haven't already been cast in stone (or in concrete..as the case may be!).

About mounting the louvers…especially where mechanical testing (such as the missile test) has been conducted… manufacturer's instructions should be followed exactly… to fail to do so may void any certification of compliance. There will be some variation in the exact installation, depending upon the relative thickness of the penetrated wall to the depth of the louver assembly. In any case, a gap between the louver frame and the structure opening should be provided, to be filled with an elastomeric sealant, to allow for minor irregularities in the opening and to account for thermal effects (sunrise, sunset and/or deep freeze).

While far from an exhaustive (no pun intended) treatise on louver construction/selection (another few pages could be added regarding blade profile and configuration), it is hoped that this discussion will better prepare you to ask the right questions when filling that "hole in the wall".

Don Kane, P.E.
CTTC Chair - cttc@ashraeli.org

Young Engineers in ASHRAE (YEA)

As the year comes to a close we will take time to celebrate a year of many accomplishments for our chapter and get together during our holiday party. The festivities will take place at Westbury Manor on Tuesday, December 9th from 6-8 pm. Participation is complimentary to ASHRAE members. We hope that many of our YEA members can join us in this celebration and showcase the strength & support of our younger members.

Have a Merry Christmas and happy & healthy holiday season. Cheers to the New Year.

Frank Paradiso
YEA Chairman

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. Frank Paradiso will be collecting them.

Programs and Apps offered on the Web or for Your Smartphone

Since the Web has become more and more useful for finding information about products and the works of others, we have decided to start a space in the Sounder to note items that some of us might find useful. This is not an endorsement of a web site nor is the information furnished said to be accurate but rather just the advice that the information is available to you for your review. Send what you find useful and we will publish it for others to try.

Rich Rosner

Web Sites:
None this month

Apps for Smart Phones:
DuctSizer for IPhone
Voltage Drop by Southwire for IPhone
iHandy Level for IPhone
Psyc-It the Psychrometric Calculator for Android;
https://play.google.com/store/apps/details?id=linric.psycit
Psyc-It for Blackberry;
http://appworld.blackberry.com/webstore/content/102387
Psychrometric application for the Iphone and Ipad.
http://itunes.apple.com/us/app/psyc-it-lite/id477044298?mt=8

History

A History of Air Conditioning in the Home: Sleeping Soundly on Summer Nights

Anyone can drive through their city, town or countryside and see the impact of air conditioning on the home over the years. Houses built prior to the 1950s often were constructed to take advantage of natural cooling as much as possible. Architectural features such as shaded porches, high ceilings, and the liberal use of windows with moveable sashes were used to make occupancy as comfortable as possible during warm weather. The advent of air conditioning brought about architectural changes in home construction that necessitated its use to keep the occupants comfortable even on moderate days.

As a result of air conditioning, the growth of the suburbs after World War II was dominated by single-story houses with low-pitched roof lines, large plate glass windows that were sealed shut, ceilings that were 8 ft (2.4 m) high, and porches that were more ornamental than functional.

Air conditioning also has been responsible for major shifts in the demographics of the United States. Since 1940, eight of the 10 fastest-growing states are located in the Southeast and Southwest portions of the country. The Northeastern and Midwestern states have experienced the slowest growth rates. Figure 1 shows the number of homes built each decade since 1940 in the United States divided into five major regions. It is evident that the growth of home construction in the Southern portions of the country coincides with the growth and availability of air conditioning to the homeowner.

The taming of hot and humid summer conditions has enabled the rapid growth of large metropolitan areas such as Atlanta, Dallas, Houston and Miami. Business owners and individuals from northern latitudes looked southward to escape severe winter weather when air conditioning made it possible to endure and prosper through summer's heat.

Historian Marsha Ackerman noted that "Air conditioning expressed a city's influence and affluence, its aspirations to modernity and ability to control its domain ... air conditioning [was not] uniformly distributed within its largest markets. In hotels and on trains, air conditioning was used first to cool dining areas and public rooms, rather than private guestrooms or passenger compartments. In department stores, basements were cooled long before upper floors or workspaces. To appreciate and understand the cause of these changes in demographics and architecture - among many other changes made possible by air conditioning - we now trace the history of the development of air conditioning in the home.

The Early Days (1870 to 1930)

In 1882, Nikola Tesla and George Westinghouse received a patent for their invention of the electric fan. This was considered a major innovation in helping people feel more comfortable during hot weather. However, it obviously had limitations on effective cooling. At most, an electric fan makes the air "feel" 7 to 8 degrees cooler by increasing convective heat transfer from the body. It was a logical step for many people to place ice in front of the fan to provide additional cooling. Indeed, physicians used fans and 50,000 lbs (22 700 kg) of ice to cool President James A. Garfield's bedroom during the summer months of 1881. On July 2, Garfield was wounded in an assassination attempt, and the physicians tried to keep his room cool to help his recovery. Unfortunately, the president died two months later, despite the physicians' efforts.

Table fans and ceiling fans were a primary means of comfort cooling well into the 20th centur. Even today, they are found in nearly every home as a means of saving money and energy on days when temperatures are only moderately warm. It was not unusual for office skyscrapers, like the 60- story Woolworth Building in New York, to be decked out in awnings from top to bottom into the 1940s. Although awnings reduced the heat load from direct sunlight into the interior spaces, fans were used to circulate the air. Paperweights were necessary to keep work from moving about.

The earliest high-rise office building that was completely air-conditioned was the Milam Building in San Antonio, Texas, which was built in 1928. A few existing skyscrapers soon were retrofitted for central air conditioning such as the Tribune Tower (1934) and the Wrigley Building (1936) in Chicago.

The roots of air conditioning, as we know it today, are in refrigeration. Early refrigeration plants often were used to make ice as an alternative to naturally harvested ice from frozen lakes. Ice was important in the production of beer and ale and in food preservation. Refrigeration machinery was driven by steam engines, thus its use was limited to industrial installations.

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History (Cont'd. from Page 13)

One of the earliest successful vapor compression refrigeration machines was developed by Charles Tellier in France. A New Orleans brewer named George Merz installed one of Tellier's machines in 1869 to produce cold dry air to preserve the flavor of beer and ale by keeping it at a constant temperature without ice. In the 1870s, important advancements were made by David Boyle who developed an ice machine using ammonia, and Raoul Pictet who developed one using sulfur dioxide.

The electric motor allowed refrigeration plants to become smaller. By 1890, refrigeration systems were available in a wide range of sizes that could serve small applications such as meat markets and soda fountains. It also was the ultimate luxury item for a few wealthy people. St. Louis engineer, Alfred Siebert, installed a 3 ton (10.5 kW) water chiller system in the home of Walter Pierce prior to 1900.6 Pierce was president of an oil company and used the air-conditioning system to cool his library and billiard room. The same unit was used for refrigeration of a large meat, milk and wine box and several iceboxes in the kitchen.

The domestic refrigerator was the first successful adaptation of refrigeration machinery for use by homeowners. Refrigerators first were made available to homeowners as early as the 1890s, but it was not until the 1920s that they became widespread. Low-cost refrigerators were cooled by blocks of ice delivered to the homeowner by a local ice manufacturer and distributor. It was a luxury to have a refrigerator that used mechanical refrigeration. During this period of development, engineers solved many problems associated with small-scale refrigeration equipment and domestic operation.

The Audiffren-Singrun refrigerating machine was one of the most successful early units made for domestic service. Marcel Audiffren of France was granted a U.S. patent for his refrigeration unit in 1895. Audiffren made improvements, in collaboration with Albert Singrun, to his original refrigeration machine and received another patent in 1908. A group of Americans bought the patent rights and formed the American Audiffren Refrigerating Machine Company. General Electric manufactured the equipment, and the Johns-Manville Company marketed it. The first machine was sold in 1911 and 150 to 200 units were produced each year until 1928.

The Audiffren-Singrun refrigerator was a sulfur dioxide compression machine that was shaped like a dumbbell with the condenser and compressor in one sphere rotating in a tank of cooling water. The evaporator in the other sphere rotated in a brine tank as shown in Figure 3. This allowed the unit to be hermetically sealed and prevented the lubrication oil from mixing with the refrigerant. The bulky design required a remote location for the refrigeration machine, usually in the basement. It was connected to a heat exchanger in the refrigerated cabinet in the kitchen by pipes.

In 1916, General Electric began to design a refrigeration machine that was simpler and cheaper than the Audiffren machine. By 1918, they developed a machine with the motor enclosed in the compressor case, which eliminated the troublesome stuffing box between the motor shaft and the compressor. This enclosed motor was one of the most important technical developments in domestic refrigeration machinery. However, the compressor was still water cooled. In 1923, the compressor and condenser were air cooled, which eliminated the necessity of plumbing connections.

While comfort cooling rarely was applied to individual homes before 1920, it was a steadily growing industry serving commercial and industrial markets. By 1911, air conditioning proved itself to be of great economic value in "lithography, the manufacture of candy, bread, high explosives and photographic films, and the drying and preparing of delicate hygroscopic materials such as macaroni and tobacco" according to Willis Carrier's experience.10 In these industries where air conditioning was used to facilitate manufacturing, it was observed that workers in such plants were often more comfortable, more productive and less prone to absenteeism.

Most Americans' first exposure to air conditioning was in movie houses and theaters during the 1920s and 30s. Without air conditioning, most theaters were closed during the summer months. Air conditioning was an economic boom to the theater and movie industrie. Theater operators found that they were able to recover the cost of their air-conditioning equipment in just one summer. Many theaters would leave their doors wide open to allow the cool air to entice passers-by into their establishments.

Still, comfort cooling in the home was a luxury. Many remaining technical difficulties made air conditioning unaffordable for the average homeowner.

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Overcoming Technical Hurdles

In 1924, General Electric introduced the first domestic refrigerator with a hermetically sealed motor and compressor. Until that time, compressors were belt driven and shaft seals on the compressor were prone to leaking refrigerant. The direct drive compressor resulted in a significant reduction in compressor size because it operated at 1,740 rpm. Typical belt-driven units used for larger commercial refrigerators operated at speeds of 300 rpm to 600 rpm. This compressor configuration would have been suitable for a room air conditioner, except that it was virtually impossible to meet the safety code limitations on the refrigerant charge size for the home.

Larger size compressors operated at speeds of 200 rpm to 400 rpm, with a capacity of 2 tons to 20 tons (7 kW to 70 kW) of refrigeration. These could only be used in commercial applications such as restaurants, cocktail lounges, butcher shops and drug stores.

The condensers of nearly all air-conditioning and large refrigeration units in the 1920s and early 1930s were water cooled and thus required a plumbing connection and a sewer hookup. This presented a serious problem for municipal water suppliers concerned with providing adequate water to their customer base as the size of the air-conditioning market grew. Furthermore, it required additional expenditure by the homeowner to install the necessary plumbing. In Chicago, 5,200 tons (18 300 kW) of air-conditioning capacity existed in the central business district by 1932. Sixteen years later, the air-conditioning capacity had increased to more than 28,000 tons (98 500 kW). It is estimated that the water-cooled condensers of air conditioning alone could have consumed well over half of the peak water consumption in Chicago of 75 million gallons (280 million liters) per day in 1948.

One obstacle to the room air-conditioner market was the limited electrical service available in most residences. The typical home in 1930 had only a 30-ampere capacity with a 15-ampere limit on each two-wire branch circuit. The National Electrical Code specified that motor- operated appliances could not exceed 50% of the rating of a branch circuit. Hence, it was virtually impossible to produce a room air conditioner that operated on less than 7.5 amperes on a 110- volt circuit.

Customers desiring to install room air conditioners with adequate cooling capacity had to upgrade their electrical service, although it was common knowledge that many homeowners were in violation of code specifications. Typical upgrades to 60-ampere service allowed for dedicated branch circuits that could carry a motor current load of up to 12 amperes at 208 volts or 220 volts solved many problems.

Products Coming to Market

Prior to 1930, comfort-cooling applications were central station units and were too expensive for a typical homeowner to install in an existing structure. These installations required plumbing and sewer connections, ducting for air distribution and upgraded electrical service. Because the domestic refrigerator market had been developing for many years, it was a natural extension to introduce a self-contained or "portable" appliance that could be installed in any room in a house. The Frigidaire division of General Motors introduced its first room cooler in 1929. This was a water-cooled console type air conditioner that modeled refrigerator designs of that era (Figure 2). Over the next three years, several manufacturers began to offer room coolers including Carrier, Copeland, General Electric, Kelvinator, Strang, Universal Cooler and York among several others.

One of the first air-cooled console units was produced by the De La Vergne company in 1931. This unit not only provided cooling, but also could operate in a heat pump mode. Although this unit was classified as portable, it was never moved from room to room since it weighed about 1,200 lbs (544 kg).

The first window air conditioner was introduced by the Thorne company in 1932, although it is doubtful that it was ever mass produced. In 1936, Philco-York introduced a 3,675 Btu/h (1077 W) window unit that used a single motor to drive the compressor and the fans for the evaporator and the condenser. Westinghouse sold the first hermetically sealed window air conditioners in 1941. It also featured a heat pump cycle providing up to 92,000 Btu/h (26 700 W) in heating mode and 6,000 Btu/ h (1760 W) in cooling.

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The Post War Period (1945 to 1960)

After World War II, comfort air conditioning became increasingly popular and affordable to the growing middle class. Advertising of air-conditioning systems moved from the engineering and architectural trade journals to popular magazines such as House Beautiful and House & Home. General Electric and Carrier, among many other smaller manufacturers, began advertising that air conditioning was now affordable to the masses in suburban neighborhoods where homes were built with almost factory-like efficiency and cost.

G.E. portrayed homes costing $12,500 in Dallas' East Ridge subdivision in a series of advertising in 1952. These homes, like most homes in that day, were not well designed for air conditioning. Therefore, in 1952, the Carrier Corporation commissioned an architectural firm to design a new mass-producible house that optimized the firm's Weathermaker air-conditioning system.

In 1953, Carrier followed up with a nationwide Weathermaker Home Competition advertised in House & Home, Progressive Architecture and Architectural Record. There were 861 entrants competing for a $5,000 grand prize and 30 smaller awards based on region, house size and roof style. The grand prize went to two Argentinean architects based in Raleigh, N.C. Their design, which was later built, was a 1,000 ft2 (93 m2) house with huge areas of fixed glass on the north and south exposures, a flat roof and a wide overhang. House & Home complained that "most contestants only showed a rudimentary understanding of how to take advantage of air conditioning." Furthermore, it stressed that flat roofs absorb heat and release it slowly and that sealed windows necessitate air conditioning to make the house livable. While these features require air conditioning, they "ride roughshod over most people's desire to keep windows open part of the year." Most contestants failed to consider strategies such as shading to provide more natural cooling.

Despite House & Home's initial disapproval of these types of houses, the people living in them praised the houses, especially during the hot summer of 1953. In its March 1954 issue, House & Home hailed the benefits of air conditioning. One article featured a homeowner in Dallas who said, "Our outdoor terrace received little use because it was pleasanter inside. Not only is it cooler inside but there are no mosquitoes or other insects to bother you."14 Air conditioning was gaining wide acceptance and was on the path to becoming a common appliance and not a luxury.

In 1955, homebuilder William Levitt signed a contract with Carrier to install their units as standard equipment in hundreds of new homes. This was the largest contract to date for residential air conditioning. Levitt stated, "It doesn't make sense to heat a home in the winter and not cool it in the summer ... before long we hope to be able to install central air conditioning equipment in every home we produce. Air conditioning will be a basic feature of modern home development."2

In the early 1950s, homeowners and builders had several options for air conditioning. Central air conditioning was manufactured as either a combination heating and cooling unit or as a separate cooling unit. The combination unit was designed primarily for new homes and had several advantages over the separate cooling unit. A single blower was used to handle air distribution through the heating or cooling coils and the ductwork. The system could be changed over from heating to cooling by a single thermostat and switch. All of them used a water-cooled condenser that required either a cooling tower or a connection to the house water supply and sewer (Figure 6).

These units were large because the cabinets contained the blower, the furnace, the evaporator and condenser and the compressor. Separate central air-cooling units were designed to be added to existing forced-air heating systems and to increase flexibility in locating the air conditioning system. One problem with adding a separate cooling unit to an existing heating system was that the blower and the ducting often were smaller than that required for a cooling system.

In areas of the country where water supplies were tight, cooling towers were used to remove heat from air-conditioning condensers. There were two kinds of towers, forced draft and natural draft. The forced draft tower had a fan and could be located inconspicuously near the house or behind a fence or hidden with vines. The natural draft tower required open access to wind and could not be easily concealed. The natural-draft towers were typically one-third the cost of a force-draft unit.

One innovative twist on the cooling tower was the development of the cooling fountain. Building materials dealer C.C. Rouse of Houston developed a decorative fountain that cost about the same as a forced-draft tower for a 5 ton (17 kW) cooling system.

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Air-cooled condensers for central systems were rare in the early 1950s. Most manufacturers did not sell these kinds of split systems until 1955. An early example of a split system is shown in Figure 7.

Another option for cooling existing homes was the window or console cooler. The console cooler resembled a household refrigerator until the mid-1930s. Because many of these units were sold to wealthy customers, the console design began to appear as a fine piece of furniture like a radio to blend in with the usual living room decor (Figure 5). By the 1950s, the window units had grown in popularity, with sales approaching 300,000 units in 1952. The window units had air-cooled condensers, while many of the console units used water-cooled condensers. An advantage of water cooling was that the console could be placed into a closet and kept out of the way.

Although window units were functional, they were not considered upscale. Anyone hoping to reach middle class had to have central air conditioning. Sociologist William Whyte Jr. studied patterns of window-mounted air conditioner installations on blocks of town houses in Philadelphia to demonstrate how in 1954 neighbors influenced each other to purchase certain kinds of goods. What he found was "the more similar things are, the more important the minor differences."

Of the nearly 5,000 houses surveyed, Whyte found that roughly 20% of them had at least one window air conditioner compared to an estimate of only 3% nationwide. Whyte found that houses with window air conditioners tended to be grouped into clusters. As air conditioner equipped clusters emerged, Whyte said, "on a hot night, the whir of the motors would become 'psychologically deafening' to those who still needed to open their windows. " A delicate balance existed between the unseemly ostentation of being the first on the block to buy an air conditioner and the unwillingness to buy one after everyone else had done so.

Like any technology, air conditioning had its detractors. Some people considered the use of technology to satisfy private wants, while public needs were ignored, a deformation of American values. In 1958, John Kenneth Galbraith's The Affluent Society argued that once wants had been created by producers and advertising, it was foolish to believe that the public would ever willingly "un-want" them again, even in times of national crisis. He was not the only moralist to antagonize the new "affluent" class. Vance Packard, a magazine journalist turned social critic, "spoke to a middle class ready to be horrified and titillated by its own indulgence." Packard's 1960 book, The Wastemaker, spent 31 weeks on the New York Times Bestseller list. America had become a nation of indulgence.

The Energy Crisis (1973 to 1989)

The July 1973 issue of Consumer Reports magazine set a tone for resentment against air conditioning. In its annual survey of air conditioning, it stated: "the true price of comfort was energy waste and environmental degradation." The article said that the multitude of appliances providing air-conditioned comfort for the home and office might make a significant contribution to overall discomfort by heating up the outdoors. Apparently, neither the author nor the editors figured out that the total amount of energy expended by air-conditioning condensers is minuscule compared to the total energy the earth receives from the sun.

By 1975, Consumer Reports recommended abstinence from air conditioning noting that, "electric rates are zooming, the nation's energy resources continue to shrink and prices for air conditioners are up 20% to 30%. If you must buy an air conditioner, economy deserves extra emphasis."

Although air conditioning was not the predominant user of energy resources, it was one of many targets set for reducing energy consumption. President Richard Nixon urged Americans in 1974 to set their thermostats to 68°F (20°C) or lower in the winter. President Jimmy Carter asked Americans to turn their thermostats down to 65°F (18°C) two days after his inauguration in January 1977.

Then, in May 1979, Congress passed a law requiring thermostats to be set at no less than 80°F (27°C) during the summer. One month later, numerous complaints from museums, restaurants, department stores and other commercial establishments forced the government to concede to setting thermostats to 78°F (25°C). There was sporadic compliance with the new law. Federal judges in Texas and New Mexico set thermostats in their courtrooms at 74°F and 70°F (23°C and 21°C) respectively.

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The adversities brought about by the so-called energy crisis produced numerous benefits. Manufacturers of air-conditioning equipment sought ways to improve energy consumption of their products in response to state and federal energy conservation statutes. In 1974, the Commerce Department's National Bureau of Standards required air conditioners to be the first appliances labeled with energy consumption information.

A significant focus of the residential air-conditioning industry in the 1970s was on the promotion of heat pumps. While heat pumps had been available since the early 1950s, they served only a very small segment of the air-conditioning and heating market. A massive marketing campaign was started to increase public awareness of the benefits of using a heat pump over separate heating and cooling systems.

New Advances

Advances in manufacturing technology made it possible to produce the elegant scroll compressor. The continuous compression provided by the scroll compressor eliminated the need for valves, which were used in old reciprocating compressors. The result was a much quieter and more reliable compression system for air conditioning.

In the area of cooling fins, some manufacturers are developing smaller and thinner tubing, more fins per inch, different fin configurations and stronger and lighter materials.17 In the past, fins were made from stock that was up to 0.010 in. (0.25 mm) thick. Now, material is 0.0045 in. (0.11 mm) thick. One future improvement will be coating the fins to increase heat transfer. This will allow even more downsizing of fins than at present, due to decreased pressure drop. Another benefit of the coatings is they can contain antifungal and antibacterial agents.

Another improvement in air conditioning is the use of heat pipes. The idea is to place two sets of pipe in an air-conditioning system before and after the cooling coils. The first set of pipes precool the incoming air, making the cooling coils work more efficiently. A second set of pipes downstream from the evaporator reheats the air to an acceptable level. This process reduces the relative humidity of the air. While the reheat process is not new, it replaces power-consuming devices such as electric heaters.

Recent developments in electronics have made significant improvements in the control of home appliances. A family can turn down their air conditioning or heating while they are on vacation and turn it on a few hours before they return. A small computer controls household functions using preprogrammed settings. An air conditioner may be set to regulate the bedroom temperatures at one setting and to regulate the remainder of the house at a different setting. Controls also may be accessed remotely via a phone line.

Air-conditioning control is not the only improvement in home systems. The National Association of Home Builders is developing a wiring system that would allow AC power, audio, video and high-speed data signals at every outlet in the house. An appliance could be plugged into the outlet, and the outlet would determine whether to deliver a dial tone or 120 volts.

Conclusion

Air conditioning has been a significant shaping influence in Four homes and cities. Like most other modern technologies it has had its share of supporters and detractors. Nevertheless, air conditioning is taken for granted these days. Most people now can afford to sleep comfortably on the hottest summer nights and feel refreshed throughout the day thanks to the efforts of countless people working in the air-conditioning and related industries.

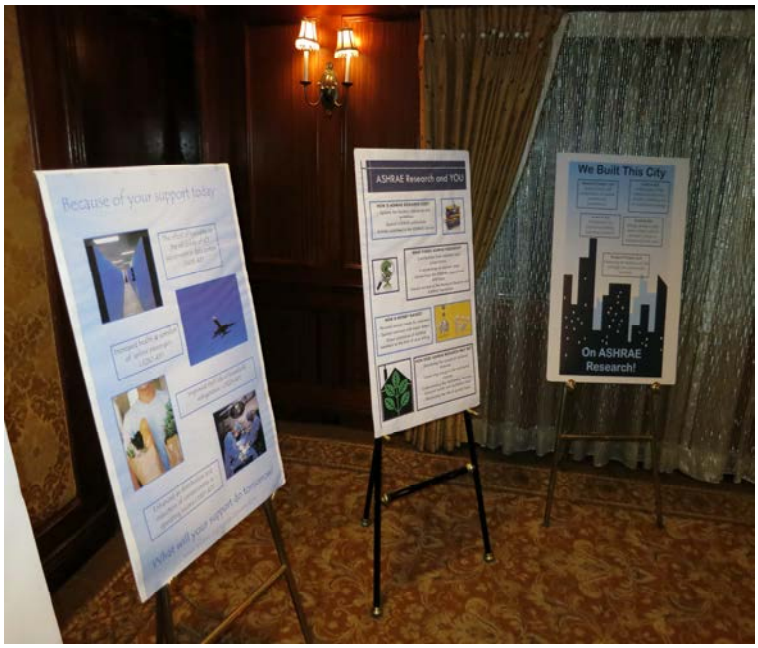
Source (M. Pauken, ASHRAE Journal, May 1999)

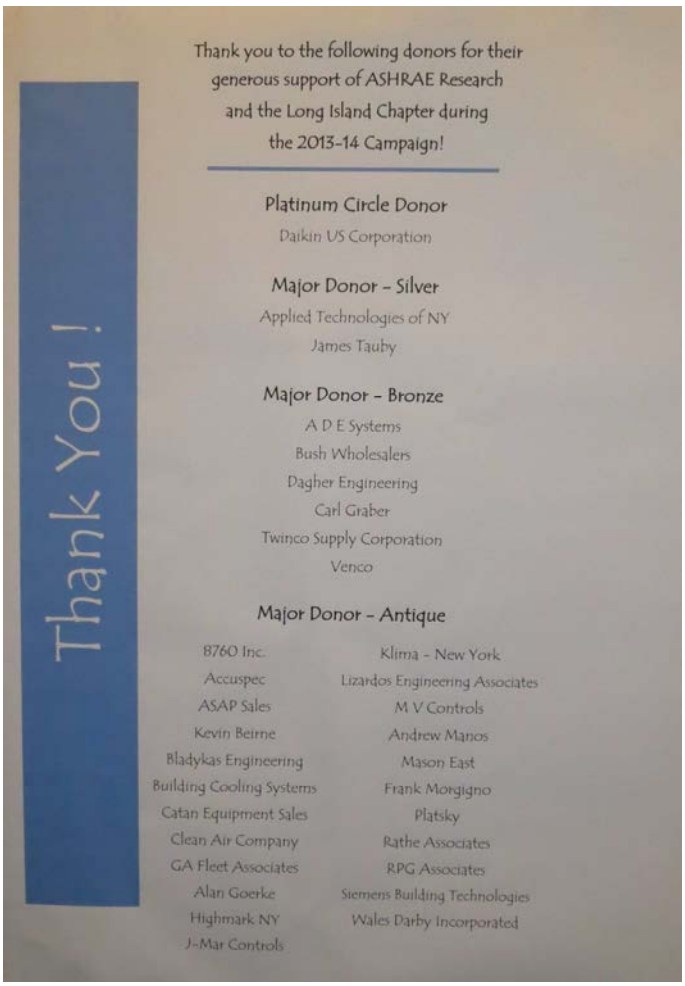
Andrew B. Dubel, PE
History Chairman

November Meeting Pictures

November Meeting Pictures

November Meeting Pictures





The Best Asset Protection Is Not Asset Protection...Is Yours?

The following article was provide by Seymour Zimbalist of OJM Group:

Seymour Zimbalist CLU ChFC is a Financial Advisor in OJM Group's New York office. Seymour works with physicians, business owners and entrepreneurs in the Northeast to introduce them to OJM Group's comprehensive range of multi-disciplinary planning services and develop strategies in the areas of asset protection, corporate structure, wealth management, and personal and corporate tax reduction. Seymour's background includes over 27 years of detailed insurance planning, business plan funding and wealth conservation and transfer for high net worth individuals, business owners and professionals. Prior to joining OJM Group, Seymour served as the Sales Vice President for the Highland Capital Brokerage, New York Metro Office and as an Insurance and Wealth Management advisor with Citigroup, UBS and Merrill Lynch. He holds the designations of Chartered Financial Consultant® (ChFC®) and Chartered Life Underwriter® (CLU®) from the American College in Pennsylvania.

By David B. Mandell, JD, MBA
Jason M. O'Dell, MS, CWM

Over the last decade, too many business owners have sought cookie-cutter asset protection plans to give them some peace of mind that if they ever are sued, they won't lose everything. While we admire these clients' commitment to proactively managing risk, we must remind them that all asset protection plans are not created equal. In fact, many will not even work if they ever are relied on.

Why is this? Essentially, it is because of a basic tenet of asset protection: that any asset protection plan that will truly stand up if challenged *must have economic substance*. Taken a step further, superior asset protection planning involves tools that are primarily used by people for *non-asset protection purposes*. In this way, the best asset protection plan involves tools typically not thought of as asset protection tools. In other words, *the best asset protection is not asset protection.*

Just Like Tax Planning
While few clients realize this crucial fact of asset protection planning, all of the leading attorneys in the field know it quite well. In fact, we are not alone – as tax attorneys and CPAs know this adage is equally true when it comes to tax planning.

Simply put, when determining whether or not a particular transaction with significant tax benefits was an illegitimate tax shelter or not, the IRS or tax court typically uses a simple test – *Would a taxpayer have done this deal if not for the tax benefit?* In other words, they are asking whether or not this transaction was simply done to save taxes or did it have another economic purpose? If there was such a purpose, the transaction stands; if it was only tax-motivated, it fails.

This same test applies when evaluating whether or not a creditor protection tactic will be upheld if challenged down the road. Here, the question is *did this transaction have an economic purpose, or was it simply done for asset protection purposes?* If you are using tools that millions of Americans use daily for non-asset protection purposes, you can convincingly answer *yes*.

Asset Protection as a Sliding Scale
In the many books we have written, we use a sliding scale approach to evaluate asset protection techniques – with the lowest (-5) being an asset that is completely vulnerable and the highest (+5) being an asset that cannot be taken by a creditor even in bankruptcy. This is important to understand here because every (+5) asset protection technique, whether in personal or business implementation, has significant economic benefits to the client, irrespective of asset protection.

Asset Protection which Isn't
Which asset protection tools are not asset protection tools? Let's examine a few of them briefly:

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The Best Asset Protection Is Not Asset Protection...Is Yours? (Cont'd. from Page 19)

A. **Qualified Retirement Plans**: The term *qualified* retirement plan means that the retirement plan complies with certain Department of Labor and Internal Revenue Service rules. You might know such plans by their specific type, including pension plans, profit sharing plans, money purchase plans, 401(k)s, or 403(b)s. Properly structured plans offer a variety of real economic benefits: you can fully deduct contributions to these plans and funds within them grow tax-deferred. In fact, this is likely why most businesses sponsor such a plan.

What you may not know is that under federal bankruptcy law, and nearly every state law, these plans are protected against lawsuits and creditor claims – enjoying (+5) protection status. IRAs are also (+5) protected in bankruptcy, with some limits, although their state protection depends on the state. For both, the overwhelming majority of millions of Americans who use qualified plans and IRAs are not using them for asset protection purposes. This, then, is a great example of attractive economic tools that just so happen to have tremendous asset protection benefits as well.

B. **Non-Qualified Plans/Fringe Benefit Plans**: Benefit plans that are not qualified are relatively unknown to many business owners, despite the fact that they are right in the tax code and can be categorized as non-qualified plans or fringe benefit plans. These types of plans should be very attractive to successful owners, as they can be terrific hedges against future tax increases and they can be used *in addition* to qualified plans. Once again, non-qualified/fringe benefit plans are generally not used for asset protection purposes, but they may have such benefits – depending on how they are structured.

C. **Captive Insurance Companies (CICs):** CICs are used by many of the Fortune 1000 companies, for a host of strategic reasons. In a small business setting, the owners actually create their own properly-licensed insurance company – to insure various types of risks of the business. These can be economic risk (that revenues drop), business risks (that records are destroyed), litigation risks and even employee claims (wrongful termination defense). If it is created and maintained properly, the CIC is like any insurance company -- established in a real economic arrangement with its insureds. Also, CICs can enjoy tremendous creditor protection (+4/+5) if the ownership is structured properly.

D. **Cash Value Life Insurance (CVLI):** CVLI policies are purchased by millions of Americans each year for their tax benefits (generally, tax-free growth, can be accessed tax-free and pays income tax free to heirs), for family protection and for estate planning purposes. Nonetheless, in many states, the cash value can enjoy the top (+5) protections. In this way, a client can purchase a product that is widely recognized as a part of a financial plan and enjoy (+5) protections easily.

Conclusion

Many clients who have implemented generic *asset protection plans* may be disappointed if they are ever attacked – as they may be ignored by courts that see no economic substance. On the other hand, those who implement techniques such as those described above may be pleased – not only will their protection be upheld, but they may build significant wealth along the way. The authors welcome your questions.

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