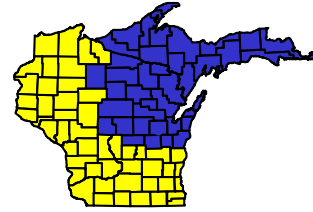




Northeast Wisconsin Chapter #107 December 2011



Chapter BOG Officers

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Chapter Programs

Ryan Macario

History Chair

Membership Promotion

Joe Dettlaff

Research Promotion

Tilak Andhole

Student Activities

TEGA

Dale Pearson

Refrigeration

Dave Schaefer

Homepage Editor

Gordy Jacobs

Other BOG

Steve Marthaler
David Carter
Tina Brueckner

***Note; You do not need to be a BOG member to participate as a chapter committee chair

President's Message

We had another good meeting in November. Thank you to Kimberly Barker for presenting on building metering and integrating and using the data from your BAS system.

It is that time again for our annual holiday dinner. This year it will be on December 13th at Mark's East Side at 1405 East Wisconsin Avenue in Appleton. Happy hour will be from 6 -7 with dinner to follow at 7. The price is \$25 per person, except for past presidents who are free. Don't forget to sign up separately for your guest, if bringing one, to ensure we get an accurate count on people attending.

All of the events are now available for registration through the website. I encourage everyone to register early for the March all day seminar. We would like to have an estimate on the number of attendees so we can work on accommodations.

This year we will be sponsoring a booth at The Einstein Project Science Expo on January 14th from 9:00 a.m. – 4 p.m. at Shopko Hall. This event attracts more the 4,000 are youth. This is a great opportunity to educate them on the science behind our industry. We are in need of six (6) volunteers to work the booth in teams of two for 2-1/2 hour shifts. If you can work the booth please email Dale Pearson at dpearson@facility-engineering.com. It is noted that if there is a Packer playoff game on that day that the event will be moved to Sunday, January 15th.

The chapter has decided to offer \$100 to any member who is attending the CRC this spring in Minnesota. If you are interested in receiving the \$100 you will need to send a copy of your registration to Matt Veriha. This is an opportunity for our chapter to help promote attendance at this great event.

We are in need of volunteers to help support our chapter level committee chairs. As you can see from the list of committee chairs, we have two open chapter level committee chairs. If you're interested in becoming an active member of the NEW Chapter of ASHRAE and would like to become a future officer or would like to fill a chapter level committee chair, refer to "Become



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an ASHRAE Volunteer” page in this Newsletter and feel free to contact any of your Chapter Officers or Board of Governors and ask how you can “Get involved”.

Please forward this email to any of your co-workers or friends that you feel would be interested in becoming a member of ASHRAE or in attending one of our meetings.

Ryan J. Macario --- President, NEW ASHRAE Chapter



ASHRAE 2012
Region VI CRC
May 3-5, 2012



November Meeting Minutes

November Meeting notes:

Meeting called to order at 12:58

We will contribute \$100 to any member attending the CRC this spring in Minnesota.
Submit proof of registration to Matt Veriha.

We will be sponsoring a booth at the Einstein Project Science Expo. on January 14th.
Six volunteers are need to work the booth throughout the day.

We are still looking into setting up two (2) \$500 awards.

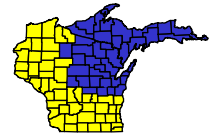
Treasurer report:

Checking: \$23,584.56, Investment, \$17,309.66, Petty Cash \$100.

Meeting adjourned at 1:10.



**Northeast Wisconsin Chapter – ASHRAE
2011-2012 Schedule of Events**



Sustaining ASHRAE Through Leadership

Date	Time	Topic	Location	Speaker
Sept. 20, 2011	11:30 AM – 1:30 PM	Demand Control Ventilatio	Swan Club, De Pere	Joe Dettlaff
Oct. 19, 2011	11:00 PM – 2:00 PM	Wisconsin Building Code Refresher	Liberty Hall, Kimberly	Randall Dahmen
Nov. 8, 2011	11:30 AM – 1:30 PM	Utility Metering	Liberty Hall, Kimberly	Kimberly Barker
Dec. 13, 2011	Happy Hour: 6-7:00 PM Dinner: 7:00 PM	Holiday Dinner (Past President's Dinner)	Mark's East Side, Appleton	-
Jan. 10, 2012	11:30 AM – 1:30 PM	Indoor Air Quality	Swan Club, De Pere	Wane Baker
Feb. 14, 2012	3:00 PM – 5:00 PM	Plant Tour & Presentation Energy Recovery / Heat Recovery	Greenheck, Schofield	Jackson Smith
March 13, 2012	8:00 AM – 4:00 PM	Hot Water / Green Energy	Bemis Center, SNC-De Pere	Dan Holohan
April 10, 2012	4:00 PM – 7:00 PM	Tour of UW Oshkosh New Academic Building	UW Oshkosh, Oshkosh	Joe Dettlaff
May 3 – 5, 2012	All Day Events	CRC	Mall of America – Bloomington, MN	
May 23, 2012	12:00 PM – 7:00 PM	Annual Golf Outing	Royal St. Patricks – Wrightstown	



Holiday Dinner

Holiday Dinner:

Date: *Tuesday, December 13, 2011*

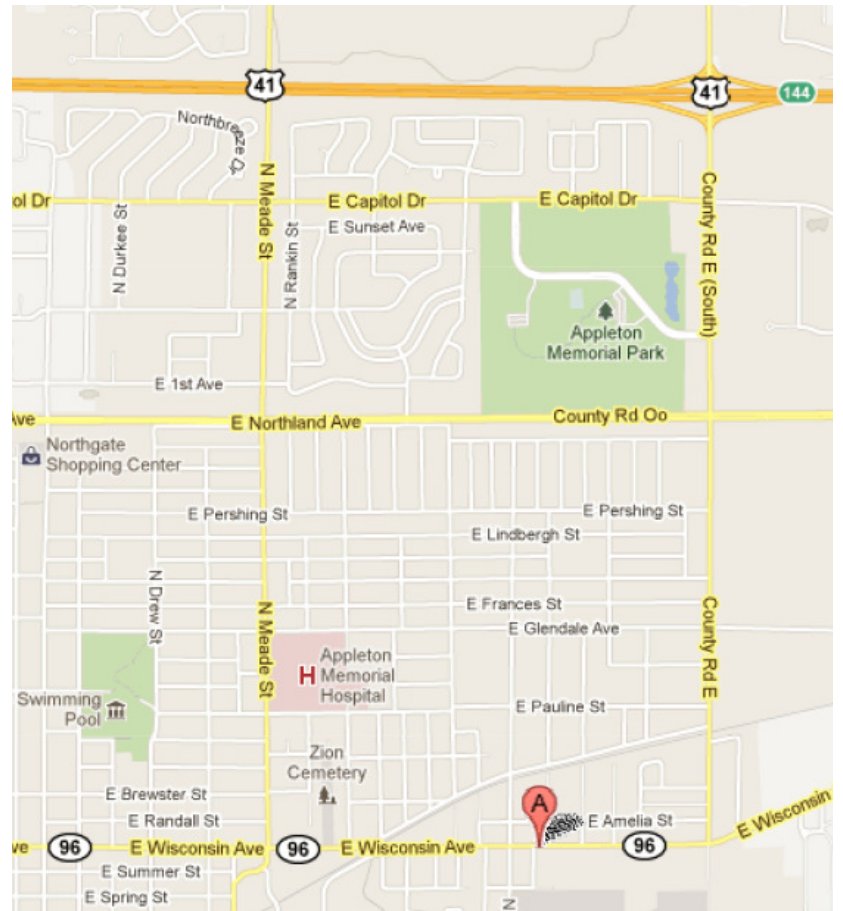
Time: *Happy Hour: 6:00 p.m. – 7:00 p.m.
Dinner: 7:00 p.m.*

Location: *Mark's East Side
1405 East Wisconsin Avenue
Appleton, WI*

Cost: *\$25.00 for Members and Non Members*

RSVP REQUIRED:

Please RSVP by using on-line registration at www.newwisconsinashrae.org or to Kevin Weber to attend.
Email: kevin@webersaleshvac.com





From ASHRAE Society

ASHRAE Technology Awards Highlight Outstanding Building Projects

ATLANTA – Designers of systems for a university building, a cancer center, an ice rink and other commercial building are recognized by ASHRAE for incorporating elements of innovative building design.

The ASHRAE Technology Awards recognize outstanding achievements by members who have successfully applied innovative building design. Their designs incorporate ASHRAE standards for effective energy management and indoor air quality. The awards communicate innovative systems design to other ASHRAE members and highlight technological achievements of ASHRAE to others around the world. Winning projects are selected from entries earning regional awards.

“Every year, the judging panel looks forward to the reviewing the outstanding projects submitting by our membership,” Nathan Hart, chair of the judging panel said. “Being a consulting engineer myself, I appreciate the effort involved in submitting an entry to Society-level competition. I enjoy seeing what fellow ASHRAE members are doing to strive for more energy efficient, well ventilated maintenance friendly building designs. Many of the entries this year incorporated innovations and technologies that took advantage of their specific geographical locations to provide more energy efficient systems—helping to highlight that one size does not fit all and that a more energy efficient design solution may be available when considering the project as a whole.”

Following are summaries of the winning projects.

Mountain Equipment Co-op

Roland Charneau, P.Eng., ASHRAE Fellow, ASHRAE Certified Healthcare Facility Design Professional, Pageau Morel & Associates, Montreal, Quebec, Canada, receives first place in the new commercial buildings category for the Mountain Equipment Co-op store, Longueuil, Quebec, Canada. The building is owned by the Mountain Equipment Co-op.

The Mountain Equipment Co-op store, a 2,600 sq. ft. single story retail sporting goods outlet, was designed and built so as to have a minimal impact on the environment. Traditionally, artificial lighting contributes to a large part of the total energy consumption in commercial retail stores. It was thus decided to maximize day lighting through a series of clerestory with a saw tooth shape roof. Also, light sensors were integrated in the design to partially or completely shut down the artificial lighting when natural lighting is sufficient. Occupancy sensors were integrated in small spaces to completely shut off lighting when not in use.

Optimization of the envelope resulted in an envelope insulated near twice the recommendations of the Model National Energy Code for Buildings, thus reducing the overall energy needs for the building. Structural Insulated Panels (SIP) were used for their efficiency, tightness and minimal construction time. Energy simulations showed a measured annual energy saving of 54 percent and cost savings of 57 percent.



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Taking into consideration new, unpacked products that retail stores carry—which bring pollutants into the occupied zone—and racking which impedes good air distribution if supplied from the ceiling, air is supplied via underground air distribution with displacement ventilation diffusers at floor level. Additionally, the building utilizes active solid thermal energy storage in its concrete slab; an underground cistern to collect rain water and to feed the water closet, as well as waterless urinals; and natural/hybrid ventilation with leeward vents at roof level, to name just a few innovations. Overall, the new store consumes 57 percent less than the recommendations provided by the Canadian Energy Model Code.

IKEA Brossard Distribution Center

Ken Sonmor, Ecovision Consulting, Montreal, Quebec, Canada, receives first place in the existing commercial buildings category for the IKEA Brossard Distribution Center, Quebec, Canada. The building is owned by the IKEA Distribution Services, CA LP.

The extensive distribution center (79,750 sq. m.) belonging to one of the largest furniture retailers in the world consists of a warehouse, where goods are received, stored and then shipped, along with adjoining office spaces.

On the lighting front, nearly 700 T12 high output (HO) lighting fixtures were replaced with a combination of T8 and T5 HO lights. An additional 510 high-intensity discharge fixtures were replaced with T5 HO fixtures with custom made reflectors to bring the light where needed. Motion sensors were installed throughout the entire facility shedding 250kW of lighting power. Luminosity sensors near windows in the office areas turn off lighting when not required thus harvesting daylight.

A 160T geothermal system is now the principal source of heat for the building. To attain the greatest possible efficiency, a dual maglev frictionless compressor heat pump was chosen. A greater number of wells than average maintain a very close approach with the ground temperature of 50 F. This higher temperature permits the reduction of glycol concentration which benefits the efficiency of the heat pump, the heat transfer through the vertical geothermal wells and lower pumping power. These improvements allow for a coefficient of performance of 5-7 in heating—representing a 50 percent improvement over a traditional geothermal layout. During a typical winter, the geothermal system is capable of supplying 70 percent of required heat.

The overall project thus provides greater human comfort, with never-before cooling in the warehouse while realizing greater than 50 percent dollar energy savings.

Université de Sherbrooke

René Dansereau, Dessau, Longueuil, Quebec, Canada, receives first place in the educational facilities category for the design of the Université de Sherbrooke—Campus de Longueuil, Quebec, Canada. The building is owned by the Université de Sherbrooke.

With its 16-story glass tower built in the heart of Longueuil's downtown area, the Université de Sherbrooke's new campus building is one of the tallest structures on Montreal's South Shore. The 650,000 sq. ft. campus includes classrooms, offices and labs for nine faculties under a single roof. Its architectural design focuses on open spaces and gathering areas, such as a green roof "oasis," to enhance a sense of community within the campus.



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Determined to create an eco-friendly building, Dansereau and his firm took a unique approach to engineer the heating, ventilation, and air-conditioning systems: Right from the start, designers chose an integrated design approach to the project. Though geothermal energy is rarely used in urban settings, designers connected a chiller to a geothermal system consisting of 37 vertical boreholes. The 165-ton screw chiller acts essentially like a heat pump and provides about 25 percent of the building's heating and cooling capacity.

With average winter temperatures falling significantly below freezing in the Montreal area, fresh air treatment can be quite costly. To enhance energy savings, three enthalpy wheels were installed on new ventilation units. These wheels recover latent and sensible heat that is usually lost in exhaust air. With an efficiency rate of 76 percent, the wheels help reduce annual heating, cooling and humidity demands.

Along with several other energy efficient innovations, energy consumption was reduced by 46 percent, consequently saving over \$250,000 a year on energy invoices. Including subsidies, the return on investment for energy-saving equipment is approximately two and a half years.

Abbotsford Regional Hospital and Cancer Centre

Paul Marmion, Stantec Consulting, Vancouver, British Columbia, Canada, receives first place in the new health care facilities category for the design of the Abbotsford Regional Hospital and Cancer Centre, British Columbia, Canada. The building is a Public Private Partnership (P3) sponsored and operated by Laing Investments Management Services (Canada). The building is owned by the hospital.

The Abbotsford Regional Hospital and Cancer Centre (ARHCC) is an acute care hospital built in the province of British Columbia. The hospital is a technologically advanced, 63,000 sq. m., \$355 million, 300 bed acute care hospital with nine operating theatres, pediatric and maternity services, inpatient isolation rooms, medical imaging and radiation cancer treatment facilities.

Marmion and his team were responsible for the design of the HVAC, plumbing and fire protection systems of the hospital, helping to successfully complete the fast tracked health care facility on time and on budget. The building incorporates several features to conserve energy, one of which is two 900 ton chillers which are piped in a counter-flow configuration with chilled water temperature reset control to optimize energy efficiency, consuming a maximum of .5 Kw/ton of cooling. There was no incremental capital cost of adding the counter-flow configuration, resulting in an annual energy saving of \$3,400, providing in instant payback. Additionally, the water use in the hospital has been reduced by 20.6 percent through the innovative use of dual flush toilets, even in the inpatient rooms, low flow lavatory and kitchen sinks and low flow showers.

The ARHCC is running 56 percent below the Environmental Protection Agency's energy benchmark, using just 153 kBtu/ft² compared to the typical 350 kBtu/ft² for a similar building. It has also been determined that the hospital is producing 3140 metric tons of CO₂, compared to an equivalent facility which produced 8470 metric tons of CO₂. Ultimately, the savings in CO₂ emissions is equivalent to taking 1,400 cars off the road.

Thermal Energy Corporation—Thermal Energy Storage



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Blake Ellis, P.E., Burns & McDonnell, Kansas City, Mo., receives first place in the new industrial facilities or processes category for Thermal Energy Storage at the Texas Medical Center, Houston, Texas. The owner is Thermal Energy Corporation, Houston, Texas.

In 2007, master planning determined that the cooling load of the 80,000 ton chilled water system that served the Texas Medical Center would double over the next two decades. With that in mind, the owner sought the most cost effective way to provide the increased quantity of chilled water to the campus while maintaining the high level of reliability to serve the critical needs of the medical center.

It was determined that thermal energy storage (TES) in a load leveling scheme was the most cost effective first step to meet the increased chilled water demand. This resulted in the selection of an 8.8 million gallon stratified chilled water storage tank; with a height of 150 ft., it is the tallest stratified chilled water storage tank in the world. Connecting such a tall tank that is open to the atmosphere to a closed chilled water system creates 65 psig of pressure at the bottom of the tank on both the chilled water supply and return lines connected to the tank. A traditional single direction pumping scheme could no longer be utilized and a unique simultaneous dual direction pumping scheme was created.

Conventional wisdom would indicate that a TES system uses more energy than an equivalent non-TES system. However, TES systems use slightly less energy (BTUs or kW-hr) by shifting chilled water production from the middle of the afternoon when the highest wet-bulb temperatures of the day are experienced to the evening when wet-bulb temperatures are lower. The lower wet-bulb temperatures yield lower condenser water temperatures, which allow the chillers to operate more efficiently during the night hours when the tank is charged.

Energy savings during the first year were 7-9 percent in the summer and approximately 5 percent aggregated over the entire year. Energy costs were dramatically reduced due to the real time pricing in Houston, Texas. During the first 23 days of August 2011, the owner saved over \$500,000 in electrical energy cost due to very high (\$3,000+/MW-hr) electric costs.

Arena Marcel Dutil

Luc Simard, Compressor Systems Control (CSC), Les Coteaux, Quebec, Canada, receives first place in the existing industrial facilities or processes category for the renovation of Arena Marcel-Dutil, St-Gédéon-de-Beauce, Quebec, Canada. The building is owned by the Municipalite St-Gédéon-de-Beauce.

In 2010, the arena was equipped with the first 100 percent CO₂ based refrigeration system for ice rinks in the world. The existing R22 chiller was removed, as well as the existing ice mat, and the concrete slab was retrofitted to install the new system. The system uses R744 as both a primary and secondary working fluid, a natural, non-toxic, non-corrosive and highly efficient refrigerant listed A1 in the B52 code. Because there is no secondary fluid, the evaporating temperature of the CO₂ can be set at -7 C while keeping the ice sheet at -5 C. The result is an evaporating temperature higher than all other standard ice rink refrigeration systems.

The refrigeration system has a 3kW variable speed CO₂ pump that reduces the power needed for circulating the cold fluid by 90 percent compared to secondary fluid installations. For a typical ice rink facility, the savings can be up to 125,000 kWh per year. The arena was also compared to similar projects in the area and was found to have a 25 percent reduction in total energy costs.



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Also, when comparing the new system with the old chiller using R22, and considering an annual leak rate of 15 percent for the old system, the total greenhouse gas reduction associated with the new 100 percent CO₂ refrigeration system is up to 100 tons per year.

ASHRAE, founded in 1894, is an international organization of 55,000 persons. ASHRAE fulfills its mission of advancing heating, ventilation, air conditioning and refrigeration to serve humanity and promote a sustainable world through research, standards writing, publishing and continuing education.

Become an ASHRAE volunteer

Volunteering within ASHRAE provides you with a single resource for keeping up with technical advances in the industry. By volunteering, you gain direct access to new technology, technical information available that is universally recognized as authoritative and reliable and you influence the direction of HVAC&R technology.

Volunteering also provides unique opportunities to develop communication, management and leadership skills. Because ASHRAE is a volunteer-driven organization, you cannot turn to a better source for human resource development. ASHRAE offers countless opportunities for developing potential through volunteer work on a committee or at the chapter level. Benefits of volunteering include:

- Strengthening leadership skills
- Improving technical skills and the ability to work on technical issues
- Networking
- Accessibility to resources
- Self-development and sharing of ideas

How strong is the ASHRAE volunteer network? ASHRAE has a membership of some 50,000 people from 137 countries around the world. Of those members, approximately 7,500 are active volunteers. About 2,500 Society-level volunteers serve on the Board of Directors, councils, standing committees, technical committees, standard project committees, etc., and an additional 5,000 or so serve in the regional and chapter structures. Assuming (conservatively) that each volunteer contributes an average of two hours a week, that would be 100 hours a year. Then, of course, 100 hours a year times the 7,500 volunteers gives us 750,000 person hours a year volunteer time. At a time value of \$100 per hour, that's an annual value of \$75 million.

Clearly, ASHRAE depends on its volunteers for its continued success in advancing HVAC&R to serve humanity and promote a sustainable world.

Volunteer for your Chapter

With more than [170 chapters](#) around the world, volunteering at the chapter level is one of the easiest ways to take part in ASHRAE. Volunteering at the chapter level helps you develop a better understanding of how the Society functions and how to receive the most benefit from your membership while contributing to the growth of ASHRAE. For more information on how to volunteer at the chapter level, contact Steve Marthaler at 920-739-6885, or any Chapter Officer.