



# BUFFALO TALES

Newsletter of the Manitoba Chapter

*The Manitoba Chapter of the American Society of Heating, Refrigerating and Air Conditioning Engineers was chartered in September 1935. It is the second oldest ASHRAE Chapter in Canada. ASHRAE Manitoba is part of ASHRAE Region XI and covers ASHRAE members in Manitoba and Northwest Ontario.*



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## ASHRAE Supper Meeting Victoria Inn, 1808 Wellington Avenue Thursday January 12, 2012 Student Night Local HVAC Education

### What our future leaders are learning today

5:00 pm - Cocktails

6:00 pm - Dinner

7:00 pm – U of M's Dr. Rob Derksen and Evan Himmelstein from Red River College will review what their students learn in their respective HVAC and air conditioning courses.

**Dr. R.W. Derksen**, P.Eng. is an Associate Professor in Mechanical and Manufacturing Engineering at the University of Manitoba. He obtained a B.Sc. (Mech), M.Sc. and Ph.D. all at the U of M. after five years in the Department of Applied Mathematics at the University of Western Ontario, he returned to U of M to what was then the Department of Mechanical and Industrial Engineering where he remains till today. His research specialties are the theoretical study of turbulent flow, aerodynamic optimization, and optimization of engineering design. He has published 20 journal papers and made 28 conference presentations. His teaching duties have included calculus, fluid mechanics, measurements, design, and for the last 5 years, HVAC.

**Evan Himmelstein**, P.Eng. has a B.Sc in Mechanical Engineering from U of M. He joined Red River College in 2008 to focus on Building Sciences in the Mechanical Engineering Technology department. Evan is no stranger to research having spent 8 years developing selection software, new products and commissioning critical environments at E.H. Price Ltd. He researched, developed and catalogued Displacement Ventilation products which were a new ventilation method for the North American Market and was heavily involved in under-floor ventilation techniques as well as hospital operating room airflow patterns and control techniques. Evan is passionate about research, alternative energy systems and advances in building system ventilation. At Red River College he is both an instructor teaching the Air Conditioning courses and Academic Coordinator of Mechanical Engineering Technology.

Both presenters are members of ASHRAE and APEGM.

***CONFIRM YOUR ATTENDANCE*** by noon, January 10, 2012 by emailing [ashrae.mb@gmail.com](mailto:ashrae.mb@gmail.com). Indicate any special meal requirements (vegetarian, allergies, etc.) ASHRAE dinner meetings are open to all. The cost for a first time guests accompanied by an ASHRAE Manitoba member is \$25. Pre-registration is required. To pre-register or to get information on the cost of ASHRAE events, e-mail [ashrae.mb@gmail.com](mailto:ashrae.mb@gmail.com) or visit [www.ashraemanitoba.ca](http://www.ashraemanitoba.ca).

## President's Message – Johann Baetsen, P. Eng.

Greetings and happy new year to everyone! Hopefully everyone had a great and happy holiday season as we look forward to 2012.

We had another great turnout at our December meeting hosting our Past Presidents as well as the annual cribbage tournament. Thanks to Corey Nation and the Special Events Committee, the participants and everyone who donated prizes. They were some of the best ones I have seen.



The ASHRAE Winter Conference is being held January 21<sup>st</sup> to 25<sup>th</sup> in Chicago. It is always worth a trip as there are so many worthwhile seminars and programs to attend. The conference is also held in conjunction with the AHR Expo January 25<sup>th</sup> to 27<sup>th</sup>. Visit the ASHRAE website for more information.

This month's Chapter meeting will be held on January 12<sup>th</sup>. It's Student Night and we have two guest speakers, as noted in the program description above. Please make all our guests and especially students feel welcome. On behalf of the Board, me and my family, I wish you all a happy and healthy new year and I look forward to seeing you all on Thursday, January 12<sup>th</sup>.

## Coming Events

**2012 Supper Meetings**– February 16, March 15 and April 12, 2012.

**January 21 to 25 2012 – ASHRAE Winter Meeting and AHR Expo in Chicago** - The AHR Expo takes place Jan. 23–25 at McCormick Place will showcase over 1,700 companies in more than 414,500 square feet of exhibit space, making the 2012 Expo the largest HVAC&R exposition of all time. You can see, touch and compare the newest products representing the most innovative technology in the HVACR marketplace. It includes the Building Automation and Control Showcase and the Software Center and the New Product Technology Theater where you will find dozens of presentations of the latest products and solutions from participating exhibitors.

For details, go to <http://www.ashrae.org/Events/page/Chicago2012>

**March 12-13, 2012 - ASHRAE High Performance Buildings Conference: A Focus on Deep Energy Savings** in Mission Valley, Calif. A technical applications track will focus on strategies, technologies, tools, measured performance and optimal operations. A policy track will focus on current and future legislation and related programs in the areas of standards, performance rating and labeling, disclosure laws, etc. The conference targets both existing and new construction non-residential buildings. For more information on this escape from the last vestiges of winter, visit [www.ashrae.org/HPBconference](http://www.ashrae.org/HPBconference).

**April 19, 2012- ASHRAE Free WebCast - “Dedicated Outdoor Air Systems: A Path to Balancing Energy and IEQ”** - the role of DOAS in the overall HVAC system, characteristics of DOAS with a parallel system vs. conventional all-air systems, various DOAS equipment configurations & typical applications, issues and challenges unique to DOAS and common design and operational pitfalls. The Webcast will be live on April 19 and available to view as an archived file

until May 3, 2012. Registration details will follow in time.

**April 24, 2012 – Better Buildings Conference** - Manitoba's premier conference and trade show related to sustainable building design and environmental best practices. This year **Better Buildings** returns to a one day format. More details are forthcoming.

**May 11 - 14, 2012 – Region XI CRC in Winnipeg** – This is where incoming ASHRAE chapter officers learn the ropes for their new duties. Russell Lavitt and the organizing committee have already started planning the event, but it's not too late for you to get involved, too.

**October 1-3, 2012 – Energy Modeling Conference – Tools for Designing High Performance Buildings in Atlanta**, will guide building design professionals using currently available building and energy modeling tools on what does and does not work and provide 'workarounds' to improve the results when the modeling tool is not be capable of modeling unique or hybrid buildings or energy systems. For more information, visit [www.ashrae.org/EMC2012](http://www.ashrae.org/EMC2012)

**November 11 to 14, 2012 – The 7th International Conference on Cold Climate HVAC in Calgary** – will provide strategies by which scientists, designers, engineers, manufacturers and other decision makers in cold climate regions can achieve good indoor environmental quality (IEQ), with a minimum use of resources and energy. The planning committee seeks papers featuring innovations in cold climate HVAC design. **Abstracts are due by Dec. 1, 2011.** For specific topics, to submit a conference paper abstract or for more information, go to [www.ashrae.org/ColdClimate](http://www.ashrae.org/ColdClimate). For additional information, contact [meetings@ashrae.org](mailto:meetings@ashrae.org).

### **Cribbage Tournament Results**

ASHRAE Manitoba tradition continued with the 33<sup>rd</sup> annual cribbage tournament on Thursday, December 15th, 2011. At the top of the heap was Dave Jurkowski followed by our Chapter leadership, namely Johann Baetsen and Corey Nation.

The Chapter would like to thank the following for their generous contributions to the prize table for this enjoyable event:

Air Movement Services	Engineered Air	Samuda Energy Engineering
Black & McDonald	Epp Siepman Engineering	SMS Engineering
BPL Sales	Manitoba Hydro	Tom Beggs Agencies
Central Hydronics	M A Stewart & Sons	Tower Engineering
Ecco Heating Products	MCW	Valley Technologies
E H Price Winnipeg Sales	Midwest Engineering	Westwood Mechanical
	R G Sales	

A bus station is where a bus stops. A train station is where a train stops. My desk is a work station.

## **A Tidbit about Data Centers**

Most data centers are cooled to 64°F to 69°F (18°C to 21°C). Intel, the world's largest computer chip company, says using new software and hardware to get a more detailed picture of what's hot and what's not allows data centers to spread work around to different computers to keep them cool. That approach, along with a range of other technologies may allow data center temperatures to increase to higher than 100°F (38°C). Data center cooling costs \$26 billion a year. The facilities use 1.5% of the power used worldwide, an amount that could double by 2014, says Intel.

## **New CSA Standard for Hospital Design**

The 400-page CSA Z8000 - Canadian Health Care Facilities - Planning, Design and Construction is the first comprehensive, all-encompassing standard for the planning and design of hospitals and other health care facilities. It incorporates and references several existing CSA technical standards for health care facilities, such as standards for HVAC, lighting and commissioning. The new standard provides a cohesive, nationally recognized baseline for health care facility design and construction/renovation and has a requirement for extensive building and systems commissioning before a new building or addition is occupied.

Covering operations, accessibility, safety and security, infection control and sustainability, the standard is intended to help facilities cope with everything from pandemics, to providing improved security around newborns and those with dementia. It specifies the number of isolation rooms required and specifies design parameters for fixtures such as hand-washing sinks and requires that rooms are fitted with certain infrastructure to support patient lifts.

Michael Keen, chair of this standards committee is an engineer, project director and director of planning at St. Michael's Hospital in Toronto. He expects the standard will be adopted at least in part by most Canadian health care authorities. According to Keen, one noteworthy feature is a requirement for single patient rooms. Single patient rooms have been found to reduce the spread of infections in hospitals. CSA estimates that 220,000 people per year acquire infections while visiting or staying in health care facilities in Canada.

A complimentary two hour webinar on CSA Z8000 can be viewed at [http://shop.csa.ca/en/canada/invt/z8000webinar/?csa\\_category=internal&csa\\_content=landingpage-z8000-en&csa\\_term=z8000-webinar](http://shop.csa.ca/en/canada/invt/z8000webinar/?csa_category=internal&csa_content=landingpage-z8000-en&csa_term=z8000-webinar) You can find more details or purchase this standard at <http://shop.csa.ca/en/canada/landing-pages/z8000-canadian-health-care-facilities/page/z8000/>

## **ASHRAE Technology Awards Highlight Outstanding Building Projects**

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 submitted by our membership,” Nathan Hart, chair of the judging panel said. “Being a consulting engineer, 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.”

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.

Amongst this year’s winners are several entries from Quebec including:

**Montreal’s Mountain Equipment Co-op**, a 2,600 sq. ft. single story retail sporting goods outlet. It maximizes 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.

The envelope is insulated near twice the recommendations of the Model National Energy Code for Buildings, the building utilizes active solar 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.

Retrofit of the **IKEA Brossard Distribution Center**, a 79,750 sq. m. warehouse, distribution center and adjoining office spaces for a large furniture retailer. T12 high output (HO) lighting fixtures were replaced with a combination of T8 and T5 HO lights; high-intensity discharge fixtures were replaced with T5 HO fixtures with custom made reflectors; motion sensors were installed throughout the entire facility shedding 250 kW of lighting power; luminosity sensors near windows in the office areas turn off lighting when not required thus harvesting daylight.

A 160T geothermal system using a dual maglev frictionless compressor heat pump is now the principal source of heat for the building. Added ground source wells help maintain a very close approach with the ground temperature of 50 F, permitting reduced glycol concentration which benefits heat pump efficiency, improved heat transfer in the vertical geothermal wells and lowers pumping power, allowing 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 provides greater human comfort, with never-before cooling in the warehouse while realizing greater than 50 percent dollar energy savings.

**Université de Sherbrooke - Campus de Longueuil** 16-story glass tower 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.

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 like a heat pump, providing about 25 percent of the building's heating and cooling capacity. Three enthalpy wheels with a rated efficiency of 76% recover latent and sensible heat from exhaust air. These and several other energy efficient innovations resulted in energy consumption reductions of 46%, 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.

Renovation of Arena **Marcel-Dutil, St-Gédéon-de-Beauce, Quebec** - The arena was equipped with the first 100 percent CO<sub>2</sub> 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 CO<sub>2</sub> 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 3 kW variable speed CO<sub>2</sub> 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. 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 CO<sub>2</sub> refrigeration system is up to 100 tons per year.

**Other winners** included the Abbotsford Regional Hospital and Cancer Centre, a Thermal Energy Storage (TES) system at the Texas Medical Center in Houston, Texas. The owner is Thermal Energy Corporation, Houston, Texas.

If you have designed an innovative project, consider submitting it for an ASHRAE Technology Award. Winners get international recognition including being written up in the ASHRAE Journal. This is publicity and recognition you can't easily buy, but you can earn. For details on how to enter or for more information on past winners go to <http://www.ashrae.org/members/page/1646>

## **Are You Going the ASHRAE Meeting in Chicago?**

If you are and are looking company at supper, go the ASHRAE bookstore in the ASHRAE headquarters hotel, the Palmer House and check out the notice board. There you can find postings for group dinners on Sunday and Monday nights. If you want to dine with people from our Region, look for the Region XI sign up sheet. Another where I have enjoyed great company is the Indian dinner organized by JB Singh. If you want to meet people from other Regions, sign up for their Regional Supper.

The last thing I want to do is hurt you.  
But it is on my list.

## ASHRAE Manitoba Chapter Officers

President	Johann Baetsen	Epp Siepman Engineering	453 1080	jbaetsen@eppsiepman.com
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## ASHRAE Region XI Officers

Director & Regional Chair	Erich Binder	Erich Binder Consulting	Calgary	erich.binder@worleyparsons.com
Assistant Regional Chair	Kevin Marple	Benz Air Engineering	Portland	kmarple@benzco.com
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2012 CRC Chair	Russell Lavitt	SMS Engineering Ltd	789.2312	rlavitt@smseng.com

**ASHRAE needs you, but more importantly you need ASHRAE.** ASHRAE always has room for more professionals, just like you. For information regarding ASHRAE membership, contact Manitoba Membership Chair Stephen Norsworthy ([ashrae.mb@gmail.com](mailto:ashrae.mb@gmail.com)) or visit ASHRAE Manitoba at [www.ashraemanitoba.ca](http://www.ashraemanitoba.ca)

ASHRAE, founded in 1894, is an international organization of 50,000 persons. Its sole objective is to advance through research, standards writing, publishing and continuing education the arts and sciences of heating, ventilation, air conditioning and refrigeration to serve the evolving needs of the public. Visit ASHRAE at [www.ashrae.org](http://www.ashrae.org).

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# ASHRAE Learning Institute

## Seminars & Courses at ASHRAE's Winter Conference in Chicago, IL

### 2 WAYS TO REGISTER

Internet: [www.ashrae.org/chicagocourses](http://www.ashrae.org/chicagocourses)

Phone: Call 1-800-527-4723 (US and Canada) or 404-636-8400 (worldwide)

### Full Day Professional Development Seminar

\$485/\$395 ASHRAE Member -- Earn 6 PDHs/AIA LUs or .6 CEUs



**The Commissioning Process in New & Existing Buildings**  
Saturday, Jan 21 – 8:00 a.m. to 3:00 p.m.

**Using Standard 90.1 to Meet LEED Requirements**  
Tuesday, Jan 24 – 9:00 a.m. to 4:00 p.m.

**Data Center Energy Efficiency**  
Saturday, Jan 21 – 8:00 a.m. to 3:00 p.m.

**Energy Modeling Best Practices and Applications:  
HVAC/Thermal**  
Tuesday, Jan 24 – 9:00 a.m. to 4:00 p.m.

**Integrated Building Design**  
Saturday, Jan 21 – 8:00 a.m. to 3:00 p.m.

### Half Day Short Courses

\$159/\$119 ASHRAE Member -- Earn 3 PDHs/AIA LUs or .3 CEUs

**Understanding Air-to-Air Energy Recovery Technologies & Applications**  
Sunday, Jan 22 – 2:00 p.m. to 5:00 p.m.

**Comply with Standard 90.1-2010: HVAC/Mechanical**  
Monday, Jan 23 – 2:30 p.m. to 5:30 p.m.

**Understanding & Designing Dedicated Outdoor Air Systems (DOAS)**  
Sunday, Jan 22 – 2:00 p.m. to 5:00 p.m.

**Evaluating the Performance of LEED-Certified Buildings**  
Monday, Jan 23 – 2:30 p.m. to 5:30 p.m.

**Application of Standard 62.1-2010: Multiple Spaces Equations  
& Spreadsheet Calculation**  
Sunday, Jan 22 – 2:00 p.m. to 5:00 p.m.

**Combined Heat & Power**  
Tuesday, Jan 24 – 9:00 a.m. to 12:00 p.m.

**Basics of High-Performance Building Design**  
Monday, Jan 23 – 8:30 a.m. to 11:30 a.m.

**Healthcare Facilities: Best Practice Design**  
Tuesday, Jan 24 – 9:00 a.m. to 12:00 p.m.

**Complying with Standard 90.1-2010: Envelope/Lighting**  
Monday, Jan 23 – 8:30 a.m. to 11:30 a.m.

**Project Management for Improved IAQ**  
Tuesday, Jan 24 – 9:00 a.m. to 12:00 p.m.

**Energy Management in New & Existing Buildings**  
Monday, Jan 23 – 8:30 a.m. to 11:30 a.m.

**Healthcare Facilities: Best Practice Applications**  
Tuesday, Jan 24 – 1:00 p.m. to 4:00 p.m.

**Advanced High Performance Building Design**  
Monday, Jan 23 – 2:30 p.m. to 5:30 p.m.

**Design Toward Net Zero Energy Commercial Buildings**  
Tuesday, Jan 24 – 1:00 p.m. to 4:00 p.m.



## ASHRAE HVAC Design Essential Workshop

January 11-13, 2012 • ASHRAE Foundation Learning Center • Atlanta, GA

### Obtain the skills needed to:

- Improve overall building performance
- Design high-performance HVAC systems
- Effectively collaborate on an integrated design team

ASHRAE has created the HVAC Design Essentials to provide intensive, practical education for designers and others involved in delivery of HVAC services. Developed by industry-leading professionals, this workshop provides participants with training design to accelerate their evolution into effective member on a design, construction or facilities maintenance team.

In addition to gaining in-depth knowledge and understanding, attendees will receive real-world examples of HVAC systems based on the newly renovated ASHRAE Headquarters building. The workshop teaches a systematic approach to guide a design team to a solution that optimally meets the client's expectations.

Visit [www.ashrae.org/hvacdesign](http://www.ashrae.org/hvacdesign) to register