



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.



ASHRAE MB Dinner Meeting October 11, 2007 Membership Promotion Night

NEW LOCATION

Victoria Inn
1808 Wellington Avenue

Manitoba Hydro's Power Smart Commercial Building Optimization Program (CBOP)

- 5:00 pm – Social Hour
- 6:00 pm – Dinner
- 7:00 pm – Guest Speaker's Presentation

Overview

CBOP is a commercial Power Smart program which provides incentives to customers for scoping, investigating and implementing energy efficiency measures in existing buildings. Frequently referred to as Retro-Commissioning, the building optimization process identifies opportunities, quantifies them and ensures that energy efficiency measures are installed with an emphasis on training building operators. Many building owners and operators take the first step in looking for opportunities to optimize their buildings by doing an energy audit, but don't have the resources or expertise to pursue the opportunities identified. Manitoba Hydro identified this as an opportunity and in 2006, developed a program that pays incentives to qualified buildings for three distinct stages of a Retro-Commissioning Project.

CBOP is a program specializing in Retro-commissioning and how it can benefit commercial buildings. The program has worked with Portland Energy Conservation, Inc. to help train engineers here in Manitoba to aid in the education of Retro-commissioning. The goal of the program is to use Retro-commissioning as a tool to help buildings perform to their design intent.

The presentation will focus on the differences between audits and retro-commissioning, and the Power Smart incentives available for the Scoping, Investigation and Building Operator Training of these projects.

Dieter Bartel is a Commercial Energy Specialist in Manitoba Hydro's Business Engineering Department where he provides technical support for the Power Smart Commercial Construction Programs including the Commercial Building Optimization Program. Dieter is a Certified Energy Manager and is certified through the University of Wisconsin as a Qualified Commissioning Process Provider. Dieter gained experience in HVAC & R design and project management of commercial buildings during his time with engineering

consulting firms and has invested 16 years with Centra Gas and Manitoba Hydro.

Dieter is Past President (1989) of ASHRAE Manitoba and is currently a governor. He served Society on Technical Committee 7.6 “Systems Energy Utilization”, the Research Advisory Panel, the 2007 HVAC Applications Handbook revisions and ASHRAE Standard 100-2006 “Energy Conservation in Existing Buildings”. Currently, he serves on Guideline 30 “The Commissioning Process for Existing HVAC&R Systems” and Guideline 31 “Building Operations & Maintenance Training for the HVAC&R Commissioning Process”. He will share thoughts related to Retro-commissioning existing buildings.

Leah Sookhan is a Marketing Specialist for the Commercial Building Optimization Program (CBOP) and the Custom Measures Program and is involved in the design and delivery of Power Smart for Business programs for the Manitoba Hydro Power Smart Commercial Marketing Department. Leah graduated from the Asper School of Business at the University of Manitoba in 2002 with a Bachelor of Commerce (Hons.) in Marketing and International Business.

Holcim Awards for Sustainable Construction

The Holcim Awards is a prestigious international design competition that celebrates innovative, future-oriented and tangible sustainable construction projects from around the globe and provides prize money of USD 2 million per competition cycle. The Holcim Awards recognize any contribution to sustainable construction – irrespective of scale – in architecture, landscape and urban design, civil and mechanical engineering and related disciplines. The current cycle of the Holcim Awards competition officially opened on June 1, 2007. The submission deadline is February 29, 2008. Additional information is also available from the official website at www.holcimfoundation.org/awards.html or from Mr. Tareq Ali, the Canadian representative of the Holcim Foundation for Sustainable Construction and the Holcim Awards. He can be reached at (905) 532-3013 or tali@stlawrencecement.com.

GreenBits Blog Provides Insight Into Building Industry

Kent Peterson juggles many roles these days: president of ASHRAE, husband and father, business owner and engineer. Now, he is adding one more item to that tidy list-blogger. In a new blog from Peterson shares information about ASHRAE happenings and industry trends from his perspective as president of the Society. Titled GreenBits, the blog can be found at www.ashrae.org/blog.

"The construction industry is rapidly evolving with new technologies adapted to a varied array of building services," Peterson says. "As I travel to various events as ASHRAE president globally, I hope to share my perspective on how our industry is meeting sustainability challenges in the built environment and how ASHRAE members worldwide are contributing. It also provides ASHRAE members with an opportunity to comment on our progress."

Updated weekly, GreenBits also has its own RSS feed for easy access to the latest posts and reader comments. To subscribe to the feed, visit the blog and click on the RSS link on the left column.

President's Message – David Stones, P.Eng.



Welcome to our Chapter's 2007-2008 round of technical and non-technical events. Our monthly dinner presentations will be at a new venue, **The Victoria Inn on Wellington Avenue**. For those that have not been to that facility, we think you will be pleasantly surprised.

Six Chapter members attended the Chapters Regional Conference on an Alaskan Cruise in May - myself, Sergio Almeida, Jesse Sandhu, Johann Baetsen, Bert Phillips and Russell Lavitt. All who attended returned with some fresh ideas for the coming year and for the future of our Chapter. We were hosted by the very energetic and efficient Alaska Chapter and both Region XI and Alaska Chapter can be proud of that success.

Johann is working diligently on the program for this year and we will likely partner with at least one other organization this year. Thanks also to Jesse Sandhu for a terrific program of presenters last year. Jesse and Johann have exchanged positions so that Jesse will be the Membership Chair.

Past-President Stirling Walkes moves on to Research Promotion. We are grateful to Stirling for leading us through another successful year as well as to Peter Gryc who accomplished a big increase in contributions to Research Promotion. Robert Bisson and the others who assisted are congratulated for a very worthwhile and well-attended one-day session on commissioning in April.

Many thanks to Bert Phillips who has agreed to edit and assemble Buffalo Tales and to all other Board of Governors and Committee Chairs who are continuing on or have joined.

Ivan Hall, our ASHRAE Regional Historian will be visiting our chapter for the October meeting. I look forward to meeting and speaking with him and with you on October 11.

Coming Events

2007 – 2008 ASHRAE Manitoba Supper Meeting Dates

November 15 - with special guest Norm Grusnick, ASHRAE Regional Vice Chair for Research Promotion; **December 13** – our annual cribbage tournament; January 17; February 7; March 13; April 10; and our year end social evening, sometime in May or June.

CSA Health Care Courses

Infection Control during Construction or Renovation of Health Care – November 1, 2007
HVAC in Health Care Course (CSA317.2) – November 2, 2007 - in Winnipeg (other dates in other places). For info on these and other CSA courses (e.g., fall protection, occupational health and safety, etc.) call 1 800 463-6727, email seminars@csa.ca or go to https://learningcentre.csa.ca/lc_site/beg.asp

ASHRAE Winter Meeting, New York City, January 19-23, 2008 - plan on attending the Joint Region X and XI Dinner on Monday the 21st of January at 7pm. The Le Rivage restaurant is less than a mile from the hotel. It has a cozy French country atmosphere offering traditional French cuisine and offers a four-course dinner including an appetizer, salad, entree and dessert with coffee for \$35.00 per plate plus tip and gratuity.

2008 CRC will be May 7-10, 2008 at the Fantasyland Hotel in the West Edmonton Mall. Golf on May 7th; Technical Seminars on the morning of May 8th, in conjunction with our chapter's bi-annual Tradeshow followed by an orientation session, the first Caucus and Welcome Party; May 9th is meetings, workshops, the President's Luncheon and Dinner Banquet; May 10th is more meetings and workshops, the Awards Luncheon and a Wrap-Up Party. Companion tours include a guided shopping tour of some of Edmonton's most unique and obscure shops, and tours of the local attractions. Registration and accommodation details will be presented as they become available.

2007 - 2008 ASHRAE Research Promotion – Stirling Walkes, Chapter RP Chair

As immediate Past President and the current Research and Promotion committee chair, I would like to thank Peter Gryc for the fantastic job he did last year for fundraising for ASHRAE Research. Last year our chapter raised over \$12,000 or about 161% of our goal. I thank everyone, individuals and companies that donated last year to achieve this goal. This year's campaign goal for our Manitoba Chapter is to raise \$9,000 for ASHRAE Research.

ASHRAE receives donations for research through the membership and affiliated companies. The research conducted benefits everyone in the industry; money goes to studying technologies that make buildings more environmentally friendly. 100% of every dollar invested by members in Canada goes to ASHRAE Research Canada (ARC); this money is spent on research done in Canada.

Some of the research helps create documents that we in our industry use regularly. The Green Building Design Guide, ASHRAE 90.1 Energy Standard for Buildings, the Advanced Energy Design Guide among others, were all created with the help of donations to ASHRAE Research. The Energy and Atmosphere component of the LEED rating systems are largely based on ASHRAE Standards.

Remember, every dollar counts, donations from individual members account for 86% of all funds collected. On average 44% of investors donated up to \$100, and 42% of investors donated between \$100 and \$250.

If you want to support research into energy efficiency in the HVAC industry, and if you want to help preserve the environment for us and future generations, invest in ASHRAE Research.

Please contact me at swalkes@smseng.com with your pledge towards ASHRAE Research.

2006 -2007 ASHRAE Research Promotion Campaign Results

The 2006/07 ASHRE Manitoba Research and Promotion campaign had a Chapter goal of \$7,900. Our Research and Promotion Committee headed by Peter Gryc solicited \$12,883 in donations which is 63% more than the goal. Congratulations to Peter and his team on this exceptional effort. Listed below are this year's donors.

Major Contributors

Manitoba Hydro	\$2000
Tom Beggs Agencies	\$1000
BEMM	\$1000
Midwest Engineering Ltd.	\$1000
Price – Winnipeg Sales Office	\$1000
Trane Service Agency	\$1000
BPL Sales Limited	\$1000
E.H. Price Limited	\$1000
Hydron-Aire	\$500
Nova 3 Engineering	\$500
Airdronics	\$250

Honour Roll and Other Contributors

(Honor Roll *- at least \$100 personal or \$150 corporate)

M2 Engineering*	Dieter Bartel*	Bert Phillips*
Robert Bisson*	Peter Gryc*	David Stones*
Sergio Almeida*	George Marchildon*	Stirling Walkes*
Russell Lavitt*	Corey Nation*	R-G Sales*
MCW Consultants*	Daryl Friesen*	Enersol Distributing*
Earth Tech Canada*	Appin & Associates*	Bornhorst Mechanical*

Other Contributions

Chapter Raffle of BEMM conference tickets	\$162
DFC Mechanical	\$100
Jeff Burreu	\$50

Natural Ventilation - Bert Phillips

A client asked about natural ventilation for a specific application. I prepared the following summary of NISTIR 6781 “Natural Ventilation Review and Plan for Design and Analysis Tools” by Steven J. Emmerich, W. Stuart Dols and James W. Axley, August 2001 <http://www.fire.nist.gov/bfrlpubs/build01/PDF/b01073.pdf> as part of my self education on the topic.

Ventilation, whether mechanical or natural, is commonly used to provide air quality control, direct cooling, and indirect (or night) cooling in buildings. Natural ventilation may also improve occupant comfort by moving air at sufficient velocity to enhance convective transport of heat and moisture from the occupants.

Natural ventilation is ventilation provided by thermal, wind or diffusion effects through doors, windows, or other intentional openings in the building. *Mechanical ventilation* is ventilation provided by mechanically powered equipment such as motor-driven fans and blowers. *Hybrid ventilation systems* attempt to combine the benefits of both natural and mechanical ventilation to enhance performance and control of natural ventilation systems in an optimal way. Hybrid ventilation systems are more complicated, nevertheless they are invariably conceived as variants of the fundamental approaches to natural ventilation.

Issues to be considered when comparing natural ventilation strategies to mechanical alternatives include:

- cooling energy savings and limits of applicability – Natural ventilation can only offset limited amounts of internal heat gain. It will not provide adequate cooling in energy intense buildings or during hot outdoor temperatures. Its use can be problematic during hot humid weather.
- fan power savings and heat recovery - Fans consume a large portion of the energy used to cool buildings. Natural ventilation can eliminate some or all of this. Naturally ventilated buildings in the U.K. use 20 kWh/m² to 60 kWh/m² less fan energy annually for cooling purposes than all-air mechanical cooling systems. Such statistics argue for natural ventilation when climatic and operational conditions prove particularly suitable. Offsetting this advantage, heat recovery is generally not practical with natural ventilation systems. In cold climates, the energy benefits of heat recovery can easily offset the fan energy savings realized through natural ventilation. The potential benefit of heat recovery during the cooling season is, however, marginal. If natural ventilation strategies are to be competitive during extreme seasons, when either mechanical heating or cooling must be provided, then they may need to be designed to recover heat.
- control and reliability - Wind and buoyancy forces are stochastic in nature making control of natural ventilation difficult. As a result, natural ventilation systems may at times under-ventilate resulting in overheating or unacceptable air quality conditions and at other times over-ventilate, resulting in unnecessary energy consumption to condition indoor air, or cause local thermal discomfort. That being said, not all mechanical ventilation systems

are able to provide acceptable ventilation and thermal comfort all year round.

- occupant health, comfort and productivity - Epidemiological studies consistently show that occupants' complaints in office buildings increase with HVAC system sophistication. One frequent explanation for this is that more sophisticated HVAC systems contain more potential sources of indoor air pollution, like filters, cooling sections and humidifiers. Another factor may be that occupants with natural and simple mechanical ventilation systems can independently adapt their environment to their immediate perception of comfort and can identify and mitigate problems, but can not do the same with complex mechanical systems. The trend towards complexity in the design of natural ventilation systems may counteract this advantage.
- HVAC equipment costs and space requirements - Mechanical heating, ventilating, and air conditioning equipment make up a large fraction of total construction costs in larger office and institutional buildings. Additionally, HVAC equipment requires a lot of space. For the common commercial building ceiling height of 12 ft, the combined requirements of fans, vertical distribution, and horizontal distribution systems typically consume 20 % to 40 % of the total volume of the building. Innovative natural ventilation system designs can use this to: increase rentable floor space; facilitate daylight distribution; buffer indoor air pollutants by increasing the total volume; reduce the total floor-to-floor height in multistory construction to either effect a savings in the cost of building construction or to allow the inclusion of one or more additional floors.
- duct cleanliness and filtration – Accumulation of dirt in ductwork may be a principle source of indoor odors, even in new construction. On the other hand, most natural ventilation systems admit outdoor air without filtration. So, mechanical ventilation systems offer the significant advantage of air filtration but with potential cost and health penalties of unclean ducts, while natural ventilation systems avoid the duct cleaning problem altogether yet provide little or no filtration of ventilation airflows. As well, natural ventilation may increase building cleaning and maintenance requirements and in environments where outdoor dust levels are excessive, can result in an environment with excessive dust and particle loads.
- other issues – Other related issues to be considered when evaluating the potential of natural and/or hybrid ventilation systems include daylighting, acoustical isolation, smoke control and management, rain entrainment, security, and pest control.

The inherent compatibility of daylighting with natural ventilation design strategies is perhaps most significant from an energy perspective. Building Research Establishment Conservation Service Unit [BRECSU] data indicate that naturally ventilated buildings can save more than half the energy consumed for artificial lighting when compared to mechanically air conditioned office buildings.

ASHRAE Manitoba Chapter Officers

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ASHRAE, founded in 1894, is an international organization of 55,000 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.

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Earn 3 PDHs/.3 CEUs or 3 AIA LUs

Complying with ANSI/ASHRAE/IESNA Standard 90.1-2004 HVAC/Mechanical

*Due to the popularity of this course,
it will be offered twice.*

Wednesday, September 26, 2007
1:00 p.m. to 4:00 p.m. EDT

Monday, October 22, 2007
1:00 p.m. to 4:00 p.m. EDT



This program presents the mechanical requirements from ANSI/ASHRAE/IESNA Standard 90.1-2004. Standard 90.1-1999 is the benchmark for commercial building energy codes in the United States and in countries around the world. States are currently in the process of adopting elements of the 2004 Standard. The U.S. Department of Energy is reviewing it in preparation for adoption as the new benchmark for state energy codes. Changes to the 2004 mechanical section schedule to become part of the 2007 Standard will be addressed. Design professionals, code officials and

building owners will benefit from this seminar, which presents the HVAC requirements and methods of compliance. Attendees will receive a discount toward the purchase of [ANSI/ASHRAE/IESNA Standard 90.1-2004 - Energy Standard for Buildings Except Low-Rise Residential Buildings](#) and [Standard 90.1-2004 User's Manual](#).

Frank Mills, Instructor

[Register Here](#)

Natural Ventilation

Thursday, October 4, 2007
1:00 p.m. to 4:00 p.m. EDT



This course will explain the various methods by which natural ventilation can be achieved including successful examples. The course will describe the calculation techniques to more sophisticated examples ranging from simple manual calculations, spread sheets through to more sophisticated techniques such as computational fluid dynamics CFD, salt bath modeling and physical (scale) model testing. Options for hybrid solutions will be described including recent innovative schemes which have used the natural ventilation strategy throughout the year with added cooling in summer. The course will follow the CIBSE Applications Manual AM10. Attendees will receive a discount toward the purchase of *Natural Ventilation in Non-Domestic Buildings*.

Mack Wallace, JJ Deringer, Instructors

[Register Here](#)

Humidity Control I - Basic Principles, Loads and Equipment

Take both and save!

Monday, October 15, 2007
1:00 p.m. to 4:00 p.m. EDT



In commercial buildings, excess humidity and moisture problems have caused difficulties with mold, mildew and uncomfortable conditions for occupants. This course, based on ASHRAE's Humidity Control Design Guide for Commercial and Institutional Buildings, helps the designer achieve true control of humidity rather than just its moderation. The course covers how to remove moisture loads with equipment dedicated to that purpose alone, rather than relying on the occasional dehumidification effect of a building's cooling system. Attendees learn what equipment is used for this purpose, how it works and how to apply it quickly, economically and reliably. Attendees will receive a discount toward the purchase of the [Humidity Control Design Guide for Commercial and Institutional Buildings](#).

Lew Harriman, Instructor

[Register Here](#)

Humidity Control II **Applications, Control Levels and** **Mold Avoidance**

Take both and save!

Wednesday, October 17, 2007 1:00 p.m. to 4:00 p.m. EDT



For those who need to go beyond the basics of humidity control, this course provides the next step. Based on ASHRAE's best-selling Humidity Control Design Guide for Commercial and Institutional Buildings, the material includes an in-depth discussion of moisture load calculations and how humidity control can be added to HVAC designs for seven different types of commercial buildings. The course also covers the effects of different humidity levels on thermal comfort, corrosion, mold growth and airborne microorganisms-information which helps the owner and designer define the humidity control level that will be optimal for each application. If you need to understand the effects of humidity control as well as how to accomplish it, this course puts you on the fast track to such understanding. Attendees will receive a discount toward the purchase of the [Humidity Control Design Guide for Commercial and Institutional Buildings](#).

Lew Harriman, Instructor

[Register Here](#)

Complying with Requirements of ANSI/ASHRAE/IESNA Standard 62.1-2004

*Due to the popularity of this course,
it will be offered twice.*

Wednesday, October 24, 2007
1:00 p.m. to 4:00 p.m. EDT

Monday, November 19, 2007
1:00 p.m. to 4:00 p.m. EDT



Standard 62.1-2004, Ventilation for Acceptable Indoor Air Quality, contains many changes from previous versions. This standard incorporates more than 15 addenda. The methodology for calculating ventilation rates for buildings is fundamentally changed for the first time in fifteen years. The standard also contains new requirements for building components and building systems. This seminar gives an overview of the requirements of the current standard with emphasis on the new requirements. Explanation of how to use an available spreadsheet will be included as a closing exercise. Attendees will receive a discount on [Standard 62.1-2004 – Ventilation for Acceptable Indoor Air Quality](#) and the [Standard 62.1-2004 User's Manual](#).

Hoy Bohanon, Instructor

[Register Here](#)

Understanding and Designing Dedicated Outdoor Air Systems (DOAS)

Wednesday, October 31, 2007
1:00 p.m. to 4:00 p.m. EDT



This course presents some of the issues that point toward separate dedicated outdoor air systems (DOAS) and away from delivering the ventilation via single all-air variable air volume systems. The course also illustrates that once a shift in the design paradigm in favor of a separate DOAS has occurred, questions concerning the thermodynamic state of the delivered ventilation air arise. Some of the boundary conditions that impact the best state of the delivered ventilation air are addressed.

Stanley Mumma, Instructor

Register Here

[An Introduction to BACnet®](#)

**Wednesday, November 7, 2007
1:00 p.m. to 4:00 p.m. EDT**



This standard has changed the way that designers, engineers and building owners/operators can use and apply building systems, and opened a new world of opportunities for multi-vendor and multi-discipline interoperability and integration. In this course, Attendees learn the fundamental principles of BACnet as these relate to interoperability. The course helps attendees understand some of the elements required to successfully plan for BACnet and some of the complex issues that must be addressed to achieve interoperability. Attendees learn that interoperability covers a wide range of possible options, and how to simplify interoperability by defining specific areas where interoperability is required. Also discussed are the basic components of any multi-vendor or multi-discipline BACnet control systems, how different systems can be merged together using BACnet, and how BACnet facilitates the integration of older systems with BACnet-based systems. The course does not discuss specific manufacturers, or alternatives to BACnet or BACnet specification writing. Attendees will receive a discount toward the purchase of [ASHRAE Standard 135-2004 – BACnet](#).

David Fisher, Instructor

Register Here

[Introduction to Green Buildings and Sustainable Construction](#)

**Wednesday, November 14, 2007
1:00 p.m. to 4:00 p.m. EDT**



This course presents the basic principles related to sustainable construction and green buildings. Included in the course

is a review of the integrated approach to buildings and systems necessary to achieve green/sustainable buildings, developments, and projects. Key elements for success in achieving green projects will be covered, including the requirements of a popular national "green" rating system in the U.S. The course details what is green and what motivates green projects in today's market, it includes a review of case studies from a wide array of green building projects including residential developments, dormitories, supermarkets, warehouses, and office buildings. Attendees receive a discount toward the purchase of the new [ASHRAE GreenGuide, 2nd Edition](#).

Joy Altwies, Instructor

[Register Here](#)

2 Ways to Register

1. **Internet:** www.ashrae.org/onlinecourses
2. **Phone:** Call toll-free at 1-800-527-4723 (US and Canada) or 404-636-8400 (worldwide)

NOTE: You may register up to 24 hours prior to an online seminar. Course times are in Eastern US Time Zone.

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ASHRAE Publications

ASHRAE STANDARDS:

Standard 52.2-2007

Method of Testing General Ventilation Air-Cleaning Devices
for Removal Efficiency by Particle Size (ANSI Approved)

Product Code: 86143

Price: \$39 / ASHRAE Member Price: \$32

Standard 62.1-2007

Ventilation for Acceptable Indoor Air Quality (ANSI Approved)

Product Code: 86155

Price: \$65 / ASHRAE Member Price: \$52

Standard 62.2-2007

Ventilation and Acceptable Indoor Air Quality in
Low-Rise Residential Buildings (ANSI Approved)

Product Code: 86158

Price: \$39 / ASHRAE Member Price: \$32

Standard 90.2-2007

Energy Efficient Design of Low-Rise
Residential Buildings (ANSI Approved)

Product Code: 86239

Price: \$95 / ASHRAE Member Price: \$76



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