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 Dinner Meeting
March 15, 2007
Viscount Gort Hotel
1670 Portage Avenue

Winnipeg's New Air Terminal Building
Russell Lavitt, P.Eng., LEED AP

5:00 pm - Social Hour
6:00 pm - Dinner
7:00 pm – Winnipeg's New Air Terminal Building, Russell Lavitt, P.Eng., LEED AP

Overview

The new terminal building at the Winnipeg James Armstrong Richardson International Airport will be the focal piece of a renewed airport campus. The process through which the design was undertaken was unique given the scale of the project. The end result will be a highly efficient building that will likely be the first LEED certified airport in Canada. This presentation will not only discuss the unique mechanical systems, but will touch on how they were developed within a complex and multi-disciplinary design process.

Russell Lavitt, P.Eng., LEED AP is a Mechanical Engineer with SMS Engineering Ltd. Since 1998, he has been involved as designer and project manager on numerous projects in the Winnipeg area. In early 2004, he became involved in the Winnipeg James Armstrong Richardson International Airport redevelopment project and is Mechanical Engineer-of-Record for both the new Parkade and Air Terminal Building.

Russell holds both a Bachelor of Arts (Philosophy, Mathematics) and a Bachelor of Mechanical Engineering from the University of Manitoba, and is a LEED Accredited Professional. Russell, his wife Fran, and his son Oscar reside in Winnipeg, and are expecting a fourth member of the family in August.

President's Message – Stirling Walkes, P.Eng.

In our industry we live to deadlines. Some deadlines are very hard. For example, a contractor that does not submit his bid prior to a project closing date will not even get considered for a chance at the work for which he prepared his bid. If does win a contract but does not complete the project within the time allotted, he may face late completion penalties in addition to having an unhappy client.

There are soft deadlines, too. If you work late and so arrive home late, you probably still get supper. It might be cold followed by a healthy serving of cold shoulder for desert, but ….. If you fail to meet the soft deadline because you are facing a hard deadline, and those around you understand that you must meet your hard deadlines otherwise there won't be any supper, and if you communicated with them that your were at risk of missing the soft deadline because of the hard deadline, when you do get home, the supper and the shoulder might not be so cold. So, along with meeting our hard deadlines, we need to be good communicators if we want to succeed in our industry and always have hot suppers followed by sweet dreams.

Writing the President's Message has been a difficult soft deadline for me, probably because meeting the newsletter deadline requires me to use the artsy side of my brain, not the analytical side we engineers normally use. If Bert is telling me the truth, it has been a tough deadline for most other Chapter Presidents over the past dozen years. I have met another newsletter deadline, and with luck will go home to a warm supper and sweet dreams tonight.

ASHRAE Manitoba is an active supporter of the annual BEMM Conference and Exhibition. At the March Supper meeting, there will be a raffle for tickets for this years conference and exhibition to be held Wednesday, April 25th, 2007, The Victoria Inn, 1808 Wellington Avenue in Winnipeg. Two lucky participants in that draw will win admission to the BEMM Conference and Exhibition. Tickets will be $2 each or three for $5.

Hopefully we'll see you at the dinner meeting on March 15th.

Coming Events

Zen and the Art of Commissioning - Monday, March 19, 2007, noon to 1:30 p.m., Dalnavert Museum Visitors' Centre, 61 Carlton Street. Murray Guy, MBA, P.Eng., LEED™ AP, principal of Integrated Designs of Saskatoon will experiences and observations on sustainable building and commissioning within the context of a LEED™ project on the way to "enlightenment". Integrated Designs is commissioning agent for the Manitoba Hydro Downtown Office project.

$20 general admission, $10 with student ID, including lunch. Cash or cheque only. Sponsored by Manitoba Hydro. Space is limited. RSVP manitobachapter@cagbc.org to reserve your place.

ASHRAE BOG Meeting – Tuesday March 20, 2007 – Note date change to accommodate Spring Break. 7:30 AM at SMS, 770 Bradford Street, as per usual.

Manitoba Geothermal Conference - March 26 & 27, 2007**,** hosted by the Manitoba Geothermal Energy Alliance. Winnipeg,

Commissioning Green Buildings Seminar – Thursday, April 12, 2007 ASHRAE Manitoba is bringing ASHRAE Distinguished Lecturer Ronald Wilkinson from Dome-Tech Commissioning in New Jersey to Winnipeg to lead the seminar. Fees are $250 for ASHRAE Member and $300 for a non-member. See the attached brochure for details.

ASHRAE MB April Dinner Meeting – April 12, 2007 details to follow.

Indoor Environmental Design: Practical Solutions to Everyday Problems Broadcast/ Webcast - Wednesday, April 18, 2007. Specific solutions to the everyday challenges of achieving indoor environmental quality within real-world budget constraints will be presented by ASHRAE in a satellite broadcast/Webcast, from noon - 3 p.m., April 18. For details go to www.ashrae.org/iedbroadcast

BEMM Conference and Exhibition - Wednesday, April 25th, 2007, The Victoria Inn, 1808 Wellington Avenue in Winnipeg. Manitoba's premiere event focusing on energy efficiency and sustainable design in new and existing commercial and institutional buildings is seeking sponsors and exhibitors. Showcase your products and services to various private and public decision-makers who are seeking energy management and sustainable design solutions for their new and existing commercial buildings. For information, visit www.bemm.ca, or contact Dara Maternick, (204) 654-3995, dara@plannersplus.ca

Condensing Boilers and Furnaces

George Marchildon, P.Eng. presented data on gas consumption before and after boiler replacement in a number of Manitoba schools. The good news is that new boilers save energy relative to the boilers they replace and condensing boilers save significant amounts of energy. In all cases, it appears energy cost savings were sufficient to easily justify the incremental cost of choosing condensing boilers, typically resulting in a simple payback on the incremental costs of less than three years and often under two years.

For almost twenty years I have been keeping utility bills for my house, an old two storey on full basement, with a 700 sq. ft. footprint. Except for a bit of insulation in the attic, the house was uninsulated when I bought it and has since undergone extensive energy upgrades. After George's presentation, I analyzed my utility bills. Building envelope upgrades and tweaking the old heating system reduced gas consumption by about 45%. Furthermore, the house is much warmer during

cold weather and much cooler during hot weather. A couple of years ago I replaced the 40 year old gas furnace with a small condensing furnace and replaced the gas DHW tank with an electric tank. These changes reduced gas consumption by just over half. Electric use by the new DHW tank has not been detectable on my electric bill, probably because the new furnace fan uses less power than the old and since the change over I have been away from home more than before, so energy used for lighting and heating DHW (which is modest anyway because I live alone) are down. Replacing my avocado coloured fridge a few years ago reduced electric consumption 2.5 kWh/day.

Whereas energy upgrades to my house and recent lifestyle choices have greatly reduced my carbon footprint, living alone and driving cars and motorcycles 35,000 to 50,000 km per year ensures that I am still doing much more than my fair share when it comes to producing green house gases.

Russell Lavitt Appointed to ASHRAE Regional Board

Russell Lavitt joined ASHRAE in 1995 as a student member while studying mechanical engineering at the University of Manitoba. Upon graduation, he became a full member and became involved at the chapter level with the Chapter Board of Governors in 1999. He has served as Secretary, Vice-President, President-Elect, President, Research Promotions Chair, Webpage Editor, and presently serves the Manitoba Chapter as Technology Transfer Chair. Russell recently has been appointed to a three year term as Regional Vice Chair of Membership for ASHRAE Region XI. Region XI comprises chapters and members in Manitoba & Northwestern Ontario, Saskatchewan, Alberta, British Columbia, Alaska, Washington State, and Oregon.

ASHRAE has three levels of administration, Chapter, Region and Society. We know those active in our Chapter's administration because they are among us. They organize Chapter events such as the monthly supper meetings and the Commissioning Green Buildings seminar scheduled for April 12. We are aware of the administration at Society level because they manage our Society memberships, deliver the ASHRAE Journal and handbooks and organize the major ASHRAE conferences such as the recent Winter Meeting in Dallas and events like the upcoming satellite broadcasts/webcast on Indoor Air Quality (see "Coming Events" for detail). Between the Chapters and Society is Region, the least visible level of ASHRAE administration. People active as ASHRAE Regional officers are the communication link between Chapters and Society, ensuring that those operating Society are apprised of Chapter concerns, and ensuring that Chapters are aware of Society's policies and objectives.

Notes from the Winter Meeting in Dallas, January 2007

In Seminar 23, John Hill said SEER ratings significantly exceed actual system performance. Field performance of low SEER (e.g., 10) equipment suggests a real world SEER of about half the rated SEER. Higher SEER equipment fares better (a rated 12 typically pans out to a real world 9). On the same note, Steve Kavanaugh said heat pump rating points include a lot more easy operating conditions than are actually met in real installations, hence they over rate actual performance. SHR (humidity removal) suffers with high SEER equipment and especially with two speed equipment.

In Seminar 32, Michael Brandemuehl said that using handbooks values for plug loads results in a significant overestimation of cooling loads, and based on this overestimation, designers often unnecessarily rule out displacement ventilation and natural ventilation, which are low energy use approaches that do not deal well with big loads.

Steve Kavanaugh has some energy loss evaluation tools on his website at U Alabama, Tuscaloosa. He says system energy losses (kW/ton) with water based radiant cooling systems are in the 1% to 4% range. With air systems or chilled water and air systems, you loose up to 40% of energy relative to advertised kW/T. "Parasitic losses destroy system performance."

Seminar 38 looked at radiant systems. Tom Meyer noted that the location of radiant heat piping can easily be found using an IR camera. Alternatively, turn the water temperature up and mop the floor. The floor will dry first above the pipes. While there are arguments in favour of installing radiant heat in walls, avoid placing radiant panels where people hang pictures or install chair railings, etc.

Peter Simmonds recommended installing sensors that turn off radiant cooling to a zone whenever a window in that zone is open. This will reduce the problem of condensation occurring on the cooling panels. Further, he suggested using radiant cooling and VAV together, radiant cooling to deal with space cooling loads and the VAV to deal with ventilation loads.

Tim McGinn noted that radiant cooling can't deal with loads greater than 40 w/m2. Radiant cooling is OK for sensible cooling but not for humidity control, especially with floor slabs. Radiant cooling greatly reduces airflows needed thus duct sizes and associated noise. In concrete construction, radiant heating can compress construction time by accelerating concrete dry times.

Tim stressed that for integrated design to work, the mechanical designer has to be actively/aggressively inputting at an early stage in the project. Don't sit quietly and wait to be asked for your thoughts. Lead, don't follow.

Faster Horses at the ASHRAE Winter Meeting in Dallas

Someone stressing that radical new ways of looking at old problems are needed to address the energy and environmental problems we face today, used a quote attributed to Henry Ford.

"If I had asked people what they wanted, they would have said 'Faster horses'."

Tom T Hall wasn't at the winter meeting nor did I hear anyone quote him there, but he has a song called "Faster Horses" (aka "The Cowboy and the Poet"). A young idealist seeking wisdom asks an old cowboy philosopher for some insights into the meaning and mysteries of life. The old cowboy responds on the secrets to true happiness…… "it's faster horses, younger women, older whiskey, and more money".

Fundamentals of HVAC Systems – a book by Robert McDowall, P.Eng.

ASHRAE's new eLearning course *Fundamentals of Heating, Ventilation, and Air-Conditioning Systems* (IP and SI versions) were written by our Robert McDowall. This introduction to HVAC systems is intended for recent engineering graduates working in the industry, experienced engineers entering HVAC&R from another engineering area, architects, technicians and construction or building management professionals wanting to increase their knowledge of HVAC systems.

The course is an interactive, online, on-demand e-Learning system. Students read a section of the course reader then work through a set of on-line screens with additional and reinforcing content. Students then complete questions to test their knowledge. Wrong answers are explained to provide feedback. At the end of each module there is an exam.

The course reader is provided as an online text and is available in hard copy. The course covers how HVAC systems function in controlling temperature, moisture content, air quality and air circulation in a conditioned space. Topics include: objectives to be achieved by a system in terms of environmental control; description of a system including primary equipment, means of distribution, space and load determination and operating strategy; basic functions of components that form HVAC systems; layout and functioning of common HVAC systems; and strategies for operating and their means of control.

Producing the course was a huge task which has had Robert wondering why he agreed to do a second one, Controls. His efforts have been rewarded with the knowledge that the *Fundamentals of HVAC Systems* course has an unbeatable 100% of the students saying they were satisfied and 100% would recommend ASHRAE courses to others. The course is $US295 for ASHRAE members plus, an optional, $US45 for a hard copy of the course reader.

The second course available is *Fundamentals of Standard 90.1.*The course uses *Standard 90.1-2004, Energy Standard for Buildings Except Low-Rise Residential Buildings* and its associated *User Manual* as the course readers. Standard 90.1 is a Code requirement in the USA but is only important in Canada when buildings are certified under the, increasingly popular, LEED program.

The next two courses expected on the market are the *Application of Standard 62.1* and *Fundamentals of Controls*, followed by *Refrigeration* and *Fundamentals of Psychrometrics*. Robert is the author for the Controls course which is expected out later this year.

ASHRAE is also considering courses in Business Management, Building Operation, Life Cycle Operation and Maintenance, Energy Simulation as it moves toward providing courses for certification.

ASHRAE Research Promotion Update - Peter Gryc, P.Eng.

The 2006/07 ASHRE Manitoba Research and Promotion campaign is more than halfway to the Chapter's goal of raising $7,900. Our Research and Promotion Committee will be contacting you soon to ask you for a donation for ASHRAE Research. Below is a list of donors at the time the newsletter went to press.

2006 -2007 Research Promotion Contributors

Major Contributors

Tom Beggs Agencies	**$1000**
BEMM	**$1000**
Midwest Engineering Ltd.	**$1000**

Honour Roll and Other Contributors

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

M2 Engineering*	Dieter Bartel*	Bert Phillips*
HydronAire*	Peter Gryc*	David Stones*
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ASHRAE Learning Institute

Spring 2007 Online Seminar Series

REGISTER EARLY AND SAVE!

Before March 9: $135 ASHRAE Member / $203 Non-member
After March 9: $150 ASHRAE Member / $225 Non-member

2 WAYS TO REGISTER

Internet: www.ashrae.org/onlinecourse
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. Courses are in US Eastern Standard Time.

Earn 3 PDH / .3 CEU or 3 AIA LU credits for each seminar

Complying with Requirements of ASHRAE Standard 62.1-2004*
Wednesday, Mar 21 – 1:00 p.m. to 4:00 p.m.
Wednesday, Apr 11 – 1:00 p.m. to 4:00 p.m.

Introduction to Green Buildings and

Understanding & Designing Dedicated Outdoor Air Systems
Wednesday, Apr 18 – 1:00 p.m. to 4:00 p.m.

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

Products from ASHRAE

A leader in HVAC&R technology, ASHRAE publications cover topics that impact every facet of the environment both indoors and out.

Recent Publications from ASHRAE!

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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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Visit ASHRAE at www.ashrae.org