Engineering for the World We Live In

Chapter President’s Message

Jonathan Bushman

Hello everyone! We have an exciting meeting coming up in October. It is Membership Promotion Night, Student Night, and what looks like a good presentation to boot. Be aware that this month’s meeting takes place on Wednesday to accommodate the speaker’s schedule.

I would like to invite everyone to invite others that they think would be interested in this ASHRAE meeting. Membership Promotion Night means that the meeting cost is specially reduced for non-members. For students, the meeting price is only $5. That’s only $5 for supper (which I consider to be a very good meal, given the talent of the Park Town catering staff), a technical presentation, and a chance to meet contacts, friends, and maybe potential employers. ASHRAE exists to share HVAC&R (Heating, Ventilating, Air-Conditioning, and Refrigerating) knowledge and make contacts in the industry, so come and join us.

Our speaker is Tom Watson, who is an ASHRAE Fellow and the international-level ASHRAE treasurer. (He was also an ASHRAE vice president last year.) Tom will be talking about ANSI/ASHRAE/USGBC/IES standard 189.1 “Standard for the Design of High-Performance, Green Buildings Except Low-Rise Residential Buildings”. This standard strikes me as being one of the coolest things to come out of ASHRAE ever. It is full of environment and energy saving ideas like reusing trees cut down at the construction site for wood paneling, looking at how heat and light coming from the new building will affect the surroundings and neighbours, reusing cooling water (as opposed to having “once-through” cooling systems), using low-flow plumbing fixtures, increasing energy efficiency beyond ASHRAE standard 90.1, using native vegetation and considering how landscaping will shade the building, considering building material sources (e.g. recycled materials, local materials, etc.), erosion control, measuring water and energy use, and having a plan for operation and maintenance that is communicated to the building’s owner. The American Society of Heating, Refrigerating, and Air-conditioning Engineers (ASHRAE), the U.S. Green Building Council (USGBC), and the Illuminating Engineering Society of North America (IESNA) worked together on Standard 189.1, so that the different experts could look at the while picture. I am looking forward to this presentation.

For more information, please check out our website (www.ashraesaskatoon.ca) or ask me if you have questions about ASHRAE.

Evening Itinerary

- 5:30 - 6:00 Cash Bar
- 6:00 - 7:00 Supper
- 7:00 - 7:15 Meeting
- 7:15 - 8:00 Presentation

Chapter Programs

Jonathan Bushman

ASHRAE’s October meeting will be on Wednesday, October 13, 2010, at 5:30 pm, at the Park Town Hotel. Please RSVP to Jonathan Bushman (jbushman@marchconsulting.com or 651-6372) by noon on Friday, October 8. We need replies by then so we can plan things properly.
Recent Announcements

**Net Zero Home on Display at WDM October 26**

VerEco Homes Inc and the Western Development Museum (WDM) have announced that the VerEco Home will be on display at the Saskatoon branch of WDM from October, 2010 to August 2011. The home has a projected net zero energy consumption and features R100 attic and R60 wall insulation.

The primary objective of the exhibit will be to educate the people of Saskatchewan that green homes can be built in an economical way. Education programs will include four 50 minute general tours per day, school programs and a weekly Expert Series with discussions on specific technologies used in the design and construction of the home.

**Lecture and Tour planned for U of S HVAC Design Students**

As part of ASHRAE’s objective to support students’ studies in HVAC, the Saskatoon Chapter will be giving a lecture and tour to this fall’s HVAC Design class at the U of S on November 29th. Mike Nemeth will be delivering the lecture, tentatively, on “From design to build: the process for HVAC systems”. Chris Conley has been assisting, but anyone else is encouraged to lend a hand or give ideas. Email Mike at studentactivities@ashraesaskatoon.ca.

The lecture and tour aims to provide practical insight from the HVAC and construction industry, giving the students a visual to go along with their theoretical studies. The tour building has yet to be chosen.

**Student Activities**

**Michael Nemeth**

October’s meeting is our first of two student nights for this season. We will make an extra effort to encourage student attendance along with the very-affordable $5 dinner which students enjoy at any meeting.

This month’s topic is ASHRAE’s new green building standard, Standard 189. Anyone interested in alternative energy and sustainable design should find this very interesting. It’s exciting to be involved in an industry that embraces sustainable design more and more.

The speaker, Tom Watson, has many years of experience in the HVAC field and is quite accomplished (see bio above).

These meetings provide an ideal opportunity for students to learn about our industry and meet potential employers in a relaxed and informal setting.

For more information see the [Info for Students and Young Engineers page](#).

**Energy Answers**

**Rob Dumont**

*How much insulation should you put into a new house?*

There are several possible answers to that question. A lot depends on your estimate of the future cost of energy and on your concern for the environment.

Tom Watson, ASHRAE Fellow and Treasurer, will be speaking to us at the October meeting. Tom will probably be speaking on the new ASHRAE green building standard (189.1) and some discussion of ASHRAE at the national level. November is yet TBA and December is our Past President’s Social Night. ASHRAE President, Lynn Bellenger, will be coming to Saskatoon in January 2011.

**October Speaker’s Bio:**

The following is a summary of Tom Watson’s professional experience:

- **Joined McQuay’s Staunton Facility in 1972 after serving in the US Army.**
- **1972-1974 - Product Engineer - Responsible for both reciprocating and centrifugal chillers.**

- **Worked on pressure vessel codes, electrical controls, and refrigerant controls.**
  - **1974-1980 - Senior Design Engineer - Worked on Research and Development of Centrifugal Compressors. The compressor work included rotor dynamics, lubrication, bearing design, and compressor aerodynamics. Also worked on development of solid state controls and later microprocessor controls for centrifugal units.**
  - **1980-1982 - Manager of Product Engineering - Managed Design Engineers and Manufacturing Engineers for chillers.**
  - **1984-1996 - Engineering Manager - Responsible for all Engineering and Laboratory functions in the Staunton facility.**
  - **1997 - Present - Chief Engineer – Primarily involved in Advance Technology and Reliability Engineering.**

**Committees:**

- Current Member and Former Chair of ASHRAE SPPC - 15 Safety Code for Mechanical Refrigeration 11/90 - Present
- Former Member of ASHRAE SPC - 34 Number Designation and Safety Classification of Refrigerants.
- **Previous Chair of ASHRAE Standards Committee- 07/02 – 07/03**
- **Member of ASHRAE Standards Committee. 1996 - 2003**
- **Former Chair and member of ASHRAE TEC3.1 Refrigerants and Secondary Coolants. 1999-2001**
- **Member of TC 8.2 – Centrifugal Machines, 1972 – Present**
- **Member of TC 1.11 – Electric Motors and Motor Control, Present**
- **Former Chair of ASHRAE Standard Advisory Committee**
- **Former Member & Past Chair of ARI 550/590 Engineering Committee for Liquid Chillers. 1975 - Present**
- **Member of ASHRAE Journal & Insights Committee 7/03 – 6/04**
- **Member of ISO WG-9 - Liquid-Chilling Packages Using the Vapour Compression Cycle – Testing and Performance 1999 to Present**
- **Recently Chair of ASHRAE Technology Council**
- **Society Treasurer & Chair of ASHRAE Finance Committee**
- **Recently Chair of AHRI Research & Technology Committee**
- **ASHRAE Board of Directors, Member – Treasurer**
  - **Holder of five patents.**
  - **Licensed Professional Engineer in the State of Virginia.**

- **Received the R.C. Schulze Distinguished Service Award for 2000 from ARI.**
- **Received ASHRAE Distinguished Service Award – 2002**
- **Received ASHRAE Standards Achievement Award – 2004**
- **ASHRAE Fellow**
- **Received ASHRAE Exceptional Service Award - 2010**
Putting enough insulation in a house to result in a net zero house results in a lot of insulation in Canadian houses. R100 attics, for instance, have been used in some net zero houses in Edmonton and Saskatoon. Although this approach may seem radical, consider that in the United Kingdom that all new houses starting in 2016 will have to be net zero in energy consumption.

California has plans to make all new housing as of 2020 in the net zero annual energy category.

In our house in Saskatoon built in 1992, we put R80 insulation in the attic, R60 in the walls and R35 in the basement floor. We also used triple glazed windows with two low e coatings, argon gas, and low conductivity spacer bars. I have no regrets about making this investment.

Gary Proskiw, a seasoned mechanical engineer based in Winnipeg, recently completed a study with Anil Parekh of NRCan regarding the appropriate insulation levels to use in Net Zero Energy houses in Canada. They looked at the appropriate insulation levels to use for Net Zero Energy houses in four climate areas in Canada—Vancouver, Winnipeg, Toronto and Yellowknife.

<table>
<thead>
<tr>
<th>Location</th>
<th>Recommended Attic Insulation Levels</th>
<th>R value (hr·ft²·°F/BTU)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yellowknife</td>
<td>R80</td>
<td>80+</td>
</tr>
<tr>
<td>Winnipeg</td>
<td>R60</td>
<td>80</td>
</tr>
<tr>
<td>Toronto</td>
<td>R35</td>
<td>60 to 80</td>
</tr>
<tr>
<td>Vancouver</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

RSI 1 = R 5.678

As expected, somewhat higher insulation levels are recommended for colder locations. These insulation levels were chosen by using the following criterion:

Here is a quote from the Proskiw and Parekh paper:

“To improve a building’s energy performance, NZEH designers have two options at their disposal - various types of conservation measures and renewable energy systems. Conservation measures have several advantages: they are well understood, generally have an established track record of performance, are relatively economic and are (for the most part) durable. They can also be applied to virtually any house without major modifications to the design or impact on the occupant’s lifestyle. Adding moderate levels of conservation measures tends to initially produce significant savings at modest incremental cost. However, as the level of conservation increases, the rate of further savings declines and the costs increase. This trend continues until a point is reached at which the cost of saving energy using conservation is greater than the cost of producing new energy from renewables. At this point, the designer should direct further energy investments into renewable energy sources, even though their cost may be high since they are still less expensive than the competing conservation alternatives.”

This same approach was used by the designers of the Riverdale Net Zero Home in Edmonton, who ended up with similar insulation levels. The first time that I heard of this rigorous approach (adding insulation until the cost of energy saved was equal to the cost of the energy from renewable energy (photovoltaics)) was at a design charrette for the Riverdale Net Zero Home.

The one weakness with this approach is that while insulation, properly installed, has a nearly infinite life, photovoltaics, inverters and solar thermal collectors do not. Thus, if anything, one would likely want to put some more insulation than those levels indicated in the above table.

The slightly more correct economic approach would be to choose the insulation levels indicated in the above table.

Membership Promotion

Ryan MacGillivray

Please note the change of our next ASHRAE meeting, on WEDNESDAY, October 13th. This will be a Membership Promotion Night. Meal prices will be reduced to $10 for non-ASHRAE Saskatoon members. Feel free to invite your friends and colleagues to join us for a look at what ASHRAE Saskatoon has to offer.

We will be publishing a roster again this year, based on your member information with ASHRAE. Please ensure your address and company information is correct. If you need any help with this, please let me know.

I would like to welcome the following people who have joined ASHRAE as new members: Whitney Cole, Kevin Blezy, Michael Dempsey, Tyson Smith, Kevin Lee, David Tyreman, and Jason Schultz. If you know these members, please invite them to come out to our meetings, and introduce them to everyone else. If you meet them, make them feel welcome at our meetings.

We also have a few people who are delinquent in paying their membership. I will be contacting these members to give a friendly reminder to renew. If you have received a membership renewal notice in the last few months, please check if you have paid. If you are planning on not renewing, please let me know the reason.

The role of Membership Promotion is to ensure you are getting your money's worth of your membership in ASHRAE. ASHRAE is here because of you, and we are here for you. If there is anything with which you would like some help, or member benefits you would like to see, please let me know.

Thank you, and I hope to see you at the meeting.

Company Bios

ASHRAE is all about making contacts in the HVAC&R industry and getting to know the people and companies in your area. To further this, ASHRAE Saskatoon has decided that companies that sponsored the roster can submit brief write-ups on their companies to be published in the newsletter. This should allow readers to know a little of the history of the company and the role
they play in ASHRAE and the HVAC&R field in Saskatoon. If your company has supported the ASHRAE Saskatoon roster and would like your company’s brief write-up published in our newsletter, then please contact us.

Daniels-Wingerak Engineering Ltd.

Daniels-Wingerak Engineering Ltd. (with its predecessor firm, Daniels Engineering Ltd.) has been serving the building mechanical industry in Saskatoon since 1980. John Daniels and David Colquhoun formed Daniels Engineering in 1980. Darren Wingerak and Bob Daniels joined the Firm in 1982 and 1987 respectively. In 1997 Darren and Bob became majority shareholders and the firm name was changed to Daniels-Wingerak Engineering Ltd. The Firm now has sixteen employees, and is the largest locally owned building mechanical consulting firm in Saskatchewan, working in the fields of heating, ventilation, plumbing, fire protection systems, controls, and building automation systems. Recent achievements include the Premier’s Design Award of Merit and CES Brian Eckel Award of Excellence for the design of the Cameco Office Building. The design for the Cameco Office building also won the ASHRAE Region XI design award for best commercial building, and the Ralph Robson Plaque best overall design. The design for the Shaw Centre (the new City of Saskatoon leisure centre that adjoins two high schools) has won the ASHRAE Region XI design award for best institutional building as well as a CES Brian Eckel Award of Excellence.

2. Green Option. Select insulation levels to match the price of certified “green electricity” from your local utility.

In Saskatchewan, for example, one can purchased certified green electricity for an incremental cost of 2.5 cents per kilowatt-hour. Certified green electricity in Saskatchewan comes from Wind generation. Conventional grid electricity is about 11 cents per kWh.

3. Model National Energy Code Option

Back in the mid-90s, a model national energy code for Canada was developed. At the present time, the code is being rewritten. Hopefully the new code will more seriously address climate change and the peak oil issue than the last edition.

4. Local jurisdiction Minimum Code Values

A number of jurisdictions in Canada now mandate minimum insulation standards for new housing, and others just leave it up to the local market.

When serious national objectives are at stake, Canada in the past has not “left it up to the local market.” We now have national regulations on automobile fuel efficiency and appliance energy use. I see no reason why buildings should be exempt.

Canada will seriously miss its Kyoto target of a 6% reduction in energy use compared with 1990, in large part because of an absence of initiatives by the federal government.

Nicholas Werth recently did a study for the UK government about climate change. He concluded that a carbon tax of $200 US per tonne of carbon dioxide emissions would be needed to seriously reduce greenhouse gas emissions. At present in Europe, carbon taxes are trading at about $20 per tonne. A ten-fold increase in the charges will be needed to bring about needed reductions in fossil fuel use.

Increased insulation levels are a simple, proven, and relatively inexpensive way to address carbon emissions and greenhouse gas emissions. Let’s get on with it.

References:

OPTIMIZATION OF NET ZERO ENERGY HOUSES
By Gary Proskiw, P. Eng., Proskiw Engineering Ltd. (pel@mts.net; 204 633-1107)
Anil Parekh, P. Eng., Natural Resources Canada BEST 2 - Energy Efficiency - Session EE3-3

Meeting Details

The ASHRAE Saskatoon meetings are almost always held at the Park Town Hotel, on the second Tuesday of the month. The Park Town Hotel is located at 924 Spadina Crescent East, at the corner of Spadina and 25th Street, right by the University Bridge. There are bus stops at 25th Street and Spadina, with six bus routes stopping there (click “Directions” on the map and then select “by public transit”). Free parking is available in the hotel main lot and the first 2 levels of the parkade.

Park Town Hotel

PAOE Points

PAOE stands for Presidential Awards of Excellence and PAOE points encourage chapters to work towards the goals of the society and to some degree the current society president. If you are involved in any of the following activities, please send an e-mail to vicepresident@ashraesaskatoon.ca with the details so they can be included in our PAOE reporting:

- participating in a K-12 student activity
- mentor student design Team
- participation in National Engineering Week Activity
- hiring an Engineering College or Tech School Student (part-time or summer intern)
- renewed an ASHRAE certification (e.g. High-Performance Building Design Professional)
- won an ASHRAE award (e.g. Technology Award)
- nominated someone for an award or as an ASHRAE Fellow
- published an article in the ASHRAE Journal, Handbook, or other publication
- attending the ASHRAE Winter or Annual Meetings this year

Meeting Details

The ASHRAE Saskatoon meetings are almost always held at the Park Town Hotel, on the second Tuesday of the month. The Park Town Hotel is located at 924 Spadina Crescent East, at the corner of Spadina and 25th Street, right by the University Bridge. There are bus stops at 25th Street and Spadina, with six bus routes stopping there (click “Directions” on the map and then select “by public transit”). Free parking is available in the hotel main lot and the first 2 levels of the parkade.
## Current Board of Governors

<table>
<thead>
<tr>
<th>Position</th>
<th>Name</th>
<th>Email</th>
<th>Phone Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>President</td>
<td>Jonathan Bushman</td>
<td>president</td>
<td>306 651 6372</td>
</tr>
<tr>
<td>Vice President</td>
<td>Andrew Thomson</td>
<td>vicepresident</td>
<td>306 667 2513</td>
</tr>
<tr>
<td>Treasurer</td>
<td>Chris Watt</td>
<td>treasurer</td>
<td>306 931 4773</td>
</tr>
<tr>
<td>Secretary</td>
<td>Brent Wolfater</td>
<td>secretary</td>
<td>306 955 3300</td>
</tr>
<tr>
<td>Research Promotion</td>
<td>Chris Conley</td>
<td>research</td>
<td>306 477 0678</td>
</tr>
<tr>
<td>Membership Promotion</td>
<td>Ryan MacGillivray</td>
<td>membership</td>
<td>306 477 0678</td>
</tr>
<tr>
<td>Student Activities</td>
<td>Michael Nemeth</td>
<td>studentactivities</td>
<td>306 477 0678</td>
</tr>
<tr>
<td>Historian</td>
<td>Jack Scott</td>
<td>history</td>
<td>306 931 4773</td>
</tr>
<tr>
<td>CTTC</td>
<td>Blake Erb</td>
<td>cttc</td>
<td>306 242 3663</td>
</tr>
<tr>
<td>Refrigeration</td>
<td>Manfred Gerber</td>
<td>refrigeration</td>
<td>306 242 3663</td>
</tr>
<tr>
<td>Webmaster</td>
<td>Michael Nemeth</td>
<td>admin</td>
<td>306 477 0678</td>
</tr>
</tbody>
</table>

If you wish to unsubscribe please email admin@ashraesaskatoon.ca.

This document describes the activities of the Saskatoon Chapter of the American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc. (ASHRAE). It does not present official positions of the Society nor reflect Society policy. ASHRAE is not responsible for this content. To learn more about ASHRAE activities on an international level, contact the ASHRAE home page at http://www.ashrae.org

©2010, ASHRAE Chapter 102
Saskatoon