POWUr NEWS

Saskatoon Chapter News

Februarv 28. 2005

Meeting Notice

Tuesday
March 8, 2004

@ The WILLOW'S Golf & Country Club
382 Cartwright Street

Speaker: Carl N. Lawson

Topic: Commissioning as Usual

5:30 - 6:00	Cash Bar
6:00 - 6:45	Supper
6:45 - 7:15	Chapter Meeting
7:30 - 8:30	Dinner Speaker

AMERICAN SOCIETY OF HEATING, REFRIGERATING, AND AIR-CONDITIONING ENGINEERS

ASHRAE SASKATOON

ASHRAE
Saskatoon
P.O Box 7043
Saskatoon SK
S7K 4J1

Meeting Topic Details:

With the commissioning process now being accepted by owners and engineers it has become an avenue where owners are seeing a return on their investment, due to the fact that commissioning is an investment. Owners are seeing their facilities operate as they anticipated and facility occupancy is staying for the occupants are feeling very good about the comfort and the overall operation and cleanliness of the facility. Owners are seeing a reduction in energy cost and operation cost even though the initial price may a few percentage point more.

Funspiel

Thanks to all who participated in the local Funspiel on February 5th. We had five teams (three were short 1 player each) playing for the coveted ASHRAE Saskatoon Chapter Trophy, donated by Saskatoon Boiler Manufacturing Company Ltd.

This year the team who's names go on the trophy are: Doug Freeman (skip), Greg Scrivener (third), Elie Lambert (second) and Dean Johnson (lead).

Congratulations to the winners and we'll look forward to doing it again next year.

CARL N. LAWSON
PWI Commissioning Services
Durham, NC

Carl N. Lawson is a Commissioning Authority for PWI Commissioning Services. Mr. Lawson has been involved in the ASHRAE Commissioning Process since 1984 and has remained active on the respective committees since that time. He has been involved in the commissioning process since 1962 when it was called "Total Quality Management" Over his career he has been involved in design, construction and owner representative. Prior to joining PWI, he was responsible for the commissioning process at Duke University Medical Center.

He has commissioned hospitals, medical clinics, prison laboratories, high tech facilities, medical office buildings, and office buildings projects in the U.S. and abroad. He has been responsible for developing a large number of the protocols that used today in the commissioning industry. Mr. Lawson is a pioneer in the commissioning industry and a frequent lecturer on the process. In 2000 he was awarded the Benner Award for his dedication to the commissioning process. He has also received the ASHRAE Distinguished Service Award. From 1984 to 2000, he taught the Commissioning Course at the University of Wisconsin and now an instructor for the Commissioning Course taught by the Building Commissioning Association.

Mr. Lawson has been a contributor to three books; *Indoor Air Quality* published by AEE, *The HVAC Design Process* published by ASHRAE, and the latest, *The Hospital and Clinic Design Guide*, published by ASHRAE. He has also published numerous articles in the *ASHRAE Journal* and presented numerous papers and seminars at the ASHRAE Annual and winter meetings.

Mr. Lawson is an ASHRAE member, a member of the Handbook Committee, and Chair of Committee for the ASHRAE Position Document on Mold and Mildew. He is a member of GPC-1, HVAC Commissioning, and a member of TC 7.12, Building Commissioning. He has also served as a member of the Standards, Program, Journal and Insights, and Special Publications Committees.

LECTURE TOPICS:

Commissioning as Usual

This talk explains the history of Commissioning, where it came from, and where it is going. We will discuss why you can't afford not to do commissioning, the business of commissioning, how to get started in the business, and some of the processes that must be done along the way. After exploring the area of the concept, the evaluation phase will be discussed and explained in detail. We will discuss state-of-the-art systems from a critical perspective. Through an analysis of the deficiencies in the performance and economic parameters, we will look at the theory of operation and maintenance and how commissioning will benefit those areas.

Operation and Maintenance of HVAC Systems for Improved Comfort and Air Quality

Indoor air quality is of increasing concern as society redefines the needs of the indoor environment. This talk presents a new perspective on the topic, starting with the proper preventative program and how to reduce the opportunity of bad indoor air quality relating from a proper maintenance program. We will look at the location of outside air intakes, air-handling systems, cooling towers and other areas.

The Ethics and the Economics of Commissioning

This talk explores the Ethics and Economics of Commissioning and the failures that can occur due to ethics and economical reasoning from selective individuals. We will look at why it is necessary that a party who designs the systems is not the party who commissions it. We will look at the possibility of Life Cycle Costing and how it benefits the owner. We will also discuss how commissioning can benchmark certain areas of the facility for future use in design plus operation and maintenance.

3/1/04

Membership News

Previous Meeting Attendance: Many thanks to those who attended the February 2005 Local Chapter meeting and speaker. This was a combined membership promotion night and student night, which was well attended. Many thanks to our guest speaker, Ben Voss with Clear-Green Environmental Inc. who presented us with an interesting topic on electrical co-generation. Those in attendance were:

Bob Daniels	Ward Stene	Grant Roming	Ryan MacGillivray	Kirk Cambell
Keith Lehne	Melissa Boehm	Doug Freeman	David Flamand	Elie Lambert
Keith Morson	Greg Scrivener	Jack Scott	Dean Johnson	Paul Khanna
Jeff Nordquist	Rob Kinar	Norm Hain	Reg Hofmann	Ben Voss
Myles Bantle	Jeff Frie	Mike Osborn	Travis Spokes	Jocelyn Poltier
Onile Finnestad	Kyle Spenst	Chris Conley	Travis Kravshar	Joshoa Bashforth
Erik McJannet	Amanda Weitzel	Adam Preymack	Craig McCallum	Quinn Wismen
Cory Peavie	Mark Loyns			

Rosters: Saskatoon Chapter 2004-2005 rosters are available for pick-up at the local meetings

Member Upgrades: A reminder to those who received the member upgrade package, please complete and return to update your membership grade.

Local Member Benefits: As you may or may not be aware, the local chapter has purchased a number of ASHRAE Standards and Publications. These documents will be kept at the SIAST Kelsey Campus Library. All local dues paying members will receive a SIAST library card, which will entitle you to checkout any of the books from the library. A list of these standards and publications will be on our website in the near future.

Name Tags: New nametags have been completed; if yours needs to be updated please let me know.

Web Site: The web site is now available and I am in the process of updating the content on the pages. The home page for the Saskatoon Chapter of ASHRAE is located at the following address: http://www.saskatoon.ashraechapters.org

Jeff A. Frie A.Sc.T.
Membership Promotion Chairperson

Energy Answers

Rob Dumont

Nowhere have I read that humidity in the air affects the insulation value of building materials nor the annual cost to heat my house. Yet from experience, we wet coasters (residents of Vancouver) have learned that we must dress warmer when it is damp and cool than our prairie cousins must dress when they are outside in the dry and cold outdoors. Why is it that clothes are affected, but buildings and building insulation materials are not?
Rob, can you help us webbed footed folks understand this apparent inconsistency?

David Hill

For help in answering this question, I went to Dr. Carey Simonson of the University of Saskatchewan Mechanical Engineering Department. Carey is certainly one of the most knowledgeable researchers in the world in this area.
Here was my question to Carey:
Does the thermal conductivity of air increase significantly with increased relative or absolute humidity? (Or is it that clothing that gets damp must evaporate water initially to provide its proper insulating value?)

Answer:
The thermal conductivity of air changes very little with increased humidity. Changing the relative humidity from 0% to 100% RH at 35C, changes the thermal conductivity of air by less than 1% (in fact it decreases with increasing RH). As you note, evaporation will cause cooling and damp clothing will have a higher thermal conductivity than dry clothing. One thing of interest is that when it is cold outside the RH will nearly always be close to 100% RH. In my opinion, the "damp cold" could be due to two factors:

1) If houses are more humid in a damper climate, the clothes will have more moisture, which will reduce their insulating value and also result in more evaporation when a person goes outdoors.
2) The RH could also be greater than 100% (water/ice droplets in the air) due to wind off a nearby lake or ocean.

[Rob Dumont again. When I moved from Vancouver to Saskatoon back in 1970, I kept the same winter coat. I did, however, get some storm cuffs added to the sleeves of that coat to prevent air blowing up my arms.]

What energy efficiency retrofit measures, in your opinion, provide the most financially attractive rates of return?

Let me begin by discussing rates of return. A survey of Canadians done for Natural Resources Canada some years ago suggested that the average Canadian wanted a 20% annual rate of return on energy efficiency measures; in other words, on a $500 investment they want an annual savings of $100. Put another way, the $500 investment would be paid back in five years. This is a very high rate of return.
For comparison, let's look at the actual returns that people have been getting from other relatively safe investments such as bonds, stocks and GICs.

Here are the longer term returns for the past 15 years for typical Canadian investments expressed as compound annual rates of return:

Canadian Bonds–Average Canadian Mutual Fund-- 8.34%
Canadian Stocks–Average Canadian Stock Fund-- 8.05%
Guaranteed Investment Certificates-- 6.4%

Source: Globe and Mail, Returns for the 15 year period ending November 30, 2003

(The actual returns that investors get from Bond and Stock mutual funds are even lower than those quoted above, as the above figures represent only the surviving funds–at least 1/4 of the funds have folded over that 15 years, usually because of poor performance. Add on purchase fees for mutual funds, and the foolish tendency of mutual fund buyers to market time and buy last year's winners, and the actual returns that mutual fund investors achieve are more in the range of a few percent per year. A study by the Dalbar Company in the United States carefully documented the poor returns that the average investor achieved from mutual funds.)

There is a disconnect here. People want 20% rates of return on energy efficiency, and yet must be content with returns in the 3 to 9% range from other safe investments.

My own perspective on investing is that if you can make the long term rate of return of the markets you are doing well. (Hint: Buy and hold index funds with management expense ratios less than about 0.75% per year.)

I apply the same logic to investments in energy efficiency. I'm happy if I can make 6% per year on energy efficiency investments. The following investments, however, do much, much better than 6%.

Let's take an example:
Consider a 15 watt compact fluorescent lamp. Such lamps now are available for about $6 including taxes for a CFL that will replace a 60 watt lamp. I recently bought some with a life of 10,000 hours for that price.

Over the 10,000 hour life of the lamp, the energy saved by that CFL will equal $42 at Saskatoon's electricity rate of 9.36 cents/kilowatt-hour. Assuming that the lamp is burned for 1000 hours a year, the annual rate of return on the lamp is equal to 70%! [While it is true that the lamp must be replaced after 10 years at 1,000 hours per year, the CFL costs roughly the same amount as 10 regular incandescent lamps.] Now if only my other investments could return 70% per year!

If your house is electrically heated, the savings from CFL are reduced considerably, as the waste heat off the old lamp would be good for space heating. If, however, we assume that the heating season is 8 months of the year, then the energy savings are present only for 4 months of the year. The rate of return from the CFL investment is decreased to about 23% per year--still very respectable.

What are some other very attractive energy saving devices?

Here are my picks:
1. Low flow shower head.
For about $10, the improved shower head should cut the shower flow by about half and return your investment in less than a year. Rate of return: greater than 100% per year.

2. Toilet tank water dams.
The toilet dams reduce the water flow per flush by about one-half. In Saskatoon, our water is relatively cheap, at about $1.00 per cubic meter for residences. Even at that low water price, your investment is returned in less than a year. Rate of return: greater than 100% per year.

3. Night setback thermostat.
At about $50 to 100, the setback thermostat can readily save money if you use it for setbacks. A day and night setback of about 5 degrees C can readily pay back the capital cost within one year. Rate of return: greater than 100% per year

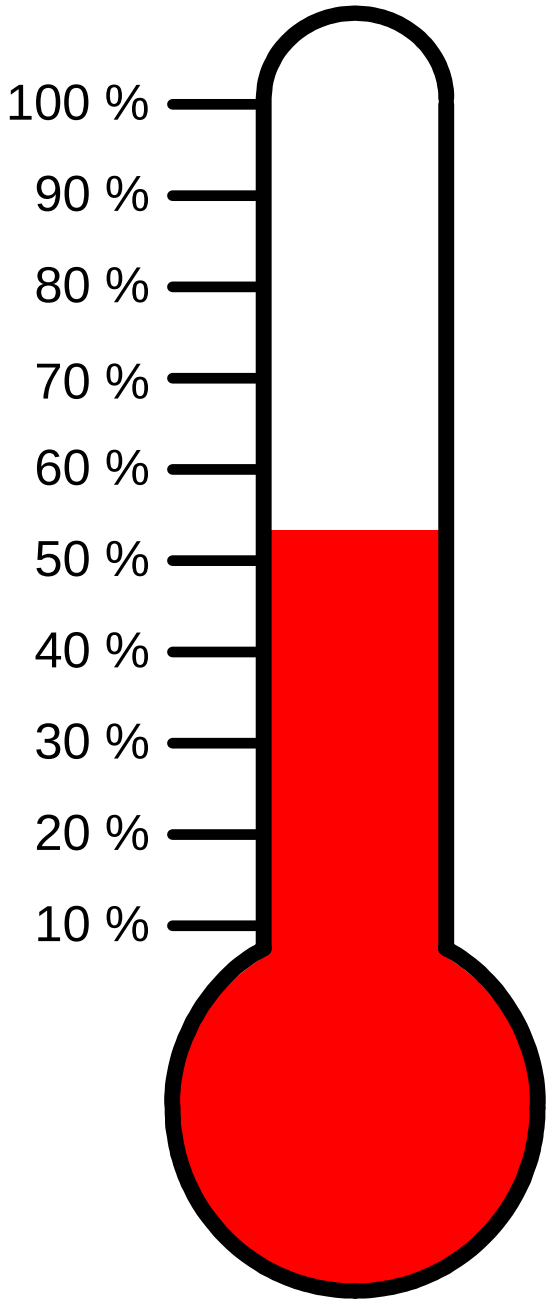
4. Replacement of an existing refrigerator with an energy efficient unit.
If the existing refrigerator is an older unit, it probably uses more than about 1000 kWh per year. Newer units of the same size use about 500 kWh per year.
One way to look at the economics of a new energy efficient refrigerator is to consider the total cost of the refrigerator and compare that with the annual energy savings. The rate of return, assuming that the new refrigerator cost $700 and the annual energy savings were about 500 kWh per year, would equal about 7% per year, plus you have a newer refrigerator.
Another way to look at the cost is to consider only the **incremental** cost for the Energy Star rated appliance. Often there is little or no incremental cost to purchase an Energy Star refrigerator. Assuming that the Energy Star refrigerator costs about $50 more than a standard fridge, the rate of return on the extra $50 capital cost would be about 94% per year at Saskatchewan's current electricity rate.

5. Replacement of other appliances such as freezers, dishwashers, and clothes washers. On the incremental cost to buy an Energy Star equipment, the rates of return are generally very high.

6. Water Heater Insulating Blanket.
Typical storage type water heaters have a jacket heat loss of about 100 watts or 341 BTU/hour continuously through the year. By adding about R20 insulation to the outside of the water heater and insulating the cold and hot water pipes for about a meter, the heat loss can be reduced by about 3/4. The annual savings for an electric water heater would be $66 at an electricity price of 10 cents per kilowatt-hour. The cost of the blanket would be about $50. Annual rate of return: 132%
If, however, the house is heated electrically, the rate of return would be reduced to about 44% per year.

The above devices all have outstanding rates of return, particularly compared to the returns that most investors in mutual funds actually achieve.

RESOURCE PROMOTION



MAJOR DONOR $250 - $2,499

Sask Energy
Conservation Energy Systems
Daniels Wingerak Engineering Ltd.
Cypress Sales Partnership
HVAC Sales Ltd.
ECCO Heating Products Ltd.
Prairie Controls Ltd.

Bill Dean

HONOUR ROLL $100 (Ind) $150 (Bus)

Interwest Mechanical
Intercity Mechanical
Vortec Engineering
Dynamic Agencies

Bob Besant
Jonathan French
Mike Carr
Reg Hoffman
Mike Osborn
Kirk Campbell
Bruce Waldbillig

OTHER CONTRIBUTORS

Great West Controls

ASHRAE – Chapter 102 Saskatoon Meeting
February 8th / 2005

- Mike called meeting to order.

Introductions:

Bob Daniels	Ryan MacGillivray	Ward Stene
Grant Roming	Kirk Campbell	Keith Crang
Doug Freeman	David Flamand	Elie Lambert
Keith Morson	Greg Scrivener	Jack Scott
Dean Johnson	Paul Khanna	Jeff Nordquist
Rob Kinar	Norm Hain	Reg Hofmann
Ben Voss	Myles Bantle	Jeff Frie
Mike Osborn	Travis Spokes	Jocelyn Peltier
Onile Finnestad	Kyle Spenst	Chris Conley
Travis Kravshar	Joshua Bashforth	Erik McJannet
Amanda Weitzel	Adam Preymack	Craig Mccallum
Quinn Wisman	Cory Reauie	Mark Lorns

- We would like to welcome all students.
- Minutes from last meeting were read.
- Motion to accept minutes as read by Paul Khanna.
- Amend minutes to change local bonspiel to February 5th, 2005.
- Motion to accept minutes as amended.
- Motion passed unanimously.

BUSINESS ARISING FROM MINUTES:

- Books were displayed for ASHRAE Library.
- Books will be brought to Kelsey.
- Will look into UofS Students access to ASHRAE Library at Kelsey.

OLD BUSINESS:

- None to Report.

REPORTS:

Programs – Reg Hofmann

- We would like to welcome Ben Voss for guest speaker tonight.
- Will have Carl Lawson for next months meeting.
- Will have Dwain Nasy for ground source heat pumps coming up in April.

Treasurer – Bruce Waldbillig

- Not Present.

Resource Promotion – Jonathan French

- Not Present.

Membership – Jeff Frie.

- Tonight is 2nd of membership promotion night.

- We would like to welcome new members:
  Grant Roming from Ecco Heating Products
  Lisa Gerspacher from Venmar CES Inc.
- Membership advancement email has gone out for upgrading members.
- Rosters are still available.

History – Jack Scott
- Local bonspiel was a great success.
- Would like to congratulate the winning team of: Doug Freeman, Greg Scrivener, Elie Lambert, and Dean Johnson.
- There were 5 rinks competing.
- There is still nothing to report on John Ross Bonspiel in Calgary.
- Mike will check into John Ross Bonspiel.

CTTC – Chris Conley
- There has been no interest in instructor lead courses.
- Picked up a self-taught course on "Fundamentals of HVAC Systems".
- Will start a phone campaign of instructors for self-taught course.
- There are 3 full day sessions on course.

Student Affairs – Paul Khanna
- There are 16 students from Kelsey and 4 students from the UofS; that are signed up for student night.
- Students are always welcome to come to any meeting for $5.00.

New Business:
- The CRC is in May and in being held in Hawaii.
- Motion to have Chapter to pick up reasonable expenses by Jeff Frie, seconded by Bob Daniels.
- Motion for Chapter to pay reasonable expenses passed unanimously.
- Will need a treasurer for next year's treasures position.
- Will nominate at next meeting for treasurer.

Motion to Adjourn by Greg Scrivener.