

Meeting Notice

Tuesday
February 10, 2004
@ Saskatoon Construction Association

Speaker: **Fred F. Campagna**
Aerco International
Topic: **Condensing Boilers**

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



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Funspiel



The local chapter "Funspiel" will be held **Saturday, February 28, 2004** at the Granite Curling Club, starting at 3:00 P.M. Followed by dinner. Family, Partners and friends welcome. Jack will have a sign up sheet at the next meeting.



Speaker BIO

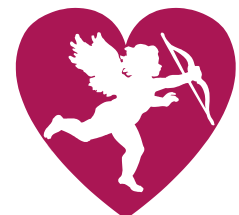
Fred F. Campagna – VP, International Sales & Marketing

Fred has been working in the HVAC industry in distribution, consulting engineering, and manufacturing since 1971. He's been with Aerco International since 1979, starting in engineering and new product development, eventually moving into sales and marketing as Product Manager, Marketing Manager, General Sales Manager and currently, as the VP of International Sales & Marketing.

Over the past several years, Aerco has expanded its distribution to 29 International representatives, and a license in the UK. In addition, Aerco has further expanded its operations into Asia where Fred has been instrumental in the formation of Aerco's Chinese and S. Korean joint venture manufacturing companies.

Prior to Aerco, Fred worked for Burns & Roe A&E Consulting on nuclear and fossil fuel plant design.

Happy Valentines Day!



Membership News:

Previous Meeting Attendance: Many thanks to those who attended the January 2004 local Chapter and heard Society President Richard Rooley. Those in attendance were,

Mike Osborn	Bruce Anderson	Maury Wawryk	Steve Hendricks	Bob Cowan
Doug Freeman	Ken Ingalls	Murray Guy	Paul Khanna	Ken Swann
Lloyd Labas	Bill Dean	Reg Hoffman	Brad Chisan	Kirk Nagus
Dean Bilodeau	Keith Lehne	Mark Calette	Keith Morson	Robert Bergen
Grant Roming	Chris Conley	Hector Drolet	Ray Graves	John Peters
Reg Povey	Jeff Frie	Rob Dumont	Travis Braid	Warren McAuley
Dan Thompson	Rob Craddock	Richard Rooley	Darrell Solie	Bob Daniels
Eric Binder	Bob Bessant	Myles Bantle	Ryan MacGillivray	Jack Scott

Membership Promotion Night: Tuesday, February 10th, 2004 will be the second of 2 membership promotion nights. A letter to Prospective members will be sent out to people who would benefit from being an ASHRAE Member. If you know of someone who would like to become a member or if they are just curious about ASHRAE, bring them along to the next meeting. The cost for the meal and meeting for prospective new members has been set at \$10.00 per person.

Membership Delinquency: The phone campaign for membership delinquency has been completed. Our goal set by the Region is for a 5% delinquency rate, currently we are at 11%. Please ensure your membership dues are up to date.

Rosters: Saskatoon Chapter 2003-2004 rosters are available. Attend our monthly meeting to receive your copy.

Student Members: I have received an updated list of student members. Congratulations to all those students interested in the HVAC industry and welcome to ASHRAE. The list of Student members are as follows:

Veronique Fontaine, Taiwo Ajala, Ryan Basaraba, Dalys Buck, Ilaisheng Fan, Onile Finnestad, Daniel Gareau, Conrad Iskra, Chris James, Craig King, Michael Larson, Eric Macatangay, Matthew Neilands, Olalekan Osanyintola, Siying Teng, Richard Yackulic, Zhen Zhu, Mark Zlipko.

All student members who have provided an email address to ASHRAE when they completed their membership form will be forwarded a copy of our monthly newsletter.

Web Site: A new home 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

What is the status of solar energy use for new buildings?

Here are a few points that are of interest:

- 1.** The sun provides the earth with about 10,000 times as much annual energy as do all the other sources of energy currently being used (coal, oil, gas, propane, nuclear).
- 2.** Virtually all buildings on this planet are already more than 95% solar heated.

How can one make such an audacious statement?

This can be said because the earth would be at temperature of -273 C if the sun were not present. The average annual temperature in the populated areas of Canada is about $+7\text{ degrees C}$, and our furnaces, boilers, etc. only need to top up the temperature in houses to about $+22\text{ C}$. If you do the math, an average Canadian home has its temperature raised about 95% by the action of the sun. All that a 100% solar heated home has to do is raise the temperature that last 5%.

- 3.** A very large amount of solar energy strikes the roof of an average house. At about 5 gigajoules per square metre per year in most parts of southern Canada, the sun striking a house with a roof area of 100 square metres amounts to 500 gigajoules per year.

The average Canadian house uses roughly 150 gigajoules of energy per year for space heating, water heating, lights and appliances.

- 4.** Passive solar energy can provide a substantial part of the space heating in a house. For instance, in the house my wife and I own, about 35% of the annual heating load is covered by passive solar energy, primarily through south facing windows. Careful design of the passive heating system is needed to prevent overheating in the spring, summer and fall. Appropriate window types, window areas, internal thermal mass and shading are needed to get a satisfactory passive solar fraction in a house without overheating.
- 5.** Daylighting is another major aspect of solar energy use in homes. Without daylighting we would have to use artificial lighting 24 hours a day.
- 6.** Solar water heating systems, usually with flat plate collectors, are now in wide use in certain parts of the world with high energy prices. By law all new homes in Israel must have a solar water heater. Water heating is particularly attractive because the hot water is useful on virtually every day of the year. Thermosyphon systems are the most common systems world-wide, and are particularly clever devices in that no pumps or thermostats are required. Unfortunately these simpler systems have not been used much in North America.
- 7.** Active solar space heating systems have been used on houses, although to a much lower degree than solar water heating.

8. Solar photovoltaic panels are now being used in increasing numbers. Assisted by government programs, thousands of houses in Japan and Germany are now providing a substantial part of their electricity needs with PV panels.

The following table summarizes the costs of several solar energy technologies for houses.

Technology	Capital Cost	Comments
1. Solar energy striking the earth's surface	Nothing	All of our existing fossil fuels—coal, oil, gas— were provided by solar energy through photosynthesis
2. Passive solar heating of houses	Nothing to several thousands of dollars	Orientation of the house for passive solar gain, appropriate window types, window areas, internal thermal mass and shading are all needed to make the best use of passive solar
3. Daylighting of houses	Nothing	Proper window orientation and sizing is important to make the best use of daylighting
4. Solar domestic water heating	\$4500 is the approximate installed capital cost for a 6 square metre flat plate system	Well installed systems can provide about 2 Gigajoules per square metre per year in southern Canada. At an electricity cost of \$0.10 per kWh, a 6 square metre system supplying 2 GJ/m ² would provide about \$330 a year of useful energy
5. Active solar space heating systems	Cost varies with system size and complexity, but the useful energy output is reduced compared with a solar water heating system because the heating season in a well-designed house in Canada is usually less than 7 or 8 months per year.	Assuming a system could be installed for \$10,000 and could provide 1 GJ/m ² per year from a 12 square metre system, the useful annual energy collected would equal about \$660 assuming electricity at a cost of \$0.10 per kilowatt-hour is being displaced.

<p>6. Solar photovoltaic systems</p>	<p>Cost varies with system size and complexity, but the annual cost of electricity is in the range of about \$0.50 to \$1.00 per kilowatt hour when the system is amortized over the life of a mortgage.</p>	<p>A 2 kilowatt peak output system with a grid connect in most parts of southern Canada would produce about 2000 kWh per year. The capital cost for such a system would likely be in the \$20,000 + range.</p>
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As can be seen from the table, passive solar heating and daylighting are the most cost-effective applications of solar energy.

A solar water heater is now relatively cost competitive with other long term investments in those parts of Canada with higher energy prices. As the volume production of solar water heaters increases, the cost will likely come down.

Active solar space heating and solar photovoltaic systems have higher costs, but cost reductions are quite likely with higher volume, particularly with photovoltaic systems. According to a recent paper by André Filion, Deputy Director of the CANMET Energy Technology Centre in Varennes, Quebec, the annual global production of solar cells has risen by a factor of seven in the period from 1991 to 2001.

Prior to 1973 and the first world oil crisis, conscious use of solar energy in houses was almost unknown. The solar technologies now at least have a beachhead.

From Solplan Review Magazine, Box 86627, North Vancouver, BC, V7L 4L2? An annual subscription to the publication is \$48.15 including GST.