



# Capital Communiqué

2006 - 2007

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January 2007

## EVENING PROGRAM

- DATE:** Tuesday **January 16, 2007**. Social: 16:30 Dinner: 18:30 Program: 20:00  
La Contessa, 156 Cleopatra Dr., Nepean, Ont., (613) 224-8700
- TECH SESSION** **ASHRAE Career Fair**  
14:00 – 16:30  
at La Contessa
- THEME:** **Student Activities**
- PROGRAM:** **Ground Coupled Heat Pump System Design**
- SPEAKER:** **Mr. Michel A. Bernier, Ph.D., P.E.**  
Professor, École Polytechnique de Montréal
- OVERVIEW:** The presentation is a summary of Michel's ASHRAE journal, volume 48, September 2006 article. The closed loop ground coupled heat pump system offers several advantages over conventional HVAC systems. Heat pumps are amongst the most energy efficient and environmentally friendly heating and cooling systems available.
- SPEAKER BIO:** Michel Bernier is currently a professor at École Polytechnique de Montréal where he is responsible for the HVAC program in the department of mechanical engineering. Before joining École Polytechnique, M. Bernier worked as a consultant in HVAC design and as a researcher at the Institute for Research in Construction of the National Research Council of Canada. His current research interests are: simulating zero net energy homes, modeling and simulating ground-coupled heat pump systems; modeling and performing experiments on windows and on residential electric hot water tanks, prediction of pumping energy in HVAC systems. He is a past-president of the Montréal chapter of ASHRAE and a registered professional engineer in the province of Québec. He obtained his bachelor's degree from Ecole Polytechnique de Montréal in 1980, his M.Eng degree from Carleton University in 1985 and his Ph.D. from McGill University in 1991.

### Menu

Hot Roast Potatoes, Chicken with Mushroom Sauce, Rice Pilaf, Baked Fish, Meat Balls, Penne with Tomato Sauce, Cold Chef's Salad with Dressings, Potato Salad, Crab Salad, Pasta Salad, Chick Pea Salad, to name a few; Assorted Cheeses, Coffee & Tea, Dessert

Chapter Members: \$25.00 Guests: \$30.00

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President &  
CRC Delegate



## President's Message

By Glenn MacLean

As we approach the halfway mark of this ASHRAE year with the holiday season upon us, I'd like to take this opportunity to thank all the people that have volunteered their personal time and resources to ASHRAE. We've had a great start to the year, with excellent presentations, focusing on energy recovery and smart energy choices in HVAC design.

Countless hours go into organizing speaker programs, technical sessions, meeting plans, social events, technical articles and seminars, design competitions, etc. Further still, a tremendous amount of work happens behind the scenes - taking care of the accounting and day to day operations of the chapter as a business, recording and documenting meeting minutes and chapter activities, raising money for ASHRAE Research, and other activities too numerous to list entirely. To all the people who have committed to the day to day operation of this chapter, our Board of Governors, and our Executive, I thank you. A special thank you also to our Editor in Chief, Webmaster, and now Co-Historian - Rod Potter. Rod has been tireless in his efforts to promote ASHRAE and this chapter in a professional, and as our friend Joel says, "a Cyber-Sexy" way. We were one of the first Chapters to have our own website - thanks to Gabriel Lazlo, and one of the first to send our Communiqué electronically. We continue to be leading edge in our presentations, communications, and technical submittals to industry competitions. For all involved at all levels, thank you and keep up the great work.

We have an extremely exciting event planned for January. The planning is virtually complete for the Career Fair and space is filling up fast, so if you haven't booked your booth, don't delay. There's an article included in the Communiqué, Sign up forms available on the website, or just pick up the phone. This is not only a great opportunity to get an early look at this year's graduating students, but an opportunity for us to show the students (graduating or just starting) that this industry is vibrant and in need of energetic, enthusiastic new employees. The evening is also a focus on students in general and is our second student night of the year. Please make an effort to make all the students that are able to attend feel welcome.

A fantastic evening program for the January meeting has also been prepared - Michel Bernier will be joining us to discuss Ground Source Heat Pumps. Again, in keeping with our 'Smart Energy' and 'Sustainability' focus for this year, this is a must see presentation.


We will be sending out reminders in the New Year, but I wanted to deliver this issue of the Communiqué before people break for the Holidays. If you are traveling, may your God keep you safe. Have a safe and happy holiday - we look forward to seeing you in the New Year. May it bring a little more peace and prosperity to all.

You can watch my Christmas Happy Dance here:

<http://www.elfyourself.com/?userid=01a9a628b7415e4a5976bceG06121704>

In your service,  
Glenn MacLean  
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Committee  
Chair



## Theme Student Night

by Chris Fudge  
2006-2007 OVC Committee Chair

Hi All!

My name is Chris Fudge I am the committee chair for student activities. The student activities committee is made up of several volunteers: Stephen Lynch, Benjamin Moore, Aaron Dobson and Helena Jonas. This year we started out with what at the time seemed some lofty goals. Our committee, with the help of the membership, dedicated student advisors and most of all the students, is well on the way to realizing these goals. Thanks to all of you who have volunteered your time to help out with student activities.

During the first half of the year we saw students at not only our student night but at most of our regular meetings as well. It is obvious that there are many students out there who are eager to get involved in our industry.

Carleton University is looking at getting involved in the design competition. Carleton is currently offering a fourth year mechanical engineering program that is based on HVAC design. They are going to incorporate the design competition into their curriculum.

The students activities committee has made presentations at Carleton University and Cegep de L'Outaouais. Students from both schools have made firm commitments to participate in this year's career fair being held January 16<sup>th</sup>. Early in the New Year presentations have been scheduled at Ottawa University, Algonquin College and La Cite Collegial.

For the first time since my involvement in ASHRAE we have made inroads at some of the local k-12 intuitions. At this level we have distributed material to guidance councilors. Again this year our chapter will be involved in the annual science fair. As usual I will be looking for judges, so if interested please feel free to approach me at the next chapter meeting. We will sponsor three different categories: junior, intermediate and senior. It is a great experience to see just how talented some of these young people really are.

January's theme is student activities. Please try to thank a student for taking time out of their busy schedules to see what ASHRAE is all about. Many of these students are trying to figure out what to do next, as this is their last year of study. Please take a minute and tell them about your typical work day (if there is such thing!).

You can watch my Christmas Happy Dance here:  
<http://www.elfyourself.com/?userid=b2adff9a7b28fae179ac82dG06121704>

Happy Holidays!

Yours truly,  
Chris Fudge



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Secretary



## What You Missed

November 21<sup>st</sup> 2006 Chapter Meeting  
by Francois Belair  
Chapter Secretary 2006-2007

The evening began with an interesting (and well attended) tech session by Mr. Luigi Pisani of Enbridge. Luigi discussed various incentives that may be offered to building owners and managers who choose efficient gas burning equipment. Luigi outlined the economic benefits of reducing gas consumption in utilizing newer more costly appliances.

For the main program, the meeting bell rang and a packed program ensued. First participants were besieged to participate in a ticket raffle to raise funds for research, followed by certificates of recognition for the previous year's donations. A brief overview of the career fair and we found ourselves at the break before discussing heat recovery technologies.

Mr. Geoff Gorai's presentation focused on the most common types of energy recovery in air handling systems. His presentation was clear and concise and although the delivery at times was not "Toastmasters" the material was presented in a straightforward manner with an emphasis on the psychometric cycle.



Luigi Pisani of Enbridge with Glenn MacLean



Marc Chiasson of Genivar receives an ASHRAE Award

You can watch my Christmas Happy Dance here:

<http://www.elfyourself.com/?userid=902a79156dc2a323f6937e2G06121704>

Happy Holidays!

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President & CRC Delegate



## Student Sponsorship (Adopt a Student Program)

By Glenn MacLean

This year, as with most years, we are encouraging students from Carleton, University of Ottawa, Algonquin, CEGEP de L'Outaouais, and La Cite Collegiale to join us at our monthly meetings. We typically have two student nights per year in October and January, but encourage students to attend whenever their schedule permits. On student nights we invite the students to attend our meetings and we pick up the cost of their meals. This is a program we have been offering for some time, and wish to continue to offer in the future. However, as the program becomes more successful it also creates a greater draw on our Chapter funds and resources. We would also like to extend this offer to students attending on other nights as well. Currently, students are charged \$15 per meal when they attend on their own. Meals actually cost more than this, but any contribution members are able to make is appreciated.

If your company or you personally are interested in sponsoring a student for January's meeting or future meetings, please contact our Treasurer, Imtee Baksh [imteeb@lonhill.ca](mailto:imteeb@lonhill.ca), or see him at the check-in table at our monthly meetings. As a way of recognizing our members for their contributions we will give you a receipt for your investment in Student Activities, publish your name or your company's name on our website, and include you in our list of previous donors in the Capital Communiqué.

Thank you for your support,  
Glenn MacLean

Treasurer



## Student Sponsors November 21st, 2006 Meeting

By Imtee Baksh

Glen Maclean – donated \$50.00 (3.33 student meals)  
Trane - donated \$30 (2 student meals)  
Cathy Godin – donated 15\$ (1 student meal)

Your Chapter thanks you!

You can watch my Christmas Happy Dance here:

<http://www.elfyourself.com/?userid=0d1597cb335f14c46dfdb2fG06121704>

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President-Elect &  
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## News Update

By Robert Lefebvre

### Technical News:

### Learn to Meet and Beat 90.1 Requirements

Guidance to help users design buildings that are in compliance with ASHRAE's energy efficient standard is available through a new online learning course.

The Fundamentals of Standard 90.1 is the newest offering in ASHRAE's eLearning system, which provides on-demand, interactive online courses that include hardbound and online course reference books, online self-assessment and continuing education credits.

ANSI/ASHRAE/IESNA 90.1-2004, Energy Standard for Buildings Except Low-Rise Residential Buildings, has become the basis for building codes, and the standard for building design and construction throughout the United States. "The new eLearning course is designed to help you go through the standard and learn about each of the requirements," said Carol Marriott, P.Eng., a former member of the Standard 90.1 committee who helped develop the new module. "In school, you had assignments to enforce retention of the concepts you learned. The eLearning course is designed exactly the same way, in that it reinforces learning by providing questions to practice the concepts learned, and applying the 90.1 requirements to sample questions. Most users will hardly even realize they are learning as it is designed for users to have fun while doing the work."

The course explains:

The detailed requirements of the standard so that they can be applied in designing buildings that are in compliance with 90.1;

How to use available resource material, such as the standard and the User's Manual, to design and construct building in compliance with the standard;

How to complete compliance documentation in a satisfactory manner the first time; and

How to translate the key principles of the standard to local and state adaptations.

Marriott said the course is one of three key elements in learning about the requirements, along with the actual standard and the Standard 90.1 User's Manual.

The course is the second in ASHRAE's eLearning system. The first, Fundamentals of HVAC Systems, provides a thorough and comprehensive introduction to how HVAC systems function in controlling temperature, air quality, and air circulation in a conditioned space.

For more information about ASHRAE eLearning Systems, visit [www.ashrae-elearning.org](http://www.ashrae-elearning.org).

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**Sustainability News:**

**New solar cells break efficiency records**

Breakthroughs in solar cell efficiency could make solar power a competitive part of the energy market, with two separate groups announcing record results this week. The U.S. Department of Energy announced Tuesday that a concentrator solar cell produced by Boeing-Spectrolab has achieved a world-record conversion efficiency of 40.7 per cent. The next day, Australian scientists said a commercially available thin solar sheet was capable of over 20 per cent efficiency.

Conversion efficiency measures the percentage of energy from sunlight that is converted into electricity. Most commercially available solar cells rely solely on natural light and typically reach a top efficiency of 12 per cent to 18 per cent. But concentrator cells, which focus light from the sun, have reached efficiencies approaching 40 per cent. "Reaching this milestone heralds a great achievement for the Department of Energy and for solar energy engineering worldwide," said Alexander Karsner, the assistant secretary for energy efficiency and renewable energy at the U.S. department of energy. "We are eager to see this accomplishment translate into the marketplace as soon as possible — [it] has the potential to help reduce our nation's reliance on imported oil and increase our energy security."

The new record in efficiency is seen as a first step to creating affordable systems, with an installation cost of \$3 US per watt and capable of producing electricity at a cost of eight to 10 cents per kilowatt/hour, or roughly the same price as the cost of natural gas.

**An alternative to fossil fuels**

The current lack of efficiency in commercial cells has made solar energy an impractical solution as a replacement for fossil fuels such as oil, natural gas and coal. However, interest in the technology has remained because of the seemingly limitless supply of energy available from the sun and its minimal pollution footprint.

The most basic photovoltaic solar panels use semiconductors such as silicon to absorb light particles — or photons — from the sun. The energy from these photons knocks loose electrons in the silicon, which are induced to follow one direction to create an electric current. Metal contacts attached to the semiconductor draw the current off for external use. Prof. Andrew Blakers, director of the Centre for Sustainable Energy Systems at the Australian National University, announced on Wednesday a new cell using "sliver technology" could reduce the cost of producing solar cells by more than 60 per cent. The sliver panels take a standard solar cell and cut tiny slices just 120 micrometres wide into it to provide the cell with more surface area, and therefore more opportunity to absorb the sun's rays. The researchers said they have achieved efficiencies of over 20 per cent, making it the most efficient among commercially available thin-film solar cells.

The Boeing-Spectrolab cell is more complex. Called a multi-junction cell, it is made up of super-thin individual layers, each of which captures part of the sunlight passing through the cell. This allows the cells to capture more of the solar spectrum, the researchers said. In 1995, Boeing-Spectrolab had reached 39.0 efficiency with a multi-junction concentrator cell capable of focusing sunlight as if light from 236 suns was hitting the cell.

Earlier this year, U.S. President George W. Bush announced plans for a Solar America Initiative with a mandate to gain nationwide acceptance of solar energy technologies by 2015.

*This article is based on a news release from the CBC*

You can watch my Christmas Happy Dance here:  
<http://www.elfyourself.com/?userid=f88e2f523ec96d4882ef185G06121704>

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## Career Fair January 16<sup>th</sup>, 2007

By Patrick St. Onge  
Governor  
and lots of work by **Stephen Lynch** of Regulvar

In the never ending struggle to employ and to be employed, it is those first few steps for a newly born grad that are the most fragile. It gets harder every year for companies to hire people and get the long-term commitment everyone looks for. Why not choose a recent grad? As a new born gosling to the first thing it sees, a newly born grad will cuddle up to the first company to act as mentor and Oracle-like figure head.

I encourage all ASHRAE members to encourage your employers to take a chance on our budding new work resource; either way they are going to replace us at sometime. I challenge everyone to consider, is it not better to brain wash them while we're at our prime so we can make sure they look after us into retirement?

Top 6 reasons for a company to attend:

1. Benefit from a large gathering of educated and ambitious students and graduates.
2. Affordable Booths with proceeds going towards the evening and student events.
3. Opportunity to take part in an ASHRAE event and meet other industry professionals.
4. Fun and informative evening.
5. One free dinner with your booth purchase.
6. Schools that are being canvassed; University of Ottawa, Carleton University, Algonquin, CEGEP de Gatineau and La Cite Collegiale.

I can appreciate how daunting it can be for an employer to hire new employees with little or no experience. But try to remember, they are just as afraid of you as you are of them.

Date: January 16<sup>th</sup>, 2007

Time: 2:00 pm until the social

Cost: \$200/booth which includes a free dinner

Booths Include:

- Approximate 8' X 8' space
- 120 VAC power, but please bring your own extension cords and power bars
- Tables and skirts provided
- Students seeking a career experience
- Notify Stephen Lynch ([slynch@regulvar.com](mailto:slynch@regulvar.com), 613-565-2129) of any extra requirements and we will do our best to accommodate.

Please RSVP Tony Doyon ([tdoyon@trane.com](mailto:tdoyon@trane.com), PH: 613-820-8111, FX: 613-820-1414)

### Download Promotional flyers:

[http://www.ashrae.ottawa.on.ca/ashraeoc\\_functions/20070116\\_Career\\_Fair/Career\\_Fair\\_-\\_Flyer\\_for\\_Students\\_V2.pdf](http://www.ashrae.ottawa.on.ca/ashraeoc_functions/20070116_Career_Fair/Career_Fair_-_Flyer_for_Students_V2.pdf)

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**(Francais)**

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**NCR NIRAJ CHANDRA REPORT**  
OUR GUY ON SITE

**Needed:  
Tax Incentives for Sustainable Growth**

Achieving sustainable growth is the major challenge of our times. Without growth, there is no progress in the world, but if we simply keep on depleting the earth's resources, there will not be much of a world left to live in. And, indeed, there is a growing body of evidence that we have not been making the wisest of choices so far.

Global warming can no longer be denied: polar ice caps are melting, the ozone layer is getting bigger, and there are more GNGs in the atmosphere than ever before. Most significantly, there is growing conflict in those very regions of the world where natural resources such as oil are dwindling most rapidly.

Governments have adopted a variety of approaches to solve this problem, with varying degrees of success. The punitive approach is the most common, with penalties for violating the environmental laws of the land. This works, but it is obviously not enough, as pollution levels continue to rise worldwide.

Governments have also tried to set national and international targets for emissions, with the associated concept of emissions trading. But this approach, too, has its problems. What do we do if some countries refuse to participate? Whom do we penalize if national targets are not met?

Politicians have also flirted with the idea of imposing energy taxes – a viewpoint advocated by many of the “green” parties. The Clinton administration tried to impose such a tax, but luckily for Americans, it never got passed into law. Other countries have also tried this, but, in most cases, an energy tax simply results in more revenues for the government, without significant reduction in energy consumption.

My own preferred approach is to provide tax incentives for sustainable growth, at both the individual and the corporate levels. The US has taken a few steps in this direction with the passage of the Energy Incentives Policy Act of 2005, but much more needs to be done. In Canada, there are commercial building incentive programs for energy efficiency, but, again, much more needs to be done.

The key to success is in finding incentives that really work. I tried to answer this question with another question - what incentives would work best for me, as an individual? Like most Canadians, I hate paying income tax, and any type of tax break for making sustainable choices would be more than welcome. With this perspective, I tried to look at some of the environmental choices that I've made, over the years.

I bought a new mid-sized family car recently, to replace my aging small car. I seriously contemplated buying a hybrid instead, but I quickly discovered that there is no real incentive to do so. At current gas prices, it takes far too long to pay back the extra dollars required to buy a hybrid, even with available rebates. The rebates, anyway, come with a lot of caveats – they don't apply to leases, and they get reduced with trade-ins, and the rebates are a one-time payment. In any case, I had no real desire to spend another ten thousand dollars or so for the hybrid, adding to my monthly payments.

If, however, the incentives had been structured differently, I would have made the more energy efficient choice. A good inducement would be an income tax deduction based on an environmentally friendly choice. In fact, there should be an increasing range of tax deductions for better environmental choices, with the highest deduction being for not owning a car at all and using only public transportation. (cont...)

(...cont.) There should also be a tax deduction for using my car less, by opting for car-pooling, or, for choosing to commute to work by bus. If I owned several cars, the deductions should reduce, since I would now be consuming more resources. With the right incentives, most of us would make better choices for our transportation needs.

The same applies to the other ways in which we consume energy, at the individual or at the corporate level. I live in a 14-year-old house, which is probably not very energy efficient, but I'm content simply paying the utility bills as they come in. There is no real incentive to spend money on improvements that could save energy. In most cases, the payback time is uncertain, and in any case, my wife doesn't trust my math – a common failing with engineer's spouses!

However, if I could claim a yearly income tax deduction based on the energy efficiency of the house, I would be more inclined to spend money on it and I could convince my wife more easily, too. Ideally, the property taxes should also be linked to the energy consumption of the home, based on the norms established for that type of home. Also, a larger deduction should be allowed living in a smaller house, as it consumes fewer resources. A suitable tax structure can be worked out which is revenue neutral, with large homeowners paying proportionately more property taxes to offset the deductions given to smaller homeowners.

Similar logic applies to commercial properties, too. Property taxes should be linked to the energy efficiency of the building. Business owners should be allowed more deductions depending on how sustainable their activities are. There are a few incentive programs for commercial buildings, but the real question is whether they are really adequate? Do they really make a difference? I am, by no means, an expert on energy incentive programs, but I did notice that some of these programs have a ceiling of \$60,000.00 per building, even for buildings costing millions of dollars.

Incentives linking property taxes, or even income tax, to building energy efficiency may well prove more productive. Energy efficiency is, of course, just one component of sustainability. Property taxes could, perhaps, also be linked to the LEED rating of a building – there are, indeed, many, many possibilities.

Achieving sustainable growth is not somebody else's problem – the solutions reside with you and me. And, as members of the most prestigious association of the HVAC industry, you can make a difference by providing your valuable inputs towards solving the biggest and most challenging problem of our time.

You can watch my Christmas Happy Dance here:

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## Business Card Ads

by Rod Lancefield

You can support your chapter and promote your business by placing your business card in the Capital Communiqué. It will appear in the electronic and printed version as well as on the Chapter website.

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Past President



## Table Top Display

by Frank "Johnny Cash" Bann  
Past President 2001-2002



Victaulic will be presenting two new copper products that will be launched in the New Year. The first product launch will be the new PermaLynx small diameter copper line. The PermaLynx System is a complete system of valves, fittings and adapters for 1/2"-2" copper tube (K,L,M). The PermaLynx System connects with no flame and can be installed wet and dry. The PermaLynx System makes new jobs and repairs fast, safe and easy.

Victaulic will also launch a new copper coupling that will resemble their new fire protection Style 009 coupling. The new copper coupling will offer a new unique design that eliminates loose parts, ensures consistent installation and provides substantial gains in productivity.

Victaulic is the global leader in mechanical pipe joinings systems and the originator of the grooved end joining technology. Established in 1925, Victaulic has pioneered the grooved methodology and continues to lead the way in offering a full line of products for the piping industry. From HVAC applications to fire protection systems to serving the special needs of dozens of industries, Victaulic has the products, the services and the people to meet whatever piping challenges the world has to offer.



Ventex Inc. was founded in 1984, and has become one of Canada's largest louver manufacturers by operating on our simple philosophy of supplying excellent, top quality products. They offer a complete line of extruded aluminum louvers and dampers: Thin line, four inch, six inch, exhaust, stormproof, drainable, operable and combination louvers.

If you plan to have a tabletop the only remaining dates are April and May. We have 1 space available for only a few more Chapter meeting dates, April 17th 07 and May 15th 07. E-mail Frank Bann at fbann@gwal.com to book your table top and get the best captured audience in our industry. Your products deserve the best.

You can watch my Christmas Happy Dance here:

<http://www.elfyourself.com/?userid=2aa7c13d50bc86781078db0G06121704>



## Research Promotion Update

By Jay Doshi P.Eng.  
Chapter President 2005-2006

The Ottawa Valley Chapter (OVC) and ASHRAE would like to thank all the donors who were at the November donor recognition night and to all those who were not present for investing in *ASHRAE Research Canada* last year. It was a great opportunity to celebrate with our industry friends, supporters and winners of our “fund-raising Senators hockey tickets”. Thanks to **Master’s Group** for donating 4 TICKETS, to the New Year’s Day Senators game vs. Atlanta and **AC Mechanical** for 2 TICKETS, to the Dec 19th 2006 game between Senators and Boston. The New Year’s Day game tickets were won by Robert Lefebvre and the Dec 19<sup>th</sup> game tickets was won by Mike Cation. Congratulations to the winners and donors.



**The Donor Line-Up Skit**

We sincerely hope that you and your company will once again renew, or even increase, your much needed investment in *ASHRAE Research Canada* and the future of the HVAC&R profession and industry. The Ottawa Chapter website will recognize donors as the donations are made, so make your donations early and get recognized.

Your investment in *ASHRAE Research Canada* is doubly important for the following reasons:

- All funds raised in Canada go towards ASHRAE Research Canada;
- ASHRAE has a policy of matching contributions dollar for dollar with the revenues generated from the Winter AHR Expo;
- Canadian companies/institutions receive more funds per Society member than our American counterparts;
- Canadian companies/institutions are recognized as leaders in research;
- Every dollar being contributed in Canada, about four (4) U.S. dollars are being reinvested back into Canadian HVAC&R research projects

**Your investment is needed today**, next year’s research budget is based on contributions received by June 30<sup>th</sup> 2007! Please consider renewing your support as soon as possible so we can put your investment to work as well as recognize your contributions on our website immediately.

You can watch my Christmas Happy Dance here:

<http://www.elfyourself.com/?userid=5b210ac69ffd799807f7096G06121606>

Thank you for your support.

In your service,  
Jay Doshi



## Santa - From an Engineer's Point of View

By Rudolph the Red-Nosed Reindeer.  
Chapter President 2005-2006, North Pole Chapter

There are approximately two billion children (persons under 18) in the world. However, since Santa does not visit children of Muslim, Hindu, Jewish or Buddhist religions, this reduces the workload for Christmas night to 15% of the total, or 378 million (according to the Population Reference Bureau).

At an average (census) rate of 3.5 children per household, that comes to 108 million homes, presuming that there is at least one good child in each. Santa has about 31 hours of Christmas to work with, thanks to the different time zones and the rotation of the earth, assuming he travels east to west (which seems logical). This works out to 967.7 visits per second. This is to say that for each Christian household with a good child, Santa has around 1/1,000th of a second to park the sleigh, distribute the remaining presents under the tree, eat whatever snacks have been left for him, get back up the chimney, jump into his sleigh and get on to the next house.

Assuming that each of these 108 million stops is evenly distributed around the earth (which, of course, we know to be false, but will accept for the purpose of our calculations), we are now talking about 0.78 miles per household; a total trip of 75.5 million miles, not counting bathroom stops or breaks. This means that Santa's sleigh is moving at 650 miles per second - 3,000 times the speed of sound. For purposes of comparison, the fastest man-made vehicle, the Ulysses space probe, moves at a pokey 27.4 miles per second, and a conventional reindeer can run (at best) 15 miles per hour.

The payload of the sleigh adds another interesting element. Assuming that each child gets nothing more than a medium sized Lego set (two pounds), the sleigh is carrying over 500 thousand tons, not counting Santa himself. On land, a conventional reindeer can pull no more than 300 pounds. Even granting that the "flying" reindeer could pull ten times the normal amount, the job can't be done with eight or even nine of them - Santa would need 360,000 of them. This increases the payload, not counting the weight of the sleigh, another 54,000 tons, or roughly seven times the weight of the Queen Elizabeth (the ship, not the monarch).

600,000 tons traveling at 650 miles per second creates enormous air resistance - this would heat up the reindeer in the same fashion as a spacecraft re-entering the earth's atmosphere. The lead pair of reindeer would absorb 14.3 quintillion joules of energy per second each. In short, they would burst into flames almost instantaneously, exposing the reindeer behind them and creating deafening sonic booms in their wake.

The entire reindeer team would be vaporized within 4.26 thousandths of a second, or right about the time Santa reached the fifth house on his trip. Not that it matters, however, since Santa, as a result of accelerating from a dead stop to 650 miles per second in .001 seconds, would be subjected to centrifugal forces of 17,500 g's. A 250 pound Santa (which seems ludicrously slim) would be pinned to the back of the sleigh by 4,315,015 pounds of force, instantly crushing his bones and organs and reducing him to a quivering blob of pink goo.

**Therefore, if Santa did exist, he's dead now.**



## The Internet Sucks...?

by Rod Potter  
Editor, Governor, Gopher and Webmaster

As you may have noticed, those half-wits over at MacLean's magazine recently ran an issue with the cover story "**THE INTERNET SUCKS**". This of course probably made a few heads turn and added to the standard line-up of freeloaders standing at the magazine racks in Chapters. I did the obvious thing instead and used the "sucking" Internet to find the article in its entirety for free. That really sucked that did.

Reading the diatribe of the writer revealed what was basically a rant about how the Internet has become nothing more than a haven for parasites hoping to take advantage of unsuspecting old ladies and their pocketbooks. Oh and of course there is the porn angle to this story which I have to say does seem to take up much of the available bandwidth (at least when my wife isn't looking (joke) (no really).

But I think we need to take a step back and think about how our daily lives have been affected by this so-called sucking Internet. You are probably reading this rant by me because you downloaded it – and look at the value-added there! And without the Internet, how could I manage to check the status of my 649 subscription so easily twice a week? Not to mention that my wife makes an impressive living in web-related activities (no, not that kind of activity). And then there are all of those massively huge files I keep sending to Wade-Tech for plotting. I can remember about ten years ago when I had to actually get in the car and drive a floppy disk over to Woodward Avenue. Now I cannot remember the last time I used a floppy disk, or even if I own any.

Yes the Internet does suck in certain ways – recently I had the task of re-building a friend's computer (that's starting again from scratch, reformatting, and reloading the operating system). The first thing you need to do nowadays after Windows has loaded is to download the latest updates from Microsoft (did anyone mention Mac? Wash out your mouth!). So I installed Mozilla Firefox and started updating. I also updated the drivers for offending things like the sound card etc. And in my stupor during this activity I forgot the first rule of Internet activity – **turn off cookies**. At the end of the rebuild I ran a Spybot session and found to my horror that there were about 10 sucking items to deal with, including one from those dreaded "doubleclick" parasites. I can remember having to entirely rebuild my main computer years ago because of these toadies taking over my browser activities. Fortunately Spybot dealt with the offending items nicely.

Of course then there is SPAM. Half of you are probably getting this crap because your email address is published on our Chapter website (sorry). But what are we to do? I could take all of the email links off the site and make all of the addresses images (which cannot be read by bots). Or we could all try using SpamArrest, a rather intriguing idea I must say. Check them out at <http://www.spamarrest.com/>.

Speaking of SPAM, I recently paid my ASHRAE dues on-line at the now wonderfully revamped Atlanta website. After spending far too long to find the link for payment on-line, I duly got out my credit card and completed the transaction. Then ASHRAE (or whoever they use to handle their on-line financial stuff) sent me an email to confirm the payment. Their email address was (wait for it...) [netforum@avectra.com](mailto:netforum@avectra.com) which was most excellent because the subject line said nothing about ASHRAE and this was obviously a test of my recognition skills. If you are anything like me, when an email arrives in my inbox with a subject line like "Order Confirmation: Invoice #70000121" from an email address like that mentioned, it gets stomped on. For some reason I went looking later at my deleted items and checked the message properties – which revealed what it was. We sure are lucky the boys in Atlanta know how to use the sucking Internet.

While we are on the subject of Atlanta, a recent visit to that 1.4 Billion dollar boondoggle YouTube revealed the following link which I encourage you all to check out: <http://www.youtube.com/watch?v=Wvp6fyhQKY8>. That about "raps" up this rant. I'm off to read MacLean's.

You can watch my Christmas Happy Dance here:  
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