



# AMERICAN SOCIETY OF HEATING, REFRIGERATION AND AIR CONDITIONING ENGINEERS INC.

LONDON CANADA CHAPTER #116

<http://LondonCanada.AshraeChapters.org>

WED APRIL 13/2011

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SPEAKER:

**Dr. Sam C. M. Hui, Ph.D., CEng, CEM**

Department of Mechanical Engineering  
The University of Hong Kong

ASHRAE DISTINGUISHED  
LECTURER

TOPIC:

**Green Building Design  
and Assessment**



**Meeting - WED APRIL 13/2011**

**Best Western / Lamplighter Inn**

591 Wellington Rd., London

5:15pm Social      6:00pm-Dinner  
7:15pm - Program

\$35.00 for London Chapter dues paid members  
or \$175.00 for meal plan

\$10.00 for Students with valid student card

\$45.00 for others





## President's Message

We have a very special guest this month Dr. Sam Hui from the University of Hong Kong. He will be speaking to us on Wednesday April 13th, earlier than usual, to accommodate his busy schedule. Dr Sam Hui is also an ASHRAE Distinguished Lecturer he will be speaking to us on "Green Building Design & Assessment". We are asking that everyone please come out it looks to be a great night, bring a friend or colleague out with you we want this to be our biggest turn out to date. We are also changing up the menu we will be having a roast beef just like last year at our "Past Presidents Night".

Also this month we have the ASHRAE Satellite Webcast on "Ground Source Heat Pumps Systems – Putting the Earth to work for you". Baymar Supply has offered us to use their board room so please feel free to come out and watch the presentation it will start at 1:00pm.

Remember to get your Golf registrations in we are over 75% full already and also there are opportunities to sponsor a hole, give an Silent Auction item or even sponsor the BBQ lunch please contact Jamie Kruspel for information.

I would like to thank the people at Great Lake Copper for taking us on the tour of their manufacturing facility it was very interesting to see how they make the copper piping and tubing and the process involved and thank-you to Khalid El-Kadri for setting up the tour and also the dinner.

One last item is that there is no monthly meeting in May the golf tournament is our last meeting of the 2010-2011 ASHRAE year.

I would like to thank every one you came out to the meeting this year I felt we had a good year with good speakers, topics and locations. The group of people who are on the ASHRAE Board of Governors have been constantly been trying to keep things fresh and make good changes to help benefit the chapter and its members and we will continue to grow in this direction of change. We have been able to recruit some of our younger members to the board and they have jumped in with both feet willing to help out in any way. The BOG looks forward to the upcoming year and as mentioned have more changes in store already for next year.

Jason Vandenberghe  
President – ASHRAE London Chapter



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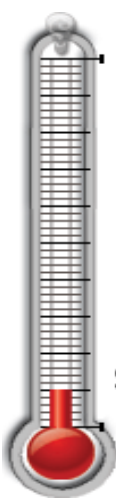
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**\$11,000 ASHRAE RESEARCH 2010-2011**

ASHRAE London Goal = \$11,000

funds contributed so far = \$1,500 (13.6%)

for contributions - contact:

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519-964-0022  
2010-2011 RP Chair

**\$1500**  
**\$0**

2009-2010 RP campaign

Our goal was \$10,000, we finished with \$11,072

I want to thank all of you for the help and hopefully we can grow on this

Karl Gilroy 09-10 RP Chair





## April Meeting Info

Speaker:

**Dr. Sam C. M. Hui, Ph.D., CEng, CEM**

Department of Mechanical Engineering, The University of Hong Kong  
Hong Kong

Dr. Sam C. M. Hui is a Teaching Consultant and an Honorary Assistant Professor of the Department of Mechanical Engineering, The University of Hong Kong. He has a strong technical background in the study of energy efficiency in buildings and is active in promoting sustainable building technology. He has good experience in practical building services design and has carried out teaching, research and consultancy studies on building energy efficiency, renewable energy and sustainable architecture. He has published more than 60 technical articles in academic/professional journals and conferences and has acted as a visiting fellow to research institutes in Japan, Germany and USA. He has been invited to present research papers at different institutions, forums and conferences in Hong Kong, Mainland China and overseas. He has also acted as a Technical Expert in building energy code and green building assessment projects in Hong Kong, Mainland China and Thailand. He was the President of the ASHRAE Hong Kong Chapter in 2006-2007 and has been serving the ASHRAE Region XIII since 1999.

Dr. Hui received a Higher Diploma and a B.Eng. (Hons.) degree in Building Services Engineering from the Hong Kong Polytechnic University in 1987 and 1990, respectively. He also obtained a Ph.D. Degree in Building Engineering from City University of Hong Kong in 1996. He is a Chartered Engineer, a Certified Energy Manager and a Corporate Member of the Chartered Institution of Building Services Engineers, the Hong Kong Institution of Engineers (Building Services Discipline), the American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc. and the Illuminating Engineering Society of North America. He is a Life Member of the Association of Energy Engineers and an Associate Member of the American Institute of Architects.

Topic:

### Green Building Design and Assessment

Promoting green buildings is essential for achieving sustainable development and good building performance. This presentation explains the important design considerations of green buildings and the key green building assessment methods in the world including LEED, BREAM, CASBEE and HK-BEAM. The basic principles and design strategies of green buildings are described. The philosophy and process of green building assessment are explained. By studying the concepts of green buildings from both engineering and architectural perspectives, it is possible to develop sound knowledge and understanding for practical design and evaluation.

## ASHRAE WEBCAST

Geothermal Heat Pumps will be the subject the next free ASHRAE Chapter Technology Transfer Committee (CTTC) Webcast scheduled for  
**April 21, 2011.**

[www.ashrae.org/GHPwebcast](http://www.ashrae.org/GHPwebcast)

Online Registration begins March 21, 2011

Baymar London will be hosting local members that wish to watch the broadcast.



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## **March Meeting Summary**

A group of chapter members had a plant tour of Great Lakes Copper Inc. Within the plant, copper recycled material and new copper plates are melted and then formed into various sizes of copper tubing products for the plumbing, medical gas, refrigeration and industrial products. Various equipment shape, draw, cut and form the copper into products that are shipped world side.

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## **Upcoming Meetings and Events**

**Thur April 21/2011:** ASHRAE Webcast: Ground Source Heat Pump Systems – Putting the Earth to Work for You  
see: [www.ashrae.org](http://www.ashrae.org)

**Mon June 6/2011:** ASHRAE London & Area Golf Tournament, Firerock Golf Club, Komoka

**June 25-29/2011:** ASHRAE 2011 Annual Conference

Join ASHRAE in Montreal, a city that brings a bit of European charm to North America. New for the conference is the Engineering Tools track that explores energy modeling and building information modeling.

[http://www.nxtbook.com/nxtbooks/ashrae/meetingplanner\\_201103/](http://www.nxtbook.com/nxtbooks/ashrae/meetingplanner_201103/)

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### **ASHRAE Hamilton Golf Tournament**

Anyone interested in entering either as a Single Player, A Two-Some or a Four-Some, please send an email to David Rasmussen of the Hamilton Chapter and he will forward to you a copy of the Entry Form.

The Tournament is a Best Ball held at the Legends On The Niagara, In Niagara Falls on

**Wednesday June 15<sup>th</sup>.**

Cost is \$150/person (includes Golf, Cart, Supper, Prize)

David Rasmussen  
Social Chairman/ RVC Research  
ASHRAE Hamilton Chapter

Email address: [tigerdave60@yahoo.ca](mailto:tigerdave60@yahoo.ca)

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## **Student Activities**

Announcement from Ralph O. Buchal, Ph.D., P.Eng., Associate Professor, Director of Integrated Engineering, Department of Mechanical and Materials Engineering, The University of Western Ontario

There were many fine projects on display at MMEDD. Based on judges evaluation and consultation, I am pleased to announce that we have selected the following project as the overall best project at MMEDD:

Project title: HVAC System Design: The Drake Well Museum

Students: Fady El Koriny, Shahnawaz Lodhi, Zachary Swartz and Mohammed Othman

Faculty Advisor: Walid Altahan

The winners will receive a prize of \$100 each. Congratulations!

Project: Drake Well Museum, Titusville, Pennsylvania

Summary: The objective of our project was to design an energy efficient and cost effective HVAC system for the Drake Well Museum as per the 2011 ASHRAE Student Design Competition. Our team analyzed the location, space, existing equipment of the location, in order to evaluate the best possible design for the museum. Then, precise heating, cooling and ventilation loads were determined in order to size the system. The most effective system to be used for this building was found to be a VRF system with a geothermal heat pump as the heat source. The HVAC system designed includes all the components required for exhaust air, supply air, fresh air, and return air distribution systems. The design project also entailed design of ducting, fans, diffusers, air handling units, piping, heating, and cooling equipment.

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ASHRAE, founded in 1894, is an international organization of some 50,000 persons. ASHRAE fulfills its mission of advancing heating, ventilation, air conditioning and refrigeration to serve humanity and promote a sustainable world through research, standards writing, publishing and continuing education.





### **Final Energy Savings Figures Announced for 2010 Energy Standard**

More than 30 percent energy savings can be achieved using the recently published 2010 version of Standard 90.1 vs. the 2004 standard, according to an announcement made today by ASHRAE at its 2011 Winter Conference. ANSI/ASHRAE/IES Standard 90.1-2010, Energy Standard for Buildings Except Low-Rise Residential Buildings, which provides minimum requirements for the energy-efficient design of buildings except low-rise residential buildings, was published in November 2010. ASHRAE was awaiting the final results of analysis work from Pacific Northwest National Laboratories in support of the U.S. Department of Energy (DOE) Building Energy Codes Program on addenda included in the standard. The final figures were made available and were announced today at ASHRAE's annual press breakfast.

Without plug loads, site energy savings are 32.6 percent and energy cost savings 30.1 percent. Including plug loads, the site energy savings are estimated at 25.5 percent and energy cost savings 24 percent.

"Three years ago, the 90.1 project committee set an aggressive goal of 30 percent savings for the 2010 version," ASHRAE President Lynn G. Bellenger said. "That the target was met and exceeded is a testament to the talent and dedication of the men and women from ASHRAE and the Illuminating Engineering Society (IES) who developed and evaluated over 119 change proposals to increase the stringency of our flagship energy conservation standard. At the 35th anniversary of Standard 90.1, it continues to lead the way in our industry as the minimum standard for energy efficiency."

On a nationally aggregated level, building type energy savings ranged from 8.8 percent to 38.3 percent and energy cost savings from 7.9 percent to 33.6 percent. These figures include energy use and cost from plug loads.

Extensive analysis work was performed by a team from Pacific Northwest National Laboratories in support of the DOE Building Energy Codes Program. Sixteen different building prototypes were modeled in 17 different climate zones for a total of 272 building types and climate zone combinations.

How was the energy reduction achieved? Here are a few examples:

- The Scope was expanded so that 90.1 covers receptacles and process loads, including data centers. This allows future addenda to the standard to address energy consuming equipment and systems previously outside its scope.
- Building Envelope: Continuous air barrier and cool/high albedo roof requirements were added.
- Lighting: Most interior Lighting Power Densities were lowered, and additional occupant sensing controls and mandatory daylighting requirements were added for specific spaces, along with a new five-zone exterior Lighting Power Density table.
- Mechanical: Most equipment efficiencies are higher, energy recovery is required in more applications, economizers are required in more climates and more energy-conserving controls are required.
- Modeling requirements have been clarified and expanded so that building modelers can more accurately compare energy cost of their building project with an appropriate baseline building as defined by the standard.

"The 90.1 standard is a fluid document," Mick Schwedler, immediate past chair of the 90.1 committee, said. "As technology evolves, the project committee is continually considering new changes and proposing addenda for public review. The rigorous, open, public review process following ASHRAE and American National Standards Institute (ANSI) procedures, results in a document that is both technically sound and reaches consensus."

"I agree wholeheartedly with Mick on the strength attributes of Standard 90.1 based on our ASHRAE/ANSI consensus process," echoed Steve Skalko, current chair of the committee. "As we look ahead to exploring new areas of energy savings from energy consuming equipment and systems, we will seek input from materially affected and interested parties. We welcome their input to help the project committee in this endeavor."

The standard is written in mandatory code language and offers code bodies the opportunity to make a significant improvement in the energy efficiency of new buildings, additions and major renovations.

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### **Free ASHRAE Webcast Highlights Ground Source Heat Pumps: Registration Opens March 21**

While temperatures above ground vary with the seasons one constant is the temperature underground, which stays relatively the same all year. Designers in the built environment using ground source heat pump systems are harnessing the energy underground to help with heating and air conditioning in the buildings they design. ASHRAE's upcoming webcast, "Ground Source Heat Pump Systems – Putting the Earth to Work for You," focuses on this method of using underground temperature to create a system using natural resources to save energy and money at the same time. The webcast takes place April 21, 2011, from 1–4 p.m. EDT.

"The overwhelming choice from our several webcast surveys has been ground source heat pump systems," Dave Shugars, chair of ASHRAE's Chapter Technology Transfer Committee Webcast Ad Hoc Committee, said. "This webcast will highlight several critical factors in the evaluation and design process that are essential to deliver system efficiency. From understanding ground characteristics, to avoiding pitfalls of design and installation, the webcast is a must see for discerning owners and designers alike."

The webcast presenters are Jeffrey D. Spitler, Ph.D., P.E., professor in the School of Mechanical and Aerospace Engineering, Oklahoma State University, Stillwater, Okla.; Kirk T. Mescher, P.E., principal, CM Engineering, Inc., Columbia, Mo.; and Mick Schwedler, P.E., manager, Applications Engineering, Trane, LaCrosse, Wis.

The live program will be archived online until May 5, 2011, for viewers who are unable to participate on April 21. Registration is required to view the archived program. For more information on the webcast program, and ASHRAE ground source heat pump resources, visit [www.ashrae.org/ghpwebcast](http://www.ashrae.org/ghpwebcast). If you have questions about the webcast.



### **ASHRAE Winter Conference Sees Best Attendance in 15 Years**

The 2011 ASHRAE Winter Conference saw its highest attendance numbers in years, as well as the announcement of updated energy savings figures for ASHRAE's energy standard. Some 3,400 people attended the Conference, held Jan. 29-Feb. 2, in Las Vegas, Nev.; of that number, 400 were first-time attendees. Also taking place in conjunction with the meeting was the Air-Conditioning, Heating, Refrigerating Exposition, which attracted over 54,000 registered visitors and exhibitor personnel. The Show was by far the largest and best attended AHR Expo in the Western states, with more than 1,900 exhibiting companies and their 20,000 exhibiting personnel—the second largest number of exhibiting companies in the Show's history. Overall, the 2011 AHR Expo was the second largest held outside of Chicago.

The ASHRAE Conference offered a technical program with nearly 300 sessions, 20 educational courses and numerous social events. The meeting also featured more than 600 meetings of technical, standards and standing committees, developing guidance for the future of the industry and ASHRAE. The biggest buzz at the Conference centered on the latest energy saving figures of ANSI/ASHRAE/IES Standard 90.1-2010, Energy Standard for Buildings Except Low-Rise Residential Buildings, which provides minimum requirements for the energy-efficient design of buildings except low-rise residential buildings. Without plug loads, site energy savings are 32.6 percent and energy cost savings 30.1 percent. Including plug loads, the site energy savings are estimated at 25.5 percent and energy cost savings 24 percent. The standard is written in mandatory code language and offers code bodies the opportunity to make a significant improvement in the energy efficiency of new buildings, additions and major renovations.

Other Conference highlights included the Technical Plenary, with its focus on Standard 189.1, Standard for the Design of High-Performance, Green Buildings Except Low-Rise Residential Buildings. The Plenary drew over 700 attendees, with standing room only. Additional sessions from the Technical Program are part of ASHRAE's Virtual Conference, which provides access to more than 250 presentations and PDFs of posters. Register or access presentations at [www.ashrae.org/lasvegasvirtual](http://www.ashrae.org/lasvegasvirtual).

Also offered were six Professional Development Seminars and 14 short courses from the ASHRAE Learning Institute. The most popular courses were Using Standard 90.1 to Meet LEED Requirements; Determining Energy Savings from Performance Contracting and LEED® Projects: Measurement and Verification; Successful Solar Applications for Commercial & Industrial Facilities; The Commissioning Process & Guideline 0; and Energy Modeling Best Practices and Applications: HVAC/Thermal.

The Conference served as the launch of ASHRAE's newest certification program, the Building Energy Assessment Professional certification, with more than 60 candidates taking the exam. The new certification recognizes individuals' ability to audit and analyze residential, commercial and industrial buildings. It complements ASHRAE's Building Energy Quotient program as well as the Building Energy Modeling Professional certification. Together, the programs provide a valuable toolkit when it comes to the evaluation and reduction of building energy use.

Top selling publications included Standard 189.1-2009; Standard 62.1-2010; the "ASHRAE Pocket Guide" and new publications including Standard 90.1-2010, "ASHRAE GreenGuide, The Design, Construction, and Operation of Sustainable Buildings," third edition; "Green Tips for Data Centers;" and the Standard 90.1-2010 User's Manual

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### **Do Clothes Make the Man Hotter or Cooler? Role of Fashion in Thermal Comfort Studied by ASHRAE**

The role of international fashions in determining how cool or hot we are is being studied by ASHRAE. It's not the impact of Gucci or Chanel on our style but rather how non-western wear, such as burqas or saris, affects our thermal comfort. Comprehensive data exists on western clothing insulation values but little research exists on non-western. Having information on attire like saris could influence the design of ventilation and air-conditioning systems to provide the best thermal comfort for occupants.

"Given the growing energy needs of large nations such as India, China and Pakistan, all of which often have different clothing styles from western nations, knowing more about the impact of clothing on comfort is essential to improving ventilation and air-conditioning systems for these countries," John Stoops, head of the project monitoring subcommittee for Technical Committee 2.1, Physiology & Human Environment, which is overseeing the project, said. "The project also will look at how different fabrics and body postures and movements impact the insulation value of cloth. We expect to find that the results of non-western wear on thermal comfort will be different than that of western wear due to looser fit, long gowns and lighter materials that promote movement of air."

1504-TRP, "Extension of the Clothing Insulation Database for Standard 55 and ISO 7730 to Provide Data for Non-Western Clothing Ensembles, Including Data on the Effect of Posture and Air Movement on that Insulation," is one of 17 projects currently out for bid by ASHRAE. The deadline to submit proposals for all projects is May 16.

Results of 1504 would be of fundamental importance to both ASHRAE and the International Organization of Standardization (ISO) standards, building and building system designers and vehicle designers around the world. Specifically, it could expand the scope and reach of ASHRAE Standard 55, Thermal Environmental Conditions for Human Occupancy, to a worldwide audience.

For other projects open for bid, refer to ASHRAE web site ([www.ashrae.org](http://www.ashrae.org))



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**ASHRAE Online Courses Feature High-Performing Guidance**

For a more sustainable world, high performance is demanded of buildings. The same applies to continuing education. Two courses related to high-performance building design are being offered as part of ASHRAE Learning Institute's (ALI) spring online series. Twelve online instructor-led short courses run from late March through early May and are available to those interested in expanding their knowledge of the HVAC industry and keeping up to date with the latest technology and their applications. Many popular courses are offered, several of which include updated material.

Basics of High Performance Building Design, taking place April 27, focuses on the basic application of ANSI/ASHRAE/IES Standard 90.1-2010, Energy Standard for Buildings Except Low-Rise Residential Buildings, and ANSI/ASHRAE/USGBC/IES Standard 189.1-2009, Standard for the Design of High-Performance, Green Buildings Except Low-Rise Residential Buildings, to achieve high-performance building design. The course focuses on the differences in purpose and requirements between Standards 189.1 and 90.1.

"The Basics of High Performance Building Design course will help you earn the 'three greens'," instructor Tom Lawrence, Ph.D., P.E., University of Georgia, said. "First, you will be helping the planet stay green by reducing the energy, water and materials required to build and operate a facility. Second, you will be left with a facility that will save you 'green' due to lower operating costs and more efficient operations. Finally, you will have a building that will leave its neighboring buildings 'green with envy' when they know that they have a lower market value compared to their high performance neighbor."

Advanced High Performance Building Design, May 4, focuses on advanced concepts involved in applying Standards 90.1 and 189.1 to achieve high-performance building design. More emphasis is placed on case studies to move beyond the minimum requirements of these standards.

"In many instances, building design objectives tend to regard minimum code requirements as a ceiling of quality rather than a minimum requirement," instructor Jeff Ross-Bain, P.E., ASHRAE-Certified Building Energy Modeling Professional, Ross-Bain Green Buildings, LLC, said. "However, the development of high-performance green building methods, strategies and technologies has given designers the tools to reach for energy efficiency levels in buildings that exceed these minimum requirements and, in fact, are beginning to approach net-zero-energy building status. In order to advance the performance of buildings, it is essential that the engineering community rethink 'business as usual' and begin to maximize the performance of buildings – beyond the codes. We have tools, resources and real-world examples available to help us achieve those goals. The advanced energy design course will give the attendees an insight into ways in which these principals can be integrated into practice."

A full list of courses and registration information can be found at [www.ashrae.org/onlinecourses](http://www.ashrae.org/onlinecourses).

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**Intensive ASHRAE Workshop Highlights Essentials of HVAC Design for High Performing Buildings**

As the demand for high performing systems and buildings has risen, what is considered to be status quo in HVAC&R has changed. Whether you're an experienced engineer or new to the field, it's crucial to have a firm understanding of these new HVAC& essentials for the green building industry.

ASHRAE Learning Institute presents an intensive, three-day workshop focusing on both the fundamental and technical aspects of HVAC design in commercial buildings, providing practical strategies for HVAC designers and others involved in delivery of HVAC services. HVAC Design Essentials: Tools for High Performance Building Designers takes place at ASHRAE Headquarters in Atlanta, Ga.

The workshop addresses the skill set that will be required by designers of the future; techniques to interact effectively with all design partners in an integrated design team; the economics of sustainable buildings; and the skills needed to design high-performance buildings, to name just a few.

"HVAC Design Essentials is ideal for engineers looking to learn about the latest tools and technology in the high-performance building industry, but is also beneficial for those new to the field who want to give themselves an edge," Filza Walters, professional development committee chair said. "Facilities managers involved in new construction or technicians who would like to gain design knowledge are also encouraged to attend."

The course is led by ASHRAE members Julia Keen and Joel Primeau, both are licensed engineers and ASHRAE Certified High Performance Building Design Professionals. Keen is associate professor of architectural engineering and construction science at Kansas State University, Manhattan. Primeau is director of sustainable design at Genivar, in Ontario, Canada.

In addition to updates on the most cutting-edge green HVAC&R tools and technology, attendees receive a copy of Standard 189.1, Standard for the Design of High Performance Green Buildings Except Low Rise Residential, and the 189.1 User's Manual. Professional Development Hours and Continuing Education Units are also available.

Register early to save: Advance conference registration is \$1,189 (\$939 member price) and \$1,239 after April 15 (\$989 member price). A company discount is available for \$889 per person when three or more from the same employer enroll at the same time. More information can be found at [www.ashrae.org/hvacdesign](http://www.ashrae.org/hvacdesign).

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ASHRAE, founded in 1894, is an international organization of some 50,000 persons. ASHRAE fulfills its mission of advancing heating, ventilation, air conditioning and refrigeration to serve humanity and promote a sustainable world through research, standards writing, publishing and continuing education