



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

LONDON CANADA CHAPTER #116

<http://LondonCanada.AshraeChapters.org>

Mon Oct 28/2013

BOARD OF GOVERNORS

President

Jamie Kruspel
ph: 519-200-2197
jamie.kruspel@td.com

Vice President & Program

Ibrahim Semhat
ph: 519-681-1221 e234
ibrahim.semhat@jci.com

Secretary

Mike Piluk
ph: 519-652-8280
mike_piluk@hotmail.com

Treasurer

Jorden Foster
ph: 519-679-8660
jordan.foster@chorley.com

COMMITTEE CHAIRS

Technology Transfer

Khalid El-Kadri
ph: 519-681-1977
khalid@somersep.com

Membership Promotion

Jeff Watson
ph: 519-679-8660
jeff.watson@chorley.com

Research Promotion

John Freeman
ph: 519-266-3587
jfreeman@gpainc.ca

Student Activities

Benjamin Oliver
ph: 705-945-0139
ben.oliver@chorley.com

YEA

Nikola Zubic
ph: 519-679-8660 e240
nik.zubic@chorley.com

Grassroots Gov Activities

Ibrahim Semhat
ph: 519-681-1221 e234
ibrahim.semhat@jci.com

History & Newsletter

Tom Pollard
ph: 519-685-2570
tpollard@execulink.com

Topic

Radiant Cooling Design Process and Control Options

Speaker

Dale Hanscomb Sales Manager- Building Technology Division REHAU

Meeting - Mon Oct 28/2013

Student Night

Windermere Manour - UWO
200 Collip Circle, London

5:30pm-Social 6:00pm-Dinner
7:00pm to 8:00pm - Program

ADVANCED PAYMENT BEFORE MEETING
by using PAYPAL

use chapter web site to register and pay
<http://LondonCanada.AshraeChapters.org>

\$50 Nonmembers and Guests
\$50 CASH AT DOOR (if not preregistered)
\$40 London Chapter Member or \$250.00 for meal plan
FREE for Students (student night)

Meeting RSVP: <http://www.surveymonkey.com/s/BKDK57Q>

Presidents Message

A huge thank you to everyone that came out to our first Chapter meeting. That terrific level of support kicked-off a great start to the year. Let's keep the momentum going with our next meeting October 28, 2013 at Windermere Manor. The topic will be Radiant Cooling Design and is presented by Dale Hanscomb. This will be a Student night and we will have many interested and enthusiastic Engineering Students joining us. Your support of Student night and other student programs is greatly appreciated as it helps ensure long stability for our membership.

In regard to chapter support, your feedback is always welcome. Please feel free to contact me at any time (Jamie.kruspel@td.com, 519.200.2197) to share your thoughts on Chapter Programs and how we solicit support. Student Programs, ASHRAE Research, 2014 CRC all require funding and to date the support received has been terrific. However, it is understood that with so many programs, the requests can be overwhelming. Please share your thoughts, criticisms, or ideas and the BOG will review. All feedback is appreciated.

The 2014 CRC in Grand Bend is fast approaching. There remains much planning and a separate committee chaired by Karl Gilroy is being formed. If you are interested please contact Karl (KGilroy@ehpricesales.com). Key roles include:

Secretary
 Treasurer
 Venue & Meeting Room Coordinator
 Transportation Coordinator
 Registration Manager
 Sponsorship

Feel free to reach out to Karl and pledge your support of helping us deliver the best CRC to date!

As the weather turns cooler, thoughts of warm summer golf fade as distant memories. However, it is not too early to reserve your spot in our 2014 ASHRAE London Golf Day: Monday June 2, 2014 at Firerock Golf Club. Please send me an email to reserve your foursome.

Thanks for your continued participation and support of our Chapter.

All the best.
 Jamie Kruspel
 Chapter President 2013/2014
 ASHRAE London Canada Chapter

Upcoming Chapter Meetings

Monday Nov 25/2013

Monday Jan 27/2014
 Monday Feb 24/2014
 Monday Mar 31/2014
 Monday Apr 28/2014
 Monday Jun 2/2014

Other Meetings

Jan 18 to 22, 2014 - ASHRAE Winter Conference - New York, NY (see ashrae.org)
 Jan 21 to 23, 2014 - AHR Expo - New York (ahrexpo.com)

Mar 19 to 21, 2014 = Canadian Mechanical and Plumbing Exposition (CMPX) - Metro Toronto Convention Centre

Thu April 17/2014 ASHRAE WEBCAST - Buildings in Balance: IEQ and Energy Efficiency
<https://www.ashrae.org/membership--conferences/webcasts>

June 28 to July 2, 2014 - ASHRAE Annual Conference - Seattle, WA (see ashrae.org)

Meeting Survey

If you attend the chapter meeting, be sure to complete the meeting survey that is emailed out and you will be entered into a draw for a bottle of wine at the next meeting.

BAYMAR
 SUPPLY LTD.

Progressive HVAC Solutions

Eric Shaw - Sales Manager - London District
 Phone: (519) 964-0022 Inwats: (888) 296-2357
 Fax: (519) 440-7039 E-Mail: eshaw@baymarsupply.com
 on the web: www.baymarsupply.com

RERCO

DOUSQUET
 Technologies

MITSUBISHI
 ELECTRIC
 Changes for the Better

VENMAR CEE

SIEMENS

Infrastructure and Cities

Siemens Canada Limited
 Building Technologies Division
 514 Newbold Street
 London, Ontario
 N6E 1K6 / Canada

Tel: (905) 465-9566
 Fax: (905) 465-9810
 Cell: (519) 852-9622
jennifer.corey@siemens.com

Jennifer Jeanne Corey
 Account Executive

Phone: (519) 268-3166
 Fax: (519) 268-3165
 Web Site: www.eriesheetmetal.com

HEATING
 VENTILATING
 CUSTOM FABRICATING

ERIE
 SHEET METAL
 INC.
 COMPUTERIZED PLASMA CUTTING
 INDUSTRIAL - COMMERCIAL

JOE LEGUE
 President

248 HAMILTON CRESCENT
 DORCHESTER, ONT. N0L 1G1

IRONROSS Price Sales

Manufacturer Representatives for Industrial & Commercial Air Handling Products
 Members of London, Windsor and Hamilton Chapters
 George Clark • Jim Ironside • Kirk McLeod
 Mike Popofski • Jon Popofski • Larry Mills (Sarnia)

8-75 Saltsman Drive
 Cambridge, ON
 N3H 4R7

Phone: 519-653-9470 Fax: 519-653-7853
 Email: lryder@ironrosspricesales.com
 Website: www.ironrosspricesales.com

NORTHERN INDUSTRIAL - FANS & BLOWERS -

SCOTT C. DEAN, P. Eng.

Tel: (519) 740-7000
 Fax: (519) 740-0051

1-888-FAN-COIL
niscont@iprimus.ca



4-122 Earl Thompson Rd, AYR, ON N0B 1E0

systemair

Robert Ferris
 Sales Manager

Systemair Mfg Inc.
 10048 Industrial Blvd.
 Lenexa USA 66215
 Phone: 913 498 9554
 Mobile: 913 626 0973

robert.ferris@systemair.net
www.systemair.net

Speaker Bio

Dale Hanscomb REHAU

Dale Hanscomb is the Sales Manager in charge of the Building Technology Division of REHAU for Ontario and has been actively involved in Hydronics since 1997. Responsibilities include all aspects of sales, design, and service for REHAU's Radiant Floor Heating Systems, Radiant Cooling Systems, Geothermal Systems, Residential Fire Protection Systems, Plumbing Systems, Energy Transfer Piping, and REHAU Smart Controls (Building Automation System).

He has participated in various organizations over the years including the Canadian Institute of Plumbing and Heating, the Canadian Hydronics Council, the Ontario Hydronics Council, the Hydronics Marketing Group, CASA (Canadian Automatic Sprinkler Association), and as a member of the Technical Committee to update CSA F280.

Topic

Radiant Cooling Design Process and Control Options

This presentation provides a fundamental understanding of the options for incorporating radiant cooling into commercial project design. Learning Objectives:

1. Explain the basic principles of radiant cooling and the factors that affect thermal comfort;
2. Discuss how a radiant cooling system can be combined with air handling unit to create a "hybrid" radiant cooling HVAC system which can address the concern of condensation
3. List the factors that affect output capacities of a radiant cooling system;
4. Indicate how a radiant system leads to an improved building environment, in terms of thermal comfort and indoor air quality;
5. State the reasons that a "hybrid" cooling HVAC system can lead to reduced energy consumption;
6. Compare initial investment costs, operating costs and maintenance costs for a "hybrid" radiant cooling system

Student Activities

This month, we have had 2 new student members join ASHRAE! Welcome Will and Simon!

Since this month is student month, I want to draw everyone's attention to the scholarship programs provided by ASHRAE at the Society level. They are great opportunities for students regardless of their progression through their academic career. The ASHRAE Scholarship Program at the Society Level has recently increased their reach to include high students as well!

The scholarships available include:

High School Level

Four \$3,000 scholarships

Engineering Technology

One \$3,000 scholarship
 Three \$5,000 scholarships

Undergraduate

Four \$10,000 scholarships
 Five \$5,000 scholarships
 Three \$3,000 scholarships

For more information about these scholarships, including eligibility criteria, please visit <http://www.ashrae.org/scholarships>, send me an e-mail (Ben.oliver@chorley.com) or find me at our monthly meeting to discuss further.

Ben Oliver, MBA, B.Eng.Mgt
 Chapter Student Activities 2013/2014
 ASHRAE London Canada Chapter



www.somersep.com

Daryl Somers, CET

96 Meg Drive, London, Ontario N6E 3T7
 Phone: 519-681-1977 Fax: 519-686-9324 Cell: 519-670-7720
 Email: daryl@somersep.com



Norm Clarke, P. Eng.
 District Manager

Trane Canada
 8 Belleisle Court
 London, On N5V 4L2
 Tel 519 453 3010
 Fax 519 453 3024
 Windsor Tel 519 256 7922
 Sarnia Tel 519 337 0740

Jason Vandenberghe Technical Sales Representative



Sales & Marketing Inc.

4390 Paletta Court Burlington, ON L7L 5R2
 Bus: (905) 631 5815 Fax: (905) 637 8655
 G.T.A. Bus: (647) 288 0980 Cell: (519) 670 8066
 Email: jasonv@aquatech.ws
www.aquatech.ws



ENGINEERING LTD

Jim Bender, P.Eng.
 Contracting Sales
 #6 - 320 Neptune Cres.
 London, ON N6M 1A1
 Tel: (519) 457-6700
 Fax: (519) 457-8900
 bender@hitseng.com

Toll Free: (800) 341-3110



Hugh D. Palsler
 President

hpalsler@palslerent.com
www.palslerent.com

London, Ontario
 tel. 519-471-9382
 fax. 519-471-1049
 cell. 519-660-9135

Concord, Ontario
 tel. 905-738-5200
 fax. 905-738-6111



CONTROL SYSTEMS INC.

Your Partner in Energy Savings...

www.durellcontrols.com

John Xiang, P.Eng., LEED AP BD+C - Systems Manager

johnx@durellcontrols.com

Phone (519) 652-5502

Fax (519) 652-0265

3392 Wonderland Rd. S., Bldg. 9, Units #1 & 2, London, Ontario N6L 1A8



BACnet

ACCESS

HVAC

LIGHTING

Native BACnet

Membership

Greetings from the Membership Chair,

Last month's Chapter Meeting was a Membership Promotion night. I would like to thank everyone who attended as it was a successful and informative way to kick off the new ASHRAE year. The meeting was well attended, and we were also able to have a few students attend from Western University.

At the meeting, I spoke about my role as MP Chair and the goals for our Chapter. I also ended by giving my Testimonial as to why I joined ASHRAE and how it has impacted my career. During that testimonial, I challenged other Members to encourage those that are not a part of ASHRAE to join. I continue to ask you all to help me promote this wonderful organization that has helped us throughout our careers. We have had 6 new members join over the course of the last month. Our current Chapter Enrolment is 122 members. We started the year off with 116, and our goal from Society is to have a net gain of 2 members over the course of the year. We are off to a great start, however membership retention will be a key item throughout the year, so I encourage you all to renew your membership on time.

I look forward to seeing you all at the next meeting.

Best Regards,
Jeff Watson
Chapter Membership Chair 2013/2014
ASHRAE London Canada Chapter

 Arun Arora Account Executive Tel: 905-264-6372 Ext. 204 Fax: 905-264-6432 aarora@belnor.com	1 Royal Gate Boulevard, Unit J Vaughan, ON Canada L4L 8Z7 www.belnor.com
---	--

YEA

A Young Engineers in ASHRAE event is planned for Thursday November 7/2013. The location will be at the South Palasad starting at 7:00pm to 10:00pm. Address is 141 Pine Valley Blvd, near the Wonderland and Southdale intersection. Be sure that you are on the contact list if you wish to attend.

Zubic Nikola <Nik.Zubic@chorley.com>
Ben Oliver <Ben.Oliver@chorley.com>

ASHRAE Announces New High Performance Buildings Conference

ATLANTA ASHRAE has announced its next High Performance Buildings Conference will take place April 7-8, 2014, Hyatt Fisherman's Wharf, San Francisco, Calif.

Building upon the 2012 High Performance Buildings Conference and 2009 Net-Zero Energy Conference, the Conference seeks to advance the industry's efforts to accomplish a true high-performance built environment.

"The 2014 HPB Conference provides a unique opportunity for dialog among attendees to facilitate understanding of current indoor environmental quality and energy saving efforts and to share best practices for achieving high-performance buildings," Kent Peterson, Conference chair, said.

The conference topics provide a comprehensive overview of high performance building design with a focus on strategies in several areas, Peterson said. New subject areas include water efficiency, building occupant behavior, new building technologies and indoor environmental quality. In addition, there is increased emphasis on lighting/daylighting and the building envelope.

A case study-type poster session on "Measured Performance" and "Modeled Performance" is presented.

The conference format will include invited speakers as well as a call for presenters and a call for posters, which will be announced in the fall. Additional information can be found at www.hpbmagazine.org/hpb2014.

Attendees will be able to realize the synergy required between indoor environmental quality and energy savings through advanced HPB design through the conference as well as network with other HPB professionals, Peterson said.

The conference is being presented by ASHRAE's High Performing Buildings magazine, the industry's premier source for measured performance of practices and technologies to promote better buildings.

ASHRAE 2014 Winter Conference

Jan. 18-22, 2014

New York City, New York

New York City's iconic skyline serves as the perfect backdrop for the 2014 Winter Conference. In one of the world's top cities for most skyscrapers—nearly 600—it's only appropriate that the Conference puts a special focus on the design, development and operation of tall buildings. And they say if you can make it in New York City you can make it anywhere, so ASHRAE is also taking a look at new and innovative international design strategies for meeting environmental, geographical and cultural factors. Join the Society—along with the ASHRAE co-sponsored AHR Expo—as it returns to the Big Apple for the 2014 Winter Conference.

Item of Interest:

The AHR Expo takes place Tuesday, Wednesday, Thursday (Jan. 21-23), vs. its traditional Monday, Tuesday and Wednesday.

The ASHRAE Conference, which takes place Jan. 18–22 at the New York Hilton, allows you to network with your fellow ASHRAE members from around the world and shape the future of the built environment industry. The Technical Program has a building-oriented theme and seeks papers on building information systems; environmental health; international design; HVAC&R applications and systems; and, featured for this Conference, tall building performance. Nearly the entire technical program is approved for NY PDHs, AIA LUs and LEED® AP credits. Also offered are ASHRAE Learning Institute courses, social events and the opportunity to take part in more than 600 committee meetings.

Of course, you don't want to miss the ASHRAE co-sponsored AHR Expo, which allows you to see, touch and compare the newest products representing the most innovative technology in the HVAC&R marketplace. This year, the show takes place Tuesday, Wednesday and Thursday, Jan. 21–23 at Javits Convention Center, a change from its traditional Monday, Tuesday and Wednesday. The Expo will feature nearly 2,000 leading manufacturers displaying thousands of products. Also be sure to check out AHR Expo's comprehensive program of over 100 educational sessions, workshops and new product presentations offered at the Show.

To encourage attendance at the Conference, first-time conference attendees receive a discounted \$515 early bird rate for the entire Conference, which also provides admission into the Expo. Registration information for the Winter Conference can be found at www.ashrae.org/newyork and for the AHR Expo at www.ahrexpo.com.



ASHRAE Announces 2013-14 Conference Lineup

ATLANTA—Mark your calendars now because ASHRAE's conference schedule for 2013-2014 is widespread in both dates and global reach.

ASHRAE conferences present the latest developments in the industry and fundamental tried and true practices. Topics range from high performance buildings to buildings that have combustion with low-grade fuels.

Oct. 15-18, ASHRAE IAQ 2013: Environmental Health in Low Energy Buildings, Vancouver, British Columbia, Canada

Jan. 18-22, 2014, ASHRAE Winter Conference; Jan. 20-23, AHR Expo, New York, New York

Feb. 24-26, 2014, First International Conference on Energy and Indoor Environment for Hot Climates, Doha, Qatar

April 7-8, 2014, High Performance Buildings Conference, San Francisco, Calif.

April 24-25, 2014, Efficient, High Performance Buildings for Developing Economies, Manila, Philippines

June 28-July 2, 2014, ASHRAE Annual Conference, Seattle, Wash.

September 10-12, 2014, ASHRAE/IBPSA-USA Building Simulation Conference, Atlanta, Ga.

The conferences feature peer-reviewed papers, presentations with hands-on information presented in a non-commercial format, Professional Development Hours and networking opportunities.

ASHRAE, founded in 1894, is a building technology society with more than 50,000 members worldwide. The Society and its members focus on building systems, energy efficiency, indoor air quality, refrigeration and sustainability within the industry. Through research, standards writing, publishing and continuing education, ASHRAE shapes tomorrow's built environment today.

Students Showcase Sustainable, Innovative Practices as Part of Design Competition

ATLANTA—This year, in addition to the Student Design Competition, ASHRAE asked students to think outside the box with the new Applied Engineering Challenge, which invited students to design a portable refrigeration unit.

The Applied Engineering Challenge is part of the charge from Presidential Member Tom Watson, who put forth that ASHRAE broaden its horizons by making accessible technology for use in any country, by any person.

The Engineering Challenge stipulated that students design a refrigeration unit with a holding volume of 1 ft.³ that could transport small essential cargo, such as food or medicine. The temperature inside the box must be maintained at 25 F without an external power supply and the device must be able to be assembled anywhere in the world.

The first place Applied Engineering Challenge winners are Brian Kaufman, Nick Leeburg, Tony Lin and Micah Reich of San Jose University, Calif. Their faculty advisor is Nicole Okamoto, Ph.D.

The team chose a simple wooden frame for their freezer unit due to the simplicity of fabrication and availability of the material. As refrigerant, HFC-134a was used for its less detrimental impact to the environment compared to chlorofluorocarbons (CFCs). The freezer utilizes a swing motor compressor which allows the device to work while in transit, making the freezer more durable and able to handle vibration and changes in orientation. At just 65 lbs, the freezer can easily be carried between two people.

Also critical to the freezer's design is the solar panel and self-adjustable rack that allows a user to gather the maximum amount of sunlight. The solar panel powers an absorbed glass mat battery, which was chosen for its reliable track record in the solar industry and relative lower cost in relation to cycling life. The battery requires little maintenance and provides increased safety to the user—safety such as drop protection and no spilling of acid if broken.

ASHARE also announces the winners of the 2013 Student Design Competition, which recognizes outstanding student design projects, encourages undergraduate students to become involved in the profession, promotes teamwork and allows students to apply their knowledge of practical design.

This year's competition featured a mock design of a high rise residential building, with retail space on the lower floors, in Dallas, Texas.

Among the 41 entries from eight different countries, three were awarded first place in the three categories that the competition offers.

First place in HVAC Design Calculations is awarded to Jayson Bursill, Natasha Palmer, Angela Walton and Gavin Wong of the University of British Columbia, Vancouver, B.C., Canada. Their faculty advisors are Nima Atabaki, Ph.D., Geoff McDonell and Steven Rogak, Ph.D.

Limited mechanical space available for large plant equipment and exhaust ducting resulted in the team selecting an air-cooled heat recovery chiller for the roof and high efficiency condensing boilers for heating. Heat recovery was implemented via air-to-air heat pipes, which provide minimal leakage and are a passive technology, and allow for washroom exhaust recovery. Hydronic radiant panels were used for skin heating in the first floor retail space to lower the room air temperature and maintain occupant comfort.

The team used Ottawa, Ontario's climate when considering weather conditions and found, when compared to the Standard 90.1-2010, Energy Standard for Buildings except Low-Rise Residential Buildings, baseline, the design is 8 percent more efficient given the constraints on mechanical space and terminal unit selection for the Ottawa climate.

Analysis of the cost of installing the necessary equipment for the heat recovery chiller gave a payback period of 13 years and a net present value of \$3,358 over the life of the building. This is with the consideration of additional piping costs and the fuel (natural gas) savings for when the chiller waste heat production was equal or greater than the building heating load so the boiler could be turned down.

As an alternative energy conservation measure, the team chose triple-paned windows. The energy savings from adding an additional inert space between the environment and the conditioned space are undeniable. It was found that the use of moderately tinted triple-paned windows would reduce heating and cooling equipment size by 14 and 25 percent respectively.

First place in HVAC System Selection is awarded to Garrett Elder, Nathan Love and Nick Theimer of Kansas State University, Manhattan, Kan. Their faculty advisors are Fred Hasler, P.E., and Julia Keen, Ph.D., P.E., ASHRAE-Certified High-Performance Building Design Professional.

After considering several systems, the team chose a water source heat pump (WSHP) with sewage heat exchanger (SHX) for the building. A water source heat pump allows for load sharing between spaces within the building via a common water loop; it is an extra benefit that helps to improve the efficiency of the entire building's heating and cooling system. The system also has the potential to be self-balancing due to the fact that simultaneous heating and cooling will occur during the year.

The addition of the SHX to the water loop provides conditioning to the loop prior to activating the boiler and fluid cooler. The system takes advantage of the fairly consistent effluent (i.e., wastewater) temperature range between 52 and 75 F. This range allows the effluent to be used as a heat source or heat sink for the building's central water loop. The SHX also consumes the lowest amount of energy when compared to other systems.

Ultimately, the students based their decision on the Triple Bottom Line (TBL): profit, people and planet. Though the WSHP with SHX has a higher initial cost (profit) than other suggested alternatives, the cost did not prove to be a deterrent when the students considered the many other requirements for the systems, such as low impact on energy and water usage and strict acoustic criteria. For the second factor, "people," the team found that the innovative SHX allows the building and its owner to ultimately be an example and leader for sustainable energy in its region. Finally, when considering "planet," the students explain how the system affects the environment: "the fact that the SHX can provide the required capacity acting as a heat sink or heat source from a renewable energy source sets this system apart."

First place in Integrated Sustainable Building Design is awarded to Jiayi Qiu, Dalin Si, Yukai Wu, Zhongzhe Wu, Ruijun Zhang, Zhiang Zhang and Xuyang Zhong of the University of Nottingham, Ningbo, China. Their advisor is Ed Cooper.

The students redesigned the building and relocated it to Ningbo, China, on a greenfield close to basic services as stipulated by Standard 189.1, Standard for the Design of High-Performance, Green Buildings Except Low-Rise Residential Buildings. They considered passive cooling strategies such as shading in summer and natural ventilation in May, June and September. The students also explained that increasing solar heat gain and use of high thermal mass material will also contribute to thermal comfort in winter time.

For shading on residential areas, the students suggested photovoltaic devices and a double-skin façade. The façade would have one panel each and generate 22,468 KWH/year. Similar panels on the retail portion of the building would generate 7,270 KWH/year.

A closed vertical loop system was selected for the ground side circulation. Due to the space restriction, the W-type of buried pipe was chosen to increase the area of heat exchanger with ground soil in per borehole, with 240 boreholes in total.

The projects are shared at the 2014 Winter Conference in New York City, Jan. 18-22.

ASHRAE Conferences 2013-2014

Attend to See What's New, Learn New Skills, Earn PDHs, Network with Peers

ASHRAE IAQ 2013: Environmental Health in Low Energy Buildings

Oct. 15-18, 2013 | Vancouver, BC, Canada

www.ashrae.org/IAQ2013

Comprehensive overview presented via papers.

Co-organizer:



ASHRAE 2014 Winter Conference

Jan. 18-22, 2014 | New York, NY

Jan. 21-23, 2014 | AHR Expo

www.ashrae.org/newyork

Bookstore Sponsor:



First International Conference on Energy and Indoor Environment for Hot Climates

Feb. 24-26, 2014 | Doha, Qatar

www.ashrae.org/hotclimates

Papers focused on arid and humid hot climates.

Organized by:



Qatar Environment & Energy
Research Institute

Member of Qatar Foundation

 **Qatar Oryx Chapter**

Co-sponsor:



Gold sponsor:



Endorsed by:



High Performance Buildings Conference

April 7-8, 2014 | San Francisco, Calif.

www.hpbmagazine.org/hpb2014

State-of-the-industry presentations



Efficient, High Performance Buildings for Developing Economies

April 24-25, 2014 | Manila, Philippines

www.ashrae.org/Developing2014

First ASHRAE conference on this topic.

Organized by:



Philippines Chapter

Co-sponsor:



Endorsed by:



ASHRAE 2014 Annual Conference

June 28-July 2, 2014 | Seattle, Wash.

www.ashrae.org/seattle

2nd Annual Research Summit presented.

2014 ASHRAE/IBPSA-USA Building Simulation Conference

Sept. 10-12, 2014 | Atlanta, Ga.

www.ashrae.org/Simulation2014

Single collaboration of Energy Modeling and SimBuild Conferences.

Organized by:



Get Updated on Current Trends and Make Industry Connections at an ASHRAE Conference!

www.ashrae.org/conferences

