



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

LONDON CANADA CHAPTER #116

<http://LondonCanada.AshraeChapters.org>

MAR 28/2011

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TOPIC:

**PLANT TOUR
GREAT LAKES COPPER INC.**

1010 Clarke Rd
London, ON N5V 3B2

Time: 4:00PM

Maximum 40 people for tour

Dinner:

Huron House Restaurant
1345 Huron Street
London, ON

Time: 5:30PM

Meeting - MONDAY MAR 28/2011

RESEARCH NIGHT

3:50pm - Gather and Sign-in

4:00pm - Tour Start (Sharp)

5:30pm - Dinner

\$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

Finally spring is coming, the sunshine and warmer weather I think we can put away the winter coats.

I would like to thank last month speaker Patrick Oilver from EH Price who talked about Noise Control in Schools. I would also like to thank Doug Cochrane from the Toronto Chapter also Nominating Member for Region 2 for coming out to our meeting is was great that he had the time to visit our chapter. Doug also made the chapter aware that David Underwood has been appointed as one of the Vice Presidents for ASHRAE Society which is great news for Region 2.

This month is our annual tour and we are going to Great Lakes Copper. Thanks to Khaled El-Kadri for setting up the tour as well as the dinner which will be right after at the Huron House.

Next month our meeting will be at the Lamplight Inn and we have a distinguished ASHARE lecturer from the University of Hong Kong Mr. Sam Hui who will be talking to us about "Green Building Design & Assessment". We are asking everyone to attend this meeting and also if you can to bring a collogue with you out to the meeting. We will be having a phone campaign to make sure we get lots of people out to this meeting as well asking members from other chapters and other associations.

Last but not least our annual golf tournament which many of you know has been switched to Firerock which we are very excited about. Please book your foursome as soon as you can we are filling up fast. We are also looking for Silent Auction items which will happen before and during dinner please contact Jamie Kruspel with any donations or you can bring them with you to the tournament.

As I mentioned at last months meeting we are also planning another golf tournament is September but will only be 9 holes and then dinner to kick off our 2011-2012 ASHRAE year. We will have more details to follow.

I look forward to seeing all of you at the tour.

Jason Vandenberghe

President - ASHRAE London Chapter

March Meeting - Tour Info

GREAT LAKES COPPER INC.
1010 Clarke Rd, London, ON N5V 3B2

Great Lakes Copper Inc. previously known as Wolverine Tube (Canada) Inc. is a manufacturer of copper tube products for the industrial, wholesale and refrigeration markets. The company has been in operation for over 50 years and based in London. Great Lakes Copper Inc. manufacture a variety of copper tubing products includes plumbing, refrigeration, medical gas, industrial, line sets & factory coating tubing.

BAYMAR advertisement with contact info for Eric Shaw and logos for AERCO, MITSUBISHI ELECTRIC, and VENMAR CES.

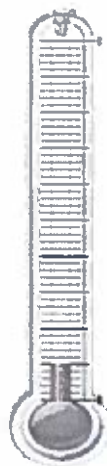
SIEMENS advertisement for Siemens Building Technologies, Ltd. with contact info for Eric Christopher Salin.

ERIE SHEET METAL advertisement with contact info for Joe Legue.

IRONROSS INC. advertisement for industrial and commercial air handling products with contact info for George Clark.

NORTHERN INDUSTRIAL advertisement for fans and blowers with contact info for Scott C. Dean.

Systemair advertisement with contact info for Robert Ferris.



ASHRAE RESEARCH 2010-2011

\$11,000

ASHRAE London Goal = \$11,000

funds contributed so far = \$1,050 (9.5%)

for contributions - contact:

Eric Shaw <eshaw@baymarsupply.com>
519-964-0022
2010-2011 RP Chair

\$1,050

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

\$0



2011 ASHRAE LONDON GOLF TOURNAMENT

The 2011 ASHRAE London Chapter (#116) is set for Monday June 6, 2011. The tournament will be held at **Firerock Golf Club** in Komoka, Ontario. The format will be a shotgun start and 4-player team scramble. There will a BBQ lunch prior to tee-off and a buffet dinner to follow. The dinner banquet will feature awards presentations, a preview of the 2011-2012 season, and a silent auction.

Registration will open at our next Chapter meeting February 28, 2011. Forms will be available at the meeting and on the ASHRAE London website. The cost has been kept the same as past years and will be \$600 per foursome. Your spot will be guaranteed upon receipt of payment. Sponsorship opportunities are available as well.

For any questions regarding the tournament format, registration, silent auction, or sponsorship, please contact:

Jamie Kruspel,
 Chapter Treasurer, Golf Tournament Chair
 519-200-2197
jamie.kruspel@td.com

Thanks to Forest City National for their past participation and support. We are excited for the 2011 tournament at Firerock and thank them for their accommodation.

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

Online Registration begins March 21, 2011

Feb Meeting Summary

Mr Patrick Oliver, P.Eng from EH Price Ltd presented on noise control and suggested requirements for school and other environments.

Past studies have found that sound levels in classrooms can contribute to learning problems. Patrick showed research and suggested noise levels.



SOMERS ENVIRONMENTAL PRODUCTS INC

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Upcoming Meetings and Events

Wed Apr 13/2011 (*NOTE DATE*) BestWestern - Lamplighter Inn:
Green Bldg Design & Assessment - Dr. Sam Hui, PH.D., CENG, CEM, Dept of Mechanical Design, University of Hong Kong
ASHRAE Distinguished Lecturer

Thur April 21/2011: ASHRAE Webcast: Ground Source Heat Pump Systems – Putting the Earth to Work for You
see: 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/

Energy Modeling Conference

ASHRAE is hosting an Energy Modeling Conference **April 4-6/2011** in Atlanta at ASHRAE Headquarters.

Lynn G. Bellenger, P.E., ASHRAE president - Keynote speaker
William J. Worthen, AIA, LEED AP - Keynote speaker

Sessions include:

- ASHRAE standards
- Cost of energy modeling
- Modeling for a variety of building types, such as hospitals, data centers and labs
- Building information modeling and integrating building performance
- Case studies

The conference covers energy modeling procedures, elements, and systems; case studies; and how different software applications address similar energy modeling challenges all while providing ample opportunities for networking.

ASHRAE is offering a special administration of the Building Energy Modeling Professional (BEMP) certification examination on April 6. There is a separate application fee for the certification exam. Certification applications must be received by ASHRAE 30 days prior to the exam. Applications will not be accepted onsite.

As part of the conference, The U.S. Department of Energy launches its development roadmap for EnergyPlus, OpenStudio, EPGUI, and other tools and introduces new, formal channels for public input. Attendees can provide feedback on the roadmap and on DOE's general activities in the simulation tools area.

Energy modeling software companies will offer 30-minute demonstrations. One-on-one comprehensive demonstrations also are available.

Registration is \$450/Member of ASHRAE, USGBC, or AIA / \$500 Non Member

This conference is ideal for hands-on modelers, principals responsible for energy modeling projects. For more information, and to register for the conference and apply for the BEMP exam, visit ashrae.org/energymodeling. Seating is limited – register early!

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 15th.

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

David Rasmussen Email address: tigerdave60@yahoo.ca
Social Chairman/ RVC Research
ASHRAE Hamilton Chapter



14 Projects Funded - Smart House Developed Through ASHRAE Grant

From smart home controls to solar powered gas refrigeration, undergraduate HVAC&R students in their senior year are able to gain hands-on experience in their field thanks to the 2010-2011 ASHRAE Undergraduate Senior Project Grant.

The grants, totaling some \$65,000, are awarded by ASHRAE to colleges and universities worldwide to promote the study and teaching of HVAC&R, encouraging undergraduate students to pursue related careers. The grants are used to design and construct projects. For more information, visit ASHRAE.org/studentzone

This year, 14 schools from across the country and around the world were awarded grants, with Purdue University-West Lafayette ranking the highest among the applicants for their proposal to develop smart home controls. As the top grant award winner, two students from the university are invited to present their project as part of the Student Program at the 2011 ASHRAE Winter Conference in Las Vegas, Nev.

Purdue University is designing and building a net zero energy home that will showcase a variety of new technologies for residential construction. Bill Hutzel, faculty advisor of the project, said:

The ASHRAE grant will provide the crucial infrastructure for monitoring and controlling the mechanical, electrical, lighting and other systems in the smart house by developing the controls schematic; developing the sequence of operation; developing the control code; installing the controls and sensors; and commissioning the building systems.

The smart house will become a multidisciplinary living laboratory for large numbers of university students interested in low energy residential construction. The school also anticipates displaying the home to media, contractors and the public and predicts that at least 500 Purdue students will visit the home annually over a two-year period.

"This will be a fun and exciting project and great way to get students interested in HVAC&R careers" Hutzel said.

Other ASHRAE grant recipients are:

Purdue University, Calumet, Energy Efficient HVAC&R Using Evaporative Cooling

California Maritime Academy, Solar Absorption Refrigeration Unit

Texas A&M University, Thermal Energy Storage Using Phase Change Materials and Carbon Nanotubes

Florida International University, Design and Testing of an Add on Rain Water External Radiant Wall Siding as both Thermal Mass and Heat Dissipater

Penn State, Controlled Exposure Experimentation Reactors and Ambient Response Facility for Student Experiments/Demonstrations

Widener University, Laboratory Ice Storage Cooling System for Air Conditioning Application

Montana State University, Modulating Scroll Compressor Energy Efficiency Experiment

UNC - Charlotte, group 2, Vapor Absorption Refrigeration Trainer

University of Wyoming, Comprehensive Study to Evaluate HVAC Systems and Envelope Performances

Hofstra University, Solar Powered Gas Refrigeration Experiment

American University of Beirut, Study of Performance of a Solar Assisted Liquid Desiccant System To Supply Building Fresh Water and Cooling Needs by Modeling and Experimentation

University of North Texas, Harvesting Built Environments for Global and Accessible Modular Energy Audit Training

Oral Roberts University, Swirling Pipe Flow Laboratory

For more information on the grant program, visit www.ashrae.org/students. ASHRAE will begin accepting applications for the 2011-2012 program in August 2010, with a December 2010 final deadline.

New ASHRAE Guideline Published

ASHRAE Guideline Addresses Interactions Affecting Indoor Environmental Quality

ASHRAE has published a new guideline that provides guidance on achieving good indoor environments by considering the interactions of air quality and thermal conditions, as well as lighting and acoustics. Guideline 10 is especially important in the design of low-energy buildings in order to ensure full consideration of indoor environmental quality and its effects on occupants.

ASHRAE Guideline 10-2011, Interactions Affecting the Achievement of Acceptable Indoor Environments, calls attention to many interactions that designers might not have previously recognized or understood. The guideline contains an assembly of available knowledge on the complexity of the indoor environment and its impact on building occupants.

"The guideline summarizes what research and experience have taught us about the complex interplay of the wide range of factors that determine occupants' reactions to the buildings they inhabit," Hal Levin, chair of the committee writing the guideline, said.

Levin explains that the guideline is intended to help users understand and use existing documents that deal with indoor environments, including the ASHRAE standards related to energy, ventilation, indoor air quality and thermal conditions with a more complete understanding of their combined effects on occupants.

"It can provide assistance to building design professionals and building operators by making them aware of the major interactions that have the potential to impact the indoor environment," he said. "We believe the guideline will help draw attention to the narrowly-defined scopes of the widely-used standards and the significance of combined or interactive effects in determining the acceptability of an indoor environment."

The cost of Guideline 10-2011, Interactions Affecting the Achievement of Acceptable Indoor Environments, is \$54 (\$46, ASHRAE members). To order, contact ASHRAE Customer Service at 1-800-527-4723 (United States and Canada) or 404-636-8400 (worldwide), fax 404-321-5478, or visit www.ashrae.org/bookstore.

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.



Protocols for Performance Measurement Offered by Leading Building Groups

It's long been realized in the building industry that you can't manage what you don't measure when it comes to building performance. But even if you measure, what ensures that those measurements are appropriate and meaningful?

"Although many buildings claim to be green or high performance, it's rare that evidence or data is presented to verify these claims," said Jeff Haberl. "If claims of high performance are to be credible, it is essential that a common set of measurements be used and that the results be reported against meaningful and consistent benchmarks. Reliable and reproducible protocols are also needed to give usable feedback to designers and operators when measured performance does not match design intent and expectations."

A new book from three leading building industry associations provides a standardized set of protocols over a range of accuracies and costs that can be applied consistently to the assessment of building performance. Published by ASHRAE and developed in collaboration with the Chartered Institution of Building Services Engineers (CIBSE) and the U.S. Green Building Council (USGBC), *Performance Measurement Protocols for Commercial Buildings* identifies what to measure, how to measure it and how often it is to be measured for inclusion in buildings' operation and maintenance plan.

"In an energy conscious world, those who measure and manage the energy use and performance of their buildings will be at an increasing advantage over business as usual energy managers," Haberl, who chaired the committee that wrote the book, said. Because energy efficiency should not compromise the services provided in the building, the protocols cover indoor environmental quality measures as well as energy and water use.

"The collaboration of CIBSE with ASHRAE and USGBC on this project demonstrates the importance of international engineering collaboration to deliver measurably green buildings, not just green promises," said Hywel Davies, technical director of CIBSE and vice chair of the committee.

Protocols are developed at three levels for each of six performance categories: energy, water, thermal comfort, indoor air quality, lighting and acoustics.

The three specification levels are:

- basic level, which outlines simple, low-cost measures that provide an initial insight into performance at the annual, whole-building level
 - intermediate level, which provides additional data on the building performance, typically at a monthly frequency and major system level
 - advanced level, which offers a more detailed and comprehensive analysis for those building owners or managers wishing to gain deeper insights into the performance of a building, typically at a daily or weekly frequency at the system or equipment level.
- The cost of *Performance Measurement Protocols for Commercial Buildings* is \$89 (\$75 ASHRAE members). To order, contact ASHRAE Customer Service at 1-800-527-4723 (United States and Canada) or 404-636-8400 (worldwide), fax 404-321-5478, or visit www.ashrae.org/bookstore.

User's Manual Provides Guidance on 2010 Energy Standard

Detailed guidance on how to apply the latest ASHRAE/IES standard for the design of energy-efficient buildings is provided in a newly published user's manual.

The *User's Manual to ANSI/ASHRAE/IES Standard 90.1-2010, Energy Standard for Buildings Except Low-Rise Residential Buildings*, was published this week. The standard, which provides minimum requirements for the energy-efficient design of buildings except low-rise residential buildings, contains 109 addenda approved since the 2007 standard was published. "The new *User's Manual* is a very useful resource because it helps guide practitioners in by explaining the intent of provisions in the standard and how they apply to buildings through not only written word but also illustrations and example problems," Steve Skalko, chair of the Standard 90.1 committee, said. "The latest edition of the manual is especially valuable because it specifically identifies what changes have taken place since the 2007 edition and through use of calculations and examples tells how the new provisions apply."

Specific examples of how the *User's Manual* assists users in regard to the 2010 standard include:

- Application of new requirements in the standard regarding data centers.
- Application of new requirements for building envelopes including vestibules, continuous air barriers, skylights, daylighting controls and the use of dynamic glazing.
- Explanation of new lighting power density requirements and application of revised lighting controls. In the standard, maximum allowed interior lighting power densities were lowered for most space types, additional occupant sensing controls and mandatory daylighting requirements are added for specific spaces and a new five-zone exterior lighting power density table has been added.
- Explanation of how to apply new HVAC requirements, including higher equipment efficiencies, energy recovery provisions in more applications, economizers required in more climates and smaller system sizes and more energy-conserving controls.
- Changes to modeling requirements (e.g. for U.S. Green Building Council LEED® certification) that were clarified and expanded.

Since being developed in response to the energy crisis in the 1970s, Standard 90.1 has become the basis for building codes, and the standard for building design and construction throughout the United States.

The cost of the 90.1-2010 *User's Manual* is \$99 (\$84, members). To order, contact ASHRAE Customer Service at 1-800-527-4723 (United States and Canada) or 404-636-8400 (worldwide) or visit www.ashrae.org/bookstore.



ASHRAE's 2012 Winter Conference Seeks Papers on High Performance Buildings, Integrated Design, Energy Modeling and Specialized Applications

Papers addressing advances in high performance buildings, integrated design and numerous high-intensity HVAC applications are being sought for ASHRAE's 2012 Winter Conference in Chicago, Ill., Jan. 21-25. The Specialized Applications track focuses on high-intensity HVAC applications, such as laboratories, hospitals and data centers, and seeks papers on design recommendations, regulations and lessons learned. The Integrated Design track addresses how the integrated building design and integrated project delivery processes are being applied to build better buildings. Papers are being sought on case studies, lessons learned and ongoing research projects studying new project delivery methods.

The Energy Modeling Applications track seeks papers that address the range of different energy modeling and Building Information Modeling tools available, their use and specific applications, including systems, building and communities. Papers that address an integrated approach from modeling through end designs are requested.

In addition, papers are sought for tracks on Operations & Maintenance, HVAC Systems, HVAC Fundamentals and Applications, Professional Skills and Refrigeration.

The deadline for paper submissions is April 18, 2011. For complete information on tracks, contacts and submittal requirements, visit www.ashrae.org/chicago

Full-length technical papers or conference paper abstracts (400 words or less) should be submitted by April 18. For more information about the two types of papers and how to submit a full-length technical paper or conference paper abstract, go to the ASHRAE Chicago Conference webpage: www.ashrae.org/chicago. For accepted conference paper abstracts, the completed conference papers will be due July 8, 2011.

The Conference is expected to attract some 3,000 attendees from 60 countries. The technical program takes place Sunday, Jan. 22–Wednesday, Jan. 25, and includes paper presentations as well as non-paper presentations. Approved papers are published in ASHRAE Transactions. Held in conjunction with the ASHRAE conference is the ASHRAE-cosponsored AHR Expo, Jan. 23-25.

ASHRAE Funds Research to Improve Building Maintenance, Operation through Performance Data

Guidance to specifying engineers and designers on how they can use building data to improve building operations, energy efficiency, comfort and sustainability will be developed through newly funded research from ASHRAE. Research Project 1633, "Data and Interfaces for Advanced Building Maintenance and Operation," will result in development of a set of standard data-driven metrics, interfaces and dashboards for advanced building operation and management. It was one of three projects totaling \$430,000 approved by ASHRAE at its 2011 Winter Conference. The 1633 project is sponsored by Technical Committee 1.4, Control Theory and Application, and co-sponsored by 7.6, Building Energy Performance, and TC 7.9, Building Commissioning, and was awarded to KGS Buildings, Cambridge, Mass.

"Analyzing and interpreting building performance data is critical to the success of high performance buildings," Stephen Samouhos, Ph.D., principal investigator, said. "This research will help fill a void in standards literature by establishing data-driven metrics, interfaces and dashboards, organized by building type, that clearly quantify and communicate building performance to a diverse set of building stakeholders."

The other two projects approved at the Winter Conference are:

- 1580-RP, "Study of Input Parameters for Risk Assessment of 2L Flammable Refrigerants in Residential Air Conditioning and Small Commercial Refrigeration Applications," sponsored by TC 3.1, Refrigerants and Secondary Coolants, awarded to Navigant Consulting Inc.
- 1613-RP, "Update Climatic Design Data in Chapter 14 of the 2013 Handbook, Fundamentals," sponsored by TC 4.2, Climatic Information, awarded to Numerical Logistics Inc.

User's Manual Provides Guidance on Ventilation Standard, New 'Must Have' Spreadsheet

The newest guidance for using Standard 62.1-2010 includes a revised, user-friendly spreadsheet and examples, as well as the latest updates pertaining to the new version of the standard. The 62.1 User's Manual provides explanatory material, detailed information, figures and examples to guide users in designing, installing and operating buildings in accordance with ANSI/ASHRAE Standard 62.1-2010, Ventilation for Acceptable Indoor Air Quality, which sets minimum ventilation rates and other requirements for commercial and institutional buildings. Also highlighted is the application of useful tools used for compliance with Standard 62.1-2010, including a newly revised spreadsheet that assists in Ventilation Rate Procedure calculations. The spreadsheet provides calculations for the multiple spaces procedure and has been significantly improved, made more user friendly and now includes two example spreadsheets focusing on cooling and heating.

"The spreadsheet and new examples have been revised in response to user feedback and have much improved usability," Roger Hedrick, chair of the Standard 62.1 committee, said. "The spreadsheet should significantly reduce the effort needed to perform the calculations needed for multizone recirculating systems. The spreadsheets are a must have for designers."

The Manual encourages users of the standard to apply the principles of good indoor air quality and effective ventilation when designing buildings and building systems, and provides useful reference material to assist designers in efficiently completing a successful and compliant design. The cost of the 62.1 User's Manual is \$75 (\$64 ASHRAE members). To order, contact ASHRAE Customer Service at 1-800-527-4723 (United States and Canada) or 404-636-8400 (worldwide), fax 404-321-5478, or visit www.ashrae.org/bookstore.



ASHRAE LONDON & AREA 2011 GOLF TOURNAMENT

Date: MONDAY JUNE 6/2011

Location: *** **FIREROCK** *** www.firerockgolf.com
10345 Oxbow Dr., Komoka

Registration: 10:00 - 11:00am

BBQ Lunch: 11:00 - 12:00noon

Golf Start: 12:10pm Shotgun Start / Scramble Format / Best Ball

Cost: \$150.00 Golf, BBQ Lunch and Dinner per person / \$600.00 per foursome
\$ 45.00 Dinner Only

- * Golf Carts included
- * Lunch Included
- * Dinner Included

* LIMITED SPACES AVAILABLE



For Registrations: contact

Jamie Kruspel
email: jamie.kruspel@td.com
cell#: 519-200-2197

Payment must be made before Friday May 13/2011 to secure your group(s).
Please make cheques payable to: ASHRAE LONDON CANADA CHAPTER

name of golf group: _____

HOLE SPONSORSHIP ALSO AVAILABLE (\$200.00 per company)
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and
donations also accepted for SILENT AUCTION to be held during dinner
contact:

Eric Shaw
email: eshaw@baymarsupply.com
519-964-0022

Dear ASHRAE Research Contributor...

I am contacting you on behalf of the local London Chapter, and ASHRAE Research Canada, and we are requesting your financial assistance with this year's Research Promotion Campaign.



ASHRAE Research Promotion Campaign – 2010/2011

Our Mission: *To improve the quality of life and to answer tomorrow's questions through research TODAY.*

The Research Promotion Campaign annually raises funds to support ASHRAE's research program.

It is conducted by the Society's membership through local chapter volunteers and receives over 7,000 contributions each year from the membership and companies associated with the HVAC&R industry.

This annual support totals more than \$2 million annually at the society level to help fund over \$14 million in research projects and student grant-in-aids.

In the last few years, Region II (our region) has received research grants totaling more than ½ Million dollars in support of 6 local Region II projects.

Active research projects are conducted all around the world at various universities and organizations.

Contributions can be submitted with a Member's annual dues payment, by allocating all or a portion of their travel reimbursement, or by sending contributions to the Chapter's Research Promotion Chair or ASHRAE Headquarters.

We would be happy to accept your donations at our regular meetings, or can arrange to pick them up at your location at a time convenient to you.

Research investments sent directly to Headquarters should be addressed to: Research Promotion, 1791 Tullie Circle, Atlanta, GA 30329.

Cheques should be made payable to ASHRAE Research Canada. Individuals and companies are also able to submit their contributions online at www.ashrae.org/contribute.

100% of every invested dollar goes directly into the research program.


Regards, and thank you for your support in advance...


Eric W. Shaw

ASHRAE RP Chair - London ASHRAE Chapter

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