



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

LONDON CANADA CHAPTER #116

<http://LondonCanada.AshraeChapters.org>

Mon Feb 25/2008

Board of Governors

President

Scott Edmunds
ph: 519-667-4120
sedmunds@uniongas.com

Vice President and Program

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

Treasurer

Jason Vanderberghe
ph: 519-670-8066
jasonv@aquatech.ws

Secretary

Jack Maynard
ph: 519-681-1221
jack.c.maynard@jci.com

Committee Chairs

Membership

Karl Gilroy
ph: 519-451-5100
kgilroy@price-hvac.com

Research

Scott Turner
ph: 519-681-1977
scott@somersep.com

Golf Tournament

Hugh Palser
ph: 519-471-9382
hpalser@palserent.com

Newsletter

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

TOPIC:

SIMULATION DRIVEN DESIGN OF BUILDINGS & HVAC SYSTEMS

MR PAUL MacDONALD PEng

ANSYS CANADA LTD / ANSYS INC

Senior Account Manager

Meeting - Mon Feb 25/2008

THE LAMPLIGHTER INN, 591 Wellington Rd., London

London Chapter Members = \$25.00

Students = \$10.00 Others = \$35.00

MEMBERSHIP NIGHT

CASH BAR

ALL YOU CAN EAT BUFFET

5:15-Social

6:00-Dinner

7:15-Program





President's Message

I hope those of you who made it out to our October meeting enjoyed the presentation of Mr. Garth Denison on refrigerant R-410A. Garth's knowledge and experience in refrigeration, and particularly refrigerants, was well evident and as mentioned in our previous newsletter, I consider our chapter very fortunate to have had him speaking to us last month.

This month, Mr. Paul J. MacDonald, P.Eng., Senior Account Manager with ANSYS Canada Ltd. will talk on the role and value of applying simulation software, such as computer-aided engineering (CAE) and computational fluid dynamics (CFD), to the design of HVAC & other building systems. For all future speakers, topics and dates, please check out the London ASHRAE website, at <http://LondonCanada.AshraeChapters.org>

This month's meeting will also be our second Membership Promotion night. As previously mentioned, our goal for this year was to raise local membership by 10 new members. We have not met our goal yet so if you know of anyone who would benefit from being an ASHRAE member, please let myself (sedmunds@uniongas.com) or our Membership Chair, Karl Gilroy (kgilroy@prive-hvac.com) know. Better yet, if you know someone who would enjoy attending one of our monthly meetings to hear a speaker, such as Mr. Paul J. MacDonald from ANSYS Canada, please invite them to come along as your guest. If nothing else, I certainly hope you can make it out to our meeting on February 25th.

Scott Edmunds
ASHRAE London Canada Chapter President

Speakers Bio

Paul MacDonald P.Eng
Senior Account Manager

ANSYS, Inc., founded in 1970, develops and globally markets engineering simulation software and technologies widely used by engineers and designers across a broad spectrum of industries. The Company focuses on the development of open and flexible solutions that enable users to analyze designs directly on the desktop, providing a common platform for fast, efficient and cost-conscious product development, from design concept to final-stage testing and validation. Headquartered in Canonsburg, Pennsylvania, U.S.A., with more than 40 strategic sales locations throughout the world, ANSYS, Inc. and its subsidiaries employ approximately 1,400 people and distribute ANSYS products through a network of channel partners in over 40 countries.

Paul J. MacDonald, P.Eng., is a Senior Account Manager with ANSYS Canada Ltd., a wholly-owned subsidiary of ANSYS, Inc., based in Waterloo, Ontario. Paul has nearly 9 years of experience helping engineers and designers implement and apply ANSYS simulation software, including ANSYS CFX, Fluent, and ANSYS Multiphysics. Paul also enjoys helping his customers extract maximum value from their application of ANSYS software.

Paul's presentation, entitled Simulation Driven Design of Buildings & HVAC Systems, will introduce the role and value of applying simulation software to the design of HVAC & other building systems. Several real-world case studies will be presented to illustrate how simulation software can help improve efficiency, increase safety and reduce costs.

Pete Edmiston
Branch Manager



Carrier Canada Sales and Distribution
305-307 Consortium Court
London, ON N6E 2S8
Tel: 519-455-7000
Fax: 519-455-7733
E-mail: pete.edmiston@carrier.utc.com

BAYMAR
SUPPLY LTD.

Eric W. Shaw
Sales Manager, London District

241 Consortium Crt.
London, Ontario N6E 2S8
Tel. (519) 964-0022
Cell (519) 851-8000
Fax (519) 680-7039
eshaw@baymarsupply.com
www.baymarsupply.com



York
Engineered
Systems Group



SIEMENS

Siemens Building Technologies, Ltd.

Eric Christopher Salin
Account Executive
Building Automation, Security,
Integrated Building Technologies

514 Newbold Street
London, Ontario
N6E 1K6 / Canada
Tel: (519) 680-2380 ext. 2805
Fax: (519) 680-2410
eric.salin@siemens.com
www.siemens.ca/buildingtechnologies

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 INC. (est. 1986)

**Manufacturers Agents for Industrial & Commercial Air
Handling Products**

**FANS • COILS • AIR HANDLING UNITS • SILENCERS •
ISOLATION • FILTERS • DAMPERS**

Jim Ironside

George Clark

Larry Mills (Sarnia)

678 BELMONT AVE. WEST, SUITE 304
KITCHENER, ONTARIO N2M 1N6
PHONE: 519-742-0171 FAX: 519-742-0543
E-MAIL: info@efi-ironross.com

NORTHERN INDUSTRIAL
— FANS & BLOWERS —

SCOTT C. DEAN, P. Eng.

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

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



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



Jan 2008 Meeting Summary

THE MOST POWERFUL TOOL YOU CAN HAVE WITH R401A "KNOWLEDGE"

by Garth Denison

Mr Denison spoke about the upcoming requirements to reduce CFC and HFC use in all types of equipment. Some manufacturer's have already switched to R401A or other alternate refrigerants. Garth spoke about problems with conversions of existing equipment to R401A and also what to watch out for with new equipment as new charging equipment may be required.

Upcoming Meetings & Events

Wed March 26/2008 The Commissioning Process in New and Existing Buildings - Metro Toronto Convention Center
www.ashrae.org/education/page/1605

March 27-29/2008 CMX CIPHEX 2008
Metro Toronto Convention Centre
www.cmxciphexshow.com

Mon March 31/2008 ASHRAE London Chapter Meeting
Global Warming - Differing Perspectives
Mr Victor Goldschmidt - Northport MI **ASHRAE DISTINGUISHED LECTURER**

Wed April 16, 2008 Chapter Technology Transfer Committee Satellite Broadcast/Webcast
The broadcast will focus on "Integrated Building Design."
Watch for additional information regarding the Broadcast/Webcast via ASHRAE Insights and www.ashrae.org.

ASHRAE RESEARCH

I would like to take this opportunity to thank the following contributors to the ASHRAE Research Canada London Chapter 2008 Campaign:

Individual Contributors:

Mr. Jamie Kruspel
Mr. Scott Edmunds
Mr. Jason Vandenberghe
Mr. Eric Shaw

Mr. Richard Hammond
Mr. Jack Maynard
Mr. George Qubty

Company/Corporate Contributors:
Johnson Controls

ASHRAE Research Promotion plays a key role in funding various projects. Whether you specialize in IAQ, sustainable building design, tools and applications for refrigeration, ASHRAE has research projects focused on your field and specific topics that affect your business the most. If you have not already done so, please consider investing in ASHRAE Research. You can either donate on line at https://www.ashrae.org/aboutus/resource_promotion.asp (ensure to select ASHRAE Research Canada), or send a cheque made out to ASHRAE Research Canada to address listed below. Once again thanks you for your continued support of ASHRAE Research Canada.

Scott Turner
Research Promotion Chair – London Canada Chapter

SOMERS ENVIRONMENTAL PRODUCTS INC.

Daryl Somers, CET

96 Meg Drive
London, Ontario
N6E 3T7

Tel: (519) 681-1977
Fax: (519) 686-9324
Mobile: (519) 670-7720

email: daryl@somersep.com



TRANE

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@hsteng.com

Toll Free: (800) 341-3110

PALSER ENTERPRISES LTD.
MECHANICAL AND ARCHITECTURAL
MARKETING AGENCY

Hugh D. Palser

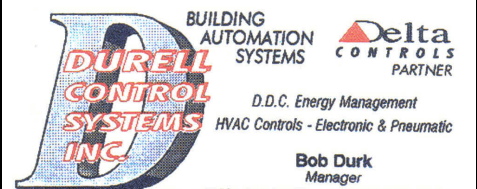
LONDON, ON

CONCORD, ON

TEL: (519) 471-9382
FAX: (519) 471-1049

TEL: (905) 738-5200
FAX: (905) 738-6111

E-Mail: hpalsen@palserent.com



BUILDING
AUTOMATION
SYSTEMS

Delta
CONTROLS
PARTNER

D.D.C. Energy Management
HVAC Controls - Electronic & Pneumatic

Bob Durk
Manager

Phone (519) 652-5502 • Fax (519) 652-0265

e-mail: bdurk@durellcontrols.com

3392 Wonderland Rd. S., Bldg. 9, Unit 1, London, Ontario N6L 1A8



ASHRAE Course Before CMX/CIPHEX

Wednesday, March 26, 2008 9:30 a.m. – 4:30 p.m. EDT

Metro Toronto Convention Center. 255 Front Street West, Toronto, Ontario

ASHRAE will present, in conjunction with CMX/CIPHEX 2008, the ASHRAE Learning Institute Seminar, The Commissioning Process in New and Existing Buildings.

Seminar Summary: Learn the fundamentals of the commissioning process through each step of a new construction project from pre-design to occupancy and operations. Attendees will become familiar with the benefits of commissioning and gain an appreciation for how the process can improve the built environment, reduce environmental impacts through responsible resource utilization, improve the quality of design and construction, and raise the professional reputation of the entire commissioning team. Attendees will discuss the documentation that is created during the process, including specifying commissioning for new construction. Students will take away compelling information and case studies that demonstrate the value of investing in the commissioning process.

Who should attend: Designers, Owners, Architects, Contractors, Operators, Code Officials

To learn More About the Seminar visit www.ashrae.org/education/page/1605

ASHRAE Publishes Book on Hot, Humid Climate Building Design Guidance

Building operators and designers around the world face common issues related to thermal comfort, ventilation and energy.

But these measures take on greater concern for buildings in hot and humid climates. In addition, areas with these climates, such as South Asia, are experiencing rapid construction growth.

Design guidance on critical issues for achieving excellence and long-term sustainability in these climates is contained in a new book from ASHRAE. The ASHRAE Guide for Buildings in Hot and Humid Climates identifies and explains key issues for owners, architects, HVAC designers, contractors and building owners as they plan, build and operate air-conditioned buildings – in a sustainable way – in hot and humid climates.

"All countries want to achieve high standards of energy efficiency," author Lew Harriman said. "But recent history warns that mold and mildew problems in hot and humid climates can overshadow any gains made through energy reduction. On the other hand, the practical experience of ASHRAE's members shows that by focusing on several critical building enclosure design details and by keeping the indoor air dry, owners and designers can avoid mold problems and have high indoor air quality, while their buildings use much less energy than outdated designs."

Topics covered in the book include improving thermal comfort, managing ventilation air, reducing energy consumption and avoiding bugs, mold and rot. The book explains ASHRAE's standards in these areas. It also highlights common problems seen in hot and humid climates, along with practical alternatives for avoiding such problems.

"The guide was created in part because of requests from designers and owners in North America, but also because of requests from government agencies in developing countries that are working to establish robust building codes to guide energy use and indoor environmental quality," Harriman said. "When balancing the equally important concerns of low energy consumption, high thermal comfort and healthy indoor air, ASHRAE's experience and internally-informed consensus standards can be very helpful." A second edition is planned for January 2009 that will add more information arranged into sections aimed at each different member of the construction and delivery team.

The cost of the ASHRAE Guide for Buildings in Hot and Humid Climates is \$59 (ASHRAE members, \$49). 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 at www.ashrae.org/bookstore.

New Publication Provides Energy Efficiency Guidance for K-12 Schools

A full 16 percent of schools districts' controllable costs is spent on energy. A new publication written specifically for K-12 school buildings will aid design teams in constructing energy-smart schools using off-the-shelf technology that can cut energy use 30 percent or more annually.

The Advanced Energy Design Guide for K-12 School Buildings, published by the American Society of Heating, Refrigerating and Air-Conditioning Engineers, instructs architects, engineers and others on building design teams how to use best design practices to create energy-saving buildings. Written in partnership with the American Institute of Architects, the Illuminating Engineering Society of North America, the U.S. Green Building Council and the U.S. Department of Energy, the book is available for free in electronic form at www.ashrae.org/freeaedg. Hard copies are available for purchase.

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.

**Energy Efficient Buildings Encouraged Through Free Download of Advanced Energy Design Guide Series**

To encourage energy efficient design in a range of building types, ASHRAE and its partnering organizations are making available for free the Advanced Energy Design Guide series.

Electronic versions of the newest book in the series, Advanced Energy Design Guides for K-12 School Buildings, as well as the existing guides on small office and small retail buildings are available for free download at www.ashrae.org/freeaedg. Future guides, including one focused on warehouses to be published this spring, will be available for free electronic download as well.

"Energy efficiency is still a vast and underutilized energy resource that is essential to the long-term survival of our world," says ASHRAE President Kent Peterson. "Buildings consume approximately 40 percent of the primary energy in the United States. As part of our energy efficiency market deployment strategy, we want to get this valuable building guidance into the marketplace and into the hands of owners, contractors and design teams. The technology is available today to construct substantially more efficient buildings. Free distribution of the Advanced Energy Design Guide series will help educate the marketplace on how to build energy efficient buildings that use significantly less energy than those built to the minimum code requirements.

"The Illuminating Engineering Society of North America (IESNA) supports the electronic distribution of the Advanced Energy Design Guide series to ensure widespread availability of these voluntary recommendations," said Rita Harrold, IESNA member of the AEDG Steering Committee. "Offering these important Guides for free download to a large audience of users will help further the partnering organizations' efforts to create a more secure energy future."

In addition, the K-12 guide was sent to nearly 14,000 school systems around the country to assist with the design of energy-efficient schools that create safe and comfortable environments conducive to learning.

Partnering organizations include the American Institute of Architects, the Illuminating Engineering Society of North America, the U.S. Green Building Council and the U.S. Department of Energy.

"Addressing energy use in our buildings is one of the most important measures we can take in our efforts to protect the health of our environment," said Brendan Owens, vice president of LEED Technical Development, U.S. Green Building Council. "The Advanced Energy Design Guide series are critical publications for the building industry. Every percentage point reduction in buildings' energy use brings us that much closer to our goal of mitigating climate change."

"The importance for all design and construction professionals to move toward carbon neutral, sustainable buildings is of paramount importance to the American Institute of Architects," said Christine McEntee, executive vice president and CEO of the AIA. "The Advanced Energy Design Guides are an approachable, important tool to help achieve that goal."

The guides provide a sensible, hands-on approach to design through use of products that are practical and commercially available as "off-the-shelf" technology. They offer designers and contractors the tools needed for achieving a 30% energy savings compared to buildings that meet the minimum energy efficiency requirements of Standard 90.1-1999.

Hard copies of all of the guides are available for purchase. For more information, visit www.ashrae.org/freeaedg.

ASHRAE Publishes Updated Version of Energy Efficiency Standard

Energy reduction through new requirements related to lighting, façades, and mechanical systems is achievable in the latest energy efficiency standard from ASHRAE and the Illuminating Engineering Society of North America (IESNA).

Just published, the 2007 version of ANSI/ASHRAE/IESNA Standard 90.1, Energy Standard for Buildings Except Low-Rise Residential Buildings, provides minimum requirements for the energy-efficient design of buildings except low-rise residential buildings. The standard contains changes made through 47 addenda to the 2004 standard.

"One of the best ways to reduce building energy consumption is to reduce, or eliminate, the cooling or heating loads," Mick Schwedler, chair of the Standard 90.1 committee, stated. "By doing so, the systems installed in buildings become smaller and use less energy. For example, on a hot, sunny day, having more insulation in the roof and better glass on the southern and western façades of a building reduce the air conditioning necessary as well as its resultant energy use. Two of the addenda do this by enhancing the insulation and fenestration (or window) requirements for the building exterior."

The standard also addresses reduction of electrical and cooling loads and thus electricity by allowing less power for lighting. An addendum revised lighting allowances for retail displays, as it allows more flexibility for designers and better reflects actual retail lighting function.

Schwedler cited forewords from three approved mechanical addenda to quantify a portion of the energy savings:

- Addendum an: "...would save about 18 trillion Btu of gas and oil annually once the existing boiler stock turns over."
- Addendum g: "will save an estimated 1.05 Quads of cumulative primary energy by 2035."
- Addendum f: "will save an estimated 2.3 Quads of cumulative primary energy by 2035."

"These substantial savings are credited to the work of past Standard 90.1 Chair Jerry White, the Standard 90.1 committee, and those that aided in the rigorous public review process," Schwedler said. "We know that many projects are achieving considerable energy savings at reasonable costs and ask the entire design, operation, and owner communities to share these project ideas and contribute toward future energy and energy cost savings."

The cost of the I-P version of ANSI/ASHRAE/IESNA Standard 90.1-2007, Energy Standard for Buildings Except Low-Rise Residential Buildings, is \$119 (\$95, 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 at www.ashrae.org/bookstore.

**Design of Energy Efficient Datacom Facilities Focus of ASHRAE Book**

Datacom center energy use is typically large and concentrated (it can be 100 times the watts per square foot of an office building), with operations running 24 hours, 7 days a week, about three times the annual operating hours of most commercial properties.

As a result, issues such as sustainable design, energy efficiency and operating cost become critically important for these facilities.

Guidance to assist those involved in the design, construction, commissioning, operation, implementation and maintenance of datacom equipment centers is available in a new book from ASHRAE, *Best Practices for Datacom Facility Energy Efficiency*.

"This book provides detailed information on the design of datacom facilities that will aid in minimizing life-cycle cost and maximizing energy efficiency," said Tom Davidson. "The overall goal is to minimize total cost of ownership (TCO) for the end user, while helping to conserve energy resources on a global scale."

Davidson is a member of ASHRAE's technical committee on mission control facilities, technology spaces and electronic equipment, which wrote the book.

A study conducted by Lawrence Berkeley National Laboratory on average data center power allocation showed that only 46 percent of power was used by information technology (IT) equipment such as servers, while 23 percent was used by HVAC cooling equipment, 8 percent by HVAC fans, 8 percent by uninterruptible power supply equipment losses, and 4 percent by lighting. Another 11 percent was attributed to other uses, such as miscellaneous electrical losses, support office area, etc.

"Since the infrastructure/energy cost is an increasing component of total cost of ownership, a strong emphasis must be placed on this cost to keep a datacom facility energy efficient and operating at the lowest cost to support the level of reliability and availability of the equipment it houses," he said.

The book provides a listing of best practices in the areas of environmental criteria, mechanical equipment and systems, economizer cycles, airflow distribution, HVAC controls and energy management, electrical distribution equipment, datacom equipment efficiency, liquid cooling, total cost of ownership and emerging technologies. Examples of the best practices include:

- **Environmental Criteria**
Adoption of temperature and humidity ranges provided in ASHRAE's Thermal Guidelines for Data Processing Environments publication can result in increased energy efficiency.

- **Mechanical Equipment and Systems**

- For computer room air-conditioning equipment, focus the cooling solution on very high sensible/total cooling capacities per the revised ANSI/ASHRAE Standard 127-2007.

- **Economizer Cycles**

- Raising the supply air setpoint in a facility can significantly increase the number of cooling hours in economizer mode.

- **Airflow Distribution**

- Recognize that datacom equipment loads will change over the next 10 to 15 years. Develop a cooling distribution strategy that can adjust to these changes.

- **HVAC Controls and Energy Management**

- Investigate the costs and benefits of different methods for humidity control. System design and control algorithms should allow the primary cooling coils to 'run dry' and thus allow for chilled-water reset at light loads without impacting relative humidity.

- **Electrical Distribution Systems**

- Consider distributing high-voltage AC or DC power to point of use.

- **Datacom Equipment Efficiency**

- Select power equipment from the highest input voltage available within its input voltage rating range.

- **Liquid Cooling**

- Consider the use of a cooling distribution unit (CDU) to isolate the liquid cooling loop from the building chilled-water cooling loop. This allows the liquid cooling loop temperature to be set above the room dew-point temperature, thus eliminating condensation.

- **Total Cost of Ownership (TCO)**

- Use energy system modeling software to aid in developing an accurate TCO.

- **Commissioning**

- Verify and document that the facility, its systems and assemblies are designed, installed and maintained in accordance with the owner's program requirements.

The book is part of the ASHRAE Datacom Series, developed to provide a more comprehensive treatment of datacom cooling and related subjects. Other books in the series are ASHRAE's Design Considerations for Datacom Equipment Centers, Thermal Guidelines for Data Processing Environments, Liquid Cooling Guidelines for Datacom Equipment Centers, Datacom Equipment Power Trends and Cooling Applications and Structural and Vibration Guidelines for Datacom Equipment Centers.

The cost of *Best Practices for Datacom Facility Energy Efficiency* is \$59 (ASHRAE members, \$47). 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 at www.ashrae.org/bookstore.