



Capital Communiqué

ASHRAE - AMERICAN SOCIETY OF
HEATING, REFRIGERATING AND AIR-CONDITIONING ENGINEERS

<http://www.ashrae.ottawa.on.ca> OTTAWA VALLEY CHAPTER e-mail: contact@ashrae.ottawa.on.ca

January 2004

PROGRAM

DATE: January 20, 2004

THEME: STUDENT ACTIVITIES

PROGRAM: FUNDAMENTALS OF UNDERFLOOR VENTILATION

The discussion will center around the fundamental principles of the design of an under floor air distribution system, including stratification, load calculations, and construction issues.

SPEAKER: Andrew S. Clancy P.E., Business Development Manager

Andrew Clancy joined York International in April 2000 as the Senior Product Marketing Engineer for Underfloor Air Systems and is responsible for promoting underfloor air distribution systems to the market.

Prior to joining York International, Andrew was a designer at Buchart Horn, Inc, a multidisciplinary engineering and architectural firm in York, Pa.

Andrew holds a Bachelor's degree in Mechanical Engineering from Messiah College, Grantham, PA, and is a registered Professional Engineer in the Commonwealth of Pennsylvania.

MENU

Assorted Salads, Roast Beef, Chicken Teriyaki served with rice, Fresh seasonal vegetables, Rolls & Butter, Coffee & Tea, Dessert Buffet

2003 -2004

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Doug P. Breckenridge, P.Eng.

877 Boyd Avenue, Ottawa, ON K2A 2E2
 Tel.: (613) 728-0060 • Fax: (613) 725-2637
doug@breck-mar.com

John P. Lowery, P.Eng.
 Senior Territory Manager



Carrier Canada
 1050 Baxter Road, Unit B
 Ottawa, Ontario K2C 3P1
 613-820-7810, Ext. 240
 World: 1-800-561-8385, Ext. 240
 Fax: 613-820-9462
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Mike Swayne, B.Eng., P.Eng.
 Partner

GENIVAR Ontario Inc. 15 Fitzgerald Road, Suite 100
 Nepean, Ontario K2H 9G1 CANADA
 Tel.: (613) 829-2800, ext. 333
 Fax: (613) 829-8299
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PRESIDENT'S MESSAGE

Welcome back! I trust everyone had a very enjoyable holiday and a good start to the New Year.

We have a number of very interesting programs planned for the upcoming meetings in this, our second half of the ASHRAE year. In addition, we look to keeping you posted on upcoming social events like our annual Bonspiel. Plan to be involved.

The theme for our January Chapter meeting is **Student Activities**. Once again, we kindly request your assistance in sponsoring a student's meal for the evening. Please contact our Student Activities chair Chris Fudge (Tel. 820-8111, Email cfudge@trane.com) or myself if interested.

We have a great program planned. I hope to see there.

Jason MacMurdo, P.Eng.
 Ottawa Valley Chapter President 2003-2004

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 745-3613
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Goodkey, Weedmark & Associates Limited
 Consulting Engineers

Ross J. McIntyre, P.Eng.
 Principal, Designated Consultant
 Mechanical Engineer

1749 Woodward Drive, Ottawa, Ontario K2C 0P9 Canada
 Telephone: 613-727-5111 Fax: 613-727-5115
 Email: rossmc@gwal.com



Rod Lancefield, P.Eng.
 Branch Manager

889 Lady Ellen Place, Ottawa, Ontario K1Z 5L3
 Tel: (613) 728-7400 Cell: (613) 851-1997 Fax: (613) 728-8032
 Email: rod1@htseng.com Toll Free 1-888-280-8544

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QUEBEC 1060, boul. Michèle-Bohec, Suite 101
Blainville, Quebec J7C 5E2

ONTARIO 2, Director Court, Suite 107
Woodbridge, Ontario L4L 3Z3

Modern Niagara
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John R. McAninch, P.Eng.
CEO

85 Denzil Doyle Court
Kanata, Ontario K2M 2G8
Tel: (613) 591-7505 Fax: (613) 591-1523
E-mail: jmcaininch@modernniagara.com

THE CAPITAL GROUP
KEN BOYD
PRESIDENT

9 Antares Drive, Ottawa, ON K2E 7V5
Tel: (613) 225-0140 • Fax: (613) 226-6804
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TABLE TOP DISPLAY

Regulvar will be showing a cost effective DDC controls package for VAV and rooftop unit applications. The system is pre-packaged, pre-configured and can be purchased off the shelf to be installed directly by mechanical contractors.

Please contact Gary Hartmann at 728-0060 regarding future tabletop displays.

BUSINESS CARD ADS

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

Cost is \$225.00 for the year.

Contact Rod Lancefield, rodl@htseng.com, 728-7400

ASHRAE OTTAWA VALLEY CHAPTER MEETING LOCATION

Our meeting location is **Capone's Catering** at the Nepean Sportsplex, 1701 Woodroffe Avenue, Nepean. We meet in the "Richmond Room". Enter Capone's from the rear of the Sportsplex at Entrance #4. Parking is available at the rear.

Make sure you lock your car and bring your valuables with you.

TECHNICAL SESSION NOTICE

The National Capital Region Chapter of the Society of Fire Protection Engineers (SFPE) is presenting a technical session on smoke management systems applications for objective Code based compliance examples. Please contact Mary Smith by email at smith@leber-rubes.com or by calling 247-1313 x23 before 4 PM on Tuesday, January 20, 2004 if interested. Space is limited.

TOPIC: Smoke Management Systems for Objective-Based Applications

SPEAKER: Eric Esselink

DATE/TIME: Wednesday, January 21, 2004 / 3:00-4:30 PM

LOCATION: National Research Council Building M-59, 1500 Montreal Road, (993-2204)

SIEMENS

Siemens Building Technologies, Ltd.
2435 Holly Lane
Ottawa, Ontario K1V 7P2

Tel: (613) 733-8788
Fax: (613) 733-4888
jack.taewens@sbtsiemens.com

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Office 613.230.1186
Facsimile 613.230.2598
davide.sa@n.a1bn.com

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29 Cleopatra Drive
Nepean, Ontario
Canada, K2G 0B6

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HUGH WILLIAMSON ASSOCIATES INC.
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Hugh Williamson, Ph.D., P.Eng.
12 Maple Lane, Ottawa, ON, K1M 1G7

Phone: (613) 747 0983
Fax: (613) 747 4514
hughwilliamson@sympatico.ca
http://www3.sympatico.ca/hughwilliamson

InAIR Environmental Ltd.
Indoor Air Investigations and Research

Gemma Kerr, Ph.D.
Partner

1390 Prince of Wales Drive, Suite 503,
Ottawa, ON K2C 3N6
Phone: (613) 224-3863 FAX: (613) 224-2561
E-mail: inair2@mail.cyberus.ca



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Dynamic Air Cleaners Inc.
1313 Cour du Grand-Chêne Est.
Ottawa, Ontario, Canada K1A 5H9
(613) 833-1520 Fax (613) 833-1775
page1 (613) 566-8245
TOLL FREE 1-800-607-6892

http://www.dynamicaircleaners.ca e-mail: mlachance@dynamicaircleaners.ca

WHAT YOU MISSED

November 18, 2003 Chapter Meeting

November's program was a very informative presentation on motors and motor control. The speaker for the evening was Mr. Arnold Midgley of R.J. McKee Engineering Ltd.

As a follow up to a question raised on TEFC (Totally Enclosed Fan Cooled) motors, Mr. Midgley offers the following explanation of the differences between TEFC and Explosion Proof motors:

A TEFC motor keeps out contaminants like water, and chemicals which could attack the materials of the windings and insulation systems, and provides for the removal of the heat from the motor through the external fins and fan construction arrangement.

"Explosion Proof" motors (or more properly, motors rated for operation in hazardous locations) are required in certain hazardous atmospheres, but the requirements are much more stringent, and the resulting construction is much more expensive than TEFC construction.

There are three main types of "Hazardous Locations" covered in the Electrical Code, and each of these has subdivisions or Zones depending on the severity of the hazard.


Class I locations are those in which flammable gases or vapours are or may be present in the air in quantities sufficient to produce explosive gas atmospheres. Most people would think of these as explosive atmospheres, and this would cover fuel storage or dispensing areas, sewage containments, and laboratory gas storage/distribution systems.

Class II locations are those which are hazardous because of the presence of combustible or electrically conductive dusts. This would include some grain mills, or grain storage silos, and some wood and metal working facilities.

Class III locations are those which are hazardous because of the presence of easily ignitable fibres or flyings, but in which such fibres or flyings are not likely to be in suspension in air in quantities sufficient to produce ignitable mixtures. The main hazard here is the piling up of ignitable material on top of electrical equipment, where the heat of the electrical device could set the material on fire. This includes areas such as material weaving and spinning facilities, like cotton processing or blanket factories, and some types of wood working facilities.

For most people, explosive gases are the obvious type of "Explosion Proof" environment. For this location, the motor is required to have a machined set of mating surfaces where the end bell of the motor inserts into the motor frame, to a stated tolerance. This produces a known dimension of crack through which the explosive gas could enter the motor interior, which would limit the amount of gas which could enter. The narrow crack, and high aspect ratio of crack length to width would also quench and cool any flame from the ignition of the small amounts of interior gas set off by the operation of the motor, so that the spark inside the motor could not escape the crack and cause ignition of the atmosphere outside the motor.


For Class III locations, the surface temperature of the electrical equipment is limited to be safely below the ignition temperature of the material, even when heavily insulated by the deposit of the fibres on top of the equipment.



Longhill Energy Products (Eastern) Ltd.
15 Capella Court, Unit 111
Ottawa, ON K2E 7X1
Tel: (613) 226-3886
Fax: (613) 226-3715
Email: chrish@longhillenergy.on.ca

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Christian Caron, eng.
Applied Systems and Commercial Regional Manager
YORK, MAMMOTH and VENTROL

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1250, Old Innes Road, Unit 522
Ottawa, Ontario
K1B 5L3

(613) 741-4455
FAX: 741-5393
CELL: 794-4872
1 (800) 627-4768
ccaron@master.ca
www.master.ca



James S. Mills, P.Eng., P.Eng.
Resident
UDT Accredited Professional


Keen Engineering Co. Ltd.
253 St. Patrick Street
Ottawa, Ontario K1N 3A4

Tel: 613.225.8414 Fax: 613.241.0151
Cell: 613.447.2613
E-mail: jsmills@keen.ca

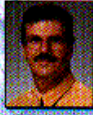
Guy H.J. Bourbonnière P.Eng.
District Manager




Trane Ottawa
1024 Morrison Drive
Ottawa, ON K2H 8K7
Tel: (613) 820-8111
Fax: (613) 820-1414
ghjbourbonniere@trane.com
www.traneottawa.com




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Daniel Roy
P.Eng., P.A.Sc.
President

101 DES SABLES
D'ATIMEAU, QC J8P 7C7
P.O. BOX 8033, CSD T
OTTAWA, ONT. K1B 3B8
TEL: (819) 643-3544
FAX: (819) 643-2859
CELL: (613) 276-8838
E-MAIL: droy@royassocinc.ca
WEB SITE: www.royassocinc.ca



WALMAR www.walmar.net

24 Gurdwara Road
Nepean, Ontario
K2E 8B5
Tel: (613) 225-9774
Fax: (613) 225-2972

RANDY CAVILL, C.E.T.
President
e-mail: randy@walmar.net
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All electrical equipment to be installed in a Hazardous location must be rated for the specific type of hazard, and no electrical equipment is permitted in such an area *unless it is required for the operation of that hazardous area*. From an economic view also, any equipment which is not required to be inside the hazardous location, should be kept out of the area - for example, a motor may be required in the room to drive a fan, but the starter for that motor can be located outside, and be contained in a normal enclosure. The wiring methods inside the hazardous area are severely controlled and expensive, to prevent the hazardous condition from bleeding into adjacent spaces through the wiring conduit, for example. Special seals in the conduit where it passes into the hazardous area are required, or special types of wiring without any voids inside can be used in certain circumstances.

Because of the high cost of electrical systems inside a hazardous environment, there are ways to avoid having electrical equipment inside. Some lighting systems place the lamp and wiring outside, and carry only the light inside by a "light pipe", a special plastic tube which spreads the light only where required. Instead of a normal thermostat inside the space, the contact portion is outside, operated by a remote bulb inside and a capillary through the wall and sealed around. Wherever possible, such devices should be used to keep the cost and the hazard down.

Each hazardous location needs careful consideration and design to suit the nature and severity of the hazard. The above information is provided to suggest some considerations as a guide for the use of electrical equipment in a variety of hazardous situations.



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Ottawa Office
1501 Carling Ave., Unit 8
Ottawa, ON K1Z 7M1
Tel: (613) 729-6960 Fax: (613) 729-2690
e-mail: dfanset@belnor.com


Head Office
286 Atwell Drive, Unit 7
Toronto, ON Canada M9W 5R2
Tel: (416) 213-0889 Fax: (416) 213-1687



VAN FORT

ERIC VAN BENSCHOTEN
35 LE ROY STREET, DAINEAU, QUÉBEC
CANADA J0V 1G6
Tel: (819) 246-1161
Fax: (819) 246-2750
Prog: 616-6924

vanfort@vanfort.ca



R.J. McKEE
ENGINEERING LTD.
CONSULTING ENGINEERS

Jim Siciliano, P. Eng.
Partner - Mechanical Section Head

1785 Woodward Drive
Ottawa, Ontario, Canada K2C 0P9
(613) 723-9585 Fax: (613) 723-9584
Email: jhsiv@rjmeng.com



Steve Clayman
Agent for Knauf Fiber Glass GmbH

Knauf Fiber Glass GmbH
100 University Avenue, Suite 702 Box 128, Toronto, Ontario M5J1V6
Direct: (416) 593-4322, Fax: (416) 586-0481
Voice: (800) 825-4434 *8216, E-Mail: steve.clayman@knauffiberglass.com
www.knauffiberglass.com



X-L-AIR Nicolaos Haitas, P. Eng.
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x-l-air@rogers.com Fax: 613-839-1803

