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 ride, Fresh seasonal vegetables, Rolls & Butter, Coffee & Tea, Dessert Buffet

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

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)

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.

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.