

BOA

Building Operators Association of

Canada

Official Publication of the Building Operators Association (Calgary)

June 2022



NEED POWER?

GENTECH FIELD SERVICES IS A TURNKEY POWER GENERATOR COMPANY SERVING CALGARY AND SURROUNDING AREAS. THE GENTECH FIELD SERVICES TEAM SPECIALIZES IN LIFE SAFETY EQUIPMENT FOR COMMERCIAL BUILDINGS AND ON CONSTRUCTION SITES. WE PROVIDE SCHEDULED AND EMERGENCY SERVICE FOR ALL COMMERCIAL DIESEL GENERATORS AND FIRE PUMPS. CONTACT US TODAY TO SCHEDULE A SERVICE OR FOR AN ESTIMATE ON A NEW OR USED GENERATOR.

OUR TURNKEY INSTALL SOLUTIONS INCLUDE:

RENTALS

PRODUCTS

ENGINEERING

SERVICE



GENTECH
FIELD SERVICES

Authorized dealer for  &  WACKER NEUSON

240023 Frontier Crescent
Rocky View County T1X 0W5
587 349 3500
service@gentechfieldservices.com
www.gentechfieldservices.com



REGENCY CLEANING SERVICES

Janitorial Services
Window Cleaning
Pressure Washing
Specialty Services
Carpet & Upholstery
Move In / Out Cleaning
Floor Care & Maintenance
Post Construction Cleaning

PH: 403-520-7788 | FAX: 403-663-9911

info@regencycleaning.ca
www.regencycleaning.ca




BOULDER MECHANICAL CONTRACTORS LTD

Complete Boiler Services
Air Handling Units
HVAC, Plumbing, Refrigeration
Electrical
Building Automation
Gas Detection Testing & Service
Preventative Maintenance & Emergency Service
Retrofit / Replacement
General Contracting

*Your partner in building
maintenance and service!*

Bay #6 6420 79th Ave SE Calgary, Alberta T3M 2B8
P: 403-230-5519 F: 403-230-5529 E-mail: j.harding@bouldermechanical.net

What's Inside?

Executive & Committees

Executive & Committees	3
Important Phone Numbers	3
Presidents Message	4
Test Your Operator IQ	6
On HVAC Technology It's Not The Heat	7
New Construction Commissioning	11
IAQ Culprits: Hiding in Plain Sight	12
KenKen Puzzle	14
Fire Protection and Detection	15
National Fire Protection Association	17
KenKen Puzzle & Test Your Operator IQ Answers	19
Top-Level HVAC Maintenance	20
Wearing a Hard Hat Is Only Half The Job	24
BOA Tradeshow	27
May Meeting Minutes & June Guest Speaker	29
Advertising Rates & BOA Calgary Sponsors	30
Advertisers Directory	31

President	president@boacalgary.com
Les Anderson	C: 403 921 0648
Vice President	chairman@boacalgary.com
Mark Arton	(c) 403-305-7029
Associate VP	associate.vice.president@boacalgary.com
Vacant	
Chairman	chairman@boacalgary.com
Mark Arton	(c) 403-305-7029
Treasurer	treasurer@boacalgary.com
Carrissa Speager	(c) 403-969-0329
Secretary	secretary@boacalgary.com
Monika Bhandari	(c) 403-470-4169
Education Committee	education@boacalgary.com
Vacant	
Membership Committee	membership@boacalgary.com
VACANT	
Promotions Committee	promotions@boacalgary.com
VACANT	
Activities Committee	403-874-0850
Samson Isowode	
Technical Concerns	chairman@boacalgary.com
Kyle D'Agostno	
Webmaster	webmaster@boacalgary.com
Les Anderson	

Important Phone Numbers

Emergency	911
Alberta Boiler Association	403 291 7070
Alberta Labour (Emergency)	403 297 2222
Buried Utility Locations	1 800 242 3447
City Of Calgary (All Departments)	311
Dangerous Goods Incidents	1 800 272 9600
Environmental Emergency	1 800 222 6514
Poison Centre	403 670 1414
Weather Information (24hr)	403 299 7878



President's Message



I hope this message finds you and yours well and in good health

The season for the Building Operators Association is coming to an end but still the executives will be working, taking the next two months preparing for the first in-person meeting in over two years as well the October 18th, 2022, trade show. It has been over 4 years since the last trade show, and it feels good to finally be getting back. There were some good lessons acquired over the last two years. We have shared a lot of knowledge in building operations and standards. We read and placed on our website more about operating a safe building according to governing authorities as well ASHRAE standards. We have shared all we have learned with you in our website and on the video library. The YouTube channel/library we developed for you was an awesome inspiration by the executives and we will try to maintain it, with the guest speakers that we have in future meetings. I tip my hat to you, who have worked so hard to maintain a safe work environment even if so, many stayed away from work. You were considered an essential service and had to stay but I would say that Building Operators are essential part and needed to maintain your facility. KUDOS good people for doing a great job under trying times.

The Building Operators Association is pleased to announce that we will be having in-person



meeting again at the Danish Canadian Club in Calgary. The monthly general meetings with guest speakers on timely topics will begin Tuesday September 13th, 2022, at 5PM and each meeting runs for about 2 hours. Sandwiches are provided for anyone feeling a little peckish because it is after all at supertime. There is a cash bar at the restaurant on the main level. The food at the Danish Canadian club is awesome if you arrive early and feel like a full meal on the main level. The general Monthly meetings are on the second level on the balcony . It will be great to see everyone again. We have yet to announce the guest speaker for the September meeting.

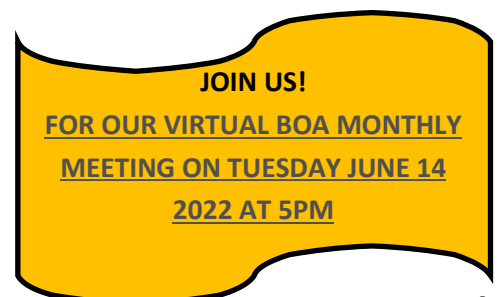
The trade show is on again set for the afternoon of October the 18th 2022. It will be at the Danish Canadian Club on 7th street and 11th Ave SW Calgary. We already have 24 tables of the 33 paid for. If you want to purchase a booth please contact me as soon as possible, as they are going fast. I can be reached at lesa@telus.net. I will forward a floorplan for you to choose a booth that remains.

I am looking forward to seeing you soon,

Smiles))

With kind regards,

Les Anderson PE, RPA





Clean Air Matters

We spend about 90% of our time indoors, and it has never been more important to ensure we have clean, healthy indoor environments.

For over 50 years, BGE's approach has focused on people, as we strive to provide optimal air quality through proactive, integrative advisory services and quality products you can trust.

BGECleanAir.com

Edmonton Calgary Vancouver Fort McMurray Prince George Regina Saskatoon Winnipeg



DCS AGENCY LTD.

Manufacturer's Representatives for:

- Xylem / Bell & Gossett
- Watts Water Technologies / Watts Radiant
- Watts / Powers Mixing & Electronics
- Tekmar Control Systems
- American Standard Brands
- Clemmer Technologies
- Laars Boilers
- De Dietrich Boilers
- Gastite Flexible Gas Piping
- Sisco P/T Plugs
- WGI Western Gauge & Instrument
- Griswold Flow Control Valves
- Metraflex Pipe Connectors
- Rinnai

Alan Proctor Shawn Oakley Greg Smith
#7, 6130 - 4 Street S.E., Calgary, AB. T2H 2B6
Tel: (403) 253-6808 Fax: (403) 259-8331
www.dcsalesitd.com



CUSTOM POWER GENERATION

CANADA'S LARGEST
BLUE STAR
POWER SYSTEMS DISTRIBUTOR

Western Canada's Premier Supplier of Stand-by, Prime & CHP systems

24/7 Parts and Service Support

Emergency Generator Repair

Planned Generator Maintenance Programs

On Site Fuel Testing & Polishing

100% CANADIAN OWNED AND OPERATED!



CALGARY - EDMONTON - VANCOUVER
24HR: 855-948-8810 / CUSTOMPOWER.CA

SURE

PRINT & COPY CENTRE AVENIDA

WE PRINT EVERYTHING!

SIGNS
RETRACTABLE BANNERS
X-BANNERS
SANDWICH BOARDS

&
MUCH MORE!

DESIGN
NCR FORMS
MAGAZINES
BUSINESS CARDS
POSTCARDS
CALENDARS
LARGE FORMAT PRINT
LARGE FORMAT SCANS
BLUEPRINTS

501 - 12445 Lake Fraser Drive SE, Calgary, AB T2J 7A4
Phone: 403.254.6922 Email: sure20@surecopy.com
www.sureprintavenida.ca

TEST YOUR OPERATOR IQ!



Are you equally adept at troubleshooting problems in the boardroom and the boiler room? As the resident facility guru, there's a lot riding on whether or not you know the difference between sounds control and a sound investment.

Try our monthly Operator IQ challenge...answers on page 19

1. **When comparing the moisture content in the air between two locations it is best to use?**
 - a) the dry bulb temperature
 - b) the wet bulb temperature
 - c) relative humidity
 - d) the dew point
2. **Which of the following air masses is the most dense?**
 - a) cold and moist
 - b) cold and dry
 - c) warm and moist
 - d) warm and dry
3. **The dew point is greater than the temperature:**
 - a) when clouds form
 - b) when its raining
 - c) when the relative humidity is 100%
 - d) never
4. **Which of the following processes absorbs the most latent heat?**
 - a) condensation
 - b) freezing
 - c) melting
 - d) evaporation
5. **What is measured in millibars?**
 - a) air pressure
 - b) temperature
 - c) wind speed
 - d) rain gage
6. **This is defined as the pressure exerted by water vapor alone in a sample of air:**
 - a) relative humidity
 - b) mixing ratio
 - c) vapor pressure
 - d) absolute humidity



On HVAC Technology

It's Not the Heat

By James Piper

Facilities step up humidity control efforts

Maintenance and engineering managers are increasingly aware of the important role that proper humidity control plays in indoor air quality (IAQ). In the past, humidity control was limited to special applications, such as computer rooms in which high levels of moisture in the air could corrode electrical contacts and low levels of moisture would lead to a static electricity buildup.

Today, recognizing the effect humidity has on people's health and comfort, more manufacturers are designing HVAC systems with humidity controls. Without proper humidity controls, a typical office facility has summer humidity levels and winter humidity levels that can vary as much as 10- 15 percent.



The ideal summer range for humidity in most applications is 40-60 percent. Higher levels can cause building occupants to feel uncomfortable and can have other effects, such as increasing the number of paper jams in office printers and fax machines. Lower levels can lead to respiratory problems and skin irritation.

During the winter, the ideal humidity range is 20-30 percent. Higher levels can cause condensation to form on windows and other cold surfaces, while lower levels can increase the susceptibility of occupants to colds and viral infections and result in the buildup of static electricity that can damage computers and other office equipment.

The good news for managers is that both summer and winter humidity levels can be easily controlled. A range of options is available - including those that use hot water, steam or electricity - to add moisture to building air systems. Similarly, building



dehumidification systems can use either mechanical refrigeration or a desiccant to remove moisture from the building air system.

While the methods of maintaining building humidity levels within the desired range are not new, advances in system technology have made them more reliable, easier to control and less expensive to maintain.

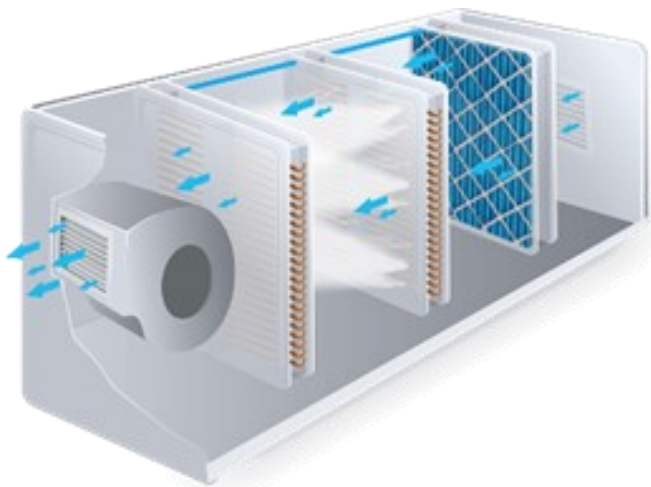
Humidification Systems

Managers have five major types of building humidification systems to select from today: water spray systems; boiler-supplied-steam

systems, packaged electric or steam systems; centrifugal atomizing systems; and pressurized-air systems.

Water spray systems are the lowest cost and simplest of the major building humidification systems. They operate by injecting a fine mist of water into the building's air supply, where it evaporates. Since the water is not heated, no energy is required to operate the system, resulting in low operating costs.

The systems, however, can have high maintenance costs, particularly if the mineral content of the water is high enough to lead to



clogging of the nozzles. The systems also must be frequently inspected to ensure that water does not pond in the duct downstream of the spray nozzles, a condition that can lead to fungi and bacteria growth.

Boiler-supplied steam systems are the simplest and least expensive type of system to install, provided the facility has a central steam plant and a steam distribution line is located close to the building's air supply. This system draws steam from the central boiler system and injects it into the air stream. Although these systems once were very common in facilities with large central steam plants, concerns over the impact of the boiler feedwater treatment chemicals on indoor air quality has led to their decline.

Packaged electric and steam systems use a small, dedicated boiler to generate steam that is free of contaminants. These systems, as with central boiler systems, inject steam directly into the air stream. Since the steam is generated in a dedicated system, there is no boiler- feed-water chemical-treatment system to contaminate the humidified air. Both packaged electric and steam systems offer the advantages of low first cost and low maintenance costs, although both require energy to generate the steam.

Centrifugal atomizing systems, unlike electric and steam systems, do not heat the water before injecting it into the air stream. Instead, water is sprayed onto a large rotating disk. Centrifugal force forces the water off the disk into an atomizing screen in the building's HVAC supply duct. There, it is broken into droplets that are 5- 10 microns in size. Air flows across the screen and dislodges the he supply air.

Centrifugal atomizing systems offer the advantages of low operating and maintenance costs and require no energy for steam generation. Depending on the mineral content of the water supply, however, it may be necessary to use treated water to prevent the clogging of the atomizing screen.

Pressurized-air systems operate by forcing high-pressure air through a nozzle. The pressure drop in the nozzle creates a vacuum that draws water into the nozzle, where it is broken into micron-sized particles and injected into the building's HVAC system air supply. Pressurized-air systems do not require energy to generate steam, but they do require the use of pressurized air. Their chief draw- back is the need for frequent cleaning of the nozzle, particularly when the mineral content of the water is high.

Selecting a System

Managers and specifiers must weigh a number of

factors when evaluating building humidification options, including the climate in which the building is located, energy costs and maintenance costs.

Geographic areas with long heating seasons probably will benefit more from a centralized approach to humidification than those with short heating systems. Managers of facilities in climates with limited heating requirements should consider installing small, localized units to serve specific areas of the facility.

Systems that inject steam into the air supply have much higher energy requirements than those that inject water at supply-water temperatures. If an inexpensive source of energy is readily available, such as natural gas, steam or waste heat, managers should consider using a steam-based system. If not, centrifugal atomizing or pressurized-air systems will be less expensive to operate.

Building humidification systems can be high-maintenance items, particularly if a facility's water quality is poor. Minerals dissolved or suspended in the water tend to clog discharge nozzles, foul atomization screens and coat boiler heat-transfer surfaces. All systems will require some maintenance to minimize damage from mineral deposits.

Technology Improvements

All of the current types of systems for regulating the humidity levels in buildings have been in use for years. What makes today's systems so successful is recent developments in the technology used to control those systems.

One of the most significant improvements that has been made is in the way the systems sense humidity levels. In the past, humidity

sensors have been made from a range of organic and inorganic materials. Most of these sensors were inaccurate and prone to failure, due to contaminants in the air supply. Today's generation of sensors is electronic, using thin capacitance film or bulk polymer resistance to measure changes in the moisture content of the building's supply air. Both types are accurate to within 3 percent, operate over a range of humidity levels and provide fast response to changes in relative humidity. These sensors have given system designers the accuracy needed to provide the humidity control required in today's IAQ-conscious environment.

Changes in sensing technology have resulted in the way systems are controlled. Most system



operations had used on-off controls, resulting in swings in building humidity levels as conditions changed. Today's systems - due, in part, to the rapid response of humidity sensors - are proportional. Sensors rapidly detect changes in building moisture levels and vary the output of humidification and dehumidification systems to keep a facility within the desired range.

Today's systems also use multiple sensing locations to provide a more accurate picture of humidity levels throughout the facility. The result of these developments in sensing and control technologies is that today's humidification and dehumidification systems finally give engineering

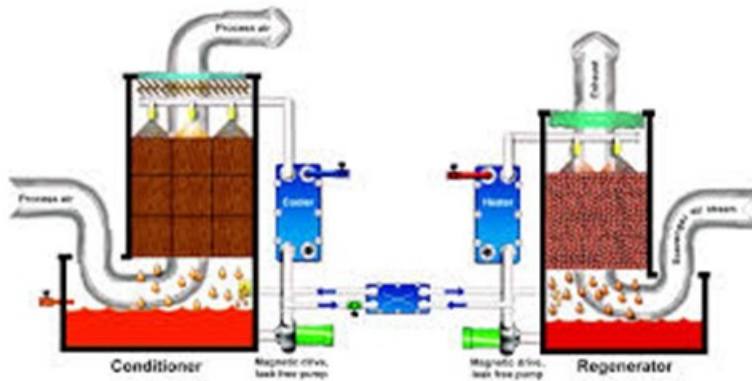
and maintenance personnel the tools they need to meet the needs of building occupants in making the building environment as comfortable and healthy as possible.

Dehumidification Technology

Humidification systems are only half of the story when it comes to regulating humidity levels in buildings. During air-conditioning months, humidity levels often are too high, which reduces occupant comfort, accelerates corrosion of electrical contacts in sensitive electronic equipment, causes condensation on cold surfaces, and creates conditions in the building that promote the growth of mold and bacteria.

Two major types of systems are used for dehumidification - mechanical refrigeration and desiccant-based systems. The majority of the installed dehumidification systems are based on mechanical refrigeration, but desiccant-based systems are growing in use due to their low energy requirements.

Mechanical-refrigeration-based systems operate by cooling a building's supply air below the dew point, causing moisture to condense out of the air. Since the air leaving the coils is at nearly 100 percent relative humidity, it must be mixed with warmer supply air or reheated before being



introduced into the building space.

By increasing or decreasing the temperature of the dehumidifying coil, the system can vary the amount of moisture left in the air

supplied to the space, thus regulating the humidity of the building space. The primary drawback of mechanical refrigeration-based dehumidification systems is their energy cost.

Desiccant-based dehumidification systems require much less energy than mechanical refrigeration systems. A wheel or drum coated or filled with a material that absorbs moisture, such as silica gel, slowly rotates in the duct of the building's air supply. As air passes across a portion of the wheel, the desiccant absorbs moisture, lowering the air supply's humidity level. As the wheel rotates, it passes through a second air stream, one that is heated. Moisture absorbed by the desiccant is released, thus regenerating the desiccant for another cycle. The primary drawbacks of desiccant-based systems are their size and the need for a second, heated air stream.

James Piper is a consultant based in Bowie, Md., with more than 20 years of facilities management experience. This article appeared previously in the May issue of Maintenance Solutions

Article reprinted with permission





Western Canada Region

Classroom Training in Canada!
July 11 – 14, 2022

The BCxA is offering 1 ½ day training on New Construction Commissioning (NCCx) and Existing Building Commissioning (EBCx) in Calgary, Alberta, on July 11 – 14. Attend one or both trainings. Discounts are available for groups of 5 or more from the same company and for taking both classes.

The BCxA Western Canada Chapter is also hosting an outing on day two of the NCCx training to an evening at the Calgary Stampede Chuckwagon races. More details are coming soon on the Stampede!

July 11-12 is reserved for the **New Construction Commissioning (NCCx)** course led by Craig Hawkins, CCP. This course is designed to guide attendees through the NCCx process phase by phase, so you understand the goals and benefits of commissioning (Cx) and all the stakeholders' roles and responsibilities in the Cx process.

July 13-14 is dedicated to the **Existing Building Commissioning (EBCx)** course led by Kevin Thurston, CCP. This course focuses on the What, Why, and How-To of EBCx. Participants receive comprehensive instruction on each phase of the EBCx process based on BCxA's Best Practices.

Register

Pricing (In US dollars)		Register for both	
One Class		Both Classes	
Member	Non-Member	Member	Non-Member
\$500	\$600	\$850	\$1,020

Location:

240 Fourth – Conference Centre
240 – 4th Ave SW
Calgary, AB

For Corporate discounts on five more attendees, contact Sheri Adams at SAdams@BCxA.org

Refund/Cancellation Policy

Registration refunds will be provided minus a \$75.00 cancellation fee for refund requests received in writing via email to info@bcxa.org two weeks before the event. No refunds will be given after this date. Travel and accommodation cancellations remain the sole responsibility of the individual.

IAQ Culprits: Hiding in Plain Sight

by Ted Fitzmeyer

Unlikely suspects boilers, chillers and cooling towers can jeopardize indoor environments without proper maintenance.

The key to maintenance and engineering managers' success is staying ahead of maintenance requirements critical in ensuring a safe, efficient and healthy building. System operators and managers play key roles in determining whether indoor air quality (IAQ) problems will or won't occur, since they oversee preventative maintenance of heating, ventilation and air conditioning (HVAC) systems.

But oversights often occur, despite the best efforts of the maintenance manager. These IAQ problems typically result from improperly functioning key mechanical systems that are not generally associated with IAQ issues, such as cooling towers, chillers, humidifiers and boilers.

To eliminate the likelihood of these HVAC components creating IAQ problems, they must be regularly inspected, tested, cleaned and repaired. Although there is no substitute for a qualified technician, a series of specific maintenance tips can help identify the most common IAQ problems associated with these HVAC components.

Cooling towers

Cooling towers use water to remove heat from

cooling processes and equipment such as chillers. Cooling towers can be the cause of a variety of IAQ problems.

First, the cooling tower can be a breeding ground for bacteria. In addition to ensuring proper heat rejection, cooling towers require careful and thorough maintenance to ensure that pathogens



such as Legionella do not occur. Pathogenic growths can be prevented by proper biocide chemical treatment and preventive maintenance.

Managers should schedule periodic water testing conducted by a qualified chemical treatment specialist, as well as oversee the installation and maintenance of a system to deliver appropriate chemicals to the water. Technicians should monitor these systems continuously.

Cooling tower inspection is critical in verifying that the chemical treatment system is doing its job. Managers should schedule a quarterly inspection to look for bacteria growth, tower overflow and effluent drift or carryover. Signs of bacteria growth include slimes and algae in the cooling tower sump and within the spray area.

If such growth occurs, properly protected and qualified technicians should perform the cleaning. Any leaks or overflow problems should be repaired. If effluent drift occurs, a drift eliminator can be installed. Managers must make sure that effluent from a cooling tower is never drawn into outdoor air intakes or openings.

A cooling tower that does not permit the associated cooling equipment to properly control



building humidity levels also may be an indirect cause of IAQ problems.

Chillers

Water chillers provide cold water — typically 45 degrees or colder — to air handlers and terminal equipment to control space temperature and relative humidity. If a chiller is not providing cold enough chilled water, adequate dehumidification may not occur, which can lead to mold growth within the HVAC ductwork, air handlers or the building itself.

Refrigerant leaks from chillers also can cause IAQ problems. Weekly visual inspections and checks of refrigerant levels will verify any possibility of leaks. Continual monitoring of the refrigerant leak monitor which is now required by many of today's codes, warn of leakage as measured in parts per million.

Technicians should repair any leaks immediately. As with most HVAC equipment, only properly protected and qualified technicians should perform refrigerant repairs. Managers must make sure that waste oils and spent refrigerants are stored and disposed of properly.



Technicians also should repair insulation on piping in and around the chiller to prevent the formation of

condensation. Many systems use glycol in the chilled water system to prevent freeze problems. Toxic glycol, such as ethylene, however, should never be used, because a leak within an air handler could cause a catastrophic IAQ problem and jeopardize the health of building residents.

Boilers

Boilers also can contribute to IAQ problems if they do not provide proper heat or reheat. Increased ventilation rates require that many systems use reheat to ensure spaces will not overcool, while still delivering the proper amount of outdoor air. This

situation may require the boiler system to operate year round.

Boilers also contribute to IAQ problems by permitting the products of combustion and carbon monoxide to inadvertently enter the building because of leaking boiler flues or stacks positioned too close to air intakes. Managers should schedule monthly inspections during the heating season to ensure proper flue drafting and that the flue system and fuel systems are not leaking.

Older boilers can contribute to IAQ problems, especially if they have inadequate ventilation for combustion. In general, a minimum of 1 square inch of free area per 2,000 Btu is acceptable. Check local codes. Often, combustion air openings are bearded up to reduce freeze problems which further contributes to ventilation problems.

Gas or oil leaks at the boiler are not only fire hazards, but they can cause odor and health problems elsewhere the building. Qualified and properly protected technicians should repair all such leaks immediately.

Properly maintained HVAC components can eliminate or reduce the likelihood of IAQ problems and permit quick repair of problems that do occur. Proactive facilities engineers who have documented preventive maintenance procedures and repair follow-up are protecting building's occupants, as well as themselves, if IAQ problems arise.

Too much of a Good Thing?

Humidifiers typically are installed for areas such as computer rooms, libraries and museums. In colder climates, they are used to increase space humidity levels to within acceptable ranges, usually 20-30 percent relative humidity. ASHRAE 55-1981 provides guidelines on acceptable temperature and humidity levels.

Problems linked to low relative humidity include dry irritated eyes, nose and throat, as well as high static electricity. Ironically, humidifiers installed to

help control these problems can cause IAQ problems. Humidifiers generally deliver humidity to a space by adding steam vapor to the air stream. Although this is accomplished by different methods, each system has the same IAQ problem potential.



If a humidifier is oversized or not controlled properly, the humidifier can increase the humidity level in the duct

stream to a level that supports biological growth. When humidity levels in an air distribution system are above 70 percent, bacteria growth can occur. This risk can increase dramatically when the air system is dirty, or a duct liner is used in the air stream.

Usually, humidifiers have a control that shuts down the humidifier when the air stream in the duct becomes too moist. Technicians should test this monthly in the heating season to ensure it is calibrated properly.

Many humidifiers have a condensate drain system that can become a breeding ground for bacteria if not regularly monitored. System leaks also can provide warm moist areas that bacteria need to grow.

If the space humidistat is set at levels above 45 percent relative humidity, humidifiers can cause mold growth within the occupied space itself. In cold climates, a high humidifier set point can cause condensation on glass.

Generally, occupants do not understand the importance of proper humidistat settings and tend to turn the humidity levels up too high. If this is a recurring problem, locking the humidistat cover may be a good idea.

Steam humidifiers should use clean steam that is provided by a boiler or generator that uses non-toxic EPA approved chemicals or no chemicals at all. A

steam-to-steam heat exchanger humidifier is an excellent choice where only unclean steam is available.

Ted Fitzmeyer, PE is president/principal at Fitzmeyer & Tocci Associates, Inc., a mechanical /electrical engineering firm specializing in educational engineering, design and construction management services for heating, ventilation and air conditioning (HVAC), plumbing, fire protection and electrical systems for both new building construction and renovation programs.

Article reprinted with permission

KenKen Puzzle

How to solve the KenKen puzzle:

(Answers on page 19)

- Fill in the numbers from 1 –6
- Do not repeat the number in any row or column
- The numbers in each heavily outlined set of squares, called cages, must combine (in any order) to produce the target number in the top corner using the mathematical operation indicated
- Cages with just one square should be filled in with the target number in the top corner
- A number can be repeated within a cage as long as it in the same or column

1	10x		1-	2-	3-
3+		2÷			
20x	2÷		3÷	2÷	4
		2			6+
2÷	20x		6x		
	4	5-		3-	

Fire Protection and Detection

by Lawrence Bunyan

The following is a summary of the presentation done by Grinnell Fire Protection especially for the Building Operator Association (Calgary)

Selecting the optimal technical solution to suit application.

- Analogue addressable fire alarm systems are programmed to implement optimal fire detection solutions. Analogue addressable systems offer improved reliability and diagnostics in the event of a fire and during routine maintenance. Reduced unwanted alarms and more effective emergency response has resulted in the specification of analogue addressable systems for most significant risk areas included hotels, hospitals, office blocks, sports complexes and even cruise liners.
- Conventional detection systems are used for less complex risks and provide reliable and effective fire detection for schools, warehouses, motels and other low risk areas.
- Detectors may either respond to smoke or heat and smoke detectors may either utilize ionization or photoelectric technologies to detect smoke. Detectors selection will depend on required response time and the nature of the combustible materials present in the risk area.
- Infra-red and pressure detectors are effective in detecting fires in high hazard areas where response times are critical, including aircraft hangers, machine spaces, gas turbines and paint spray booths.

Once the system design has been chosen

and the system has been installed, the next step is the servicing.

Fire Protection - your legal responsibility.

The NFPA - 25 Fire Code makes inspection and testing of most fire inspection systems mandatory. Failure to adequately inspect and maintain fire protection systems may result in fines, but more importantly it can save lives.



Inspection and Service.

Fire detection systems need to be regularly inspected and maintained, and detectors need to be cleaned and periodically replaced. We strongly recommend a comprehensive inspection and maintenance service for all fire detection systems.

Inspection - the key to effective fire protection

The following are some of the questions which our inspectors ask when they inspect a location. A "NO" answer to any one of these, if not attended to, may result in the catastrophic failure of a system, re-emphasising the critical role of regular inspection procedures as part of your overall risk management program.

- Do sprinkler systems provide full coverage?

- Has the risk changed significantly?
- Are all control valves sealed or locked in the open position?
- Are Fire Department connections visible and accessible?
- Do alarm valves, water flow indicators, and local alarms test satisfactory?
- Are dry system air pressure and priming water levels normal?
- Do dry valves appear to be protected from freezing?
- Does the detection system provide full coverage?
- Does the panel indicate normal conditions?
- Do batteries indicate they are properly charged?
- Do detectors require cleaning or calibration?
- Did testing duct detectors shutdown air handling units?
- Are all gas bottles fully pressurized?
- Are all valves locked in open position?
- Are fire extinguishers in position?
- Are fire extinguishers physically complete?
- Are fire extinguishers fully pressurized?
- Do fire extinguishers require pressure testing?
- Does extinguisher powder need to be changed?



Local Authority

The local authority having jurisdiction (fire prevention) has completed a major shuffle in their territories. The two inspectors for the downtown core have just completed courses in fire prevention inspections and have been given the downtown area to try and clean it up.

The next big hit from the city and fire prevention will more than likely include a complete fire upgrade by-law. Many major cities in Canada have already completed upgrades in fire protection that resulted in an overall cost to building owners of more than \$40,000,000.00 per major city.

The overall expense of fire protection, whether it is the initial installation or the regular service, is always a very small part of an overall budget. However, it is one of the most important pieces of equipment you could possibly have when it comes to saving lives and property.

We at Grinnell Fire Protection strive to maintain the highest level of service and quality products and we thank you for allowing us to be part of your monthly meeting.

John Rutherford
* Boiler Service * Consults * Parts * Upgrades *
Quality Combustion & Controls Ltd
834, 3545 - 32 Ave NE, Calgary AB T1Y 6M6
Ph (403) 936-0065 Fx (403) 936-0061
jrutherford@Qualityco.ca Qualityco.ca

National Fire Protection Association (NFPA)

National Fire Protection Association (NFPA) is a US-based international non-profit organization devoted to eliminating death, injury, property, and economic loss due to fire, electrical, and related hazards. NFPA-704 is a standard system for the identification of the hazards of materials for emergency response.

The NFPA-704 defines diagrammatically what is conventionally known as fire diamond or safety square. The diagram helps personals to reliably and quickly identify the risks associated with hazardous materials so that the personals would know how to properly handle the material and also in case of an emergency what procedure should be followed and what measures should be taken.

The square or diamond diagram is divided into four parts. The parts can be seen to have an upper part, a lower part, a left part, and a right part. The upper part is coloured in red, the left part in blue, the right part in yellow, and the lower part in white. The red colour gives information about flammability, the blue colour gives information about health hazard, the yellow colour tells about hazard due to reactivity, and the white is reserved for special hazards. Each part is rated on a scale of 0-4. The lowest number on scale, zero, means no-hazard and the highest number on scale, four, means severe-hazard. The number is assigned only for the red, blue, and yellow part. In case of white part, a symbol is used. Some symbols have been assigned by NFPA but non-standard symbols may also be used if the authority having jurisdiction allows it.



NFPA Symbology

Flammability [Red]:

- 0: The substance/material is non-combustible. Basically, it contains those materials which will not burn in air when exposed to temperature of 820°C for a period of 5 minutes. Some examples are concrete, stone, and sand.
- 1: Those materials whose flashpoint is at or above 93.3°C. These materials require certain preheating before ignition occurs. Example, ammonia, mineral oil, etc.
- 2: Those materials whose flashpoint lies between the range of 37.8-93.3°C. They need moderate preheating before combustion can occur. Example, sulfur, diesel fuel, etc.
- 3: Those materials whose flashpoint lies between the range of 22.8-37.8°C. Example, acetone, and gasoline.
- 4: Those materials whose flashpoint is below 22.8°C. These are those materials which burn quite easily. Example, propane, hydrogen gas, acetylene, etc.

Health [Blue]:

- 0: These are those materials which does not pose any health hazard even though they may be flammable. Example, paper, wood, etc.
- 1: These are those materials whose exposure can only cause irritation. Example, acetone, potassium chloride, etc.
- 2: These are those substances whose continuous long-exposure may cause temporary incapacitation and possible residual injury. Example, diethyl ether, ammonium phosphate, etc.
- 3: These are those substances whose short exposure may cause serious temporary or moderate injury. Example, liquid hydrogen, sulfuric acid, calcium hypo-chlorite etc.
- 4: These are those substances whose very-short-exposure may cause death or major residual injury. Examples, dibornae, phosgene, methyl isocyanate, etc.

Reactivity [Yellow]:

- 0: Those substances which are stable even during fire hazard. Examples, helium, nitrogen, etc.
- 1: Those substances which are normally stable but may become unstable and reactive at elevated temperatures and pressures. Example, propene.
- 2: These are those substances which undergo violent chemical changes at elevated temperatures and pressures, and those that react violently with water. Example, sodium, potassium, etc.
- 3: Those materials which are capable of detonation or explosion, but they require strong initiating source. Example, hydrogen peroxide, caesium, etc.
- 4: Those substances which are capable of detonation even at normal temperature and pressure. Example, nitroglycerin, azidoazide azide, TNT.

(A) Standard symbols:

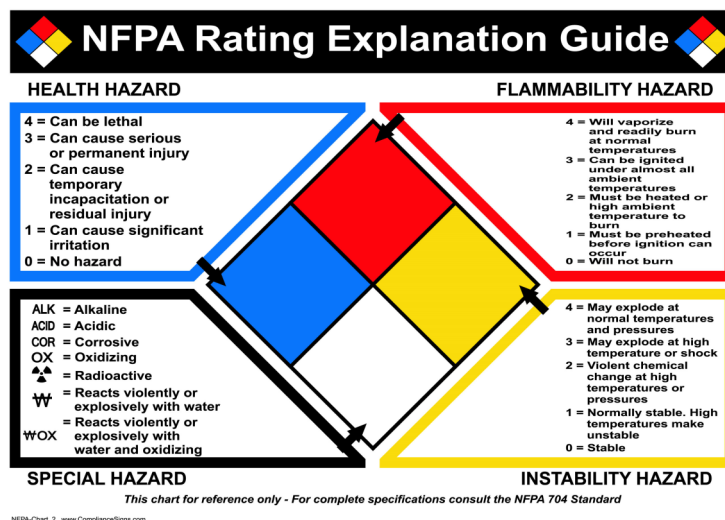
OX: Those substances which are oxidisers. Example, potassium perchlorate, ammonium nitrate, etc.

W: Reacts with water in an unusual or dangerous manner. Example, sulfuric acid, caesium, etc.

SA: This symbol refers to simple asphyxiant gases such as helium, argon, etc. It is also used when large quantities of dry ice is stored somewhere.

Non-standard symbols:

- ACID: Refers to acidic substances.
- ALK: Refers to alkaline substances.
- COR: Corrosive substances.
- POI: Poisonous substances.
- BIO: Biological hazard.
- RAD: Radioactive.
- CRYO: Cryogenic substances.



Healthy Buildings
on a Sustainable Planet



Bay 8, 823 - 41 Avenue N.E.
Calgary, Alberta T2E 6Y3

Phone: (403) 276-2201
Website: www.gasonic.com



WADE WEATHERBEE
High Rise Division Manager

5442 56 Avenue SE
Calgary, Alberta
T2C 4M6

Telephone: 403-532-3205
Fax: 403-532-0185
Cellular: 403-703-7888

E-mail: waderw@telus.net



Commercial Building Automation Solutions Provider
Over 30 product lines including



Shawn Mclean, Calgary 403-404-3660 www.westexcel.ca

CONSULTING • DESIGN • INSPECTION • TESTING SERVICES

Anton J. Vlooswyk, P.Eng.

Cel: (403) 651-1514
Tel: (403) 287-0888
Fax: (403) 287-0880
Email: anton@beci.ca

102, 4029- 8th Street S.E.
Calgary, Alberta, T2G 3A5
www.beci.ca



**BUILDING
ENVELOPE
ENGINEERING
INC.**



Kenken Puzzle Answer

¹	^{10x}		¹⁻	²⁻	³⁻
1	2	5	4	6	3
³⁺		^{2÷}			
2	1	3	5	4	6
^{20x}	^{2÷}		³⁺	^{2÷}	⁴
5	3	6	1	2	4
		²			⁶⁺
4	6	2	3	1	5
^{2÷}	^{20x}		^{6x}		
6	5	4	2	3	1
	⁴	⁵⁻		³⁻	
3	4	1	6	5	2



TEST YOUR OPERATOR IQ ANSWERS

Answers: 1) c 2) b 3) b 4) a 5) a 6) c



BOA Canada Magazine printed & distributed
by:

SURE PRINT & COPY

Top-Level HVAC Maintenance

by Mike Rogers, P.E.

Rooftop equipment presents unique challenges, but planning and PM can enhance efficiency and extend performance life.

In many instances, the value of real estate or the desire to place equipment out of sight leads facilities to place an array of HVAC equipment on the roof. This rooftop equipment presents maintenance and engineering managers and technicians with unique challenges, primarily related to weather and access.

The first priority for managers is to ensure correct installation and operation. Improper installation and start-up can result in early failure and additional maintenance throughout the life of the equipment. Beyond installation, preventive maintenance (PM) is essential.

In developing a PM plan, managers should be aware of specific types of equipment located on roofs, service concerns and roofing-system protection. Common roof-mounted equipment includes fans, air-handling units (AHUs), make-up air units, air-cooled chillers, condensers, cooling towers, and ductwork. All rooftop equipment needs routine maintenance of varying degrees.

Fans

The type of fan — whether a standard centrifugal exhauster or a large, belted vent set — determines maintenance requirements. A first-time inspection of fans should include a visual check for an available electrical disconnect within sight of the motor. A typical fan requires a belt adjustment and a check on pulley alignment three weeks after start-up and then every three months.

Ongoing maintenance includes checking dampers and actuators for operability every three to six months. Fans of more than 1 horsepower require

lubrication of some motor bearings and fan wheels, depending on whether or not they are permanently sealed. Technicians should replace grease every 2,000 hours of run time, but in temperatures higher than 104 degrees, technicians should replace grease more frequently.



Manufacturers can provide published lubrication schedules for specific fan makes and models. Technicians should check fan wheels annually for dirt build-up, unless the operating medium dictates checking more often. They also should check set screws in bearing collars annually because loose collars cause premature failure.

Air-handling units

The most common AHUs include chilled-water or direct-expansion (DX) units for cooling, hot-water or gas-fired units for heating, and energy-recovery units that use heat wheels or run-around coils. All of these units have parts in common — fans, dampers and actuators, coils and housings — that need routine maintenance.



Managers should schedule fan, damper and actuator maintenance as discussed previously. Semi-annually, technicians should check coils, casings and intake hoods for corrosion. They

should check drains and drain pans on cooling units and clean them every three to six months.

It is particularly important to inspect drains for obstructions. Plugged drain lines cause pans to overflow, and the resulting condensate will find its way into buildings. Standing water in drain pans also can cause indoor air quality (IAQ) issues resulting from mold and algae growth. A quick drain inspection can prevent serious headaches down the road.

Managers should size condensate drain traps correctly to keep traps wet and allow water to flow out of drain pans. Normally, the coil section is in a draw-through configuration, and the trap depth is two times the static pressure in the pan section.

For example, a pan with a 3-inch static pressure will need a 6-inch trap to keep from pulling in air through the trap. If the coil is in the blow-through position, there is no need to worry about pulling in air, but blowing out air is a concern. The same formula applies in this configuration. Filter maintenance on AHUs varies depending on the filter media, relative air cleanliness and filtration levels. If filters become overly loaded, the system has to work harder, using more energy. Reduced airflow can affect coils, which can even freeze on some DX units, and IAQ will suffer. Managers should place filter maintenance on a set schedule ranging from monthly to annual filter replacement, based on system requirements.

An annual inspection of AHUs should consist of:

- inspecting the casing
- cleaning the fan wheels and shafts
- inspecting drain pans and lines
- checking damper linkages and set screws cleaning damper operators.

Inspectors also should check control power and line-voltage boxes for secure wiring, and they should check gaskets, flex connections and wood nailers at curbs.

Gas-fired AHUs require



additional maintenance. Each season, technicians should check burners and orifices for debris, spider webs and other obstructions. They also should check flue collector boxes annually and clear them of debris. Upon installation, inspectors should verify that exhaust gases are not being entrained back into the building or otherwise causing air quality issues. DX equipment requires maintenance of some parts already covered, as well as of compressors and condenser coils. Maintenance of these units should incorporate previously mentioned checks, as well as checking the refrigerant charge and cleaning condenser coils. An initial installation check should verify that condenser coils have a clear air circulation path, since obstructions can dramatically reduce capacity.

Chillers and condensers

Air-cooled chillers use one of three basic types of compressors – scroll, reciprocating and rotary screw. Each type requires different maintenance and inspection, so technicians should follow manufacturers’ published maintenance schedules to get the maximum life from these units.



In addition to compressors, air-cooled chillers have condenser fans — belt driven or direct drive — that also require maintenance. If a chiller barrel is subject to freezing, technicians should insulate and heat-trace the unit, or they should add a mixture of glycol to the chilled water. They also should check the heat trace or glycol mixture seasonally.

Air-cooled condensers are usually DX units. These units commonly consist of a simple coil and propeller or centrifugal fans to aid in heat dissipation. Fan service suggestions previously

mentioned will cover most applications of condensing units.

Cooling towers

Upon initial installation of cooling towers, workers should inspect them for unobstructed airflow around the tower, as well as for adequate freeze protection for the sump, make-up lines, overflow lines, and other exposed water lines that do not drain at shutdown.

Much has been written on cooling tower maintenance, but no matter the type of system used for cooling tower water treatment, keeping a close eye on bacteria and dissolved solids is essential for an efficient and long-performing cooling tower.

Managers should set up a maintenance schedule and tailor it to the specific tower and the conditions under which it operates. Consulting with the tower manufacturer and water treatment specialist can ensure the treatment approach is compatible with tower materials.

At a minimum, technicians should check towers each month for fan-motor and bearing lubrication, as well as for tight thrust or locking collars and fan belts. Workers should clean strainers and sumps monthly, check the operating water level, adjust float valves if required, verify the bleed-off rate, and clean debris from inlet screens.

Managers can extend the performance life of rooftop HVAC equipment by establishing a specific checklist and schedule for each specific piece of equipment. A comprehensive PM plan is key to equipment longevity and addressing problems while they are small.

A good PM plan also can go a long way in helping a manager maintain the integrity of the roof envelope.

Protecting Roofs and Workers

Despite workers' best intentions, the installation and routine maintenance of rooftop HVAC equipment can damage roof materials. To prevent such potential problems, managers can establish equipment installation guidelines that also protect roofing systems and materials.

For example, during installation, managers should make sure that installers and technicians insulate

panel corners from the roof, especially if the roof is a membrane type and that they secure panels and equipment to avoid having them blow off in high winds.

Once is complete, workers should:

- pick up screws and other fasteners, which are often left behind and scattered on the roof, because these items easily puncture membrane roofs
- take special care when using grease, oil, refrigerants and cleaners that can damage roof materials

pay close attention to standing condensate on roofing, as it can cause algae and bacterial growth and create a fall hazard.

Condensate also can cause problems with internal gutter systems if they are not properly insulated or routed, resulting in condensation on perimeter gutters and downspouts.

Most roof leaks occur in association with rooftop equipment, so proper curb cuts and flashing are essential for preventing such problems. Before installation of any roof-mounted equipment, managers and technicians should consult specific and detailed plans that indicate the methods for attaching items to the roof structure and the extent of flashing and roofing materials needed to ensure roof integrity.



Workers should visually inspect all curbs prior to setting equipment. Once equipment is set, it is very difficult to modify curb flashing and roofing materials. Minimizing the number of roof penetrations from equipment and supports should be a priority.

Finally, routine foot traffic is a concern on most roofs. In the preventive maintenance plan,

managers should establish a pathway with walk-off matting and clear guidelines on access to the roof area.

Worker safety

To maintain worker safety during maintenance of rooftop equipment, managers should consider these suggestions in developing a safety plan:

- Make certain a power disconnect is within eyesight of equipment served.
- Install guard rails and platforms where regular maintenance is required but cannot be performed while standing on the roof.
- Mark trip hazards — such as expansion joints, vents and pipes — that cross the roof.
- Build walkways over trip hazards in areas of consistent foot traffic to allow for easier movement of workers, materials and tools.
- Provide adequate lighting around rooftop equipment.



Article reprinted with permission

Have a safe summer. We look forward to seeing you in-person at the Tuesday September 13, 2022 meeting at the Danish Canadian Club

(727 11 Ave SW, Calgary,)



Wearing a Hard Hat is Only Half the Job

by Michael Lloyd

Inspections are essential to ensure this vital type of PPE can do its intended job.

Millions of hard hats are worn every day. In fact, the hard hat is one of the most recognizable pieces of safety equipment in the industrial workplace. It's also one of the most important pieces of safety equipment because it protects the brain. Unfortunately, this ubiquitous piece of personal protective

equipment (PPE) is rarely part of an inspection, maintenance, or replacement program.



The durable exterior of the rugged-looking hard hat can disguise the need for replacement. Hard hats must be replaced when they can no longer provide the protection intended, and sometimes this can be difficult to detect. Workers who use gloves on a work site can obviously see (and feel) the need for new gloves; the wear and tear is readily apparent. On the other hand, many workers may be wearing a hard hat well past its useful life without even knowing it. In every organization where workers wear head protection on the job, a regular hard hat replacement program should be clearly defined and implemented. This type of hard hat replacement program can be implemented and managed with a few considerations.

Many workers may be wearing a hard hat well

past its useful life without even knowing it. OSHA, ironically, does not specify the service life of a hard hat, and there is no standard expiration time frame for hard hats. The hard hat manufacturer can recommend a replacement guideline for its products, but hard hat life span may vary significantly based upon the conditions at each work site. Ultimately, an employer is responsible for defining a responsive and appropriate solution for hard hat service life issues.

Useful Life of a Hard Hat

Determining a specific time frame for hard hat replacement at your site will take some research. As a

general guideline, most manufacturers recommend replacing hard hats every five years regardless of outward appearance. If work conditions include exposure to higher temperature extremes, sunlight, or chemicals, hard hats should be replaced after two years of use. Some manufacturers recommend the replacement of the hard hat suspension every 12 months, regardless of appearance. Careful review of each work site is critical to ensure that degradation of PPE is not being accelerated due to extreme work conditions.

Inspection and Maintenance

The typical ANSI Type I-compliant hard hat, which provides protection from objects striking the top of the head, consists of two components: shell and suspension. These components work together as a system. It is important for both the shell and suspension to be inspected on a regular basis.

Shell Inspection

Throughout history, many materials have been used to manufacture hard hat shells. Today, thermoplastics (polyethylene, polycarbonate, and others) and thermoset materials (fiberglass-reinforced polyesters and phenolic-impregnated textiles) are commonly used to mold shells of industrial hard hats. These materials have proven to be durable, reliable, and lightweight while providing effective protection. Given proper care, these materials will provide a reasonable service life under normal workplace conditions. But remember, these hard hats do not have an indefinite useful life, nor are they resistant to all physical and chemical exposures.

Careful review of each work site is critical to ensure that degradation of PPE is not being accelerated due to extreme work conditions.

Regardless of the material, shells should be inspected routinely for dents, cracks, gouges, and any damage due to impact, penetration, abrasions, rough treatments, or wear that might reduce the degree of protection originally provided. Degradation of thermoplastic material may be apparent when the shell becomes stiff, brittle, faded, dull in color, or exhibits a chalky appearance. A hard hat should be replaced at first sign of any of these conditions.

Exposure to direct sunlight will affect the life of the shell.

Although most manufacturers add an ultraviolet inhibitor to the shell material of hard hats to protect against degradation caused by sunlight, all hard hats are susceptible to ultraviolet light damage. Workers should never store their hard hats in the rear window or dash of a vehicle or in direct sunlight. This is the quickest way to degrade the shell material and reduce the life of the product.

Suspension Inspection

The hard hat suspension is just as important to worker safety as the shell. The suspension actually helps to absorb the shock of a blow, so it must be in good condition at all times. Like the shell, the suspension must be inspected regularly and replaced from time to time. Suspensions should be inspected closely for

cracks, frayed or cut crown straps, torn headband or size adjustment slots, loss of pliability, missing components, or other signs of wear. These conditions can be caused by perspiration, hair oils, or normal wear.

Maintenance

As with everything on the work site, hard hats will get dirty. The hat and suspension should be cleaned with mild soap and lukewarm water. Strong detergents, solvent chemicals, gasoline, and other like substances could affect the resistance and other such properties of the hat over time. Contact the manufacturer if you have concerns.

General Guidelines

All new employees should be provided with a new, unused, and unexposed hard hat. The practice of reissuing cleaned hard hats must be avoided. The cost of a hard hat is negligible when the potential for injury, lost time, health care costs, and liability are considered.

Hard hats are designed to protect you only once. If the hard hat has been struck by a forcible blow of any magnitude, both the hard hat shell and the suspension should be replaced immediately, even if no



damage is visible. Hard hats also should be replaced if dropped accidentally by the worker from the height of a two story building or higher. Damage to the hat and sus-

pension from the drop could seriously degrade the effectiveness of the product.

Check and log the date code (usually located on the underside of the shell) prior to sending the hard hat into service to help track the age of the product.

Assuming the hard hat has been stored in proper packaging--free from exposure to sunlight, chemicals, and extreme temperatures--the product service life would begin at the time the hard hat is put into service, not from the date of manufacture. Be sure to check with the manufacturer about product

warranty because it may not allow for storage time. All hard hats have a molded-in date code (date of manufacture) per ANSI Z89.1-2003 industrial head protection requirements. These date codes are usually located on the underside of the shell. Check and log this date prior to sending the hard hat into service to help track the age of the product.

Supplying and enforcing the use of hard hats is only half the job. Safety officials must implement and maintain a hard hat replacement program to ensure that hard hats are providing the level of protection intended. This is not only necessary, but well worth the effort when considering the implications of providing a hard hat that has outlived its usefulness. Check with the hard hat manufacturer for additional tips, guidelines, and warnings.

This article appeared in the March 2007 issue of Occupational Health & Safety.

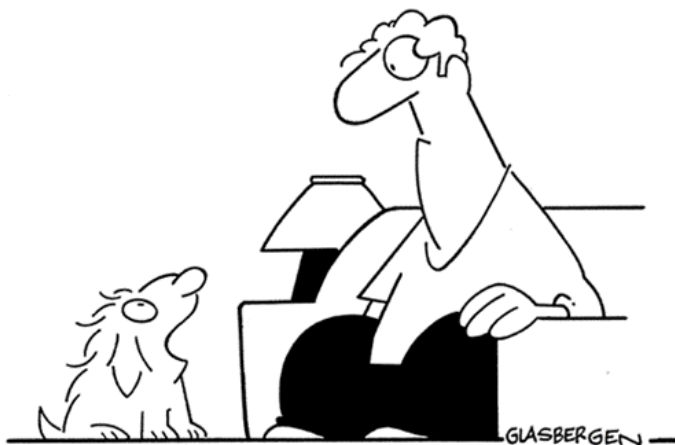
A Field Test for Your Hard Hat

The following is a simple field test that can be performed by an employee or supervisor to determine possible degradation of polyethylene shells:

Compress the shell inward from the sides about 1 inch (2.5 cm) with both hands and then release the pressure without dropping the shell. The shell should quickly return to its original shape, exhibiting elasticity. Compare the elasticity of the sample with that of a new shell. If the sample does not exhibit elasticity similar to that of a new shell or if it cracks due to brittleness, it should be replaced immediately.



© Randy Glasbergen
glasbergen.com



"If you can't stand my constant yapping,
should I just text you?"



We look forward to seeing
you in-person for our
September meeting at the
Danish Canadian Club (27
11 Ave SW, Calgary, AB)
on Tuesday September 13,

2022.



WE'RE BACK



BOA
Building Operators Association of
Canada

Trade Show 2022

Tuesday October 18, 2022

Danish Canadian Club

727 - 11th Ave SW

Doors Open at 2pm until 6pm

**30+ Exhibitors - New Technology - Latest Innovations -
Networking - Industry Personnel**

Door Prizes - Cash Bar - Finger Foods

Come & Join Us!

We hope to see you there!

Want to be an Exhibitor at the trade show? Reach out to president@boacalgary.com

New pipes inside your old pipes.



**Cost Effective, Less Disruptive.
Simple as that.**

*Whether you're replacing a
drain stack in a skyscraper or
a piece of cracked cast under
the floor in a shopping centre,
we have it handled!*

- Vertical drain stacks behind walls
- Horizontal drains under floors
- HVAC and chiller pipes
- Pipes with multiple bends and offsets
- Pipes with branch connections
- 1 1/2 - 10 Inch diameter (custom sizes available)
- Inside any type of pipe (including cast iron, steel, asbestos concrete, PVC, ABS)
- 50+ year life expectancy

REVIVE
Pipe Restoration Inc.

Inside Building Specialists
403-903-4445
www.revivepipes.com

May 2022 Meeting Minutes



Chaired by: Mark Arton	Minutes by: Monika Bhandari	Call to order: 5:00pm	Webinar: May 10, 2022
---------------------------	--------------------------------	--------------------------	-----------------------

Presenter: Tiffany Petrunia from Suez Water Technologies & Solutions
Title: The Challenging Dynamics of Open System Water Treatment.

New Business:

- Digital magazine is now out for June 2022
- Tradeshow scheduled for October 18, 2022 at the Danish Canadian Club; please contact Les if you would like to exhibit
- Join the BOA; details on www.boacalgary.com
- Past webinars available on the website and the building operators Calgary YouTube channel
- New guest speakers wanted for webinars; contact Les or Mark if interested

JOIN US: TUESDAY JUNE 14, 2022 AT 5PM FOR OUR VIRTUAL MONTHLY MEETING

Presenter: Barry Paisley, Senior Regional Sales Manager—Western Canada, Hikvision Canada Inc.

Title: Hikvision Canada—Colour of Innovation & Enhanced AI Features

Summary: Cool Technology and real world video

Bio:

Barry has been in the security industry for 30 years. Working in many roles over those years from security guard, monitoring centre manager, to operations and sales manager in the first half of his career, the later half has been with CCTV manufacturers. Barry has spent the past six years with Hikvision Canada and is more than happy to share his years of experience and assist you to solve your building security technical needs.

[Click on this link to register for the BOA Monthly Meeting](#)



Just for laughs!

KNOCK, KNOCK.
 Who's there?
Nobel.
 Nobel who?
Nobel...that's why I knocked.



How do teddy bears keep their den cool in Summer?
 They use bear conditioning!

BOA CALGARY OPERATOR MAGAZINE ADVERTISING RATES:



1/8 page	\$200	Premium Locations:	
1/4 page	\$400	1/2 page inside/outside cover	\$850
1/2 page	\$775	1/2 page outside cover	\$900
Full page	\$1000		

Deadline for ads is the 10th of each month. For any questions, please email: advertising@boacalgary.com.



Thank you to our incredible sponsors! Your support of the Building Operators Association is invaluable!!

GOLD LEVEL SPONSORS


HOSIERSKEEPING SERVICES INC.


ENGINEERING LTD.


All the parts. All the time.


TECHNICAL SERVICES LTD.


WATER MANAGEMENT LTD.




Technical Experts. Coast to Coast.


Fire & Water - Cleanup & Restoration™

SILVER LEVEL SPONSORS










BUILDING MAINTENANCE


Your Comfort. Craftsmanship.

BRONZE LEVEL SPONSORS




Hydronic Systems Inc.


FORWARD ENGINEERING


Automation Ltd.


TECHNICAL SERVICES LTD.
 404 292 4200
 www.heatseeking.ca





Advertisers Directory



Automation WestExcel Automation Ltd.	403-404-3660
Boiler Services Black & McDonald	403-235-0331
Quality Combustion & Controls	403-936-0065
Drain Services Revive Pipes	403-903-4445
Engineering Services Building Envelope Engineering	403-287-0888
Filtration BGE Air Quality Solutions Ltd.	403-243-5941
Fire Protection Services Constant Fire Protection	403-279-7973
HVAC & Electrical Services Black & McDonald	403-235-0331
Boulder Mechanical Contractors Ltd.	403-230-5519
Indoor Air Quality Services Gasonic Instrument Inc,	403-276-2201
Lighting Services Calgary Lighting Products	403-258-2988
Motor Services James Electric Motor Services	403-252-5477
Supply Services DC Sales Corporation	403-253-6808

**Support those that support
YOU!**

Next time you are looking for a product or a service provider, please consider connecting with one of our advertisers & members of the Building Operators Association of Calgary

**Alberta Certified Power Engineers
Online Directory**

**Check to see when your power
engineer certificate is due for
renewal!**

www.absa.ca/directories/alberta-certified-power-engineers-directory/



James Electric



Motor Services Ltd.

Professional Pump & Electric Motor Repair

35,000 Square Foot Service Center and Warehouse

In-House Machine Shop & Fabrication Departments

Fully Equipped Service Vans

Certified Hydronic Designer on Staff

Calgary's Largest Replacement Motor Inventory

Largest Stock of Pumps & Pump Parts in Western Canada

Custom Built Fans and Blowers to Meet Your Specifications

ISO & COR Certified

Consumer Choice Award 8 Years Running

All Service Technicians are Trained in Confined Space Entry

Fire Pump, Booster Pump and Sump Pit Annual Inspections Available

Energy Efficient Audits and Solutions

On Call 24 Hours, 7 Days a Week

Motors

A.O. Smith, Baldor, Century, Emerson, Franklin, Fasco, Lafert, Leeson, Marathon, WEG, Teco-Westinghouse, US Motors

Pumps

Armstrong, Albany, Barnes, Bell & Gossett, Burkes, Darling, Franklin, Goulds, Grundfos, Hydromatic, Liberty, Little Giant, Monarch, Paco, Taco, Tsurumi, Xylem

Fans & Blowers

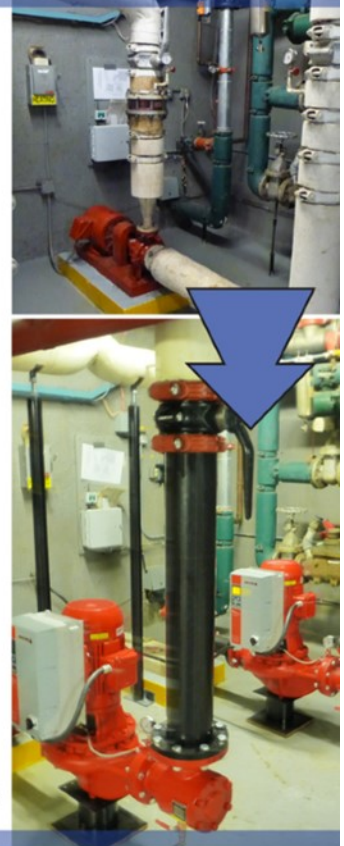
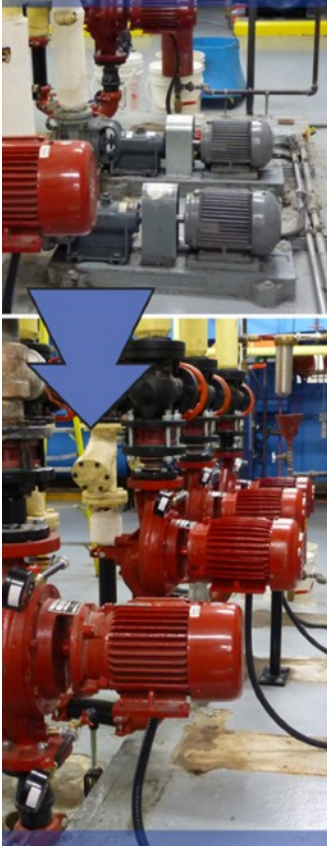
Airdex, AirKing, Broan, Dayton, Delhi, Fantech, Fasco, Greenheck, Lau, Nederman, Nutone, Schaefer, Tjernlund

Variable Frequency Drives & Motor Controls

ABB, Danfoss, Baldor/Reliance, WEG, Santerno, Teco-Westinghouse, Tornatech

Accessories

Gear Boxes, Pressure Tanks, Gauges, Bearings, Mechanical Seals, Flow Indicators, Filter Housings, Filters, Flanges, V-Belts, Float Switches, Pressure Switches, Pulleys, Sheaves, Relays, Contactors, Pressure Reducing Valves



Are your pumps leaking money?



Booster Audit

We have ability to monitor water usage and power consumption to provide the following:

- A comprehensive pre audit booster inspection
- An energy audit with an estimate of annual energy savings and potential payback.
- The "scope of work" for the installing contractor
- Start-up and commissioning on site
- Yearly maintenance inspections
- On site service 24/7/365

Grundfos BoosterpaQ

- Most efficient cascade control, application optimized software in the industry
- Single source responsibility: One manufacturer for pumps, motors, drives and control
- Plug & Play - Easy to install and commission
- Large, clear, user friendly & advanced controls interface
- Reduced floor space footprint
- Ethernet & BUS communications option
- Drinking water approvals: NSF61/372, Hygienic designed 316SS manifolds



4020 - 8 Avenue S.E, Calgary, Alberta, T2G 3A7 www.jameselectric.ca motors@jameselectric.ca

WE'RE BACK



Trade Show 2022

Tuesday October 18, 2022
 Danish Canadian Club
 727 - 11th Ave SW
Doors Open at 2pm until 6pm

**30+ Exhibitors - New Technology - Latest Innovations -
 Networking - Industry Personnel**

Door Prizes - Cash Bar - Finger Foods

Come & Join Us!
We hope to see you there!

Want to be an Exhibitor at the trade show? Reach out to president@boacalgary.com

Need Trained Building Operators? 

'Be A Part of the First Training of Its Kind'

5th Class Power Engineering 'Building Operator' Training Program



- ▶ Our first ever program graduated nineteen 5th Class Power Engineers Building Operators
- ▶ 90% secured employment with major companies in town!

**If you are a Building Owner/
Manager and would like to:**

- know more about this training or
- be a work experience host employer or
- have recruiting advantage after completion of training

At no cost to you!

Please contact:
 Monika Bhandari
 Phone: 403.514.8328
 Email: mbhandari@ccisab.ca
 1111-11 Ave SW 5th Floor
 Calgary, Alberta T2R 0G5
www.ogtp.ca

Partially by  Alberta 



Services

- Heating, Ventilation & Air Conditioning
- Sheet Metal
- Electrical
- Building Automation Systems
- Plumbing
- Refrigeration
- Voice & Data Communications
- Instrumentation
- High Voltage
- Process Piping
- Millwright & Rigging

Calgary Office
 1071 26 St NE Calgary
 403-235-0331

Capabilities

- Design/Build
- Renovation & Upgrade
- Fast-track Change-out
- Building Commissioning
- Infrared Thermography
- Facilities Management & Operation
- Planned Preventive Maintenance
- Sheet Metal Fabrication Pipe
- Complete Boiler Services
- 24-hour Emergency Service**

Facilities

- Commercial/Office
- Industrial
- Education & Institutional
- Healthcare
- Industrial
- Telecom & Data Centers
- Sports & Assembly
- Airport & Transit Stations
- Military Bases



Black & McDonald is a leader in quality service, committed to implementing innovative solutions throughout a facility's life cycle.

www.blackandmedonald.com