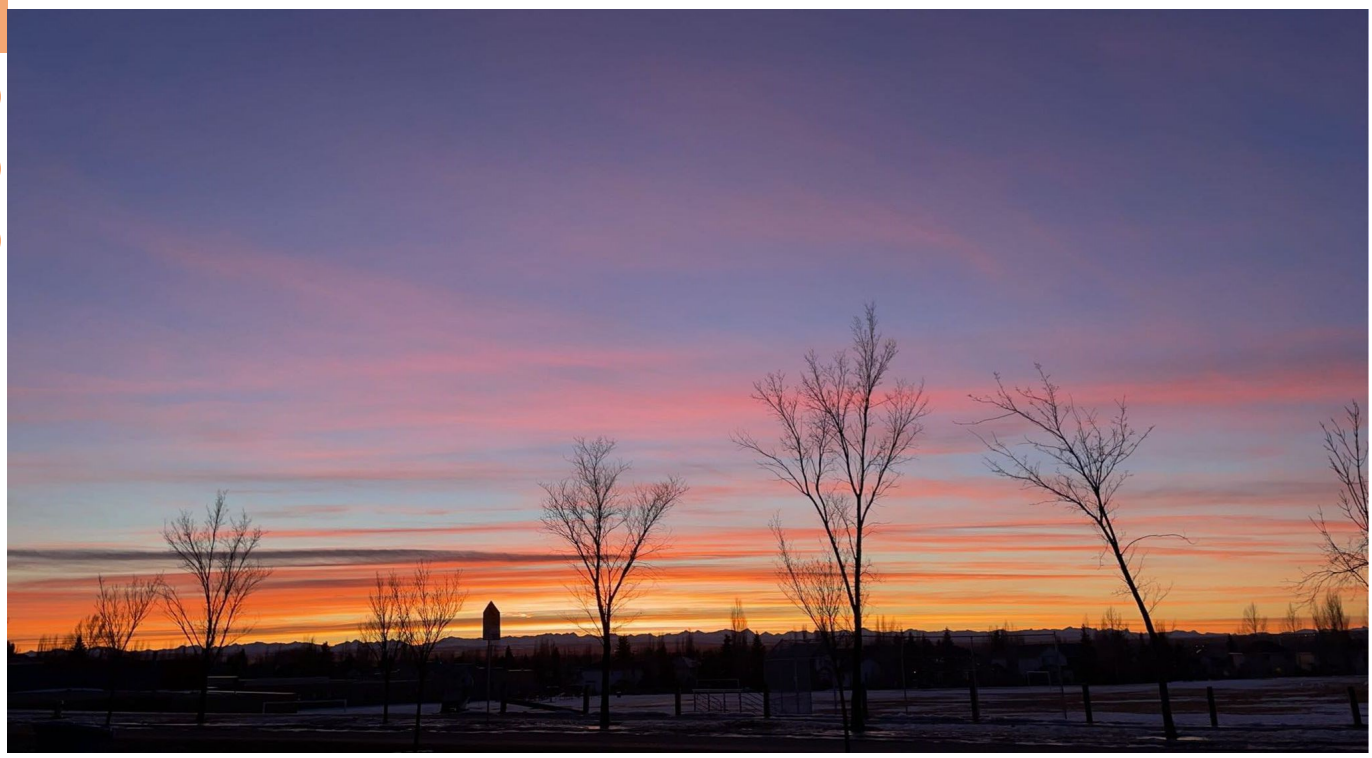
Volume 28 - Issue 6

# BOA
## Building Operators Association of Canada

**Official Publication of the Building Operators Association (Calgary)**

February 2022



# What's Inside?



## 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 |



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| Vice President<br>Mark Arton | chairman@boacalgary.com<br>(c) 403-305-7029 |
| Associate VP<br>Vacant | associate.vice.president@boacalgary.com |
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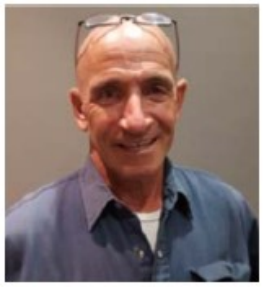
Front Cover by Saiya B.

# President's Message



BOA
Building Operators Association of Canada
Building Operators Association
Box 22116, Bankers Hall
Calgary, AB T2P 4J5
www.boacanada.ca

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

I have recently been trying to learn a new language. I am finding that my brain is not working as well as it used to. Thinking back on it, I am reminded of an article I read recently in a publication we participated in the year 2010 with the federal government using ECO Canada to discover what was happening with Building Operators. It concluded that building systems are moving along faster than the Operators that manage them. That we need to step up our game to accelerate the learning we have to do to be able to run some of the 'High Powered' facilities we work in. that without the ability to learn new things we will be left behind. That the Smart Building is Smarter than the Operator running them is a good possibility. I ask, what can we do to get ahead of the situation?

Learning is something that needs to be practiced, the more we practice the better we get. At work, start to read about the systems that are in our buildings. Try to learn something new about it, share the knowledge with others. The more we can talk on the subject the better we know it. Keep up to date on what the equipment can do. See if upgrades will improve the situation in your building. The more you know and understand about your building and systems within, the more confident you will be in operating it. That confidence will help you to acquire more skills and the capacity to take on more challenges in your roll. Taking this to other levels can lead to new opportunities which can lead you to better positions and even more money.

Learning new things can open your mind and change your attitude to begin to want to learn more. It changes your perspective on what is going on around you.

We work in one of the fastest growing industries. Technology in our sector is changing exponentially, and if we don't get in front of it, it will run us over . The report I was referring to is ECO Canada Scoping Study on Building Operators. It was on our website, but I see it has disappeared, I will put it back on the site. Some of the highlights in the report are:
Definition of the Building Operator occupation
The need for consistent, shared Building Operator training and qualifications
Key recommendations to support the further development and advancement of the occupation

It defines the issues and recommends solutions as well.

We continue our Monthly Meetings with guest speakers presenting topics relevant to our industry. Mark Arton works hard at lining speakers up for the meetings and we will insert the speakers with the topic and month they are to present.

To view what the Association already has in place, please go to our website, and follow the links. If you would like to present to the Building Operators Association, please text or call me.

Smiles))

With kind regards,

Les Anderson PE, RPA

zoom

**JOIN US!**

**FOR OUR VIRTUAL BOA MONTHLY MEETING ON TUESDAY FEBRUARY 8, 2022 AT 5PM**


# 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 16***

## 1. Before the gas pilot ignites, the:

a. low-water cutoff must be checked
b. gas pressure must be at least 10 psi
c. furnace must be purged
d. oil pressure must be at least 50 psi
e. the boiler vent valve must be 50% open

## 2. Boilers supported from the top:

a. are mostly package boilers
b. are free to expand vertically
c. can only be used on small units
d. are usually not of the large water tube type
e. can only use straight tubes

## 3. Handhole and manhole openings:

a. permit inspection, cleaning, and repairs
b. require a cast iron reinforcing ring
c. have their long axis, lengthwise along the shell
d. are not required on low pressure hot water boilers
e. are required on high pressure boilers only

## 4. Head-to-drum circumferential joints are usually:

a. double welded butt joints
b. single welded edge joints
c. fillet welded corner joints
d. double welded tee joints
e. fillet welded lap joints

## 5. If valves are located between the boiler and water column on a Low Pressure Boiler, they must be:

a. locked or sealed open
b. regular globe valves
c. steel and rated at 300 psi
d. protected against accidental opening

# What's Next for Safety Training?

***James Kruck, OSG***

One of the pandemic- era workplace's defining features has been a renewed focus on occupational health and safety, and following from this transformed role in the workplace are numerous changes regarding how health and safety are taught.

Whether through emerging ways of learning, new policies or regulations on training, or refreshed perspectives and topics being taught, the majority of changes that OH&S education is currently undergoing centre around a significant shift in attitudes toward safety in the workplace, and the role that it plays under the conditions of the COVID-19 pandemic.

The primary focus of this shift in perspective, according to Jan Chappel, senior technical specialist at the Canadian Centre for Occupational Health and Safety (CCOHS) in Hamilton, Ont., is characterized by a move toward the idea of safety as a more active and embedded part of the company culture and day-to-day operations of the workplace — as opposed to a series of background certifications and regulations.

"Training on everyday aspects became much more important," Chappel said of this shift. 'Everyday' mental health. One area affected by this move toward a more "everyday" philosophy has been the area of mental health and psychological safety. COVID-19 has really offered an opportunity for how it is taught and treated to evolve, noted Chappel. "What I've been noticing is a shift away from focusing just on the awareness of mental health issues, and more towards figuring out how to help prevent it, or at least make it something that is more of an everyday conversation," she said.

A major benefit that stems from the changing values around mental health discussion and education in the workplace, Chappel added, is the possibility that this openness creates for employees to "get the help that they need without worrying about stigma and repercussions for (speaking up)."

When approaching mental health education in the workplace as an everyday conversation, she recommended centring this discourse around establishing clear boundaries and expectations, especially as

*Continued on page 8...*

COVID-19 and remote work continue to blur the lines around work-home life. “It’s about fostering a culture about knowing when a person is available and what expectations are, and that goes to both management and workers.”

### E-learning: training by choice

An effect of the mass migration to remote and digital workplaces has been a reframing of e-learning and electronic modules into a necessary solution of contemporary OH&S training, though the demand of this new role means approaching online learning tools as more than just a novelty or convenience.

“The pandemic resulted in a clear paradigm shift to virtual learning; training could continue, remote teams could be connected, and the value of learning did not have to be undermined,” said James Kruck, curriculum manager at OSG, a health and safety training provider based out of London, Ont. “That being said, this shift in delivery method necessitated some new thinking around the product.”

Central to this new line of thinking is an approach that considers the trainee’s needs, perspective, and decision- making capabilities, which Kruck sees as being satisfied by “self paced” e-learning programs and digital solutions that emphasize employees’ control over qualities such as the structure and content of their individual training.

With self-directed learning tools, “not only do you ensure the content is more relevant, but you can save time by skipping subjects that aren’t applicable to the participant’s workplace or role.” The option for these programs to provide training relevant to the specific needs and experiences of each individual does not only foster efficiency, but also creates the space for employees to feel seen. “Learners don’t often come to you as blank slates, ready to just soak up every lesson you deliver; instead, they come with their own experiences that have shaped what they understand and how they see the world,” said Kruck. “They want training that acknowledges that reality.”

## Simulation in the spotlight

The current wave of changes in safety training is driven not just by new attitudes, such as those around mental health and trainee choice, but entirely new and emerging technologies. Montreal’s CM Labs, which specializes in the development of simulation-based training, finds themselves at the forefront of this shift.

Over the past two decades, CM Labs have developed simulator training technology for the construction, forestry, and port industries that not only teaches trainees how to navigate high stress or potentially dangerous scenarios in the workplace, but allows them to make mistakes while doing so, without any material — or human — costs. “There’s really a sense that simulation is a technology whose time has come,” said David Clark, CM Labs’ senior product marketing manager. The growing skilled labour shortage, along with the arrival of more tech-savvy generations into the workforce, are the two primary factors behind the current spotlight on this solution, he said.

**A safe investment**

With significant changes across the field of occupational safety education, adaptation and access may be issues of concern, especially for workplaces feeling the financial pinch of the pandemic. One resource helping employers navigate these changes can be noted at the provincial level, through Ontario’s Small Business Health and Safety Training Program. The province revealed in July that through this program, they are investing $10.5 million dollars over the next three years in an effort to make safety training freely accessible for over 60,000 small businesses across the province.

Through the program, health and safety representatives from small businesses can enrol in an e- learning course on industry specific safety protocols, with the program covering registration costs and compensating representatives with up to $150 for their time away from work. The accessibility granted by such programs is certainly beneficial in spreading safety habits across workplaces, but Lewis Smith, manager of national projects at the Canada Safety Council in Ottawa, believes that these types of legislative initiatives also have a positive impact by showcasing workplace safety as something worth investing in and taking seriously. “Safety is a field in which proactivity and investment are needed, but

also one which is too often prioritized less due to a lack of immediately visible revenues,” he said. “Free courses, such as this one, eliminate a perceived barrier to entry, and allow for more widespread uptake.”

# Maintenance Tips: Economizer Operation and Control

The economizer operation sequence is intended to eliminate mechanical cooling when the outside air temperature (OAT) is lower than the Makeup Air Handling Unit (MAU) discharge temperature set point (DAT-SP).

Also, the Economizer Operation will decrease mechanical cooling energy consumption when the OAT is lower than return air temperature (RAT), typically less than 21°C. The Economizer operation controls the DAT by modulating the Outside Air damper when:
*1. OAT is lower than DAT-SP – eliminate mechanical cooling energy consumption.*
*2. OAT is lower than RAT – minimize mechanical cooling energy consumption*

Note: The Economizer operation requires lower outside air temperature and humidity therefore is available during the months with lower cooling requirements. As a result, it is strongly recommended to implement a DAT-SP reset based on OAT (example – if DAT-SP for mechanical cooling is 13°C, for Economizer mode the DAT-SP should vary between 13°C and 16°C).

The higher DAT-SP should satisfy the shoulder season cooling requirements and will eliminate unnecessary heating demand; the DAT should satisfy cooling demand to maintain the expected comfort level while reducing the cooling and heating energy consumption.

**Recommended Steps:**

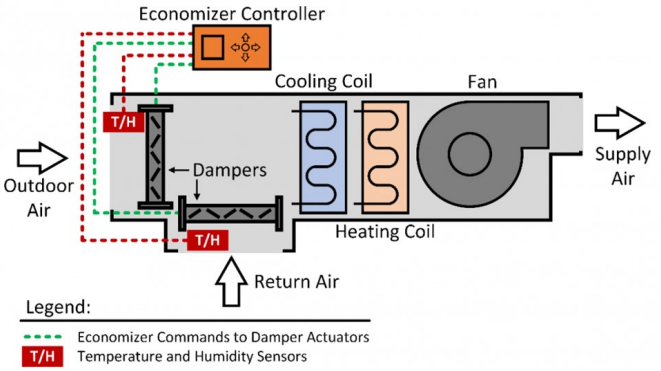
3. Test return air, mixed air and outside air dampers operation (Monitor damper's operation while overriding at BAS the damper position to 0%, 100%, 75%, 50% and 25%). Remove BAS override to restore normal operation. Repair or replace defective actuators.

4. Integrate economizer control with optimal cold deck temperature reset – contact your BAS Service provider and/or building mechanical consultant to establish the DAT-SP reset limits based on OAT.

5. Test Economizer mode – work with BAS service contractor to establish a test procedure and test the Economizer mode under various OAT.

6. Set-up BAS trends to monitor performance. Ask BAS Service provider to set-up on the same chart trends for OAT, MAT (mixed air temperature setpoint should be 1° C to 2°C lower than DAT-SP), DAT-SP, DAT, and OA damper control point.

7. Test Freeze-stat operation; use an ice cube to cool down the freeze-stat sensor to trip the freeze protection and confirm at BAS the reported AHU Freeze-stat Alarm. Reset Freeze-stat to restore operation.

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# KenKen Puzzle

How to solve the Kenken puzzle:

*(Answers on page 16)*

- 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

| | | | | | |
|---|---|---|---|---|---|
| 3+ | 1– | | 3÷ | 2– | |
| | 20× | | | 2÷ | |
| 2÷ | | 2÷ | | 30× | 3– |
| 60× | 2÷ | 3– | | | |
| | | | 2– | | 5– |
| | 2÷ | | 2– | | |

# INSTALLING AN EV CHARGING STATION IN A SINGLE-FAMILY HOME

Electric cars are becoming cheaper, and batteries are becoming more powerful. As a result, significant number of car owners are trading filling up for plugging in, and many more are thinking of joining them. We should soon see a major shift towards eco-friendly transport options and a global decrease in fossil fuel usage. If you have toyed with the thought of buying one too, then you have also probably thought of what it would take to install an electric car charger in your single-family home. Let's learn the

basics of EV car charging so you can make the right decision when the time comes.

## WHAT IS AN EV CHARGING STATION?

The simplest way to explain the EV charging station is that it is similar to your phone charger. What it does, essentially, is to convert the electricity from your home to a voltage and a current level that is suitable for your car. The more expensive your electric car charging station is, the more features it will offer you in addition to charging your vehicle. Furthermore, if it uses more electrical energy than what the installed service can provide, it can cause problems for your home's electric system. Therefore, while on paper it might seem that you should always opt for the fastest available option, you should first consider your home and your current energy usage.

## INSTALLING AN ELECTRIC CAR CHARGING STATION

Electric car charging stations are usually separated into three levels. The Level 1 chargers include the simplest charging stations that are relatively straightforward to install. They use the 110-120Volts with a maximum current of 16 Amperes. Level II chargers are more powerful charging stations that rely on 208 to 240Volts and approximately 30 amperes of current, and Level III charging stations are designed for commercial use, which use higher voltages and higher current. With this in mind, as a property owner or a prospective property owner, you should start with an assessment of the electrical system at home.

While some well informed customers may be able to perform the assessment themselves, it is always recommended to hire a professional, a good electrical contractor or an electrical engineer can take a look at your home and evaluate the loads

that are installed, assess the capacity of the distribution (also known as the breaker) panel and determine if you have enough capacity (juice) to add a charger and what type of charger you can add.

## MANAGING THE CHALLENGE OF CAPACITY LOAD

A lot of the loads are not used at night, the period when the EV is going to charge for the next day commute; rarely you will be doing laundry or using the clothes drier in the middle of the night, cooking, or having the air conditioner at full blast when the weather cools off at night. That means you can add an EV EMS, and Electric Vehicle Management System for homes, one that can monitor the overall home consumption and whenever there is capacity available, energize the charger.

If you are installing the charger inside the garage, or adding electrical equipment to the wall, the electrical code, the municipality, or your insurance company will require you to have clear space in front of the equipment for full and clear accessibility. Fortunately, storage can be an option. After all, green solutions are available when it comes to storage options that can house any type pf goodies.

While this may seem like a more costly option, we're here to assure you that it is well worth the price. The Level II Charging Stations are usually four times faster than Level I. And with a couple of alterations, you can make your home energy efficient enough to support it.

As you can see, there isn't much that needs to be done to install an electric car charging station at your home. It starts with an assessment and then the choice of a reliable Energy Management System for your home. Choosing a Level II charger is, in the long run, a wise investment. If you cannot afford it at the moment, stick with a Level I, and depending on where you live, you might be able to rely on nearby commercial charging stations.

*Article reprinted with permission*

# HOW DO MULTIPLIERS FOR METERS WORK?

## WHAT IS A MULTIPLIER

Property managers in buildings with electricity, water, gas or thermal energy meters have to extract readings from them to measure and monitor the consumption of different areas or different units in the building.

Meters use multipliers for reasons which we will try to briefly explore. Multipliers are most common when using pulse output meters. where every pulse is generated based on a fixed amount of energy or volume consumed, and therefore the multiplier is used to multiply the number of pulses to determine the correct amount of consumption.

## HOW A MULTIPLIER WORKS

For instance, in a residential unit, a 20 mm (3/4") diameter water meter is typical at the service entrance; most commonly these meters are supplied with a pulser that generates a pulse for every 10 liters of water flow. Some property managers use local pulse counters which show the total number of pulses and on the face of the counter a label indicates the multiplier for the pulse weight. when using a automated meter reading system, the data logger the pulses are counted, stored and then transmitted to the Data Collection Unit, where the total number of pulses are then MULTIPLIED by the multiplier (10) to obtain the consumption and then that value is the one reported by the software. To simplify; if at the end of the month the total number of pulses is 6,000, then the consumption is 6,000 times 10 equivalent to 60,000 liters or 60 cubic meters.

Small diaphragm gas meters for residential use would generate a pulse for every 2 cubic feet, then the multiplier is 2. and Thermal Energy - also known as heat meters - would have a pulse weight or multiplier per KWH or BTU of energy.

Electricity is a bit more complex, because not all meters are capable of measuring at higher voltage and therefore require the use of a Voltage or Potential Transformers to reduce the voltage to the right input level of the meter. Most common potential transformers have a secondary output of 120 volts and the primaries may vary depending of the voltage of the system to be measured.

Let's use an example of a Medium Voltage system of 4,160 Volts, use a Potential Transformer with a secondary output of 240 volts and assume that our meter has a variable input from 120 to 480 volts. The transformation ratio of the Potential transformer is 4,160 Volts of the primary divided by 240 volts of the secondary or 17.33333. that means that the Energy reading (in this case any other reading

that has voltage as a factor) has to be multiplied by 17.33333.

Now it gets more interesting, if the meter has pulse output and the pulse weight is 10 WH per pulse, and the pulses are transmitted to an Automated Meter Reader (AMR) then the metering system should incorporate the pulse weight times the multiplier to obtain the right value.

For instance, if the number of accumulated pulses in a period is 12,500, the correct amount of energy would be:

10 WH x 12,500 = 125,000 WH now to be divided by 1,000 WH per 1 KWH to obtain 125 KWH (Which would be the reading on the meter face) and now multiplied by the transformation ratio of 17.3333. In this case the actual consumption of energy in this meter is 2,166.67 KWH.

In a similar fashion Current Transformers may be used to reduce or adapt the current output of an existing transformer to the required input of the meter, particularly with meters using 100 milli-ampere output.

Using multipliers is beneficial for the metering technician because it provides the flexibility to adapt the instrument to the field requirements with accuracy. However, it is always important to seek help from the experts, because using a wrong multiplier, will multiply the error in the measurement with negative financial consequences to at least one party.

*Article reprinted with permission*

# National Flag Day

At the stroke of noon on February 15, 1965, Canada's red and white maple leaf flag was raised for the very first time.

The flag belongs to all Canadians; it is an emblem we all share.

Although simple in design, Canada's flag well reflects the common values we hold so dear: freedom, peace, respect, justice and tolerance. Canada's flag is a symbol that unites Canadians and expresses throughout the world and always our pride in being Canadian.

The maple leaf flag pays homage to our geography, reflects the grandeur of our history and represents our national identity.

Our flag thus honours Canadians of all origins who through their courage and determination, have helped to build and are continuing to build our great country: a dynamic country that is open to the future.

Therefore, I, Jean Chrétien, Prime Minister of Canada, declare that February 15 will be celebrated henceforth as National Flag of Canada Day.

Let us be proud of our flag! Let us recognize how privileged we are to live in Canada, this magnificent country that encompasses our history, our hopes, our future.

Jean Chrétien
Prime Minister of Canada, February 15, 1996

# 5th Class Power Engineering Course

**The Online BOMA 5th Class Power Engineering Course:**

- **Will begin in Feb (exact date TBA) and will take place every Tuesday and Thursday evenings from 5-8pm.**
- **The course will be held online only using Zoom.**
- **The fee for enrollment will cover the cost of the 150 hour course, text-books, and BOMA certificate upon completion**
  ***please note this does not include the ABSA exam****
- **The total cost including GST is $2,199.75**
- ***No prerequisites are required for the course***

**New to the industry? If you are looking to become a building operator, then we recommend taking the Building Operator Level 3 online course. Visit our website for more info: https://boma.ca/courses-list/building-operator-program/**

**If you need further information please contact info@boma.ca**

## Kenken Puzzle Answer

| | | | | | |
|---|---|---|---|---|---|
| 3+ 1 | 1− 5 | 6 | 3÷ 3 | 2− 2 | 4 |
| 2 | 20× 4 | 5 | 1 | 2÷ 6 | 3 |
| 2÷ 6 | 3 | 2÷ 2 | 4 | 30× 1 | 3− 5 |
| 60× 3 | 2÷ 1 | 3− 4 | 6 | 5 | 2 |
| 4 | 2 | 1 | 2− 5 | 3 | 5− 6 |
| 5 | 2÷ 6 | 3 | 2− 2 | 4 | 1 |

## TEST YOUR OPERATOR IQ ANSWERS

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


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# January 2022 Meeting Minutes

| Chaired by: | Minutes by: | Call to order: | Webinar: January 11, 2022 |
|---|---|---|---|
| Mark Arton | Monika Bhandari | 5:01pm | |

New Business:

- Digital magazine is now out for January 2022
- 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

Guest Speaker:

Cold Climate Building Design, Erich Binder President, Erich Binder Consulting Limited

## JOIN US: TUESDAY FEBRUARY 8, 2022 AT 5PM FOR OUR VIRTUAL MONTHLY MEETING

**Presenter: Tiffany Petrunia, B.Sc. Account Manager, SUEZ Water Technologies**

**Title & Brief: Discussion on water treatment of Closed Systems. Water treatment is one of the most important facets of Building Operations it is often misunderstood, and mistakes can be slow to show up but devastating to systems, sometimes unrecoverable but always expensive.**

### Discussion

Closed loop chemistry (corrosion inhibitors and dispersants) options overview:

- Molybdenum
- Nitrate
- Organic/phosphate based
- Other technologies (amine or polyamine)
- Azoles (copper protection)

Closed loop Monitoring:

- Key monitoring parameters and why
- Monitoring options (chemical testing, PTSA probes)

Closed loop Filtration

- Importance

Glycol Loops

- Protection options (mild steel and copper coils)
- Monitoring
- pH and the importance of glycol breakdown knowledge

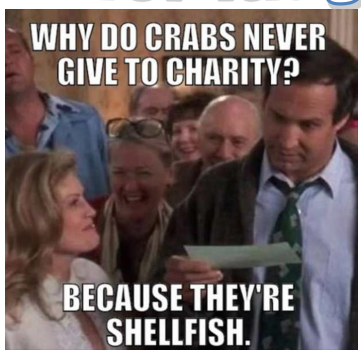
With a Bachelor of Science, University of Calgary Tiffany lives in Calgary with her husband, two daughters, dog, and 2 cats. Her interests include camping, hiking, rock climbing, snowboarding, mountain biking, yoga and spending time with family.

Tiffany joined SUEZ Water Technologies and Solutions in 2007. She began her career as an Account Manager servicing a wide variety of markets, including gas processing facilities, Universities, Hospitals, Food and Beverage plants and Commercial buildings in Calgary and Southern Alberta. In 2014 Tiffany accepted the role of Area Manager for Southern Alberta and Southern British Columbia further expanding to cover the Edmonton commercial market in 2015. This increased her market exposure to additional industries such as gas processing, mining, and metals processing. In 2019 Tiffany returned to the Calgary area as a senior account manager. Tiffany's focus has been on production optimization, problem solving, and cost reducing projects for her customers over the past 15 years. She has extensive experience in many aspects of water treatment including wastewater, cooling, low and high pressure boiler treatment, as well as water purification and pre -treatment.

Click on this link to register for the BOA Monthly Meeting

# Just for laughs! LOL!

**Can February March? No, but April May!**




**What did the farmer give his wife for Valentine's Day?**

**Hogs and kisses.**

## BOA CALGARY OPERATOR MAGAZINE ADVERTISING RATES: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| 1/4 page | $400 | 1/2 page inside/outside cover | $850 |
| 1/2 page | $775 | 1/2 page outside cover | $900 |
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