Volume 27 - Issue 5

BOA
Building Operators Association of Canada

Official Publication of the Building Operators Association (Calgary)

January 2021

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 Mark Arton	vice.president@boacalgary.com (c) 403-305-7029
Associate Vice President Mike Gerald	associate.vice.president@boacalgary.com 403-861-9091
Chairman Mark Arton	chairman@boacalgary.com (c) 403-305-7029
Treasurer Carrissa Speager	treasurer@boacalgary.com (c) 403-969-0329
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Education Committee Shaun McLean	education@boacalgary.com
Membership Committee VACANT	membership@boacalgary.com
Promotions Committee VACANT	promotions@boacalgary.com
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Webmaster Mike Thompson	webmaster@boacalgary.com (c) 403-813-9999

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 was happy to read an article in the ASHRAE magazine that was forwarded to me by Kevin Delahunt. The Article was written by the President elect for the 2019/2020 year. With the permission of Darryl K Boyce, P.Eng. I have reprinted his presidential address in this month's magazine. His inaugural talk referenced a point of view that many Building Operators share. That todays buildings built are very sophisticated, not only mechanically, electrically and architecturally but as well in the design of operational programing strategies in the control of energy management. We are not keeping up with the speed of change and the potential of these buildings suffer, costing in investment dollars and loss of return on investments. These challenges include a lack of consistent definitions of what a Building Operator should know, professional qualifications, and standards, as well as gaps in training and education, and Operator practices. The average age of a Building Operator is 57 years old. The training and upgrade of the average Operator has not kept up with the design of facility operation. Addressing these challenges will enhance the value of Building Operators by preparing them to operate high performing buildings in the present and future, it will encourage younger people to enter the discipline as a career choice. The educational institutions will not support a career that is not fully defined.

That in addition to the above, the designers of these systems are failing in accounting for who will be the ongoing operators of the buildings and the systems therein. That the people who have experience with the day-to-day control of the systems and years of operational experience should have a part in the design. What is left, can be a large gap between intent and function.

One key challenge in this area is that educational content is lagging some technological advances in building systems strategies and control. Various educational and training programs for Building Operators exist, but they remain fragmented and do not appear to be meeting the needs of industry. There is no recognized certification system for Building Operators and confusion exists amongst employers and operators about the appropriate qualifications and training required. Education and training of building operators is also hindered by an industry culture that does not encourage ongoing training. There needs to be a partnership between designers, industry, and educational institutions to develop a national training and certification strategy that is adaptable to the latest advances in building systems, technologies and provide benchmarks to ensure that the Building Operators are equipped with more consistent, comprehensive, and relevant skill sets.

We have let each other down. The designers for not understanding the users, the educators for not developing the curriculum and following the changes to the industry, the Operators for not staying up with the competencies required of them, and the regulators for not fully managing the syllabus and curriculum. We work in an industry that is technically advanced the changes are rapid. There needs to be better collaboration between the groups to make this work more effective. Most importantly we must recognize the gaps such as Darryl Boyce, P.Eng has pointed out, and then be willing to do the work to close them. We should have in all jurisdictions, a unified education system that is including, but not limited to governments, associations, industry, and educational institutions.

It will be a long road but as any journey, first you must get off the porch!

Take Care, Stay Safe , be kind to one another.

With kind regards,

Les Anderson PE, RPA

JOIN US!

For our Virtual BOA Monthly Meeting
on Tuesday January 12, 2021 at 5pm zoom

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 14

1. When a pump discharges into a vessel operating at 300 kPa, the 300 kPa is referred to as:
   A. dynamic head
   B. equivalent head
   C. discharge head
   D. friction head
   E. total head

2. When a reciprocating pump discharges while its piston or plunger moves in only one direction, it is termed a:
   A. positive displacement unit
   B. single acting unit
   C. dynamic unit
   D. double acting unit
   E. duplex unit

3. When a reciprocating pump discharges while its piston or plunger moves in one direction, it is termed a:
   A .positive displacement unit
   B. single acting unit
   C. dynamic unit
   D. double acting unit
   E. duplex unit

4. When starting-up a rotary pump you must make sure that the:
   A. discharge valve is closed
   B. discharge valve is open
   C. pump is filled with air
   D. pump is at the correct temperature
   E. pump suction valve is closed

5. The type of valve used to control the direction of flow is:
   A. ball valve
   B. gate valve
   C. globe valve
   D. needle valve
   E. none of the above

ALBERTA CHIEF POWER ENGINEERS EDUCATION CONFERENCE

The Alberta Chief Power Engineers Education Conference Committee is excited to announce our first Webinar. We are pleased to have Tom Leming, Lead Examiner and John Siggers, Examinations & Certification Manager, both from ABSA, giving an update.

January 26, 2021 @ 3:00 pm MST
To register email: admin@acpeec.ca and you will be sent an invite closer to the date

Agenda:

- What's new with ABSA since the last ACPEEC Conference
- Information Bulletins
- Assisting Power Engineer Training Programs during COVID
  - Adjustments to programs
  - Experience adjustments
- Examinations strict protocols
- Examination proctoring with remote monitoring by Examiners
- Update with SOPEEC/ACI
  - 2B2 examination converted to multiple-choice
- Online Examination Study

Meet the Presenters:

John Siggers: John joined ABSA, the pressure equipment safety authority early in 2011 as the training coordinator for External Training. Prior to joining ABSA, John was the Chief Boiler and Pressure Vessel Inspector for the British Columbia Safety Authority. He was responsible for designs, repairs, alterations, operations of pressure equipment in the province. In addition to this, John brings with him experience as the Chief Examiner/Inspector from the province of Nova Scotia. In Ontario (TSSA), he held the position as the assistant Chief Officer under the Operating Engineers Act and was responsible for code shops and the inspection (pressure boundary repairs and installation) of three nuclear stations as the in-house relief inspector. John brings us experience from the insurance industry as a boiler inspector with Commercial Union Assurance of Canada and he has experience in instructing power engineering and process operations from Keyano college. He holds a First Class Power Engineers Certification and National Board In-Service and New Construction Commissions with A & B endorsements.

Tom Leming: After a 6 year stint in the Oil and Gas industry Tom rejoined the Education & Certification department of ABSA, the pressure equipment safety authority, in 2012. Tom holds a First Class Power Engineer's certificate of competency and during his previous time with ABSA served as the Senior Examiner for Alberta and the SOPEEC Coordinator for Canada. Tom's power engineering background originated in Manitoba where he spent 15 years working in Pulp and Paper. Tom has presented for ABSA at National Board seminars both in Calgary and in Edmonton as well as representing ABSA on a national stage. He has successfully completed both his National Board Commission Examination as well as his National Board A Endorsement.

PRESIDENTIAL ADDRESS

'Designers are not always focused on operability during the design process. They need to transfer their great design into effective operations.'

Darryl K. Boyce, P.Eng.,
2019-20 ASHRAE PRESIDENT

Building for People and Performance:

Achieving Operational Excellence

Fellow/Life Member ASHRAE, is ASHRAE's President for the 2019– 20 term. Boyce has previously served on the board of directors as treasurer, vice president and director at large. He is the recipient of ASHRAE's Distinguished Service Award, Exceptional Service Award and Regional Award of Merit. In addition to his time served on the Board of Directors, Boyce has served as chair and coordinating officer for the Finance Committee and chair of the Members Council, Appointments Roadmap Committee and President-Elect Advisory Committee. Boyce has held ASHRAE Society-level leadership roles on many standing committees, technical committees and presidential ad hoc committees. Equipped with his extensive ASHRAE experience, Boyce plans to focus on how to improve operational performance of buildings by understanding and reducing the challenges between design, construction and operations.

Growing up my father owned a logging company. In order for him to keep work, we regularly moved to new locations, including remote islands off the west coast of British Columbia, Canada. My childhood memories are of being around large equipment and the rugged individuals who operated and maintained that equipment.

After the logging business closed, we continued to move around, and I attended several schools. At 14, my father left our family. My mother, younger sister and I were left on welfare.

I was thrust into the role of "man of the house" and became the chief operating officer of our sub-standard housing. There was no money to hire a plumber or electrician, so I was in charge of repairing any plumbing or electrical problems in the house. I began to appreciate the importance of safe, healthy and effective building operations.

At 15, I went on a junior high-school trip to the local university. We toured the power plant. Again, this large equipment fascinated me. So, I asked, "Who is responsible for all of this equipment?" The tour guide replied, "mechanical engineers." When we returned to class, we had to write a paper about future careers that interested us. I wrote about mechanical engineering.

It was then I caught the bug.

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It was then I caught the bug.

My first post-high school education was mechanical engineering technology, production orientation. But my first permanent job was as an HVAC mechanical systems designer at the University of Alberta. When I received my assignment to design a ventilation system, I went to the senior designers and asked for some help. They pointed to the ASHRAE Handbooks and said, "All you need to know is in those four volumes." I was on my ASHRAE journey.

At 27, Francine and I were married. I quit my full-time job at the university and enrolled in the engineering program—mechanical engineering! During those four years, I continued to work part-time as a mechanical systems designer.

Looking back I can see the thread. My thread:

- A 14 year old maintaining sub-standard housing;
- A junior high schooler learning about mechanical engineering; and

BOMA ONLINE BUILDING OPERATOR DEVELOPMENT PROGRAM - 150 HOURS

The BOMA Calgary Building Operator Training program is a comprehensive course that prepares students for the 5th Class ticket and provincial exam from the Alberta Boiler Safety Association (ABSA). More than just a 5th Class ticket, this course is specifically designed for commercial building operations and is instructed by veteran building operation experts. Taught over 150 hours (exceeding the industry standard), this program has a strong record of providing the industry with well educated and competent operators.

The next online 5th Class Course will begin on **January 12, 2021** from 5pm to 8pm and takes place every Tuesday, Thursday until June 2021. The course fees includes the text material and the certificate. Registration is now open. Contact Jessica at info@boma.ca or 403.237.0559 for more information.

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

60×			3+		2÷
3−	5−	2−	2−		
			15×		
10+	11+	7+		20×	
		1−			5
		6	24×		

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……Continued from page 8

- A young technologist discovering the value of THIS society.

I was learning and becoming passionate about the idea that "making or building things" is just not enough. We must ensure operational performance for the people who live, work and interact in them. People must succeed within the buildings we create. It makes sense to pause and ask, "Why?" Why should we care about operational performance?

There are four reasons this message makes sense for us:

1. We own the buildings we design, build, commission or operate. "That's MY building." It's part of each of us.
2. It aligns with our ASHRAE mission of "advancing human well-being.

"I bet most of you think that the "HR" in ASHRAE stands for heating and refrigeration. It really stands for people, the human resource—the "HR" at the center of ASHRAE.

3. As a building owner-operator, I can assure you that the building operators need your help.
4. It's good for the planet by reducing the environmental impact of building operations.

So, now we know why operational performance is important. Now let's take a look at the current state: Buildings are falling short on operating to the expectations of the building designers and operators.

• The Alice Turner Branch Library in Saskatoon, Saskatchewan, Canada, is using 58% more energy than the design intent;
• The Roblin Centre at Red River College in Winnipeg, Manitoba, Canada, is using 69% more energy than the design intent; and
• The Surrey District Education Centre in Surrey, British Columbia, Canada, is using 203% more energy than the design intent.

Here's why: There are three key reasons.

First, our great designs are not always delivering great operations. Designers are not always focused on operability during the design process. Designers need to transfer their great design into effective operations. Great designs warrant great operability.

Second, buildings are more complex. Technology. We design technology to help improve operations, but it does not always end up that way. Technology is not evil. We can have unrealistic expectations and it can be misused. In 2010, we opened a state-of-the-art engineering building with Power over Ethernet (PoE) controls, as well as enhanced sub-metering of equipment, lighting and plug loads. But we found that the additional data/information was overwhelming our control technicians.

Third, operators are lagging behind. Operators are being overwhelmed. Generally, they do not have the skills to operate today's buildings and are not properly trained. At building turnover, operators are rarely properly oriented.

Several post-occupancy studies, "Do our green buildings perform as intended," the UK-based "1996–2001 PROBE Project," and "2006–2010 Low Carbon Buildings Performance," identified the following key causes of performance slippage, resulting in energy consumption being much higher than modeled targets:

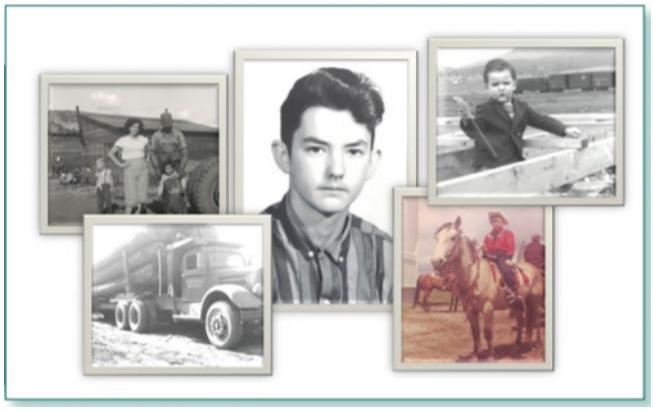
• Buildings were designed with systems that exceeded the capacity of the building managers to operate them. The study found a correlation between building performance and the quality of the management.

• Systems were complex and/or innovative, requiring several years to refine and understand.

• Insufficient commissioning. The study found a correlation between performance and level of commissioning. We are not the only organization that is concerned about the state of building operations. A 2017 IFMA Research study, "Raising the Bar: From Operational Excellence to Strategic Impact in FM," concluded that:

•Facilities management must adopt technology more quickly and far more deeply. It must move beyond technology to monitor space utilization and energy consumption. And we need to focus on using technology, data and analytics to enhance the workplace experience. *"We believe that mastering the 'digital age' means applying new forms of technology both to enhance the management of facilities and to create new kinds of work experiences."* This may be the single most important challenge facing facilities management professionals today. So, let us talk about what we can do to ensure that people succeed in the buildings that we create:

• Include the building operations team representative all the way through the design, not solely at the "end of design."



'My childhood memories are of being around large equipment and the rugged individuals who operated and maintained that equipment.'

The design should reflect the capabilities of the people operating the building. As a result, we will not be leaving operators wondering, "How do I make this work?"

• Establish an effective turnover and orientation training process.

• Understand what life is like after the building is handed over.

• Design buildings for the occupant operators who will occupy the space.

• Design decisions must be evaluated for their impact on indoor environmental quality (IEQ).

• Remember humans, the occupants, are the best sensors of comfort.

We must learn about the use of analytical/fault detection software to enhance the operation of building systems. A comprehensive study by the National Research Council in Canada determined that with today's building automation systems we have a lot of data, we just need to use it effectively. ASHRAE needs to work with building owner–operator organizations to develop strategies that will prepare the operators to effectively operate the building through enhanced training, effective use of the building automation system and analytical and other operational tools. We need to consider adding the concept of a digital twin to improve the understanding of the building operations as a base model.

For example, in the United Kingdom, the Building Services Research and Information Association (BSRIA) operates a program called Soft Landings to "improve the operational performance of buildings and meet the client's expectations."

Let's discuss what actions we can take to ensure people succeed in the buildings we create.

In the past year, ASHRAE formed a Multidisciplinary Task Group, Effective Building Operations.

MTG.EBO will coordinate the activities of multiple TC/TG/TRG and other stakeholders in the area of training and tools to support the operation of buildings to enhance the indoor environment and use energy.' Responsibility will include suggestions for research as well as the development of technical programs and special publications on effective building operation to achieve quality indoor air quality while not wasting energy.

It has been my pleasure to serve on the Building Ad Hoc committee for the last 18 months. We plan to learn from the renovation and upgrades of a real-world building owner dealing with the balance between energy use and indoor environment.

That's Our Building!

What does the building operator bring to the design discussion? The design, construction and transition to operations will be fully documented and will serve as a learning process for our members. The project is also being documented by the Building Owners and Managers Association (BOMA) Research committee as a case study in repositioning of an existing building.

What can we as ASHRAE Members do? We can LEARN, get ENGAGED and ACT differently.

We should LEARN:

- Get a copy of the new guideline, "Designing for Effective Building Operations," which will be available by June 2020.
- Review the Centre for the Built Environment to understand what people think about working in buildings.

We should ENGAGE:

- Engage with building operators at the Chapter and Society level to improve our understanding of their problems and develop educational and training programs to reduce the gap between design, construction and operations.
- Listen to what they are saying.
- Meet at least once this year to talk about operational challenges.
- Conduct follow-up discussions one or two years after buildings are turned over.

We met with representatives of APPA, the higher education facilities officers, to review a renewed agreement. They are committed to working with us in these areas.

ACT differently:

- Follow the principles outlined in the new guideline, "Designing for Effective Building Operations."
- Add computer-assisted building operations enhancements into the design program.
- Transfer the design operational concepts to the operations team.
- Learn and apply well-building fundamental principles to the design.

We launched a section on the presidential web page, ASHRAE.org/president, that provides resources to help us achieve operational excellence. At 14, I was thrust into the role of operating a sub-standard building, a position I was not prepared or qualified for.

We can do better. We will do better for those who operate our buildings. People must succeed within the buildings we create. Let's ensure we take the steps to achieve effective operational performance and enhance the operator experience. It's good for the building. It's good for the people who live and work within those buildings. It further advances our mission and moves us closer to achieving our vision of providing a healthy and sustainable built environment for all.

Thank you.

Article reprinted with permission.

Fatigue, Extended Work Hours and Workplace Safety

THE HAZARDS:

What are the hazards of fatigue and extended work hours to workers? Fatigue is influenced by extended work hours, tough physical or mental activities, and loss of sleep. Fatigue affects people differently, but it can increase a worker's hazard exposure by:

- reducing mental and physical functioning.
- impairing judgement and concentration.
- lowering motivation
- slowing reaction time
- increasing risk-taking behaviour.

Besides the influence on fatigue, extended work hours can also increase the time a worker is exposed to hazards. Some chemical and noise hazards have limits (occupational exposure limits), and these require adjustment for shifts longer than 8 hours. Information about these limits, and how to calculate adjustments, is available in the Occupational Health and Safety Code Section 18, and the Code Explanation Guide.

Extended work hours can also impact the effectiveness of personal protective equipment (PPE). Choosing the right PPE for long work hours may require selecting something with more protection than usual (e.g., a full-face respirator instead of a half mask). Also, parts like respirator cartridges may need to be replaced more often, and workers may need more breaks from wearing PPE during long work hours.

THE EFFECTS:

What effects could workers experience from fatigue? If small amounts of sleep loss add up over a long period of time, or if a worker misses a lot of sleep in a short period of time, a worker may experience sleep deprivation. Sleep deprivation can cause a worker to briefly fall sleep without meaning to do so, which distracts the worker's attention from the job they are doing.

THE CONTROLS:

How can workers be protected from fatigue?

- Be aware of how time of day affects fatigue Most major workplace incidents happen between 12 a.m. and 6 a.m. and between 1 p.m. and 3 p.m. Human bodies tend to be naturally tired during these times of day. When possible, schedule safety sensitive tasks to occur outside these times.
- Focus on short tasks when fatigued Fatigue may be temporarily overcome by performing brief tasks that last between two and five minutes.
- Maintain consistency in work schedule Keeping a work schedule consistent can make it easier to maintain a sleep schedule and avoid sleep loss.
- Be aware that shift schedules affect sleep loss Research has reported that night shift workers and workers whose shifts start before 6 a.m. sleep less than day shift workers. It is important for workers to be aware of this so they can catch-up on sleep loss and avoid the cumulative effects of fatigue.
- Encourage maintenance of healthy sleep patterns People generally require 7 to 9 hours of sleep per night.
- Encourage sleep quality Eliminate exposure to noise, light and uncomfortable temperature or sleep surfaces. Caffeine, alcohol, some prescription drugs, and sleeping illnesses, like sleep apnea, can also reduce sleep quality.

TEST YOUR OPERATOR IQ ANSWERS

Answers: 1) e 2) b 3) b 4) b 5) e

General Meeting Minutes

Chaired by:	Minutes by:	Call to order:	Webinar: December 12, 2020
Mark Arton	Monika Bhandari	5:01pm	

- **Introduction from Mark Arton**

- **Guest Speaker:**
  Curt LaMontagne, C5Plus Ltd.
  Topic of Presentation:
  Cleaning the air: IAQ and the Covid-19 Pandemic

New Business:

- Visit the website; download the December Magazine
- Any outstanding membership dues can be paid online at the www.boacalgary.com website
- Visit the website for YouTube videos of last meetings
- Next virtual (zoom) meeting on January 12, 2021, 5PM
- Happy Holidays and a Prosperous New Year to All!

JOIN US ON TUESDAY JANUARY 12, 2021 AT 5PM FOR OUR VIRTUAL MONTHLY MEETING

Title: Building Cleaning Best Practices During the COVID-19 Pandemic & Beyond

Brief: The presentation will be a collaboration between Damir Ivancic of Cleanslate Sanitary Supplies and Gregg Shoemaker of Kleer Northern with additional subject matter expertise provided by Adon Rigg with Rochester Midland Corp.

Kleer Northern Cleaning Products and Equipment 'Kleer Northern offers a full line of highly effective, environmentally friendly cleaning products and equipment, to janitorial, transportation and property management companies throughout central Alberta.'

Cleanslate Sanitary Supplies Inc. is a supplier of janitorial products and sanitary solutions for Western Canada serving the building services, retail, hospitality, education, and healthcare sectors with a focus on environmental sustainability and health.

RMC offers sustainable facility management, food sanitation, industrial cleaning and water management programs. RMC's Restoration Program is gaining wide acceptance with Canadian restoration contractors and insurance professionals.

Click on the link to register for the BOA Monthly Meeting

Kenken Puzzle Answer

60× 4	3	5	3+ 1	2	2÷ 6
3− 5	5− 1	2− 2	2− 4	6	3
2	6	4	15× 5	3	1
10+ 3	11+ 2	7+ 1	6	20× 5	4
6	4	1− 3	2	1	5 5
1	5	6 6	24× 3	4	2

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.

BOA Building Operators Association of Canada

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

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

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