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Official Publication of the Building Operators Association (Calgary)

May 2021



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Important Phone Numbers

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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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President's Message



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

For as much as we like to have things stay the same, the world over the last year has had far reaching effects. I know the Building Operators are considered an essential service, yet the managers and executives are not and the ability to deal with them on a day to day basis has impacted how we operate. No longer can we drop in for a word of advice it is now virtual meetings and delays as to when we can move forward with a clarity of doing the job. Our customers have been impacted to vacating their offices and showing up as needed. The Building Operators are monitoring the spaces in the absence of tenants and this has added to their already stressful workloads. Money is tight and deferrals to capital projects have been put on hold to start again at some, ill-defined future date. Even the day-to-day maintenance is in question as to the usage of consumables and the overriding need to save money. The continual wearing of face coverings are a distraction and an interference to the customary routines we previously enjoyed. To add to this is the fear that we will become infected and pass that on to our elders or our children. It has been an incredibly challenging year.

The light has been shone in other areas of Operations life, that was not previously engaged. That is that we have offices that do not necessarily have to be in operational centers. We have been somewhat successful in working remotely. That we have virtual meetings that we do not have to travel to engage with workers in other cities. It is being done effectively



and efficiently. The cost to do this business is minimal. Students are learning from home, parents are doing business from home, we can visit friends and enjoy their company, watch a movie together share a conversation and not have to leave the neighbourhood. ZOOM, WhatsApp, Microsoft Teams and others have rallied together to help make this happen.

The Building Operators Association continues to hold interesting meetings (virtually of course) this month May 11, at 17:00 will have as a guest Speaker Miguel Parobec of Gentech Field Services. His talk on the maintenance of Emergency Generators is something every Building Operator should hear. Please register to attend. The link is found in this magazine.

May 11th at 2PM the Alberta Chief Power Engineers Education Committee will be putting on a webinar. Approximately 45 minutes in length. Dr Mark Kolodziej will give a presentation the topic of which is, Does training automatically mean competency? To register; send an email to admin@acpeec.ca you will receive a response with an invite attached. It will be an interesting event, don't miss out!

So, take care of yourself and please be kind to one another.

With kind regards,

Les Anderson PE, RPA



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MEETING ON TUESDAY MAY 11, 2021 AT

5PM



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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 18

1. The heating surface of a boiler is the area:

- a) exposed to the flame and flue gases
- b) in contact with steam
- c) of the furnace
- d) of the burner face in the furnace



2. The boiler stop valve is located on the:

- a) oil supply line
- b) condensate header
- c) vacuum breaker
- d) steam line

3. The purpose of a bottom blowdown is to:

- a) reduce boiler pressure
- b) remove sludge and sediment
- c) increase dissolved solids
- d) remove floating oil

4. The purpose of an expansion tank in a hot water heating system is to provide for the expansion of:

- a) water
- b) hot air
- c) air and steam
- d) not used in hot water systems

5. The steam space is:

- a) the area covered by fire and water
- b) in the main header area
- c) the top half of most steam traps
- d) the area above the operating water level



WHAT IS AN ENERGY SERVICE PERFORMANCE CONTRACT?

ARTICLE BY INTELLIMETER CANADA INC

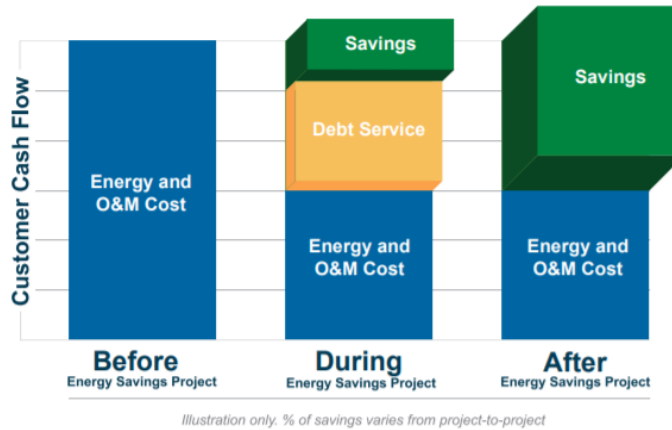
One of the barriers to submetering is financing the initial investment. Installing submeters in an entire facility may be perceived as expensive and securing funds may be challenging. The Return On Investment (ROI) on submetering is high; still, that doesn't change the fact that it requires an initial investment.

To overcome this perception with submetering, a program called Energy Service Performance Contracts (ESPC) and Energy Service Agreements (ESA) were introduced in the United States and Canada respectively. They represent a contract between an Energy Services Company (ESCO) and a company (or a person) that wants to implement cost-saving improvements related to energy into their facilities.

HOW AN ESPC/ESA WORKS

An Energy Service Performance Contract, or Utility Energy Service Contract (UESC) is basically a partnership. If a facility owner or manager cannot gather enough funding for submetering (or any other energy conservation measure, an Energy Service Company (ESCO) will cover the cost of initial purchase and installation of the necessary equipment.

The customer repays the ESCO over a period of time determined by the contract using the cost savings that resulted from the new energy conservation measure.



A crucial factor in these types of contracts is measurement and verification of system performance by submetering. Accurate measurements determine the

amount of resources used before the resource-saving project is implemented. Experts project the level of resource conservation and cost saving. These cost saving projections represent the amount of money the customer needs to pay back to the ESCO.

If the projections were off and the project actually saves more money than initially calculated, the customer is allowed to keep the excess. If the cost saving projections were higher than in reality, then the ESCO pays the customer the deficit to the project savings amount.

HOW TO SELECT THE BEST ESCO

If you wish to enter a partnership such as this one with an energy services company (ESCO), you first need to select the right one. Here are some simple steps to achieve this:

Find an approved ESCOs that operate locally to you.

- Gather all the information about your building and utility usage.
- Hold a meeting with all ESCOs at the same time. Walk them through your building or facility.

Continued on page 8...

- Explain your project and the goals you are hoping to achieve with it, including the minimum percentage of energy you want to save.
- Give the ESCOs reasonable time (30 days) to come up with suitable contracts.

Review their proposals once they come in. Select the ESCO you feel is best for your project and that will be a good long-term partner for your organization.

CONCLUSION

Whether you don't have the finances or the risk appetite necessary to implement your cost and energy-saving project (such as submetering), look into an Energy Service Performance Contract or ESA. Find an energy services company that will be a good fit for your project and company and have them cover the initial investment.

ESPCs are convenient because in essence the project does not cost you anything, you are paying the money from the amount you save from your project. Essentially, it doesn't require you to alter or reduce your budget in any way. Then once the contract is up, all the utility-saving costs go straight to you.

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BBQ Safety



Do not leave the BBQ unattended once it is alight. Do not move the BBQ whilst it is in use. Do not store the BBQ until it has completely cooled after use.

PRE-OPERATIONAL SAFETY CHECKS

- Before you start, check that hoses, connections, burner positions, igniter button, the fat drainage container and utensils are clean and in good repair.
- A regulator must be fitted to the gas supply line between the bottle and the BBQ.
- Use safe manual handling techniques to avoid muscle strain when transporting the BBQ. Get help, use ramps and trolleys to avoid any injury or damage.
- Set up the BBQ on flat ground that is away from any buildings, fences, trees or over-hanging shrubs.
- Never light a barbecue indoors or in a garage.
- Make sure the weather conditions are suitable for the BBQ activity. If it's windy, ensure the wind is blowing away from you when you light the barbecue.
- Keep children not involved in the BBQ activity away from the barbecue area.
- Don't wear loose clothing, or anything could dangle onto the flames.
- Keep fire extinguisher handy in case of emergencies.
- Never leave the barbecue unattended and don't try to move it whilst it's lit.

OPERATIONAL SAFETY CHECKS

- Ensure the BBQ burner knobs are in the off position prior to use or any connections.
- Connect the BBQ regulator into the gas bottle by screwing it to the left, turn the gas bottle on slightly as it will be quicker to turn off in an emergency.
- Check all cylinder connections and hoses for leaks. **Never** use a match or lighter to check for leaks. Brush a mixture of 50% soap and 50% water onto all connections and hoses. Rising bubbles indicate a leak. Repair or tighten all connections until there are no bubbles.
- If there is no igniter button, insert the flame from a long match or barbecue lighter through the side burner hole, if you are using a match, have the match lit before you turn on the gas at the grill controls.
- If the burner doesn't ignite, turn the gas off and wait five minutes before trying again.

LIGHTING INSTRUCTIONS

- **INSERT MANUFACTURER'S LIGHTING INSTRUCTIONS HERE.**

HOUSEKEEPING

- Turn the gas bottle tap to close/off position in the direction of the arrow on the gas bottle.
- Turn the BBQ burner knobs to the OFF position.
- Disconnect/unscrew the regulator from the gas bottle
- Do not move the BBQ until it has cooled sufficiently to do so safely.
- Clean and store the BBQ and gas bottle safely and securely away



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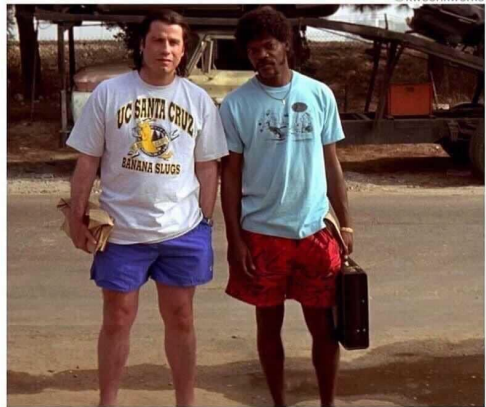
How to solve the KenKen puzzle:

(Answers on page 18)

- 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

5 -	2 -	3 -	2 ÷	10 x	
				4	
10 +	3 +		2 ÷	12 x	
	2 -			3 +	5
	3 -		5		2 ÷
2 ÷		5	5 -		

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Drain Cleaning: Equipment Considerations From Maintenance Solutions

by Thomas A. Westerkamp

A new generation of hand and power tools put more power in the hands of technicians seeking to keep facilities flowing.

When decisions on specifying drain-cleaning equipment arise, managers have a range of options from which to choose. From drum machines and water jetters to hand tools and sectional machines, manufacturers continue to upgrade existing products and introduce new models.

Among the challenges for managers in such cases is understanding how equipment technology has changed in recent years, what these changes mean for front-line technicians, and how to select the most appropriate equipment for the task at hand.

Tool options

A growing array of hand tools and drain-cleaning machines are available to handle even the toughest jobs. Among the most common hand tools are:

- Grappler hooks for retrieving hard objects
- Flat sewer tape for clearing drains
- Hand spinners with a cable magazine and crank for easier trap cleaning

• Toilet augers for clearing stoppages in traps. Manufacturers also continue to upgrade their power-tool offerings.

Equipment options in this category include:

- Light-duty corded and



cordless electric sink machines for clearing traps in sinks, tubs and urinals

- Drum machines for use in drain lines up to 6 feet



- Sectional machines for longer lines that allow technicians to add sections of cable as it is fed through the machine

Water jetters for no-chemical cleaning of soft sediment and root blockages.

Most of these tools are available in gas, electric and battery-powered versions to offer managers even more options.

Among the additional improvements to drain-cleaning equipment are these:

- High-tensile wire cables in improved packaging that eliminates banding problems and facilitates loading into the cleaning machine. Cable loaders can load cable from the box to the reel on the machine, or on a separate reel off the machine for a preloaded spare.
- Improved locking bits simplify installation of fittings on cables using a variable-speed electric drill or screwdriver. Connecting

fittings is much faster using this method, since pliers or wrenches are not needed.

- Manufacturers offer loading ramps that are designed to take the heavy lifting out of moving machines onto and off of truck beds.
- Reel shields protect against open-reel splatter and are designed to reduce job-site cleanup. Also, stands let workers convert portable units for use on floors and countertops.
- More fittings and blades are available to meet specific blockage needs.

Improved pipe-inspection systems are designed to help workers diagnose a problem. They are comprised of three elements: a control module that can include a VCR or DVD recorder; a push rod up to 300 feet long in 100-foot sections for inserting the head into the line; and a closed-circuit TV camera head. Self-leveling heads fit up to 12-inch lines. Flip-top covers protect the control modules.

Besides new technology, managers also have additional chemical considerations. For example, technicians can use bacterial drain-line



cleaners on a scheduled basis as part of the preventive maintenance program. In lines that contain soap, grease and food residue, these chemicals reduce build-up and prevent blockages from forming.

Also, technicians can apply several different rust inhibitors to equipment between uses as a way to prevent oxidation and retain flexibility.

Matching needs to options

Hand tools generally are designed for lighter-duty applications. For example, technicians can use grappler hooks fitted with gripping fingers to retrieve objects in traps as far as 6 feet into the drain line.

Flat sewer tapes have a handle and spear point on one end and a roller ball on the other for easier travel around curves and pipe bends. Snakes and toilet augers are tailored to negotiate sharp bends when removing obstructions in toilet traps. Newer models have improved sheathing over the cable to prevent damage to porcelain. By comparison, power-tool applications are designed for situations that involve heavier buildup, longer drain lines and larger pipe diameters. Typical examples are:

- o Powered sink machines with a 1/8 horsepower (hp) motor can be used in small lines up to 2 1/2 inches, have automatic forward and reverse feeds to eliminate cable kinking, and cable drums that contain cable and prevent splashing. They can operate from countertops or on the floor.
- o Drum machines with cables that are 5/8-inch and up to 100 feet long feature torque limiters to prevent sticking in blockages or cable



crimps in lines up to 6 inches.

- o Sectional machines handle very large jobs with 1/6 hp electric to 6 hp gas motors in up to 10-inch piping. They offer forward speeds up to 500 rpm and reverse speeds up to 250 rpm, along with up to 300 feet of cable, coupled and fed through the machine in sections as each cable length is fed into the pipe.
- o Typical water jetters use pressures up to 300 psi, a pulsating action, and flows of up to 4 gpm. They use no chemicals to clear blockages caused by soap, sediment, and grease, and they can restore full capacity in up to 8-inch lines. Several nozzle designs are available, including a root-cutting option. Utility pump are designed for trash and sewage handlers. With designs up to 5 1/2 hp, 250 gpm, and a 3-inch discharge line, these pumps handle up to 5/8-inch solids without blockage.

Equipment complements

To complement the equipment arsenal, maintenance managers can specify a number of preventive measures that technicians can carry out to address small drain problems before they become larger.

Some facilities, such as restaurants, hotels, and grocery stores, have problems with backups caused by carbohydrate buildup in the lines due to large volumes of soft drinks and other sugary substances. To keep lines at full capacity rather than dealing with backups, workers can pump environmentally safe sugar-residue digestants into the lines through a timed flow meter.

Another preventive measure is to install an add-on T-trap between the sink trap and drain. This enables workers to stop items such as jewelry before they get too far into the line to retrieve. Workers then can remove articles more easily from the trap strainer by opening one

convenient cap, rather than disassembling the entire line to address the problem. Finally, managers should make sure technicians maintain equipment properly, checking units periodically for rusty, dirty, or kinked cable, build-up in drums, dull cutter blades, missing fittings, corroded switch contacts, and discharged cordless batteries. These wear-and-tear problems can slow down the job when speed counts.

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DIFFERENT TYPES OF ELECTRIC VEHICLE CHARGING SYSTEMS

Powered by batteries and electric motors, electric vehicles (EVs) are getting more popular; reaching 2.5 million vehicles globally in 2020 and expected to grow at a rate of 70% in 2021. This growth, has also increased awareness for Electric Vehicle Supply Equipment (EVSE) also known as charger to re-fuel or re-charge electric vehicles.

Let's explore basic classifications of chargers that can be used to fuel electric vehicles and where these types of chargers are recommended.



Before we jump in to details, it should be noted that in North America, the average commuting daily distance is around 32 miles or

50 km, and that most of the time cars do not have a full tank. Additionally, most EV manufacturers do not recommend to charge the battery at full capacity on a regular basis to extend the life of the battery. A key point to help reduce public range anxiety when discussing the adoption of this new technology.

The term EVSE (Electric Vehicle System Equipment) refers to cables, connectors, control circuitry and other communication devices in a single assembly that operate to safely transfer power. They also enable the exchange of information between the electric charging circuitry and the electric vehicle.

1. LEVEL 1 CHARGING

A level 1 EVSE or charger, is the smallest charger available, it can be plugged to a standard home electrical

outlet rated 120 volt (V) alternating current (AC) and 15 to 24 amperes or equivalent capacities of 1.4 to 2.8 KW.

While it is the slowest charging type, it is ideal for someone who uses a car sporadically or makes short commutes on a daily basis, because a Level I EVSE adds about 5 miles -8 km of range per hour, taking between 8 to 30 hours to fully recharge an EV battery.

2. LEVEL 2 CHARGING

This type of charger requires the use of a 208 to 240V AC plug, with ratings between 30 and 40 Amperes, or power ratings between 6 and 7.2 KW. Of course, Tesla is the exception with a new Level II charger for homes that can be pre set to draw up to 48 Amperes and requiring a 60 Ampere circuit breaker.

Depending on the battery size, it can take between 4 to 10 hours to fully recharge an EV Battery, adding approximately 30 miles or 50 km of range per hour. A level 2 EVSE is recommended for those with longer commutes or those who use a vehicle for multiple errands or sales calls and have the opportunity to charge overnight at home, during the day at the workplace, and at public locations.

The most common charger type come in multiple options from dumb or just plain chargers to smart and networked chargers for demand control, and multi-vehicle charging control. The Networked charging stations can be connected to other stations via a hardwired connection or via a wireless WiFi or cellular signal. These stations allow for

more advanced controls and offer various functions, in addition to EV charging. They include online reservation systems, mobile app integration, remote monitoring and updating charging level.

3. LEVEL 3 CHARGING

Also known as Direct Current Fast Charging (DCFC) is the quickest way to charge a battery; this type of charging is supplied through a 480V direct current (DC) source rated over 50 Amperes and up to 300 Amperes (Tesla Supercharger) and most commonly uses a CHAdemo plug (again except for Tesla). DCFC stations charge BEVs (Battery Operated Vehicles) to 80% in just 25 to 30 minutes, adding more than 100 km of range per hour. They are best suited to highways and driving applications where recharging is necessary in a very short period, for example a coffee or a lunch stop during a long road trip.

4. WIRELESS CHARGING

This technology is currently used in homes, with electric toothbrushes, and cellular phone charging, it is still in development stages. Ontario Tech under the leadership of Prof. Sheldon Williamson is advancing the research on the ideal coil design for the most efficient inductive charge transfer. This type of charging is ideal for city buses or school buses that make frequent stops on a fixed route, for vehicles that use inductive charging, which is electricity transferred via an air gap between two magnetic coils, to allow vehicles to charge without plugging in, during their stops.

By Alberto Quiroz
Helping Property and Energy Managers save energy and water consumption with leading edge technologies.

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The Alberta Chief Power Engineers Education Committee would like to invite you to our virtual on-line presentation by Dr. Mark Kolodziej on: "Does training automatically mean competency?" on May 11th from 2 PM to approximately 2:45.

To register, please send an email to admin@acpeec.ca and you will receive a response with the invite attached.

This online presentation will be facilitated over Microsoft teams. A Q&A session will be held at the end of the session

For over twenty years Dr. Mark Kolodziej has been educating, training and leading students and teams within institutions, associations and corporations throughout Canada and in the United States. As educator, consultant and entrepreneur, Mark's repertoire of clients span a broad range of sectors, from educational facilities to business industries. His expertise lies in the realms of prior learning assessment/retention, strategic planning, standards of practice development and validation, among others.

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ACPEEC**

WHY MONITOR AND RECORD WATER USE?

Manufacturing companies consume high amount of water and many don't even notice it. Water Meters are usually installed at the service entrance with the intent of measuring and billing water consumption, and the process is usually left to the accounting team. Sub-metering water helps to manage and monitor in detail water consumption. There are many types of water meters -- [single-jet](#), [multi-jet](#), [Woltman](#), disc water meters, Ultrasonic water meters with remote controlled valve, and the typical [ultrasonic water meters](#).

Each has a function and an application; Their primary function is to inform the user when and how the water is consumed allowing the owner, occupant or property manager to find ways to save water and money at the same time. How? By monitoring and recording the details of the water consumption.



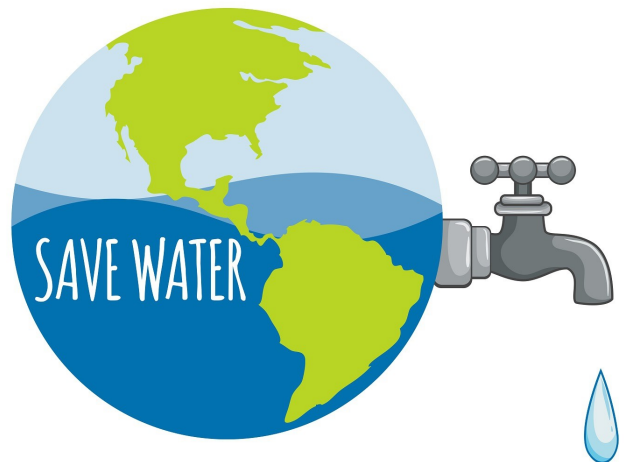
MONITOR AND CONTROL WATER

Relying on the monthly water bill is not informative. True while comparisons can be made between previous periods, whether monthly or yearly, it would be impossible to know whether the consumption took place in the daytime or at night, or whether the consumption takes place when nobody is in the premises (a leak). In addition to thinking about the addition of submeters, the way meters are read is also an important

consideration. Manual reading of water meters are subject to errors, and often, unrealistic estimations of water consumption are made to temporarily resolve the problems. When company expenses are only based on estimations, control over expenses is lost and if the practice is frequent, losses are carried into the future.

Automated and interval meter reading has become more economical and convenient once the appropriate [sub-metering system](#) is installed and the water meters reads become available remotely. They can be enabled through a software platform and accessed through the cloud, a phone, or a computer. Remotely read water meters provide [many benefits](#) and eliminate many safety risks like those that appear when checking meter readings in hard to reach places in buildings and manufacturing facilities.

With the right software platform, alerts can be sent through email or text messages, base on previously set thresholds, if there are leaks, where they are located, and the extent of the water loss. These are important in immediately detecting problems before the damages become too big.



RECORD WATER USAGE

Knowing the details and the correct water consumption helps to control utility expenses, benchmarking comparisons, by periods, or by surface, by square foot, by process or by number of employees is easily achievable with the right software tools. A clearer understanding of what and how much they have consumed enables managers to correct, to plan and to budget with accuracy for future projects, salary increases, and even a new site.

Keeping records is another way of staying in control over expenses. Expense records allow the company to better understand the costs in all aspects of the business. Overhead costs such as expenditures, and utility expenses including water consumption allow companies to monitor usage.

A record of the water consumption shared with em-

ployees and stakeholders can lower the overhead company costs by having employees participate in conserving water or looking at more cost-efficient, energy-saving irrigation, cooling systems and equipment such as toilets, faucets, and water dispensers.

Recording and Monitoring the details of water consumption in an industrial or manufacturing facility, allows for better resources management, it saves money that can be usefully applied for further research, growth, and development, and also saves the environment as it raises the awareness on ways to conserve water.

By Intellimeter 2021

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Kenken Puzzle Answer

⁵⁻ 1	²⁻ 3	³⁻ 6	^{2÷} 4	^{10×} 5	2
6	5	3	2	⁴ 4	1
¹⁰⁺ 5	³⁺ 1	2	^{2÷} 6	^{12×} 3	4
2	²⁻ 6	4	3	³⁺ 1	⁵ 5
3	³⁻ 4	1	⁵ 5	2	^{2÷} 6
^{2÷} 4	2	⁵ 5	⁵⁻ 1	6	3

TEST YOUR OPERATOR IQ ANSWERS

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

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BOA
Building Operators Association of
Canada
Tradeshow

POSTPONED
UNTIL
May 2022

<h1>April Meeting Minutes</h1>			
Chaired by: Mark Arton	Minutes by: Monika Bhandari	Call to order: 5:01pm	Webinar: April 13 2021

• **Introduction from Mark Arton**

Guest Speakers:

John Nowostawski, Juval Bothe & Nicole Morter—Enmax

Topic: **Grid Innovation - Preparing for the Future**

New Business:

- BOA Tradeshow postponed until May 2022
- Gentech to present in May, Sparton Controls in June
- More webinars to be presented possibly a few a month—share your ideas with BOA Executive
- Visit the website for YouTube videos of last meetings; download BOA Magazine from www.boacalgary.com
- ACPEEC online presentation on May 11 at 2pm with Dr. Mark Kolodziej
- Next virtual (zoom) meeting on May 11, 2021, 5PM
- Current balance is \$5883.78



JOIN US: TUESDAY MAY 11, 2021 AT 5PM FOR OUR VIRTUAL MONTHLY MEETING

Guest Speaker: Rick Hack, Business Development Manager-Mechanical Services with Ainsworth Inc. in Calgary, Alberta

Guest Panellist: Norm Denslow, Director Chiller Division

Title & Brief: WATER COOLED CHILLERS—WHAT'S NEW?

Discussion of recent changes to Large Ton Water Cooled Chillers with the following points:

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- Enhanced Tubes**
- Magnetic Bearing Compressors**
- Cooling Tower Temperatures**
- Variable Evaporator Water Flow**
- Capacity Control – VFD**
- Free Cooling to Mechanical Cooling Changeover**
- Falling Film Evaporators**
- Recycle / Restart**
- Maintenance Issues and Q&A**



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

April 2021 General Meeting Attendance

Nicole Morter	Godfery Licayan	Daniel Barbour
Juval Bothe	Karim Panjwani	Terry Connors
John Nowostawski	Jose Hernandez	Taylor Cowley
Mark Arton	Glenn Fedoruk	Fitsum Tesfai
Les Anderson	Simon Gibson	Cory McWhinney
Brandy Eagleson	Blair Bohnet	Sharon Brown
Monika Bhandari	Kyle D'Agostino	
Paul Duteau	Daniel Congdon	



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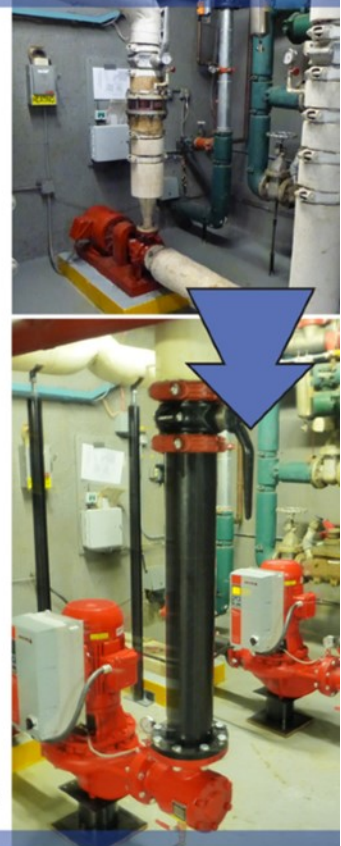
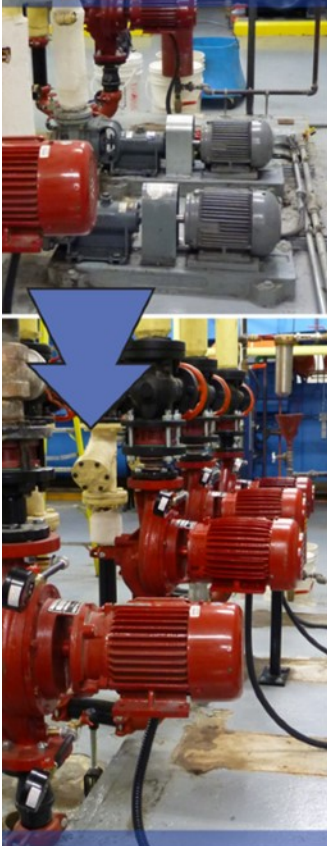
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