Volume 29 - Issue 2 - October 2022

BOA
Building Operators Association of Canada

Official Publication of the Building Operators Association (Calgary)

October 2022

What's Inside?

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Alberta Labour (Emergency)	403 297 2222
Buried Utility Locations	1 800 242 3447
City Of Calgary (All Departments)	311
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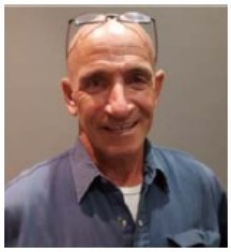
President's Message



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

Welcome to a new year with the Building Operators Association. We are having a trade show on the 18th of October. We have a great day in store for you and for any guest you want to bring. There are 35 companies displaying the best of their technologies, where questions can be asked and answered as to how it will benefit the facility you are working in. We have, with the help of our Chairman Mark Arton gathered 4 different speakers who will present throughout the day. There is free parking to the event provided by IMPARK and lot number #82 located at 714 10th Ave SW about a block from the Danish Canadian club is assigned to us.

At 11:30am is our Keynote Speaker Heather Campbell. Heather is Executive Director, Clean Technology, Alberta Innovates. The topic for Heather's presentation will be Opportunity & Energy Transitions - Why Clean Technology is Critical to Alberta. Heather will discuss hydrogen with respect to decarbonization and energy transition in residential and commercial heating.

At 1PM Noah Armstrong of Carmichael be discussing Building Energy Benchmarking.

At 3PM David Lamarre with Exel Systems will be giving a presentation on Cooling Tower Water Filtration and water usage saving opportunities.

At 4PM PM George Niksic with Aqua Air will be discussing HVAC Fan Technologies and energy saving opportunities

It is not only a day of finally getting together and meeting old acquaintances and making new ones, but we see what has gone on over the last three years after the pandemic. But we get to further educate ourselves with guest speakers, who will bring us some timely messages.

It would be nice if you would indicate your attendance to the presentations, so that I have an idea as to how many chairs to set out. To confirm a seat, shoot me an email president@boacalgary.com

BOMA Calgary is still taking names for the next Building Operator Course. If your interested in attending call BOMA Calgary at 403-237-0559

Well bye for now, I look forward to seeing you at the Trade show on October 18, and there will be lots of Door Prizes

Smiles))

With kind regards,

Les Anderson PE, RPA

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 22*

1. A double-acting pump:

a) has two pistons on the pump end
b) will always be driven by the steam pistons
c) has two pistons on the driver end
d) will have two slide valves
e) is a positive displacement pump

2. A multi-stage pump would be used when:

a) the lift is great
b) a greater volume must be pumped
c) the head is great
d) the temperature of the water being pumped is high
e) there is sufficient boiler room floor space

3. A positive displacement stand by-pump will have the:

a) vent and drain valves open
b) suction valve closed and the discharge valve open
c) suction valve open and the discharge closed
d) suction valve open and the discharge valve open
e) suction valve and the discharge valves closed

4. A pump is capable of suction lift due to:

a) its ability to convert kinetic energy into potential energy
b) the speed at which it operates
c) its input power
d) its size
e) atmospheric pressure

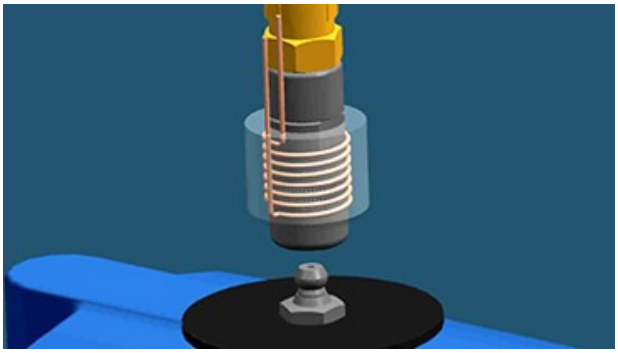
5 A rotary pump:

a) is a variety of dynamic unit
b) never has discharge pulsations
c) should be equipped with a relief valve
d) has the highest capacity of any pump
e) Never requires cylinder lubrication

Greasing with Accountability

by Goran Strand, Stora Enso

Most grease-lubricated bearings fail to reach their life expectancy. This statistic is due to a number of reasons, one of which is the manual grease route, which unfortunately has properties similar to human beings. Man is not faultless – either as an individual or as a group – and makes errors regularly.



Automatic Greasing

To date, one of the objectives of maintenance departments has been to replace all manual greasing with automatic lubrication systems.

Automatic systems offer several advantages:

- Greasing with the correct amount of lubricant significantly reduces the consumption of grease when compared to traditional manual greasing. Several cases have reported grease consumption was reduced by 30 to 50 percent. Not only has this been documented by various automatic systems manufacturers, but an article in the Swedish magazine Underhåll and Driftsäkerhet (Maintenance and Reliability, February 2000) and a case study from VTT (Technical Research Center of Finland) carry convincing evidence.
- Automatic grease lubrication that provides reliable cycles and correct lubricant discharge may reduce the number of bearing failures by approximately 50 percent, which is supported by the VTT report.
- The automatic systems are closed, ensuring grease is isolated from the environment when it transfers from the lubricant reservoir to the bearings (no contaminated zerks).

Automatic lubrication that is correctly designed, installed and maintained is reliable; therefore the impact of the human factor is virtually eliminated.

Unfortunately, the cost of implementing the system may be a hindering issue. When installed in process industries, automatic lubrication is costly - roughly estimated between 380 to 760 USD (300 and 600 EUR) per lubrication point.

Current Manual Greasing

Manual greasing is a daily task performed in process industries worldwide. It is carried out with simple tools, as a low-priority, routine task without status. This is industry's standard practice to date!

Unfortunately, the problem with manual greasing is the frequency of faults. Manual lubrication is performed by human beings and humans make mistakes.

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Aviation's View of Mistakes

In some human activities, such as aviation, mistakes cannot be tolerated. Aviation demands specific routines and systems, which are created to increase safety and eliminate (or minimize) the human element where possible. Aviation has adapted to the following conclusions: Human beings make mistakes; and mistakes cost money and may cost lives.

What are the similarities between the aviation industry and lubricating with grease? Both are large-scale routine activities performed daily by various people. In both

activities, mistakes result in expensive consequences ruled by natural law.

What are the differences between the aviation industry and lubricating with grease? In the aviation industry, the potential consequences of human mistakes are obvious, immediate and may risk lives. In greasing, the consequences are costly and lives are very seldom at risk when we fail to lubricate. Unfortunately, they are not immediately obvious.

Hidden Mistakes Lead to Costly Consequences

The grease in a rotating bearing works only for a limited time and must be replenished while the lubrication film in the bearing is still in good condition.

If the grease in a bearing is not replenished in time, heat, oxygen in the air and mechanical stresses will degrade the oil and adversely affect the strength of the lubricating film. This will result in the initiation of a bearing failure, which will reduce the life of the bearing.

An obvious problem is that one is never aware that he may have missed lubricating a bearing. A working bearing that has not been lubricated for more than a month can still function without problems and may not show any obvious symptoms of deterioration. When the bearing finally fails, it will be filled with good grease and no signs of a missed lubrication event will be present. Since the bearing was missed, several successful relubrication events have been made. Therefore, the life of the bearing was reduced, and acceptance of the shortened life becomes the norm.

Being unaware of the mistake prevents corrective actions to manual greasing from being implemented, which leads to the following conclusions: Human beings make mistakes, and mistakes cost money.

The mistakes made by the lubrication technician are not immediately apparent. The mistakes unfortunately remain; otherwise, a large difference would not be evident when manual greasing is replaced by automatic, as outlined in the VTT report. The lubricating film must remain perfect around the clock to prevent breakdowns in the bearings. In the past, manual greasing was inferior to automatic lubrication when attempting to maintain uninterrupted production of a mill.

Statistics of Manual Greasing

Manual greasing is performed so often it must be looked upon as a statistical phenomenon. At our mill, we perform approximately 100,000 grease replenishments of bearings through zerks per year.

If our team of lubrication technicians exhibit superior performance and do not miss more than one nipple per 1,000 nipples, statistically there will be 100 missed bearings per year. These missed bearings are expected to cost the mill 126,000 USD (100,000 EUR) in increased maintenance costs and lost production. So, there is definitely a problem!

If the error level is decreased by a factor of 10, the mistakes will cost 12,586 USD (10,000 EUR) per year. Furthermore, if the level is decreased 100 times, the cost comes down to 1,259 USD (1,000 EUR) per year, which is acceptable. How can the error level be decreased by 100 times?

Overgreasing: A Solution or Problem?

If bearings are unnecessarily greased twice as often, some nipples can be missed without any perceived problem, because the missed bearings will, in all probability, be greased the next time.

If one bearing per 1,000 is randomly missed, the risk of the same bearing being missed consecutively is one in a million. Greasing at half the optimum intervals offers a solution to the problem of randomly missed zerks.

But will equipment then be overgreased? Overgreasing is considered to be one of the main causes of grease-lubricated bearing failures. Greasing at half the required interval demands a great deal of work and is bad practice.

Electronic Greasing Aids: A Better Solution?

The lubrication technician is provided with a handheld aid to use during the greasing route that indicates how much grease each lubrication point needs. As greasing occurs, the aid automatically reads the lubrication point number and registers the amount of grease pumped into the bearing. It also stores all of the data. If the lube tech should miss one or more lubrication points, he will be alerted to this when the greasing route data is downloaded to a computer. He can then return and finalize the greasing route by lubricating the missing points. Not a single lubrication point will be missed. A professional lubrication technician using the new aid will guarantee this! The correct procedure no longer depends on the skills of specific individuals. It can be accomplished by substitute lube techs, who may be standing in due to sickness or holidays.

During a greasing route, the new handheld tool will automatically register which lubrication points have been greased, when they were greased and the quantity they were greased with. At the base, the computer will show which lubrication points need to be greased to finalize the lubrication route. Guaranteed lubrication cycles will be achieved with statistic certainty, providing higher profit margins for the mill.

The System

The system that met our requirements was a radio frequency identification (RFID)-based manual greasing system, where each lubrication point is equipped with a special grease nipple combined with a transponder. With a built-in antenna, the grease meter communicates with the transponder.

In addition to the RFID unit and its antenna, this system has a

metering module that calculates the grease quantity pumped into the grease nipple. The grease meter is also equipped with intelligence and storing capacity.

The entire system is controlled by a computer managed by lubrication technicians. The grease meter is connected to the computer via a communication and loading unit.

How Does it Work?

When it's time to lubricate, the lubrication technician loads the current grease route into the grease meter, then walks his route and performs the necessary tasks. For each lubrication point, the meter displays the amount of grease the bearing needs and how much it receives.

The lube tech returns to the base and connects the grease meter to the computer. The stored information is downloaded to the computer, and the time of the download operation is simultaneously registered. The computer display immediately shows the status of the lubrication points in the grease route. It appears as a list with different colors for greased and nongreased lubrication points.

The Economic Benefits

The economic impact of greasing efficiently depends on three factors:

1. The number of mistakes made by lubrication technicians.
2. The physical consequences of missing a lubrication point.

The more accurate greasing intervals, the greater the impact will be.

How much overgreasing is reduced when the correct amount of grease is applied at optimal intervals.

The first factor is difficult to estimate and depends on the organization and its personnel. The author estimates it to be one in 1,000, but likely more for most mills. With the electronic aid, this could decrease by at least a power of 100; meaning that the number of missed points will be less than one in 100,000.

The second factor is more easily estimated because it depends only on those powers of nature which have a degradable effect on lubricants. The author estimates it to be a ratio of 1:3, assuming a defective lubrication film will appear in one-third of the missed bearings. These bearings will have to operate on the defective lubrication film until the next lubrication route. This figure is presumably conservative.

If the current number of missed bearing is one in every 1,000, then it would be expected that 100 would be missed in every 100,000. By applying the electronic aid, this can be reduced from 100 to one. From this, it is apparent that the electronic aid could prevent 99 bearings from being missed. Of these 99, it is estimated that one-third would have premature wear resulting from the missed relubrication event.

This means that we can prevent at least 30 premature bearing breakdowns yearly by decreasing the human factor. The improved reliability and the decreased maintenance costs can be estimated to several hundred thousand USD per year. This will also result in an improved environment (decreased grease consumption and waste handling).

Profits will also increase from reducing overgreasing which SKF Reliability Systems estimates as one of the main causes of bearing failures in this type of industry.

According to SKF, we can also save another hundred thousand USD per year from reducing overgreasing. The investment for the whole mill amounts to approximately 204,508 USD.

The described system (LubeRight) has been invented and developed by the Swedish company Assalub.

Editor's Note:

Currency figures are noted at the exchange rate at the time this went to press. Conversions were obtained from http://www.xe.com/ucc/.

Please reference this article as:

Goran Strand, Stora Enso, "Greasing with Accountability".

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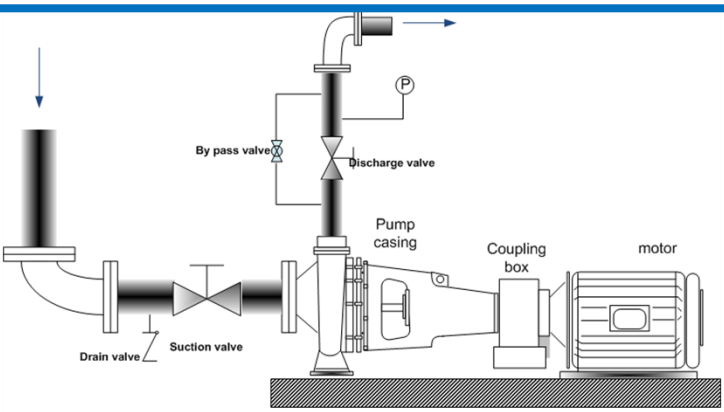
Centrifugal Pump Start up Procedure



Centrifugal pump system

Pump is a device which is used to impart mechanical energy to liquids in order to transport them from one location to another. Essentially, pumps are devices which pressurize the liquid. They are run by motors; the shaft is connected to an impeller. It is the movement of the impeller which leads to the movement of the liquid.

Start up Procedure

1. *Ensure 1st the tag number of the pump to be commissioned is correct.*
2. *Ensure all pending maintenance jobs (if start after maintenance or PM)*
3. *Ensure all drain valve should be close.*
4. *Ensure Pump's motor energized condition from electrical side.*
5. *Ensure all utilities lined up in pump seal cooling or lube oil if available.*
6. *Ensure that the discharge valve of the pump is closed. If it may be open or partially open, then close it.*
7. *Open the suction valve 100%.*
8. *Do pump priming by opening the vent valve and to release the air, when liquid starts oozing out of the vent then close the vent valve.*
9. *Rotate the shaft by hand to see if it is moving freely or not.*
10. *Check if the pump is rotating in the correct direction or not by starting the pump motor.*
11. *Check if the discharge pressure is steady or not. If it is not steady, then more trapped gases will need to be released.*
12. *Check all MCMS (machine conditioning & monitoring system) parameter are normal or under range.*
13. *Check if there are any undesired noises or vibrations from the pump. If there is then maintenance personals need to be called for fixing it.*
14. *Check if there is any leakage in the pump or not. If there is any leakage then maintenance personals needs to be called for fixing it.*
15. *Switch off the motor.*
16. *If everything is okay then the pump can be started by opening the discharge valve and then starting the motor or signalling the control room to start the motor.*

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KenKen Puzzle

How to solve the Kenken puzzle:

(Answers on page 22)

- 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×	
				4	
10+	3+		2÷	12×	
	2–			3+	5
	3–		5		2÷
2÷		5	5–		

Thankfulness is the beginning of gratitude. Gratitude is the completion of thankfulness. Thankfulness may consist merely of words. Gratitude is shown in acts.

DAVID O. MCKAY

Hydronic Circuit Purging: The Basics

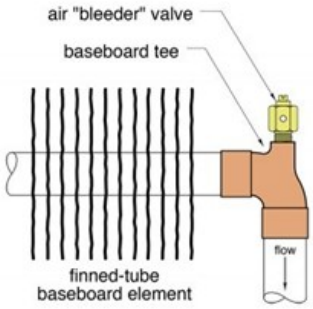
By John Siegenthaler

Nearly all closed loop hydronic heating and cooling systems are supposed to be filled with water, or a mixture of water and antifreeze. The only intentional air in the system is contained in the expansion tank.

The only exception to the above is a closed-loop, drain back solar thermal system where a volume of air is captured and managed within the system. That air is repeatedly used to replace water in the solar collectors when they drain at the end of each solar collection cycle.

Contrast the idea of a fluid-filled system with the fact that it begins its service life completely filled with air. Transitioning a newly minted hydronic system, or an older system that has been drained, from air-filled to water-filled is called “purging.” The effectiveness of purging plays a major role in reliable and efficient system operation.

Nearly all modern hydronic systems rely on two methods to get air out and move water into the system. The first is called “forced fluid purging,” the second is “microbubble elimination.” Together these methods can get the system up and running quickly and ensure that it remains essentially air-free over its full-service life.



THE OLD DAYS

Getting air out of hydronic systems was not always straightforward. When I began working with these systems in the late 1970s, the common method of purging was to fill the system from the bottom up, counting on air to exit at multiple air vents, or at “bleeder” valves on heat emitters, or at other high points in the piping.

Imagine a scenario where several fin-tube baseboards each have a baseboard tee and a manually operated bleeder valve at the end of the fin-tube element. Figure 1 shows these fittings and how each is typically installed.

The installer opens all the bleeder valves before allowing water into the system. Pressurized water is introduced into the lower portion of the system by opening the “fast fill” lever on the system’s pressure reducing valve, or by opening a ball valve that bypasses the

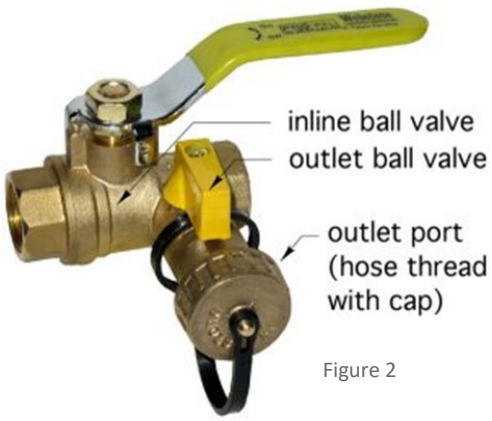


Figure 2

pressure reducing valve. Driven by the pressure of the building's plumbing system, the water races through the piping, eventually gets to the open bleeder valves and sprays out tiny holes in the side of these valves.

The trick is to catch those streams of water before they make a mess. That is pretty hard to do when the water is squirting out of four or five bleeder valves simultaneously at several locations in the building. If the hole in the bleeder valve faced outward, you could, in some cases, put a coffee can in front of each valve and hold it in place with a piece of wire. Still, this is a tedious approach to purging.

Even after the majority of the bulk air in the system is removed, the dissolved molecules of oxygen, nitrogen and other trace gases in the water take time to merge into bubbles that are large enough to be captured and ejected from the system by cast iron air scoops.

Older methods of purging that mostly relied on getting air out at the system's high points were slow and inefficient.

Today, the hydronics industry has new hardware and methods that allow fast and efficient removal of air as the system is filled with water. One of the modern hardware devices that is now used routinely is the purge valve, an example of which is shown in Figure 2.

Purge valves combine two ball valves into a single body. One ball valve is inline with the piping being purged, the other is located in a side drain port that ends with a male hose thread and cap.

When used in a single circuit hydronic system, a purge valve should be installed as shown in Figure 3.

BULK AIR REMOVAL

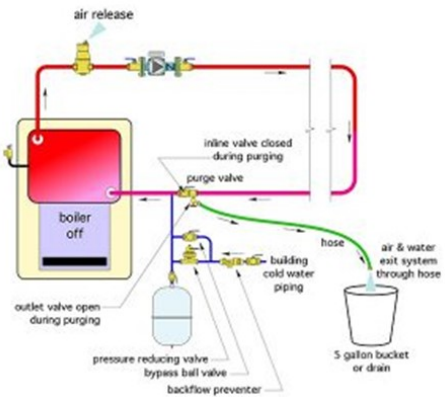


Figure 3

To fill and purge the circuit, close the inline ball on the purge valve, open the side port ball and connect a hose to the side port as shown in Figure 3. Open the fast fill lever on the system's pressure reducing valve and if a bypass ball valve is installed as shown in Figure 3, open it.

Pressurized water from the building's cold-water plumbing enters the system just downstream of the purge valve and flows through the circuit in a clockwise direction based on the layout in Figure 3. The closed inline ball in the purge valve prevents the water from "short circuiting" to the drain port.

The key to good purging is to create high water flow velocity through the circuit. I suggest a water velocity of at least four feet per second through the piping during purging. This allows the water to act like a liquid piston, pushing most of the air in the piping and components ahead of it and eventually back to the purge valve. The air then exits through the side port of the purge valve. Within a few seconds, the water stream follows the air out of the side port and through a hose leading to a capture bucket or drain. The system's circulator can be turned on at this point to further increase flow velocity though the circuit.

Once the existing water stream is free of visible bubbles for several seconds, the side port of the purging valve is closed. The system pressure will

immediately climb as building water pressure pushes more water into the system and compresses the diaphragm in the expansion tank. It is important to close the fast-fill bypass ball valve on the cold-water inlet piping within a second or two of closing the side port of the purging valve. If you do not, it is likely that the circuit pressure will exceed the rated pressure of the pressure relief valve, allowing water to be ejected from the latter. If this happens, crack open the side port of the purging valve until the system drops to the desired static pressure.

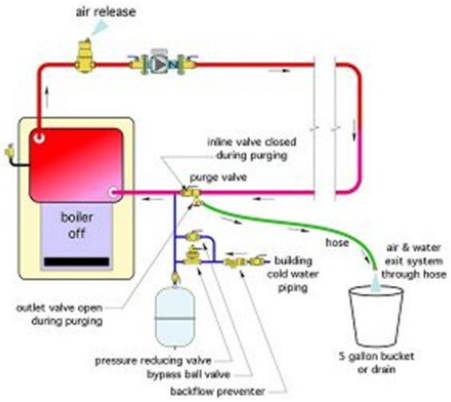


Figure 3

The process described will quickly remove most of the bulk air initially in the system. My experience has been that using this forced fluid purging

approach eliminates the need to bleed air from high point vents. The fast moving water can force air through the system in any direction, including straight down, and eventually out of the purge valve.

FINAL SCRUB

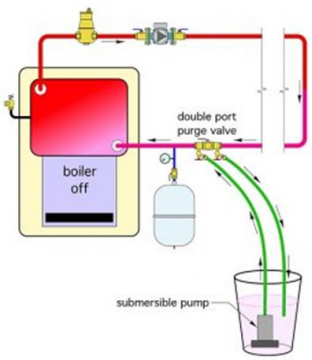
The process of properly “deaerating” a hydronic system does not end with forced fluid purging. The cold water that now fills the system still contains between two and four per cent dissolved gas molecules, including oxygen, nitrogen and small amounts of other gases. You cannot see this molecular “air,” but it will come out to play once the water is heated. Well-designed systems stand ready to quickly capture it and eject it.

The system shown in Figure 3 also includes a microbubble air separator. This device contains a coalescing media that coaxes the dissolved gas molecules to form tiny microbubbles. The coalescing media also provides pathways for these microbubbles to rise above the active flow zone in the separator and merge together at the top. After a small volume of air collects in the upper portion of the separator it is ejected through a float-operated valve. The pressure within the system is what pushes the captured air out.

Microbubble air separators are a tremendous improvement over legacy cast-iron air scoops and, in my opinion, should be used in every modern hydronic system.

Coaxing dissolved gases out of the system fluid takes time, sometimes several days. The efficiency of dissolved gas removal is greatly improved if the system fluid is heated. Hot water (or hot antifreeze solutions) cannot retain as much dissolved gas as cool water and give up dissolved air more willingly as it passes through the air separator. Eventually the microbubble air separator, in cooperation with an automatic make-up water system, or an automatic fluid feeder, reduces the air content of the system to an insignificant level and keeps it there.

MULTIPLE ZONE SYSTEMS



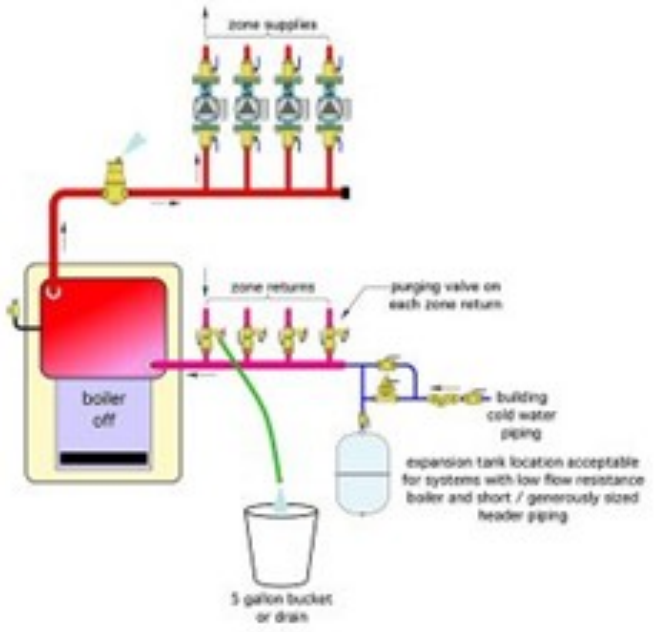


Figure 4

Most modern hydronic systems are not as simple as the one shown in Figure 3. These systems contain multiple zone circuits, or other parallel piping paths. The most efficient way to purge the systems is to install a purging valve on the return end of each circuit, as shown in Figure 4.

The purging procedure is very similar to that previously described. What is different is that each zone circuit is purged one at a time. Doing so produces the highest possible flow velocity through each circuit and the most efficient bulk air removal. When the purging valve on one zone return has a bubble-free return flow, close the inline ball on the purging valve and stop the cold water at the make-up water system.

Move the hose to the next purging valve and repeat the procedure. Keep doing this until each zone is purged. After water is forced into each zone, the zone circulator can also be turned on to further increase purging velocity. The microbubble air separator will do the final cleanup by capturing dissolved gases and ejecting them from the system.

P/S PURGING

In the case of primary secondary systems I recommend using a purging valve on the return side of each secondary circuit as shown in Figure 5.

This approach eliminates the need for a ball valve between each set of closely spaced tees– the sole purpose of which is to force water through the secondary circuit during purging. The combination of the purging valve on the return side of the secondary circuit, along with isolation flanges on each secondary circulator, allows each secondary circuit to be completely isolated for service if necessary.

Start the purging procedure by isolating all secondary circuits, then purge the primary loop using the previously described procedure. Once the primary loop is purged, set up another hose and purge each secondary circuit individually.

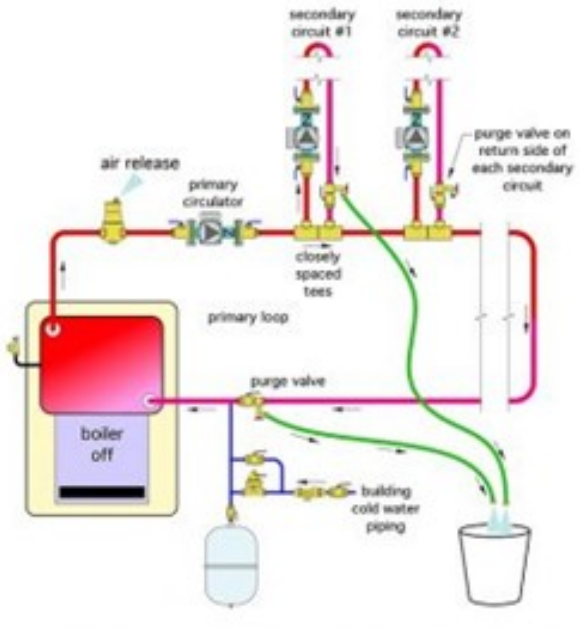


Figure 5

Figure 6

PUMPED PURGING

Some hydronics systems may not have access to pressurized cold water systems for purging. Other systems may need to be filled and purged with a premixed antifreeze solution. Both of these scenarios can be handled using a double port purging valve such as the one shown in Figure 6.

Double port purging valves combine two side port ball valves with a single inline ball valve. One side port allows fluid (water or antifreeze solution) into the system. The other lets air out of the system. A typical circuit using a double port purging valve is shown in Figure 7.

A submersible pump is used to force fluid in and around the circuit. Air exits the upstream side port of the purge valve. Eventually, a stream of fluid flows from the exit port and is carried back to the fluid reservoir. It is important to keep the end of the return hose under the fluid level in the reservoir to avoid creating bubbles that get pulled back into the purging pump. The purging pump is operated until the return stream is free of bubbles for several seconds. At that point, the outlet port of the purge valve is closed. This allows the purge pump to increase system pressure. Fluid is forced into the expansion tank until the system pressure reaches the maximum (no flow) pressure of the purge pump. The final step is to close the inlet port on the purge valve and turn off the purge pump. If additional pressure is needed in the circuit, more fluid can be added using a hand pump.

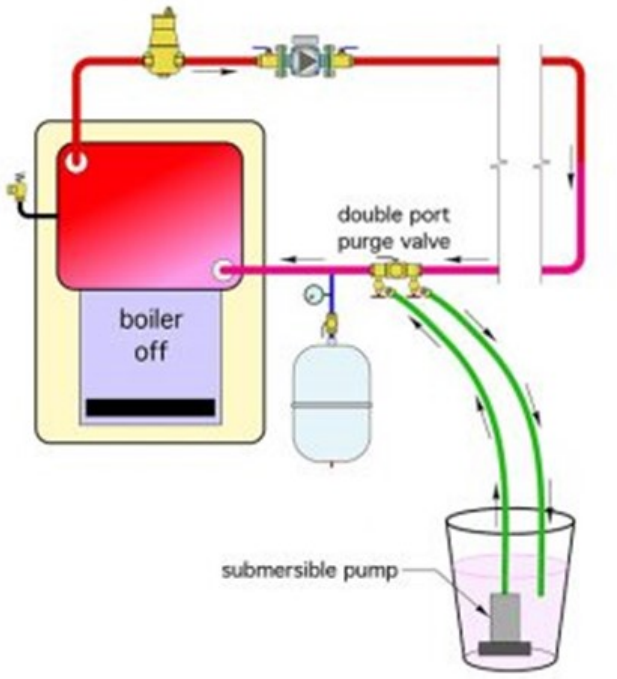


Figure 7

With modern hardware and methods it is possible to efficiently purge air from just about any hydronic system and keep that system essentially air free over its full service life.

John Siegenthaler, P.E., is a mechanical engineering graduate of Rensselaer Polytechnic Institute and a licensed professional engineer. He has over 34 years experience in designing modern hydronic heating systems. Siegenthaler's latest book, Heating with Renewable Energy, was released recently (see www.hydronicpros.com for more information).

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Come & visit us at the

BOA Trade Show

Tuesday October 18, 2022

Danish Canadian Club, 727 - 11th Ave SW

Doors Open at 11am until 6pm

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

Door Prizes - Cash Bar - Finger Foods

Keynote Speakers:

Heather Campbell, Executive Director, Clean Technology, Alberta Innovates 11:30am - 1pm
Opportunities using hydrogen's possible role in the decarbonization and energy transition landscape for heating in residential & commercial buildings in Alberta, Canada.

Carmichael Engineering 1:30pm - 3:00pm
Energy Benchmarking Symposium Workshop

David Lamarre, P.Eng., Associate, Exel Systems Inc. 3pm - 4pm
The Benefits and Best Practices of Cooling Tower Filtration

David Lima CET, Aqua Air 4pm - 5pm
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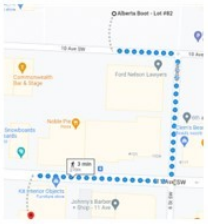

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BOA Building Operators Association of Canada

Trade Show and Keynote Speaker Event

When: Tuesday, October 18 11:00 AM – 6:00 PM

Where: Danish Canadian Club

727 – 11 Ave SW Calgary, AB (Upstairs Ballroom)

Parking: Complementary Parking provided by impark Lot 82 714 10 Ave SW

You are invited to attend! Admission is free!

32+ Industry Exhibitors, Networking, Latest Technology & Innovations

Plus: Door Prizes, Food, AND four special Guest Speakers!

11:30 AM– 1:00 PM (Tivoli Room)

Heather Campbell, Executive Director, Clean Technology, Alberta Innovates. The topic for Heather's presentation will be **Opportunity & Energy Transitions - Why Clean Technology is Critical to Alberta.** Heather will discuss hydrogen with respect to decarbonization and energy transition in residential and commercial heating.

1:30PM – 3:00 PM (Tivoli Room)

After a short lunch break, **Noah Armstrong** with Carmichael Engineering will present **Building Energy Benchmarking; A Data First Approach to Energy Management**. Learn how to leverage your buildings data to enable demand side management initiatives that provide significant return on investment and minimal payback periods. Emission Reduction Alberta will also participate in the discussion.

3:00PM – 4:00 PM (Tivoli Room)

David Lamarre & team with Exel Systems will be giving a presentation on **The Benefits & Best Practices of Cooling Tower Water Filtration**. Opportunity to increase efficiency while conserving water and corresponding water treatment.

4:00PM – 5:00 PM (Tivoli Room)

George Niksic with Aqua Air will be discussing **HVAC Fan Efficiency** Technologies and Retrofitting.

Come Out and Support our Building Operations Community!

Grounds for Safety

by Cathy Walker

Employee participation, site-specific strategies, and effective communication are grass-roots elements of a successful grounds-care safety program

Grounds care managers know that lawn and landscape maintenance is not an easy or stress-free occupation, and they are taking workplace safety more seriously than ever. From mowers, decks and utility vehicles to trimmers, edgers and brush cutters, grounds care workers regularly handle equipment that —no matter how well designed or manufactured —presents potential safety problems.

In developing a comprehensive safety and health program, the first items to address are lawn mowers and pesticides. But the safety challenge does not end there. Among the issues that a grounds care managers must address are electrical safety, emergency preparedness, ergonomics, personal protective equipment (PPE), first aid, flammable materials, material safety data sheets, record keeping, slips and falls, and employee training.

Benefits of safety

Making a commitment to improved safety in grounds care has many benefits, including reduced human suffering from injuries, illness or death; an improved financial outlook due to lower insurance premiums, less down time and lost productivity; and fewer legal consequences.

OSHA standards and regulations do not mandate safety and health programs, but such programs are important for creating a culture of safety within an organization. Establishing a safety and health program can communicate the corporate, institutional, municipal or departmental philosophy, rules, strategies, policies and responsibilities associated with on-the-job safety.

OSHA's draft proposal of a safety and health program includes five key items.

Management leadership and employee participation. Show visible management leadership, and document the necessity for employee involvement.

Hazard identification and assessment. Demonstrate in -depth hazard recognition and perform comprehensive inspections of conditions, behaviors and conduct.

Hazard prevention and control. Among the requirements are safe work practices, providing PPE and maintaining properly working equipment. An emergency preparedness and response plan also is critical.

Information and training. Organizations must provide and document hands-on and classroom instruction for all employees involved with particular operations.

Evaluation of program effectiveness. Managers must review the procedures and outcome and ask: Is the program effective? What do we need to change?

Grass-roots support

Perhaps the surest step to success in grounds care safety is to let front-line operators and mechanics know the importance of safety and to get them to commit to any measures necessary to inspect and use equipment safely. Managers need to make it obvious to employees that protecting their safety and health is the key reason to instill a safety culture at all levels.

Managers also can reinforce the financial reasons for continued focus on safety. When budgets are tighter than ever, managers can explain that safety really is a financial matter. Costs associated with injuries, accidents and illness can severely dent a company's bottom line. If more dollars are going out in workers compensation claims, insurance premiums, paperwork, equipment repair, retraining, and legal fees than are coming in, there is less money available for wages, which might mean a reduction in job security for some workers.

Employees must be able to see that the company is also committed to safety. Organizations need to make time and money available to implement all parts of the safety plan, and they should establish guidelines and communicate to employees their specific responsibilities concerning workplace safety and health.

Making safety work

An essential step in tailoring safety programs to organizational needs is asking employees to identify safety concerns. Managers must encourage them to speak up when they witness unsafe practices, and they must feel comfortable reporting any concerns and knowing that their comments will be taken seriously.

Placing a safety suggestion box in a public area of the department might help encourage participation by keeping comments anonymous. But safety concerns should not have to wait until a monthly staff meeting to be addressed. The box must be checked daily and concerns acted upon promptly. If visible changes are not made, suggestions will not continue, either.

Managers should assign one person to check the box but assign a variety of employees the task of addressing any comments or complaints. For example, if one reports addresses the issue of an employee overriding the automatic shut-off on a mower, that issue should be given to the supervisor to deal with immediately.

If one complaint brings up the issue of unsafe storage of gas cans, an operations manager might check into the current practice, develop a safe procedure, and hold a short training session to teach the new policy. Managers, supervisors, foreman, office staff and technicians all can be involved in assessment, development and training of safety procedures.

Check and check again

Hazard prevention and control also is an essential component of any effective safety and health program. Many of the tools and equip ment used today are engineered for safety, so it is extremely important to reinforce the use of all safety features. All of the safety features in the world are useless if operators do not use them.

Employees should never be allowed to override safety features, even if it means it will take them longer to complete a task. If safety features are neglected and there is an injury, the task might never get done.

Operators shouldn’t wait to inspect equipment for safe operation until they are about to start a project. Instead, they should complete a safety inspection checklist every morning before putting the equipment into use. Just because it worked yesterday does not mean it is safe to use today. Operators and mechanics should follow a routine maintenance schedule to insure the equipment is in proper working order at all times. If the equipment is not in good working order, the operator should know that they have a right to tag the equipment and lock it out of operation until it is fixed.

Another strategy for avoiding hazards is inspecting equipment for safety features before purchase. Managers and others taking part in specification

must make sure equipment is easy to maintain and comfortable to use and that safety features do not make the equipment cumbersome to operate.

Personal protective equipment —including but not limited to, proper footwear, gloves, safety glasses, ear protection, hats and helmets — are important components of hazard prevention. Managers must make the proper protective equipment available and mandate its use.

Talking safety

Information and training are essential to instilling safe procedures into the work force. Managers can have safety manuals compiled and signs posted throughout a department, but these tactics will have little impact if the information is not personally presented in such a way that employees understand both its importance and implementation.

Classroom sessions, demonstrations, and in -the-field training all are necessary to convey proper safety procedures. Training need not be sophisticated computer-generated presentations, videos or elaborate manuals to be effective. The most important aspect of training is that managers take the time to do it. A simple, hand-drawn diagram showing the proper way to secure a mower on a trailer, along with a five-minute demonstration and 10 minutes of practice, can work just as well —and maybe better.

Employees at all levels should responsible for some type of training. Managers can give them each an assignment and schedule a time for them to make their presentations. If all employees are expected to make a presentation, then no one should feel uncomfortable.

Many community resources are also available for training. The Red Cross, local hospitals, manufacturers' sales representatives, th e fire department or utility company, and an insurance agent all can provide valuable safety training information and even actual training.

Finally, managers should regularly evaluate safety and health programs. Set aside time monthly, bimonthly, semi-annually or annually to review the progress of the program and determine its effectiveness. The newer the program, the more frequently the evaluations should be done.

Once again, managers should get everyone involved by asking for input on tactics and actions that are working, and those that aren't. During the review process, managers should keep in mind that employees at different levels with different responsibilities might have very different opinions of efforts that are succeeding and those that are not.

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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) e 2) a 3) d 4) e 5) c

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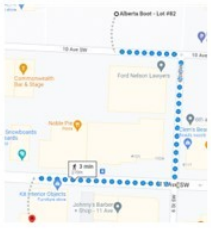

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JOIN US:
TUESDAY NOVEMBER 8, 2022 AT 5PM FOR OUR IN-PERSON MONTHLY MEETING

Presenters: **Brian Malkinson & Adam Fonseca**
Custom Power Generation

Title: **Generators and CSA 282 presentation**

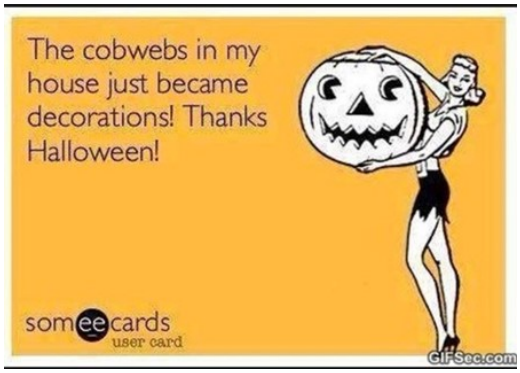
Summary: **Backup power systems in buildings are nothing new, however with the challenges of COVID and changing building use patterns pulling building operators in many different directions there is no time like the present to review this key component of your building and ensure it is maintained and meeting code.**

Brian Malkinson and Adam Fonseca from Custom Power Generation will be going over CSA 282, the code which lays out the checks that need be done on life safety backup generators. They will also be giving an overview of the generators themselves, related ATS equipment, their testing and how they might interact with your buildings other systems (such as elevators) during testing.

Bio: **Brian and Adam have over 17 years of combined hands-on experience in Power Generation. In addition, Adam Fonseca has a Degree in Mechanical Engineering from University of Calgary, Brian Malkinson has a Degree in Science from Simon Fraser University**

We look forward to seeing you in-person for our November meeting at the Danish Canadian Club (27 11 Ave SW) on Tuesday November 8, 2022.

Just for laughs!



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1/2 page	$775	1/2 page outside cover	$900
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