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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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President's Message



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

Again, we have learned that BOMA Calgary is putting on the Building Operators Course. After a couple of false starts, the commitment is for mid February. The success of the BOMA class passing rate is better than average and the classes are done from home with the instructors using ZOOM as the delivery medium. www.boma.ca is the website to sign up from or contact the office at 403-237-0559. You don't need to live in Calgary to take the class, as it is all done virtually. I am one of the instructors as is Mike Clancy and together we offer a combined Building Operator experience of many, many, many years (LOL).

We have published the tasks an Operator would normally perform in a year and placed it on our website. Please review and comment on any other tasks you feel should be included. We have only put the tasks; the safe performance of the tasks (SOP's) is up to the manufacturers recommendations and the standard operating policies (SOP's) of the managing company.

The purpose of a safe work procedure is to reduce the risk to health and safety in the workplace and reduce the likelihood of an injury by ensuring that employees know how to work safely when carrying out the tasks involved in their jobs.

Safe work procedures (SWPs) are required when the risk of injury to workers performing a job task cannot be eliminated, effective work design, work process or equipment used to work safely.

A Safe Operating Procedures (SOP) or Safe Work Procedures (SWP) sometimes also known as a Standard Operating Procedure (SOP) should be developed and used to instruct people on how operate machinery or equipment or processes safely. SOPs should also be immediately available and reviewed regularly by operations as well by management.

To reduce risks, an organization should have several generalized safe work practices. These must be developed to fit the company standards. Management must understand and fully endorse these safe work practices and ensure that safe work practices are in writing, that all employees understand the safe work practices that apply to them, all equipment to permit compliance are available and that supervisors ensure that the practices are followed.

See you soon!

Smiles))

With kind regards,

Les Anderson PE, RPA



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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 24

1. Prior to a boiler safety valve popping during routine boiler operation:

- a. a try lever test should be performed
- b. the pressure gage should be checked
- c. the high limit switch should open
- d. the feedwater pump should stop
- e. the high level alarm should sound



2. Quickly closing the main burner manual cock valve during boiler operation should check the:

- a. flame scanner
- b. combustion air proving switch
- c. low gas pressure fuel cut-off
- d. high gas pressure fuel cut-off
- e. low fire interlock switch

3. The combustion air proving switch:

- a. should be checked when air flow is minimum
- b. should not be checked while the boiler is in the purge cycle of start-up
- c. is a normally closed switch
- d. must always be a manual reset device
- e. should be checked when air flow is maximum

4. The main controlling device used with an on/off combustion fuel control is a _____ sensing element:

- a. Pressure
- b. level
- c. temperature
- d. electronic
- e. Pneumatic



5. The purpose of the high limit temperature control on a hot water boiler is to:

- a. take over operating the boiler if the water level control fails
- b. allow you to take off the operating control for maintenance without shutting down the boiler
- c. shut down the burner if the water temperature rises too high
- d. prevent the pressure in the boiler rising above 210 kPa gage
- e. limit high pressure and temperature from developing in the boiler

6 BENEFITS OF INSTALLING SUB-METERS IN YOUR RENTAL PROPERTY

BY INTELLEMETER

INNOVATIVE METERING SYSTEMS

Now is a great moment for property owners and managers to take action toward being more energy efficient. Just in case, if the ever-increasing damage to our world hasn't grabbed your attention, maybe the prospect of **lowering your monthly power** cost will. Apartment complexes, townhouses, multiplexes, and condos may all benefit from having individual energy and water sub-meters installed for each unit. This is why you need to consider implementing a sub-metering system of in your rental property. An implementation like this will provide several significant benefits for both you and your tenants. That being said, today, we will discuss the six benefits of installing sub-meters in your rental property.

WHAT IS ELECTRICAL SUBMETERING, AND HOW DOES IT DIFFER FROM ELECTRICAL METERING?

Electrical metering is the process of tracking the power consumption of a property using a utility

meter, often known as the master or primary meter. This device is responsible for keeping track of the overall power use *of a building or campus*. Utility companies will often put meters in buildings, read them, and then issue bills accordingly. For a single-family unit, it may be enough, but for a multi-unit building, it becomes more problematic. How can a landlord determine rent if there is just one meter?

Submetering is the answer to this problem. Installing sub-meters allows property owners and managers to track power consumption in specific units below the master meter. Take electricity consumption; a master meter would reveal **the total consumption for a whole building**, while a submeter would detail the use in a single unit. The following are the benefits of using a sub-metering system on your rental property.

1. AFFORDABILITY FOR LANDLORDS AND TENANTS

Having submeters installed is a great asset for property managers in charge of more than one property, as it allows for accurate billing of all tenants. Power consumption and expected consequences are no longer dependent on unfair cost distributions, or management's best guesses. A submetering system can take precise power use measurements, allowing for *in-the-moment data*



processing. The result is that management can accurately charge all tenants for their monthly consumption, while sharing with tenants real-time information on consumption. These are becoming more of an appealing choice for renters looking for cost-effective housing solutions.

2. MINIMIZED RUNNING EXPENSES

Ongoing pressure to keep profits high is a major challenge for building management. Many companies in the property management industry are struggling to keep up with the continuous increases of the cost of operations. However, many management businesses cannot afford to undertake expensive construction projects to accommodate renters. **Technology-based energy systems** are an excellent way to better control operating expenses in an older building without making a large financial commitment that can be simply integrated into pre-existing infrastructure in order to cut costs. In fact, recent research has shown that submetering systems and other forms of energy management tools may dramatically cut operating expenses related to energy and water usage.

3. QUICK RETURN ON INVESTMENT

Nothing is free, especially when it comes to hardware, setup, rollout, or software. Understanding the actual costs and the potential benefits will guide as to when can you expect a profit. Having constant access to data allows for instantaneous tweaks. Many strategies for energy conservation don't require too much time to implement, so you may see savings from your efforts sooner than you thought possible. The return on investment for submetering often occurs in *less than one year*. However, some property



owners are able to make a profit in as little as a few months. Furthermore, saving money on paperwork by hosting your metering information in the Cloud might be a welcome side benefit of using an automated submetering system. That being said, if you previously included electricity costs in the monthly rent but now bill tenants separately, charging tenants for energy and water use may increase your net profits sooner rather than later.



4. MORE AWARENESS OF ENERGY CONSUMPTION

With the use of sophisticated programs, submetering networks can monitor and evaluate power usage across a city or a region. Tenants who are kept up to date on their power use may better manage their electricity needs. As a result, consumers can reduce their energy consumption and save money on their monthly bills. With rising energy awareness, the widespread adoption of energy-saving measures

could result in cost savings through lower utility bills and operational expenses.

5. IT'S GOOD FOR THE ENVIRONMENT

Sub-metering has many advantages, most of which have to do with streamlining property management strategies, but there's also an environmental benefit that most people overlook. In order to *promote environmental sustainability*, it is crucial to use data to make better energy decisions, which results in less pollution. Although a single home's energy use may not seem like much in the broad scheme of things, it will become more necessary to monitor and control consumption as countries across the world take strong environmental action. That being said, renewable energy initiatives, such as solar power, also benefit greatly from submetering. When a solar power system is connected to the power grid, any excess energy is fed back into the grid. However, suppose you use a bidirectional submeter, which measures energy going to and from the solar farm. In that case, it is feasible to

determine how much the utility should credit back to the property.

6. EASIER ROUTINE MAINTENANCE

And the last, but certainly not least, of the six benefits of installing sub-meters in your rental property is easier maintenance. Having access to real-time information on power use across a multi-tenant building can help you anticipate and prevent any issues. You can immediately identify and establish the reason for rate swings if the daily, weekly, or monthly consumption

rates gradually rise without changes in tenant utility use. Installing sub-meters



will help you find and fix any problems before they become catastrophic. As a result, you will be able to drastically reduce the expenses that come with running a building. So, all in all, the benefits of implementing sub-meters far outweigh the costs.

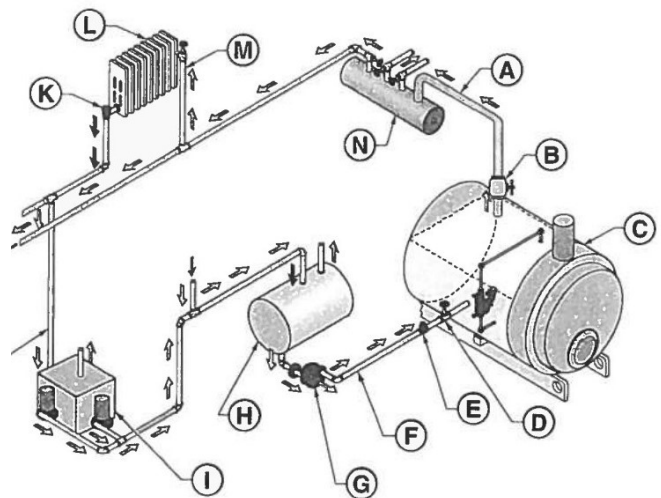
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FEEDWATER SYSTEMS

Identify parts of the feedwater system

- _____ 1. Boiler
- _____ 2. Check valve
- _____ 3. Condensate return line
- _____ 4. Condensate return tank
- _____ 5. Feedwater line
- _____ 6. Feedwater pump
- _____ 7. Heating unit

- _____ 8. Main steam header
- _____ 9. Main steam line
- _____ 10. Main steam stop valve
- _____ 11. Riser
- _____ 12. Stop valve
- _____ 13. Surge tank
- _____ 14. Steam trap



Answers on page 24

Changes in the Air Filtration Technology

by Henry Shir

A new generation of air filters gives managers more options when specifying to meet facility needs.

Today more than ever, state-of-the-art air filtration technologies are being used to meet the challenges in a variety of commercial and institutional settings. The requirements for higher efficiency in these facilities have been driven by a concern for indoor air quality (IAQ).

For example, areas such as cleanrooms have always had stringent filtration requirements, while several innovative products have been developed for health care facilities to combat the transmission of tuberculosis.

Recent changes HVAC systems for facilities such as schools and office buildings formerly used filters with efficiencies in the range of 30 percent. Heightened concerns over IAQ, however, have led designers to specify filters with efficiencies in the 65-95 percent range.

These filters are typically cartridge type and are 12 inches deep. They require a separate section in an air handling unit. While these filters provide cleaner air, some also can impose a penalty on the energy used by fans, because they have increased resistance to airflow, especially when dirty, as

compared to a standard 30 percent efficient throw-away filter.

Thirty percent filters typically are specified as prefilters for cartridge units to prolong the more efficient filter's life. Some cartridge filters now are made with polypropylene rather than fiberglass filter media, which is said to decrease pressure drop.

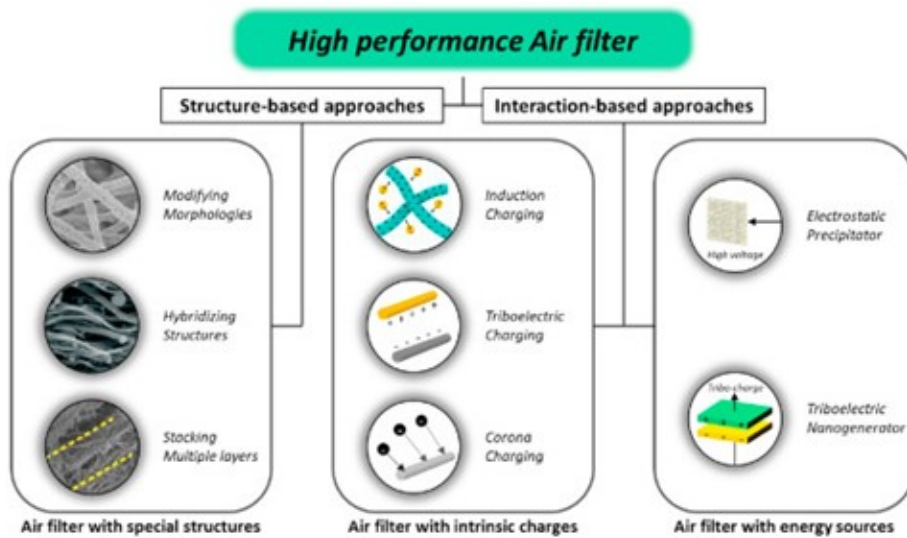
Gas-phase adsorbers, such as carbon filters, formerly seen only in industrial applications are also being used more often in commercial and institutional

facilities where outdoor air is contaminated by automobile or diesel fumes, paint vapors or other gaseous contaminants. The adsorbers typically are available in throw-away and reusable versions.

Absorbers often are installed in manufactured filter racks - they can be fitted to air handlers but typically are not a standard feature listed in manufacturer catalogs.

Managers and specifiers should consult with the filter manufacturer to determine the appropriate adsorbent for the type of contaminant to be protected against.

Potassium permanganate and alumina also are used in some filter applications, especially those involving



formaldehyde and ethylene fumes. A throw-away filter should be used upstream of the adsorber to protect against particulates.

Another recent advance is to have a standard pleated air filter impregnated with activated carbon. This type of filter can fit in a standard filter rack and replaces standard throw-away filters. This development allows adsorbers to be retrofitted to standard commercial-grade air handlers and rooftop units.

HEPA filters

Facilities with components such as clean rooms and laboratories have long required high-efficiency particulate (HEPA) filters. These filters are often supplied as HEPA filter diffusers in the ceiling. The diffuser has a laminar air flow pattern, which is suitable to handle the very high levels of airflow in these applications.



The HEPA filter fits behind the diffuser face and is linked to the ductwork through a round connection. Maintenance managers and crews must be sure to carefully tighten draw bands between flexible ductwork and the HEPA filter diffuser's neck. If the flex is not tightened adequately, the high static resistance of the HEPA filter will cause the flex duct to blow off, and the supply air will dump into the ceiling plenum. The seal between the HEPA filter diffuser and the ceiling system also must be fabricated to ensure that the appropriate cleanroom class will not be violated. A recent development in HEPA filter ceiling diffusers is a product developed in Europe that

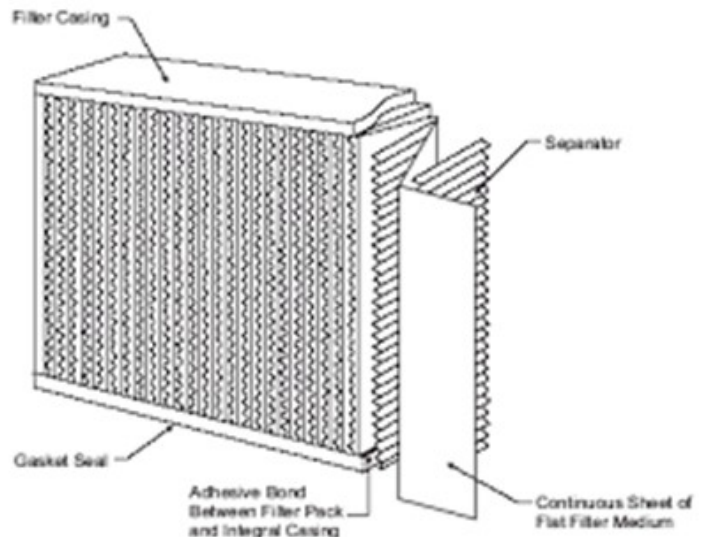
imparts a swirl, rather than a laminar, flow pattern to the discharge air. The advantage of this type of diffuser is that there is no air movement noticeable at the work surface.

These diffusers are significantly more expensive than standard HEPA filter modules and are about 12 inches deep, which might make them unsuitable for some tight ceilings. The high costs of the swirl-pattern HEPA filters make it economical to use a cartridge filter as a pre-filter, rather than a standard throw-away filter.

HEPA filters also are used in industrial exhaust applications, such as radioactive fume hoods. The filters are typically housed in a weatherproof bag-in-bag-out filter housing and are changed through a thick PVC bag with ports for gloves. The bag prevents individuals changing the filters from coming into contact with contaminated media. The filter housings typically have doors sealed with a knife-edge fluid seal that provides an airtight closure to prevent contamination.

Final filters with efficiencies of at least 90 percent have been required for some years for air handlers serving hospitals. These final filters are also a requirement for outpatient facilities that are built in accordance with the American Institute of Architects (AIA) Guidelines for Construction and Equipment of Hospitals and Medical Facilities. These guidelines have the force of law in some states.

The requirement for final filters significantly



complicates the HVAC design of small outpatient facilities because the vast majority of commercial-grade DX rooftop units under 18 tons cannot accommodate final filters. Their fans typically cannot overcome the resistance of filters mounted downstream in the supply ductwork. As a result, an air handler with a separate chiller must be used, significantly raising costs.

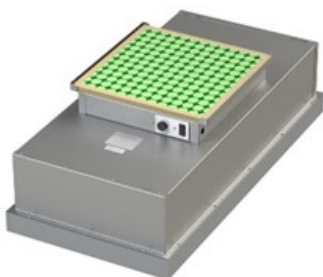
HEPA filters also are used in hospital applications for operating rooms serving bone marrow transplant patients and those with compromised immune systems.

Some regular operating rooms also have HEPA filter ceiling modules installed, although this is not a requirement of the AIA guidelines. HEPA filters are used in medical exhaust applications where the exhaust streams are contaminated or radioactive. Bag-in-bag-out housings are employed as described above.

Self-powered HEPA

Hospital and medical office waiting rooms more often are seeing a significant increase in the use of self-powered HEPA filters. The reason for the increase? The upsurge in the occurrence of tuberculosis (TB). The primary means of treating patients suspected of having TB is to confine them to isolation rooms, where maintaining negative pressure differentials is the primary means of confining the spread of bacteria.

In waiting rooms, fan-powered HEPA filters are installed to draw room air over the filter and to supply the clean air back into the space. In some cases, the air may be ducted outside for exhaust



These self-powered filters may be installed in the ceiling or in cabinet-style units. The latter type of filter often

can be moved between rooms. Among the disadvantages of self-powered HEPA filters are noise level - caused by the fan having to move large amounts of air over the high resistance of the filter - and high energy costs. The filters, however, can be effective against some allergens and airborne viruses that are less dangerous than TB.

The future of air filtration will include the development of high-efficiency filters with lower pressure drops to decrease the energy penalty these filters presently impose. More effective filtration may allow conditioned outdoor air quantities to be reduced, which also will reduce energy costs for facilities.

Suppliers See Ripple Effects from New Standard

A new standard from the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) is prompting air filter manufacturers to take notice.

The standard is 52.2P Method of Testing General Ventilation Air Cleaning Devices for Removal Efficiency by Particle Size, and manufacturers say the standard will have a ripple effect throughout the air filtration industry.

"By creating the standard, it raises the level of importance of filtration from a minimum efficiency standpoint," he says. "Therefore, the filter media manufacturers are having to create and maintain higher levels of efficiency for medium- to high-efficiency requirements in the HVAC industry."

The standard gives the efficiency of the filter when it is clean by particle size, from 0.3 to greater than 10 microns.

Charles Seyffer, national marketing manager for the Farr Co., says the standard will make the end user's life much easier.

"This standard will eliminate a lot of the confusion," Seyffer says. "You will know how specific that filter is to be removing that contaminant. You can select

KenKen Puzzle

How to solve the KenKen puzzle:

(Answers on page 24)

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

		1		6	7	8
7		5		8	9	1
9	6			7	5	
	8		5	1	6	
1			3	9		2
3		2				5
	2		6	5		9
		3	7		5	8
5		4		2	3	



the filter based on the size of the offending contaminant."

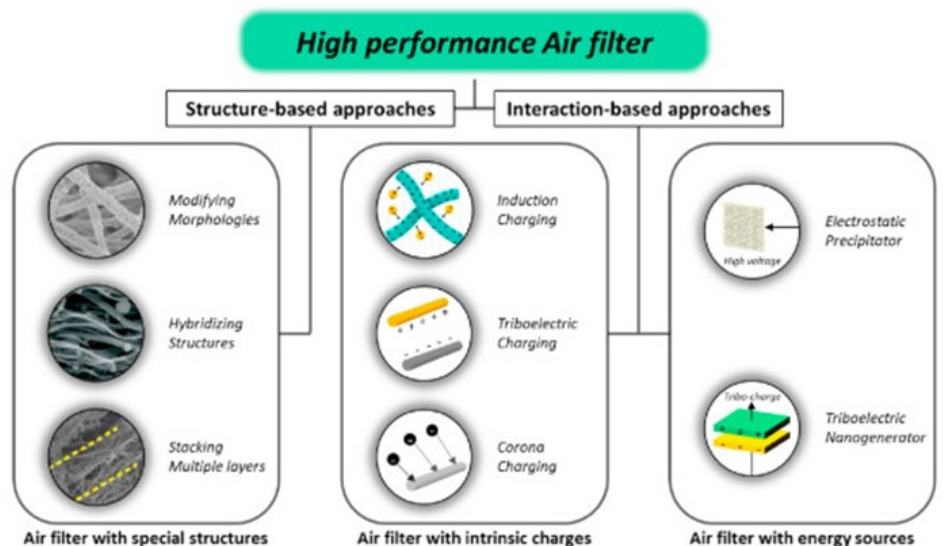
Doug Lange, west coast regional sales manager for Glassfloss Industries, agrees that the standard is important, adding that new pleated air filters are additional evidence of advances air filter technology.

"The pleated filters have been made with a blend of cotton and polyester materials to make the media," Lange says. "A new generation is being offered with electrostatic charging."

"Pleats are a bread-and-butter product, and this is a significant

step toward better efficiency without restricting air flow. It costs a little more, but nothing significant."

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HOW TO CONDUCT AN ENERGY AND BUILDING ASSESSMENT BEFORE INSTALLING EV CHARGERS

BY INTELLIMETER

Adding an EV charger to your building is a fantastic investment! The growing popularity of electric vehicles means that being the first to offer charging at home will be a massive draw to potential high-quality tenants. However, following through with this is not exactly straightforward. A lot of work must go into the project before it even begins! And the essential part of the prep work is knowing how to conduct an energy and building assessment before installing EV chargers.

CONTACT PROFESSIONALS FOR THE ASSESSMENT

The first thing you need to do is call in professionals. A building and energy assessment for EV charging is serious business, and you can suffer a lot from making mistakes. The presence of professionals will also make the whole process much smoother and, more importantly, faster.

ASCERTAIN THE CURRENT ELECTRICAL CONSUMPTION

The next step of an energy and building assessment should always be ascertaining the current electricity consumption of the building. In some cases, this can be done by reviewing the monthly energy bill, some utilities highlight the periods of highest consumption. That will give you a solid basis for nearly all the following steps.

CHECK THE HISTORICAL PEAK ENERGY LOADS

As indicated previously, a professional should

contact the utility for more detailed information on the times of highest consumption, Finding the historical peak energy loads data for your building, which you can request from your assessors, allows you to get a good idea of what your building can safely handle.

After all, it is useless to know some metrics if you cannot account for how they will affect you! And while EV chargers can add value to your condo building, installing them can be risky without proper preparation.

FIND THE MAXIMUM CAPACITY OF YOUR BUILDING

The 'maximum' capacity of your building defines how much electric load it can handle at once. It is crucial since it will determine the 'level' of the charging station you can install compared to your current consumption.



Beware: just because the main switchboard in the building is rated 5,000 Amperes, it does not mean

that the total current capacity of the building is 5KA. Have your professional advisor confirm with the utility the rating of the actual feeder. In some urban centers with higher population density or high rates of growth in the last few years, face feeder limitations and use restrictions.

While the theoretical maximum capacity of a building is important, there is one concern to consider. That is, whether it can support such high loads. After all, buildings deteriorate with age, and theoretical maximums sometimes do not match reality.

FIND POSSIBLE LOCATIONS FOR ADDITIONAL DISTRIBUTION BOARDS

If your building will be handling much higher power loads than before, it is only natural that you'd want it to be better protected, too. As the moving experts from Professional Movers Canada like to advise, it is, after all, always better to plan than be sorry you didn't do it! So, an energy and building assessment is also a perfect opportunity to find the best places in the building to install additional distribution boards whose breakers will, hopefully, prevent possible problems in the future.



MAKE AN ENERGY EFFICIENCY PROJECT

If you aren't planning on it, then take the time to learn how to improve your energy efficiency. After all, EV chargers, for all their usefulness, are actual energy loads. If the building's electricity system is incapable of working efficiently, you may face higher bills rather than profit from your installation of the chargers! So, during the assessment, you need professionals to review your system and advise on the potential use of an EV demand controller or EVEMS that can shift the demand to lower electricity rate periods, to maximize your benefit.

DOUBLE-CHECK THE LOAD CONTROL

As we stated before, the power use of your building will increase in the proportion that the EV Chargers are used. If the increase cannot be properly managed, your electric grid could suffer serious damage. It is paramount that the breakers are in good condition. And that all the other stopgaps are working as intended to protect your building from suffering in any way. That also means you should brush up on understanding power limitations when installing a level II charger or higher and adequately consider whether you can support that!

PLAN FOR RUNNING CABLES TO CONNECT TO THE CHARGING SUPPLY EQUIPMENT

You need to carefully connect the charger to the building's electric supply, or main switchboard. To do that optimally, an energy and building assessment will also need to find the optimal routes for running cables to connect to the charging supply equipment; to find the most efficient way of distributing the chargers to maintain the voltage drop within the approved minimum, and while maintaining the wire gauges within the equipment

tolerances. That will ensure that they can be properly and safely installed.



ACCOUNT FOR SOLAR PANEL AND BATTERY STORAGE OPTIONS

The final part of an energy and building assessment you can request is assistance with accounting for the effects of solar panels and battery storage on the potential EV charger installation. There are obvious reasons why this would be beneficial for you. It would increase the capacity, by allowing EV Charger during periods of high demand and massively decrease the cost of

running an EV charger. Allowing you to reap even greater benefits from the installation.

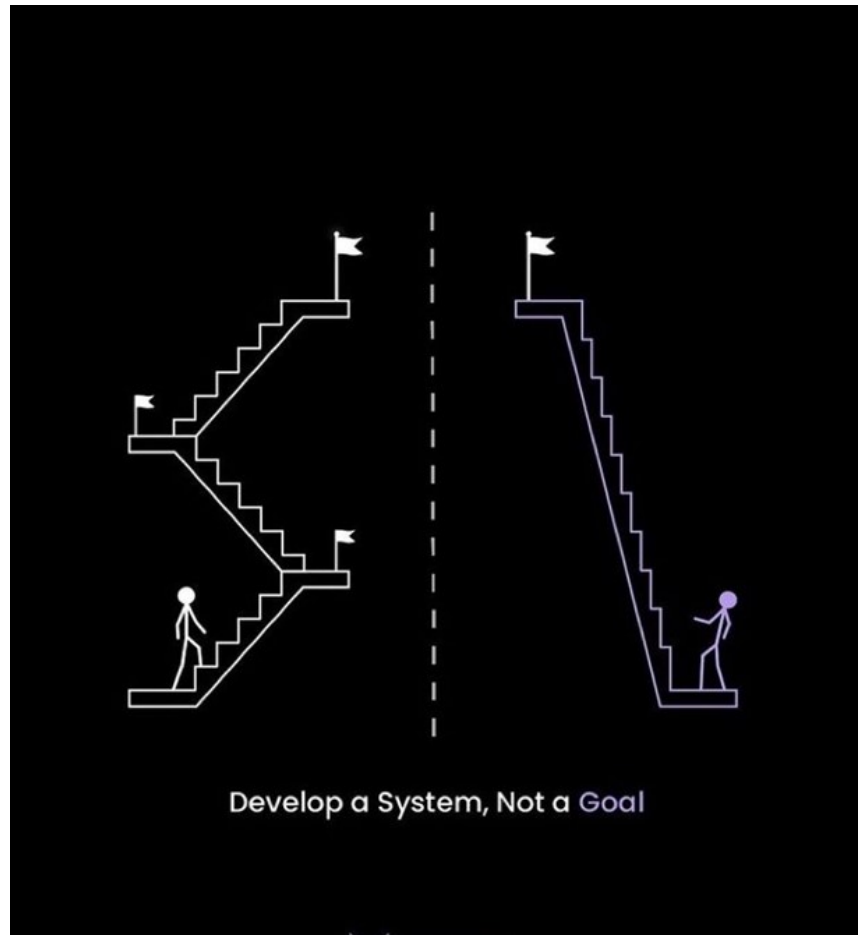
FINAL COMMENT

Understanding how to conduct an energy and building assessment before installing EV chargers will let you get through the process much faster. That means your EV charger installation can start sooner! And your building can become one of the most innovative leading properties in the city.

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In your safety programs I have seen the push to go straight to the top and not care about the teams. The staged approach is the better it allows your program to go up gradually and still reach the top or standard stress free



At your WAREHOUSE do you cover this safety items properly and based upon what standards!

By [Terry Penney](#)



Loading docks are a hazardous part of the workplace and are a common area for worker injuries. Your loading dock is central to your business and the hub of a lot of daily activity, from employees loading and unloading company trucks to vendors dropping off supplies.

Specific hazards vary from workplace to workplace. Other issues that might need consideration are space, storage of materials, ergonomic issues (risks for musculoskeletal injuries), tools, temperature, shift work, and so on. Hazards for loading docks include making heavy or repeated lifts, working with dock, levelers and dock plates, as well as working near trailers that may tip over or separate from the dock. Other possible hazards include strapping, poor maintenance of rubber wheels, improper shrink wrapping and assembly of loads, congested docks, poor weather conditions, chemical exposure or leaking chemicals

Loading Dock

- Keep dock approaches free from potholes and deteriorating pavement.
- Keep dock bumpers in good condition.
- Maintain trailer-restraint systems to manufacturer specifications and ensure that accompanying lighting functions properly.
- Use trailer-wheel chocks to block trailers and prevent movement during loading and unloading



operations. Provide two trailer-wheel chocks for each trailer, and chain the chocks to the building.

- Use warning signs or warning lights to indicate

moving vehicles.

- Warn dockworkers to never walk or stand behind a backing trailer.
- Keep dock levelers and dock plates in good working condition. Make sure their capacity is adequate based on typical load weights, lift truck speeds, ramp inclines, and use frequency.
- Require visitors to wear high-visibility clothing (such as vests) and appropriate personal protective equipment (such as eye protection).
- Prohibit the use of headphones, cellphones, radios, and other devices that cause distraction and impair the ability to hear warnings and alarms.



- Permit only authorized personnel or visitors to enter the building.

Truck/Trailer Safety



- Train, evaluate, and certify all drivers in the safe operation of industrial trucks.
- Inspect each truck before use for conditions that would make it unsafe to operate.
- See that operators follow safe procedures for picking up, putting down, and stacking loads.
- Confirm that operators drive safely. For



example, they should always obey speed limits, look both ways prior to backing up, and drive slowly in congested areas or those with slippery surfaces.

- Provide truck drivers with a place away from the loading dock to wait while their trailers are being loaded or unloaded.
 - Make sure truck engines are turned off during loading and unloading operations.
 - Verify that a lockbox or key control system is always used to prevent unauthorized use of vehicles.
 - Provide adequate trailer lighting for the tasks being performed.
 - Require employees to inspect trailer floors for damage or debris before entering with lift trucks.
- Periodically check carbon monoxide levels to evaluate dockworker exposure.

Terry Penney is a Senior OH&S and Env. & Reg., Professional, Presenter, Motivational Safety Speaker and Safety Program Development.

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5th Class Power Engineering Course

The Online BOMA 5th Class Power Engineering Course:

- Will begin on Feb 16, 2023 and will take place every Tuesday and Thursday evenings from 5-8pm.
- The course will be held online only using Zoom.
- The fee for enrollment will cover the cost of the 150 hour course, textbooks, and BOMA certificate upon completion
please note this does not include the ABSA exam
- **No prerequisites are required for the course**

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

Change of Date:

February's Meeting will take place on **Tuesday**
February 21, 2023 (not February 14th).

We look forward to seeing you on February 21,
2023 at the Danish Canadian Club



Doing Light Right

by Mary Anne Donovan-Wright



Too many facility executives accept cookie-cutter lighting design — and miss the chance to support employee performance.

You know the scene: a sea of office cubicles, lit by blinding, glaring, flickering fluorescent fixtures mounted 8 feet apart in dropped, tiled ceilings.

“This was the legacy of the 20th century way of doing lighting design,” says Gary Steffy, owner of Gary Steffy Lighting Design. “Lighting systems were plopped into place. All people wanted was a lot of light.”

There is a price to pay for this method of office lighting. Yet the norm for office lighting is still the 2-by-4-foot fixture equipped with three 4-foot lamps that produce more light than recommended by ANSI and IEEE standards.

“These were the commodity fixtures used every day,” says Mitchell B. Kohn, owner of Mitchell B. Kohn Lighting Design. “And they are not appropriate for the office.”

To understand why they’re not the best choice, facility executives need to remember the link

between lighting and employee performance. Effective lighting designs can support worker productivity as measured by visual performance.

Visual performance is determined by speed and accuracy. “The goal today is to get people to work faster and make fewer errors,” says Kohn. “The difference between a good and bad lighting design can result in a 5 percent difference in visual performance.” Energy costs offer another reason to think twice before accepting cookie-cutter lighting designs. “The newer systems yield significant savings in the long term,” says Janet Nolan, owner of JS Nolan + Associates Lighting Design.



The problem, she says, is that many of these systems have higher initial costs than the older systems, which can sometimes make them a tough sell. “People are short-sighted,” says Nolan. “They tend to focus on first cost only, not the long-term savings.”

When considering choices for office lighting, facility executives should also keep in mind that lighting shapes employee and client perceptions of the office environment.

Effective lighting design can direct activity in a given space. The starting point is to answer questions about the space. Is it a public or private area? Are people supposed to linger, or is it a space where people should move through quickly?

The Task at Hand

Newer lighting designs combine indirect lighting with task lighting — a combination that yields a pleasing overall office ambience and supports individual task productivity. In addition, this combination yields greater energy efficiency.

“A low-intensity general lighting scheme creates a pleasant environment,” says Kohn. “With added task lighting, there can be as much as a 20 to 40 percent savings on total wattage expended as well as increased focus on the task.”

But decisions about task lighting too often fall into unskilled hands. A big problem, says Michael Souter, owner of Luminae Souter Associates, is that good design is sacrificed for what is readily available. And in many office projects, task lighting decisions become the milieu of the furniture supplier.

“The decision gets reduced to the lowest common denominator — what’s cheapest — without considering the quality of light,” says Kohn. “The decision becomes ‘buy a shelf, get a light’ without recognition of the impact on visual performance.”

Indirect lighting systems with task lighting solve many of the problems inherent in using direct lighting alone. One problem with many overhead direct-lighting schemes is glare on computer screens. One way of getting around that problem has been to use recessed overhead fixtures. But that approach creates problems of its own.



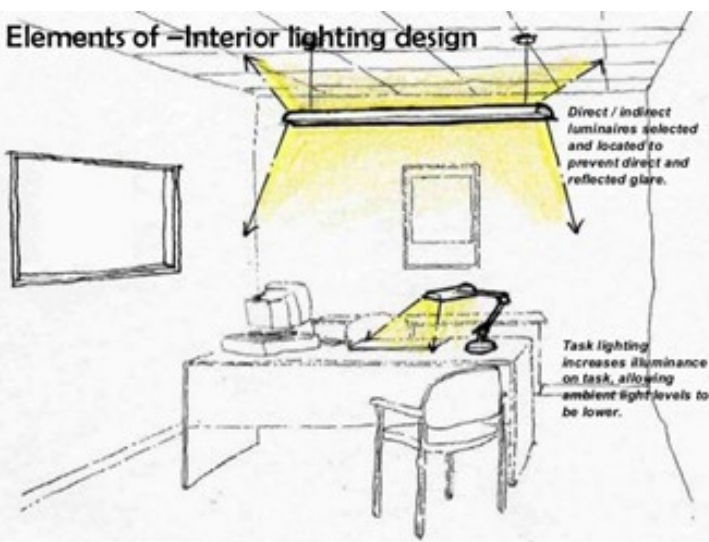
“This system looks good on paper but does not promote good long-term performance,” says Hayden McKay of Hayden McKay Lighting Design. One difficulty is that it exaggerates facial features and creates harsh shadows. “A total direct system makes people look like raccoons,” she adds.

The goal today is often to create soft, low level lighting in the background — on the walls and ceilings — coupled with task lighting at the desktop. In some workplaces, the ambient lighting level can be very low. Most general office environments are lit at a 30- to 35-footcandle level, says Nolan, but today, some staffs prefer general lighting at the 15 to 20 footcandle level.

“Young people are generally very comfortable in this range,” says Nolan. “They work 14 to 16 hours each day, and they want darker, less corporate environments.”

The Lighting Design Process

When designing lighting systems for clients, Steffy



looks at criteria in three main areas. First are the special factors of the area. Criteria within this category include visual environment pleasantness, circulation, flexibility, controls, ceiling systems, codes, ordinances and sustainability. Second are desired psychological and physiological factors, including sensory responses, visual hierarchies and focal centers, visual attraction, subjective impressions, daylighting, nightlighting and health. The third set of factors includes those related to the task itself: visual tasks, luminances, surface reflectances, surface transmittances and illuminances. "Evaluate the entire environment," says Souter. "Start with the usage of the space, operating hours, how much sunlight comes in and budget issues."

One way to evaluate the potential benefits of an innovative lighting design is to create a mockup. "You take a space with a similar ceiling, put the lighting in, put people in it to work and show them what the space is like," says Sandra Stashik, principal for lighting design firm Grenald Waldron Associates. "See if it makes people feel more comfortable, especially if they're spending extra money for the installation."

A big factor in effective office lighting design systems is control systems.

"Today there is a focus on control," says Souter. "First, we can maximize the use of daylight, and second, we can control lighting based on occupancy."

Daylight harvesting systems continually read the daylight and turn off or dim lights accordingly; these systems are designed to maintain an even level of general illumination throughout the area. Motion detectors automatically turn lights on and off depending upon activity in the space.

Technological Evolution

Like controls, lamp technology also has improved significantly. The first big step was to replace T12 lamps and magnetic ballasts with T8 lamps and electronic ballasts; the latter reduced energy costs, eliminated the annoying flickering common to previous generations of fluorescents and improved color rendering. More recently, the T5 has been

introduced; it is smaller, brighter and more efficient than the T8 and is especially effective in indirect lighting designs.

"The T5 now allows designers to space fixtures farther apart, which saves energy and cost," says Souter. Stashik says the availability of the T5 lamp will encourage better design in indirect systems. "The T5 will start pushing the envelope for good, indirect lighting fixtures."

Steffy remains skeptical about the widespread proliferation of the new lighting designs and systems. "There are clients who subscribe to these kinds of criteria of sustainable, ergonomic design," he says. "But the only way I believe we'll see the entire paradigm shift is if it is legislated through energy or sustainability issues."

That assessment may be too bleak, given the opportunities effective lighting design presents to reduce energy costs, improve employee performance and enhance the appearance of the workplace. But despite those opportunities, the importance of well-designed lighting is often overlooked.

"Lighting is typically selected by cost, and people pay the price in lost energy, absenteeism and lower worker satisfaction," says Kohn. "The negative impacts of poor lighting design aren't always recognized." If a paradigm shift is to take place, a recognition of those problems may be the place it starts.



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The 'call for abstracts' is live for the National Conference on Building and Facility Operations' June 2023 building conference. building owners and operators are being targeted as well as consultants who are involved in making buildings more energy efficient. A list of anticipated topics to have presented at the conference is included and speakers are being sought.

Please click on the link for further information:

<https://ncbfo.ca/western/events/ncbfo-2023/>

Kenken Puzzle Answer

2	4	1	9	3	6	7	5	8
7	3	5	2	8	4	9	6	1
9	6	8	1	7	5	2	4	3
4	8	9	5	2	1	6	3	7
1	5	6	3	9	7	8	2	4
3	7	2	4	6	8	1	9	5
8	2	7	6	5	3	4	1	9
6	1	3	7	4	9	5	8	2
5	9	4	8	1	2	3	7	6

TEST YOUR OPERATOR IQ ANSWERS

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

FEEDWATER SYSTEMS ANSWERS:

1)C 2)E 3)J 4)I 5)F 6)G 7)L 8)N 9)A 10)B 11)M 12)D 13)H 14)K



JOIN US: **TUESDAY FEBRUARY 21, 2023 AT 5PM FOR** **OUR IN-PERSON MONTHLY MEETING**

Presenters: **Margarita Cabezon & Shawna Sechrist,**
Lighting Specialists, WESCO Distribution Canada

Title: **LIGHTING AUDITS, CONTROLS & NEW TECHNOLOGY**

Brief: **Margarita Cabezon and Shawna Sechrist are the Lighting Specialists at Wesco** and have been working in the Commercial lighting industry for 10 years and are inspired to help commercial and industrial clients achieve their lighting and control needs when it comes to upgrading old lighting systems, assisting in design builds, lighting audits, rebates, and day to day needs.

As we move into new technology and look to be more aware of our carbon footprint and energy consumption lighting has become more than just illuminating a space. It now can reduce energy consumption, maintenance cost, reduce your company's carbon footprint, allow business to qualify BOMA certifications, local rebates and more.

The discussion will go through what a lighting audit can provide your company, how the data can influence and aid in future and ongoing budgets and projects. They will show the calculation they use to figure the energy consumption and the payback analysis that provides a timeline on when you will a return from your investment back to your companies' pockets when upgrading your lighting system.

The world of lighting and controls is ever changing and understanding how the lighting audit process works and how it can provide key information to why investing in new or upgraded system is beneficial for energy savings, to provide budget planning data and providing certifications and qualifications that show responsible business care and efficiency.

There are many facets to lighting and safety is also a key factor, we are excited to be presenting along with one of our partners in the industry ABB with their Lumacell emergency line. The ABB team will provide the new and latest information in Emergency lighting and technology.



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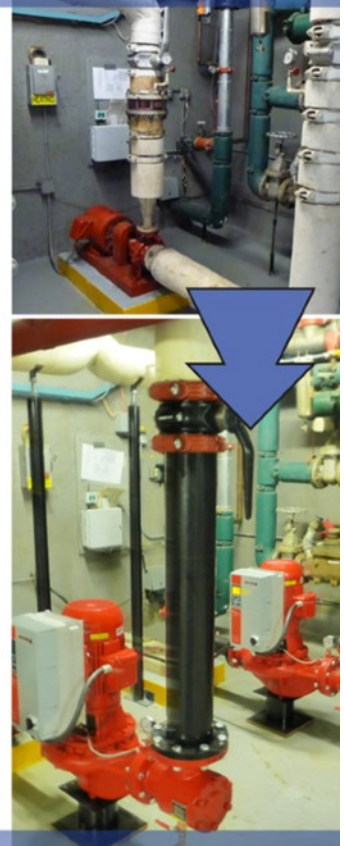
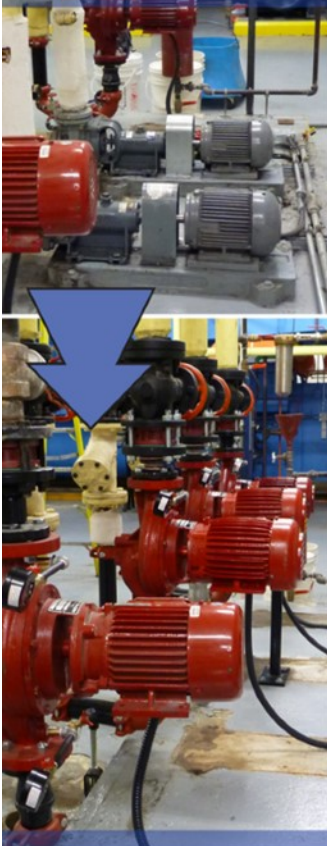
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We look forward to seeing you in-person for our meeting at the Danish Canadian Club (727 11 Ave SW) on Tuesday February 21, 2023 @ 5pm

Please visit the [Building Operators Association of Canada YouTube Channel](#) to watch the Speakers and Presentations from the Tradeshow 2022 & Previous Guest Speakers.



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