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50 years Electrical Business

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EBMag is featuring a different guest editor on this page every issue during our 50th anniversary year. You can always reach the editor at acapkun@annexweb.com.

Murray Ames is the airport electrician at the Campbell River Airport on Vancouver Island, and holds a Class A contractor license in B.C. He is a director of the Canadian Airports Electrical Association (CAEA), which conducts the annual Canadian Airports National Electrical Workshop (CANEW).

Keeping the lights on at Canada's airports

I have been in the electrical trade since 1977 and, having worked at a large gas plant and a pulp & paper mill (among others), I had amassed a great deal of experience with a range of electrical equipment. When I started at the Campbell River Airport in 1992, however, I found a whole new electrical system I had never heard about—not even during apprenticeship training.

When I saw the lighting for the runway and taxiways—plus some other very strange lighting units—I realized I had stepped into a totally different world. Airport lighting uses series circuits and isolating transformers that feed each light with a constant current rather than voltage so as to keep all lights at the same brightness.

Luckily, I travelled to a nearby airport where the resident electrician showed me the system and how it worked... and the extreme dangers associated with series circuits. These systems are designed to keep working even with multiple faults, and are capable of turning 5kV insulation to dust before tripping!

Each year, many of the electricians from airports across Canada attend the Canadian Airports National Electrical Workshop (CANEW), where they share their knowledge of these specialized systems and attend training sessions unique to this niche industry. The workshop was started after Transport Canada—following the privatization of many our airports—ceased offering its own workshop and training. The next CANEW is in Regina, Sask., this fall.

Due to the extreme hazards related to the airport electrical equipment, members of the Canadian Airports Electrical Association (CAEA) and delegates of CANEW formed a subcommittee in 2009 that worked on qualifications and training that would be required for persons working on series circuit equipment.

Several of us contributed to the CSA Z463 "Maintenance of electrical systems" committee, and were able to get airport series circuit equipment included in the guideline, as well as qualifications and training requirements.

Because of this specialized work, some airports—especially smaller, remote airports—have difficulty finding qualified electricians to work at their sites. Hoping to work in conjunction with CSA Z463, the Campbell River Airport has built a fully operational hands-on training centre for airfield lighting, which could be used for contractors or airport electricians seeking to enhance site knowledge. The airport plans to work with an airfield lighting maintenance training provider to start courses this year, and both site experience and training are recommended in CSA Z463. EB

On the cover

In this series, we look at energy efficiency standards that have now come into effect for lighting. We also examine the results of two surveys that show most of us are still in the dark about lighting options.

STOCK PHOTO.

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Culliton accepts SIMpull Solutions Contractor of the Year Award

Stratford, Ont.-based multi-trade contractor, Culliton (www.culliton.com), has been named Southwire Canada's 2013 SIMpull Solutions Contractor of the Year for Ontario and Eastern Canada. Congratulations!

"By using solutions such as SIMpull, we can control and standardize our work better. It's given us the confidence to go after large-scale, fast-paced electrical projects outside of our local home area," said Culliton's president and CEO, Tim Culliton.

Now in its 82nd year, Culliton is a mechanical, electrical and HVAC contractor that has worked on several high-profile construction projects, including the Grand River Hospital Patient Care Development, Kitchener, and the Niagara Outlet Collection, Niagara-on-the-Lake.

Culliton is a member of Electrical Contractors Association of Ontario (ECAO, www.ecao.org).

"We look for manufacturers that are innovative and willing to work with us to give us pre-fabricated solutions, such as SIMpull Solutions, that will save us a great deal of time and money in the field and make us better able to deliver projects on schedule," said Ted Lange, Culliton's COO.

"We wanted to recognize a contractor that has not only embraced SIMpull Solutions, but one that really incorporates innovation in everything they do, and never stops looking to evolve their processes that will make them more successful," said Axel Schlumberger, president of Southwire Canada (www.southwire.ca), in presenting the award.

Lights out for LED Lighting Division within Toshiba TIC

When you visit Toshiba Lighting (www.toshiba.com/lighting) online, you will see a message that reads: "Toshiba has implemented a restructuring of its international lighting businesses, and as a result, the LED Lighting Division within TIC will discontinue operations on March 31, 2014".

The message goes on to say that the HQ responsible for Toshiba Lighting in the Americas will be consolidated into Greenstar Lighting Products Inc. (San Antonio, Texas), which is a wholly owned subsidiary of Toshiba Lighting & Technology Corp. (TLT) and operates within Toshiba's Community Solutions Business Group.

The lighting will remain live as a source of product information only. After March 31, 2014, no orders will be accepted. You can visit bit.ly/1cPlB2p for any warranty questions. For any other enquiries, call (855) 829-5959.

Areva and Schneider Electric partner on energy storage development

Areva (areva.com) and Schneider Electric (www.schneider-electric.com) have signed a partnership agreement to combine their expertise to design and propose hydrogen fuel cell-based energy storage solutions that guarantee the reliability of electrical grids for isolated sites and areas where access to power is limited.

Areva will provide the Greenergy Box energy storage solution made with an electrolyzer and fuel cell. This is used to store hydrogen and oxygen from water electrolysis during periods of low energy demand to produce electricity during peak consumption periods. Schneider says this agreement will enable it to achieve grid parity for renewable energies while managing their intermittency and optimizing network connection.

"This agreement will create a robust commercial partnership for deploying an innovative solution in energy storage," said Frédéric Abbal, executive vice-president of Schneider's Energy Business. "Areva will capitalize on the international presence of Schneider Electric and its leadership in electrical grid management, utilities and infrastructures, industrial and non-residential commercial buildings."

New Brunswick invests $1 million to keep young workers "here at home"

The provincial government is investing $1 million over three years to expand the New Brunswick Teen Apprentice Program, which gives high school students early training and employment in the skilled trades.

"This year the program will expand to 28 high schools across New Brunswick and continue to grow each of the following two years," said Jody Carr, post-secondary education, training and labour minister. "We are focused on creating jobs and keeping our young workers—one of our most valuable resources—here at home."

The program connects employers with potential apprentices, enabling high school students to get a jump-start on a career in the skilled trades. The program allows students starting in Grade 10 to experience a trade; gain three years of summer employment; earn credits toward graduation; and complete the first level of a formal apprenticeship.

"This is our first year expanding the program outside the Saint John and Sussex areas, and we are excited to be growing it in all parts of the province, such as Oromocto, Fredericton and Nackawic," said Christina Taylor, executive director of the program.

In 2013, the program grew to 30 students with 17 employers providing hands-on work opportunities in 18 trades, reports the province. In 2014, it will expand to more communities, with more than 70 students working for 30 employers in more than 20 trades.

Applications for students will be accepted in March. Interested students and employers are encouraged to contact the program directly (nbtap.ca/wp).

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Editor
Anthony Capkun - acapkun@annexweb.com

Group Publisher
John MacPherson - jmacpherson@annexweb.com

Account Manager
Scott Hoy - shoy@annexweb.com

Associate Editor
Alyssa Dalton - adalton@annexweb.com

Art Director
Svetlana Avrutin - savrutin@annexweb.com

Production Manager
Kathryn Nyenhuis - knyenhuis@annexweb.com

Subscriber Customer Service Representative
Marie Weiler - mweiler@annexweb.com

President
Mike Fredericks - mfredericks@annexweb.com

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CIRCULATION: Marie Weiler
e-mail: mweiler@annexweb.com
Tel: 1-866-790-6070 • Fax: 1-877-624-1940
Mail: P.O. Box 530, Simcoe, ON N3Y 4N5

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Canada

Selling skilled trades to Grades 6 and 7 at Kwantlen Polytechnic

Future electricians, plumbers, welders, carpenters and automotive technicians who are still in elementary school had their first look at a rewarding career in the trades on March 6, when some 600 Grade 6 and 7 students from the Surrey school district went on a unique field trip to Kwantlen Polytechnic University' trades and technology campus (KPU Tech, www.kpu.ca) in Cloverdale.

"This is a chance for students to explore in a very real way what a trades career looks like," said Susan Chow, principal of career education for Surrey Schools. "Few students have the benefit of insight like this at their age."

The trip's objective was to expose young students and their families to the countless benefits and opportunities offered by a career in the trades. It is the result of a partnership between the district and KPU, with support from the Industry Training Authority (ITA, www.itabc.ca).

The 11- and 12-year-old students were given a tour of the campus and took part in hands-on activities. "Hands-on, fun and interactive events like this provide young students a chance to build and create something and get a sense of the pride and accomplishment from doing so," said ITA director of training delivery, Erin Johnston. They were also able to talk to faculty and current KPU trades students.

KPU and the district also invited the parents of the 600 participating students to come along. "Parents play an important role in post-secondary education, from providing insight and guidance to financial aid," said Henry Reiser, KPU's dean in the Faculty of Trades and Technology. "We want them to feel confident about their children's career choice, and there is no better way than to show them the possibilities first-hand."

The field trip was funded by ITA's Youth Exploring Skills to Industry Training (YES 2 IT) program—a joint initiative between ITA and the Ministry of Education. It was also made possible with support from Honeywell (www.honeywell.com), the Automotive Training Standards Organization, Clear Marketing, BC Fasteners, Noble Plumbing and Southridge Building Supplies.

Training Day 2014: Electrical Contractors Association of Alberta

The Electrical Contractors Association of Alberta (ECAA, www.ecaa.ab.ca) has organized a must-attend Training Day for electrical professionals May 23, 2014, in Edmonton, and EBMag will be there!

With the theme "Keeping up with Changes in Technology", ECAA's Training Day is jam-packed with sessions ranging from "Ticketing, administrative penalties & other changes to OH&S in Alberta" and "Guaranteeing income in retirement" to CSA Z463, CSA Z462 and "Making your business bulletproof".

Visit tinyurl.com/mbu6eoh for more information and to download a PDF of the full brochure.

Widespread wireless electric vehicle charging not far off, says Navigant

Wireless charging systems for electric vehicles (EVs) offer several advantages over conventional plug-in technology, foremost among them unparalleled convenience for EV owners, explains Navigant Research (www.navigantresearch.com), adding that worldwide sales of wireless EV charging systems will grow from a few hundred in 2014 to nearly 302,000 by 2022.

Until recently, these systems were in the R&D and pilot stages only, but now products have begun to reach the market, and several major EV manufacturers have plans to offer models with wireless charging capability in the 2015-2016 timeframe.

"Although some in the industry remain unconvinced that wireless charging will ever be more than a small niche market, it's clear that major automakers have concluded that this technology could be a differentiator in a crowded EV market," said Richard Martin, editorial director with Navigant Research. "Features once considered luxury items, such as power windows and automatic garage door openers, tend to spread, over time, across all vehicle segments—and that is likely to apply to wireless charging, as well."

Several developments in 2013 signalled the beginning of a new phase in this emerging market, according to the new Navigant report "Wireless Charging Systems for Electric Vehicles": Bosch announced a sales and distribution agreement with Evatran, maker of the Plugless Power system, with products scheduled to reach the market in the first quarter of 2014; also, the Society of Automotive Engineers (SAE) said that its Wireless Power Transfer Task Force for vehicles has agreed on a standard frequency for wireless EV charging, reducing the possibility of a standards battle among competing vendors.

Universal Lighting HQ relocates within Tennessee

Universal Lighting Technologies (unvlt.com) is kicking off the new year with new corporate headquarters, which it says will position the company for greater growth and include leading designs and state-of-the-art technologies from all members of the Panasonic Lighting Americas group.

"Universal Lighting has seen significant growth over the past few years since we joined the Panasonic family," said Chris Holstein, vice president of marketing. "We're excited to start the next chapter in our company's future as we make the move to a new home where the lighting technology reflects the very products that have led to our success."

The new corporate headquarters will be 51 Century Blvd., suite 230 in Nashville, Tenn.

LED technologies in the facility include LED downlights that use Everline LED drivers and chip on board LED modules with 0–10V dimming controls. Existing recessed troffer lighting fixtures were upgraded with LED retrofit kits and Everline linear LED modules to provide high efficiency lighting with high quality colour while being dimmable, said the company. Universal Lighting's Demandflex ballasts, six-lamp T8 fixtures and VariPRO 0–10V dimming are also incorporated. As well, a dialogue control system and occupancy sensors from Panasonic's Douglas Lighting Controls are featured in the new headquarters for local zone control, manual overrides and facility scheduling.

$113,000 in student funding via EFC Scholarship Program

Now entering its 19th year, Electro-Federation Canada (EFC, www.electrofed.com) and its members—companies that manufacture, distribute and service electrical, electronics, and telecom products—will award $113,000 (a banner year!) across 56 scholarships.

"These scholarships both encourage and support Canadian students in their studies, and some members also provide exposure to our industry through internships," said Joris Myny, chair 2014 EFC Scholarship Program (bit.ly/1fUkTBb) and vice-president, industry, Siemens Canada Ltd. "With an aging workforce and succession planning a priority—combined with the rapid development of new technologies—it is critical to attract the best and brightest students."

Watch Myny explain his own experience as a student and how the industry influenced his career decisions in our exclusive video (bit.ly/1m2aUyR).

Since its inception, the program has funded Canadian university and college students' education with over $600,000, says EFC. These students discover the electrical industry is a viable career choice in Engineering, Sales, Marketing, Finance, Management, Operations, Information Technology and Human Resources.

The deadline for applications is May 31.

"I encourage all EFC members to encourage their business colleagues, family and friends with students to apply for these scholarships," added John Jefkins, vice-president, marketing & communications, EFC.

GE investing $1.4 billion into new Distributed Power business

GE (www.ge.com) vice-chair John G. Rice gathered with business and government officials in Jakarta, Indonesia, to launch GE Distributed Power, a new business that combines three product lines—aeroderivative gas turbines (Photo 1), and Jenbacher and Waukesha gas engines (Photos 2 and 3)—to better serve the distributed power space.

Also at the launch was Lorraine Bolsinger, leader of the new Distributed Power business, in which GE is investing $1.4 billion over four years "to help meet the world's growing demand for onsite power systems that are easier to finance, faster to install and more efficient and reliable for customers".

"The proliferation of distributed power systems is benefitting people and industries around the world because power is crucial to improving the quality of life and economic development," said Bolsinger.

GE says distributed power has become increasingly popular in countries that are seeking more reliable, efficient energy options near the point of use—on or off the grid. In both developing and developed economies, industry is using distributed power to improve industrial and residential energy efficiency, notes GE, and ensure they have emergency power in the event of natural disasters and other unplanned outages. At the same time, the oil and gas industry relies heavily on onsite power to provide electricity to remote operations, as well as mechanical power to pump and compress gas.

PHOTO 1

PHOTO 3

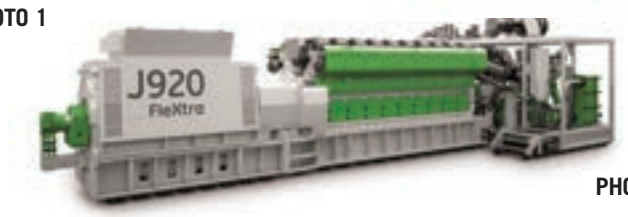

PHOTO 2

GE Power & Water comprises six business units: Distributed Power, Nuclear Energy, Power Generation Products, Power Generation Services, Renewable Energy and Water & Process Technologies.

Ontario and Manitoba partner on energy innovation

Ontario and Manitoba formally agreed to work together to advance energy innovation, support clean, renewable power and promote economic development in both provinces.

"Innovation and cooperation is the key to a prosperous and sustainable economy. Working together with Ontario to develop new conservation technologies, green jobs and reliable energy resources is the smart way forward for our provinces and Canada as a whole," said Greg Selinger, Premier of Manitoba.

Ontario Premier Kathleen Wynne (photo) and Selinger signed a Memorandum of Understanding (MoU) at the Canadian Energy Innovation Summit that will enable the partners to collaborate on growing the energy sector in a number of areas, including conservation, efficiency, security and reliability.

"I know that, together, we will be able to strengthen our economies and build a brighter future for everyone," said Wynne.

Some usual suspects return to 2014's most ethical companies

The Ethisphere Institute has named its 2014 World's Most Ethical Companies, and several electrical industry players have again made the list. Congratulations to manufacturers 3M, ABB, Eaton, GE and Schneider Electric, electric utility Enmax Corp., and communications firms Cisco and Juniper Networks. Congratulations!

"We want to integrate ethical leadership deep into our organization. Our integrity program relies on local management to lead by example," explained Diane de Saint Victor, ABB general counsel. "All local managers have to take responsibility for ethical leadership and corporate behaviour to ensure that the ethics message comes from the same person that sets the business targets."

Ethisphere explains the designation recognizes companies that "go beyond making statements about doing business ethically and translate those words into action".

"Our reputation for ethical business practices reflects our commitment to our customers, our employees, our shareholders and the communities we serve, and we're honoured to be recognized again by the Ethisphere Institute," said Deborah Severs, Eaton's senior vice-president, global ethics and compliance.

Meantime, Brackett Denniston, senior vice-president and general counsel for GE explained that this recognition "underscores GE's unwavering commitment to our customers, business partners and employees to perform with integrity and lead by example every day".

JLG quadruples size of McConnellsburg customer training centre

JLG Industries (www.jlg.com), an Oshkosh Corp. company, will soon welcome customers and JLG equipment owners to its expanded customer training centre in McConnellsburg, Pa.

The $2.5 million, 15,000-sf centre, due to open this summer, features a new bay for hands-on training and a ground course for driving and operating skills.

"We want to help customers get the most out of their investments in JLG equipment and services to help them improve their business performance," said Frank Nerenhausen, Oshkosh executive vice president and JLG president.

According to Rick Smith, JLG senior director of product training, the facility has increased the size of its bay by 7500 sf, which allows JLG to train several classes at the same time.

"But what is just as exciting are plans for what we're calling the Proving Ground, which will be located behind the new centre," he added. "This six-acre tract of land will include obstacle courses and proving grounds designed to train participants in the operation of JLG equipment."

The Proving Ground aims to simulate a working construction site. Attendees will be assigned loads to move and obstacles and hazards to maneuver around and over, including slopes, grades, and telephone poles with simulated power lines. The goal of the training is to help participants master equipment operation as they learn to overcome the more difficult challenges encountered on jobsites, said JLG.

E.B. Horsman & Son excited about relaunching Albrite Lighting

British Columbia-based distributor E.B. Horsman & Son announced a new subsidiary, Albrite Lighting (2013) Ltd. Albrite will continue operating in Port Coquitlam and Victoria.

"At a time when the lighting industry is going through an unprecedented transformation, I am excited to be involved in relaunching the Albrite Lighting brand in the B.C. marketplace," said Tim Horsman, president and CEO.

Horsman says Albrite has been serving the B.C. marketplace for 42+ years, focusing on market segments such as national accounts, retail, property management, hospitality, seniors' living/extended care, institutional buyers, and design firms and architects.

E.B. Horsman & Son is a full line electrical distributor with 18 locations. It is recognized among Canada's Best Managed companies, and is a member of Affiliated Distributors. EB

EB personalities


Jeff Parker

LED lamp player **Soraa** (www.soraa.com) says **Jeffery (Jeff) Parker** has joined the company as CEO. Previously, Parker was a senior executive with Rambus, serving as the president of the Lighting and Display Technology Division. Prior to that, he was the founder and CEO of Global Lighting Technologies, an LED backlighting company. "Our team at Soraa is looking forward to working with Jeff and leveraging his experience in the lighting industry," said **Charles Giancarlo**, Soraa chair. Parker has over 25 years experience in the information display, LED, medical and lighting markets.


PHOTO A. DALTON.
Peter Aulich

Peter Aulich has been named the new CEO of **KB Racking** (www.kbracking.com), after serving as COO for three years and expanding business into two provinces in Canada. "We could not have chosen a better person for the position of CEO. Peter has extensive experience in the solar industry and a longstanding history of success with KB Racking," said **Christian Wentzel**, chair of the North American solar mounting company.

At its 224th meeting held in San Francisco, the **Electrochemical Society** (www.electrochem.org) presented **Hydro-Quebec research institute**'s (IREQ's) **Karim Zaghib** with the **2013 Battery Division Technology Award**, which recognizes an individual's contribution to the development of battery and fuel cell technology. "I am honoured to receive this award, which demonstrates my team's top-quality work," noted Karim Zaghib, director, Energy Storage and Conversion. "Our research on the development of innovative, high-performance and safe battery materials will certainly contribute to transportation electrification."


Nathan Harwood

Nathan Harwood has been appointed vice president and chief information officer, Information Technology, of **Greenlee** (www.greenlee.com). "We're pleased to welcome Nathan to the executive team," said **Scott Hall**, president, Greenlee-Textron. "And this move is just one example of our unit drawing from Textron's diverse pool of talent to accommodate the growing and changing business needs." Harwood recently worked for Cessna Aircraft as director of Information Technology, SAP and Integrated Supply Chain. In this role, he was responsible for the business partnership between IT and Integrated Supply Chain.

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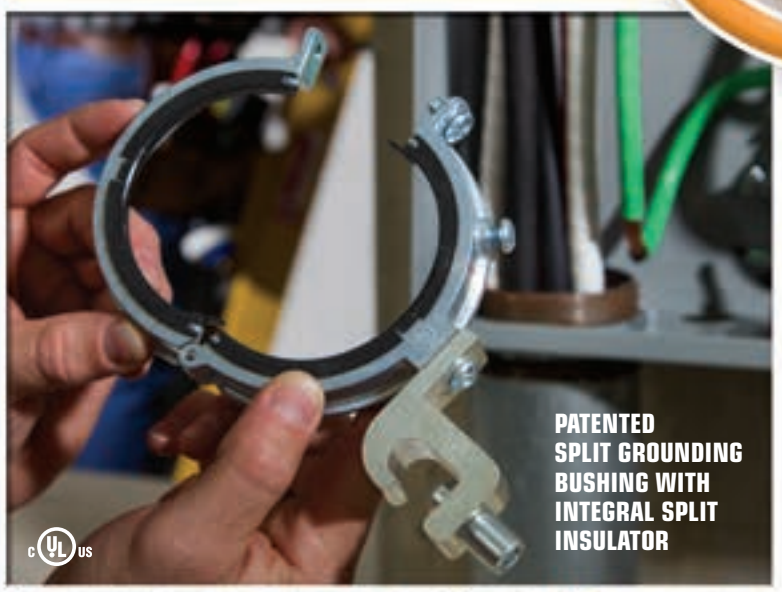

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Shawn Jackson


Dominic Longo

For the eighth year, **Cambridge & North Dumfries Hydro** (CND) employee 'chefs' held their Chili Cook-Off to raise funds for the United Way, and to see who would walk away with the coveted title of 'Chili Master' after the friendly head-to-head competition. All CND employees were invited to pay to taste their colleagues' creations, after which they submitted their votes for the People's Choice Award. The three 'celebrity' judges—**Greg Durocher**, president & CEO of the Cambridge Chamber of Commerce; **Charles Cipolla**, chair of the CND board of directors; and **Frank Curnew** of the United Way—ultimately crowned **Shawn Jackson**, supervisor of engineering, distribution, this year's Chili Master while **Dominic Longo**, supervisor of metering, was named the People's Choice Award winner.

Osprey Capital Partners (www.ospreycapital.ca)—an independent mid-market investment banking and financial advisory firm—has appointed **John Schubert**, president of Winnipeg-based electrical contractor **McCaine Electric** (www.mccaine.com), to its industry advisory board. Schubert is a past-chair of the Canadian Construction Association (CCA), past-president of the Winnipeg Construction Association, and a former vice-chair of the Apprenticeship Board of Manitoba. Additionally, he was the founding chair of the Manitoba Construction Sector Council, and has been an active trustee for several IBEW 2085 trust committees since 1981.

Janet Lloyd, vice-president of laboratory services at **United Power Services Inc.** (Nashville, Tenn.), is the new chair of **ASTM Committee D27 on Electrical Insulating Liquids and Gases** (www.astm.org). D27 includes over 100 members that make up 10 subcommittees; these experts oversee more than 50 ASTM International standards pertaining to electrical insulating liquids and gases, whether of synthetic or natural origin. An ASTM member since 1997, she also chairs Subcommittee D27.05 on Electrical Test, and was D27 vice-chair from 2006 to 2012. Outside of ASTM, Lloyd is a member of the Institute of Electrical and Electronics Engineers (IEEE) and American Chemical Society.

Colin Clark, chief technical officer of Brookfield Renewable Energy Group, has been appointed to the **Standards Council of Canada**'s (SCC, www.scc.ca) governing council for a term of four years. "His expertise in renewable energy, especially with his global perspective, is going to be a tremendous asset in advancing Canadian standardization priorities," said **Kathy Milsom**, chair of SCC's governing council. Clark provides leadership of all engineering and technical aspects of the generation, transmission and distribution businesses of Brookfield.

Toshiba International Corp. (TIC, www.toshiba.com/tic), says it has launched two new divisions—the Motors & Adjustable Speed Drives Division and the Power Electronics Division—to strengthen its core product groups and meet growing demand. The Motors & Drives Division, led by **Mark Laber** in the new role of vice president and general manager, delivers motors and adjustable speed drives for various industries and applications. The Power Electronics Division offers a range of products designed to condition, protect, and preserve the power supplied to critical equipment. Responsibility for the division is being assumed by **Greg Mack**, in the new role of vice president and general manager.


PHOTO A. CAPKLIN.
Dave Syer

Paul Lachance is retiring from **Sonepar Canada** (www.soneparcanada.com) after three years in the position as vice-president of vendor relations; **Dave Syer**, meantime, is joining the company as vice-president of vendor relations & business development. Syer most recently held the position of vice-president, sales & marketing with Hubbell Canada. He will work in Sonepar's Mississauga, Ont., office, reporting directly to **Francois Anquetil**, president of Sonepar Canada.

Hydro One (www.hydroone.com) president and CEO, **Carm Marcello**, has accepted the resignation of **Peter Gregg**, Hydro One's COO while, simultaneously, **Enersource** Corp. (www.enersource.com) announced the appointment of Gregg to president and CEO. "I'm pleased to announce that after a thorough search over the last few months, the Enersource board of directors has identified Peter Gregg as the successful candidate," said Enersource chair **Norm Loberg**. Gregg joined Hydro One in 2004 and has held several progressive positions during his 10 years with the company. He was appointed COO in 2013, having also held the role of vice-president, corporate and regulatory affairs.

AltaLink (www.altalink.ca) announced **Scott Thon** will return as company president and CEO, effective March 1, where he will be returning from a secondment at SNC-Lavalin as executive vice president, Global Power. "I am proud to be back at AltaLink, and 2014 is shaping up to be an exciting year as we invest more than $1 billion into the transmission system," said Thon. AltaLink's interim president and CEO during Thon's absence, **Dennis Frehlich**, will return to his previous position as executive vice president and COO.

EBMag has learned that **Wanda Hickey** has assumed the position of member services coordinator with the **Electrical Contractors Association of British Columbia** (www.eca.bc.ca). "Wanda has extensive experience in customer service and communications as an office administrator, sales coordinator, sales manager and web systems manager,"

says **Deborah Cahill**, ECABC president. "In her new role, she is looking forward to working with our members, our board of directors, our three chapters and all ECABC committees."


Peter Thomson

Nuheat (www.nuheat.com) announced that **John Rose** will transition from his role as CEO to a member of the company's board of directors. Under 16 years of Rose's leadership, the company says it has successfully expanded to the U.S. and received several awards, including Canada's Best Managed Companies and BC Best Places to Work. Meanwhile, **Peter Thomson** has been promoted to the position of vice president of sales. **Kevin McElroy**, company president, added that Thomson's "passion and energy for [the] business is infectious and his deep desire to always do more is an inspiration for the sales team". He has been with the company for 11 years and most recently served as director of sales, where he led the team to double-digit sales growth in 2013.


Elizabeth Sanchez


Helen Veldhuis

Eaton (www.eaton.com) has named **Jeff Lowinger** senior vice-president and chief technology officer for the Industrial Sector, where he will be responsible for leading the technology "road-mapping" for the sector and overseeing new product development. Meanwhile, **Elizabeth Sanchez** has been appointed as plant manager for the low voltage distribution assemblies facility in Milton, Ont., where she succeeds **Mike Masur** who was recently named national engineering manager, Electrical Sector Canada. Recently, she served as plant manager for Eaton's fluid conveyance facility in Guelph, Ont. **Helen Veldhuis** has been named manager, Canada's quick-ship satellites and the low voltage enclosed control facility in Mississauga, Ont., where she will be responsible for attaining financial, growth, market, and quality objectives. Recently, Veldhuis served as the manager, project management and customer service.

Vacuum Interrupters Inc. (a Group CBS company, www.vacuuminterruptertesting.com) says former General Electric vacuum interrupter engineer **John Toney** has accepted a position with the company. Vacuum Interrupters is a supplier of replacement vacuum interrupter parts, components and, says the company, the electrical industry's first predictive field-testing system for vacuum interrupters. In his new position, Toney will provide design and manufacturing oversight of vacuum interrupter replacements and components, as well as continue development of Vacuum Interrupters' flagship testing systems, the TS-1 and TS-2, which include the system that uses magnetron atmospheric condition (MAC) testing to predict the remaining life of vacuum interrupters in the shop and field. EB

Mark Borkowski

How to get new clients? It's your call

Humour me for a second. Think back to the last deal you closed and ask yourself: Who was the decision-maker I had to reach and influence? How did I do it?

I ask you to think about this because there will always be someone you need to contact and influence to get the next deal and the one after that, and all the deals you could ever possibly close in one lifetime. Your success doesn't just happen: you make it happen, and it all begins with prospecting.

Prospecting is nothing more than the art of speaking with people with whom you might do business, and engaging them in a meaningful conversation so they will want to see you again and talk further.

Let's not make it any more complicated than that: at the end of the day, a sales phone call is a conversation between two people.

Digging in to prospecting

Make a list of possible prospects. It doesn't matter if you need to speak with 50 people or only one; your focus should be on precision, not volume.

Once you have the names, write down the main issues with each person on that list. After all, your mission is to address *their* issues, not yours. When you start your conversation rambling on about your products and services, you will sound like you're selling something. When you talk about their issues, you hit their 'greed glands', as you are answering the question: What's in it for me? (For example, retirees don't wake up in the morning seeking financial products. They are, on the other hand, concerned about the rising cost of living.)

Once you've worked out what you want to say, you have to get that person on the phone. The objective of your call list is not about making calls. A call is not a commodity. It's precious! It would be nice if we could read minds and know where to find our biggest opportunities, but we can't, and so we have to speak with everyone. Your objective, rather, is to book appointments. Whether you have 20 people to call or only one, get them on the phone. All of them. Without exemption.

Leaving a voice message doesn't count. That only fools you into thinking you contacted someone when, in fact, all you did was leave a voice message. The easiest way is to ensure you connect with your prospects is to simply find out when they are in, then call at that time. By planning your calls and your message, you stay in control.

Once you get your prospect on the phone you will have the opportunity to speak for all of about 30 seconds, at which time you will either ask for an appointment or ask a qualifying question. From the time you introduce yourself to the time you ask for an appointment, there are less actually than 30 words. Make each word count. The words you speak paint images in people's minds, and you have complete control over those words.

Twice as important as what you say is *how you say it*. Speak slowly and send the message that what you are saying is important. It's so important that you will take a minute before the call to focus on how you can make the prospect's life better, and that will bring out the passion in your voice.

At the end of each call, you will either have an appointment booked, or you will not. Either way, self-assess to identify what you did well so that you can do it again on the next call, or to look at areas of improvement. When a call does not work out—for whatever reason—try to figure out if it was them or you.

When there is something you could have done better, make sure to take corrective action for the next call. When you consistently self-assess, you stop making the same mistakes, and make yourself more effective, which helps ensure your next deal is more successful than your last. EB

Mark Borkowski is president of Toronto-based Mercantile Mergers & Acquisitions Corp., which specializes in the sale of mid-market companies. Acquisition search represents a portion of its activity. Visit him at www.mercantilemergersacquisitions.com.

ONE-PIECE

Made in USA

FIXTURE BOX

FOR ANY SIDING TYPE

Arlington's ONE-PIECE fixture box is the fastest, easiest way to install light fixtures or receptacle on siding.

- Easy to install before or after siding
- Ground clip for fixture installations; NM cable connector
- UV rating for long outdoor use
- Textured, paintable finish

8141FGC Patented

ONE-piece
No extra cover to lose or store

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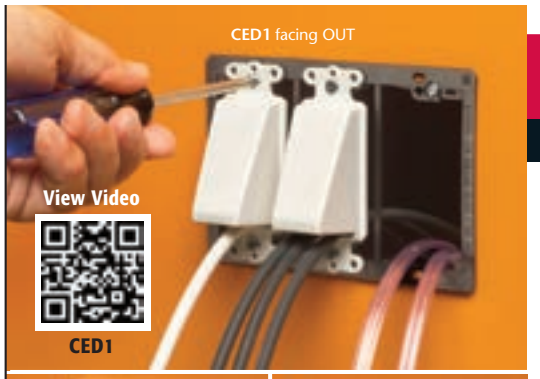

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NON-METALLIC

THE SCOOP™

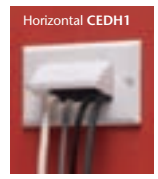
ENTRANCE PLATES & HOODS

The SCOOP™ series of reversible, non-metallic, single and two-gang entrance HOODS and PLATES protect cable while delivering good looks and installation versatility. They also reduce labor and eliminate extra connections.

CED1, CEDH1 vertical or horizontal **HOODS** for decorator-style wall plates. **CABLE ENTRY DEVICES**, CE1, CE2 single or two-gang **PLATES** that install facing in or out and other time saving styles!

- Easy to install facing IN or OUT
- Low voltage cable protection
- All white paintable plastic
- Best way to run cable where needed

CED130
cable entry device
w/ slotted cover
in Arlington's TV BOX™



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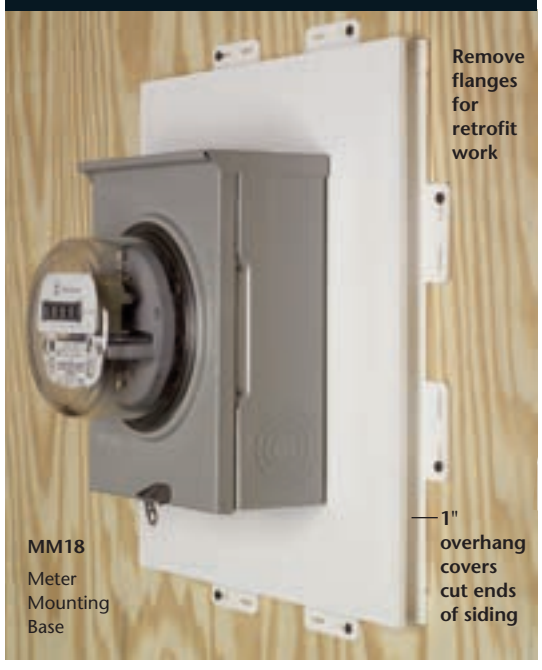
ONE-PIECE, NON-METALLIC

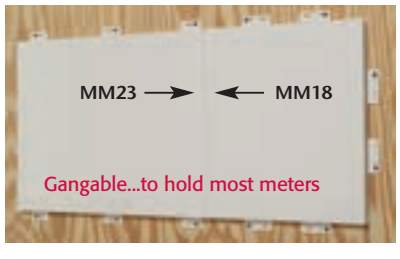
MOUNTING BASE for METERS

INSTALLS BEFORE *OR AFTER* THE SIDING



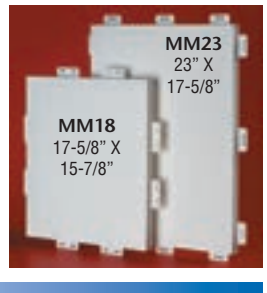
Arlington's one-piece non-metallic mounting bases provide a smooth, flat mounting surface for meters on *any kind of siding*, before or after it's installed.

Available in two sizes, they're also *gangable* so you can create the mounting base you need to hold the meter.



- UV rated, paintable plastic for long outdoor life

Made in USA



Meter Mounting Base

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SNAP²IT® CONNECTORS

EASIEST CABLE INSERTION • NO TOOLS • SECURE HOLD

FASTEST INSTALLATION WIDEST CABLE RANGES

SAVE about 17 seconds per connector!

- **Easiest cable installation - Super-secure installation** No chance of pullout!
- **Widest *total* cable ranges** *for our ENTIRE line:* 14/2 to 8/3.
- **Widest variety of cables** AC90 and ACG90, AC, MC, HCF, MC continuous corrugated aluminum cable, MCI-A cables (steel and aluminum).
- **Removable, reusable** from cable or box...easy!

CABLE DIAMETER RANGES

SNAP²IT®	AC90, ACG90	MC/HCF/AC Steel and Aluminum	MCI-A Steel and Aluminum	Flex. Metal Conduit Steel and Aluminum (RWFMC)	CABLE RANGES
3810AST or 383810AST	.460 to .480	.370 to .490	.450 to .550	3/8" Flex	14/2 to 12/2
4010AST or 404010AST	AC90 .460 to .505 ACG90 .450 to .550	.405 to .610	.405 to .580	3/8" Flex	14/2 to 10/3
5010AST 505010AST	.550 to .850 .650 to .850	.590 to .920	.610 to .780 .590 to .820	1/2" Flex	10/3 to 8/3

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Preparing to test
FIBER OPTIC SYSTEMS

An air bulb is handy because it doesn't leave a residue and, also, doesn't need to be refilled.

When you plug a dirty connector into a clean connector, you end up with two dirty connectors.

When your reference cords are dirty, clean them with alcohol and a dry wipe.

Ensure your meters were capped. If not, expect them to be dirty and provide erratic readings.

For those technicians who think they can grab a pair of meters and patchcords, and plug things in and get a valid reading *just like that*, I humbly suggest their days will be replete with confusion, frustration, bad judgments and poor, invalid readings... perhaps also some upset supervisors and unhappy customers.

Preparation

People sometimes say preparation is 90% of the job, and nothing could be truer in fiber optic testing.

To start

A clean testing area is the first requirement. A table top, cardboard box turned upside-down, etc., will do. We don't usually enjoy ideal conditions onsite, so the surface of our chosen testing area must be clean. Sometimes a dollar store table cloth can solve a lot of problems.

1. Clean the surface with alcohol and wipes (preferably lint-free).
2. Blow any lint or dust off with your air bulb. We prefer to use an air bulb because it doesn't leave a residue and, also, doesn't need to be refilled.
3. Make sure the meters you set on this clean surface are clean. Hopefully they were in a sealed case. Wipe them when in doubt. Be especially sure they are clean and dust-free around the connector connection points.
4. Make sure your reference cords are clean before you set them down. Ideally, they will have been kept in a clean ziploc bag.

Test meters

1. Be sure your meters have enough battery life. Anything less than 9V is insufficient, especially on your light source.
2. Ensure your meters were capped. If not, expect them to be dirty and provide erratic readings.
3. Be sure both meters will test at the desired wavelengths.
4. Do your meters work? When in doubt, turn both On and set them to the same wavelength, then connect a clean patchcord between them. Put your power meter on dBm and you will read the power from the light source; how much it puts out will depend on the mode and power of the meter. For example, a 1550 laser source might put out 95µW of power. Know your meters and know what to expect.

Test cords (reference cords)

1. You should have two but ideally three of the reference cords you will need for each type of fiber you are to test.
2. Reference cords should be 1-3 metres long. They should be the same size and type as the fiber you are testing. The closer they are, the smaller the variability.
3. Check each reference cord for cleanliness. Remember, when you plug a dirty connector into a clean connector, you end up with two dirty connectors. When they are dirty, clean them with alcohol and a dry wipe, or any such method. Check them again, and cap them when they are clean.
4. Are the dust caps clean? Often, they are not. You can clean them with a polyester pipe cleaner. Clean it first with a pipe cleaner dipped in alcohol. Next, dry it out with the other end of the pipe cleaner. You can also use the polyester pipe cleaner to clean out a dirty coupling.
5. You need couplings to join your cords. They might be SC/SC, ST/ST, LC/LC, LC/SC or many other combinations. Be sure they are clean. When in doubt, clean them with alcohol and blow the dust out with your air bulb. For all testing, pick good-quality, single-mode couplings with ceramic inserts for greater accuracy. Keeping your test couplings in a ziploc bag is an inexpensive way to keep them clean.

Okay, now what?

Congratulations, you are now ready to test. That's right... all you did up to this point was undertake the necessary preparations to ensure good fiber optic testing. While there are no guarantees, good preparation will go as long way toward helping ensure your test readings are correct. EB

William Graham is a master fiber optic instructor who operates Mississauga Training Consultants and has been providing training programs for 19 years. He is also a director of the Fiber Optic Association (www.thefoa.org) and has certified over 4000 installers in Canada alone. Visit him online at www.fiberoptictraining.com or email mrfiber@outlook.com.

The new SNK PI Spring is a **truly smart** terminal block.

Smart Connection

It offers 2 technologies in 1 connection

- 50% faster connection time with Push-In mode
- Reduced effort and conductor preparation time with Spring mode

Smart Logistics

Selection is simplified and stocking is significantly reduced

- 50% less inventory makes PI-Spring attractive to all markets worldwide
- Reduce your accessories inventory by up to 50%

Smart Design

Installation is optimized and secured

- Avoid mounting and wiring errors
- Save up to 15% space in your cabinet
- Speed up your projects

The SNK PI-Spring series is qualified for worldwide markets, applications and for severe environments: vibration, shock, corrosion, etc.

Industry and Commercial

SNK series terminal blocks can be used worldwide in all types of industrial and commercial applications. All our products have CB, UL and CSA third party certificates delivered by independent laboratories. SNK series products are developed and qualified in accordance with the following international standards: IEC 60947-1, IEC 60947-7-1, IEC 60947-7-2, IEC 60947-7-3, UL 1059, CSA C22.2 n°158-10.

Solar

Thanks to their 1000 V rating per IEC 60947-7-1, SNK terminal blocks are ideally suited for use in solar equipment.

Railways

All SNK series products are suited to trackside fixed equipment. For the more demanding environment of rolling stock applications, PI-Spring has been successfully tested in accordance with IEC 61373 requirements to resist high vibration and shock conditions: multi-axial waves, acceleration, etc. The plastic material used is compliant with the flammability, smoke toxicity and opacity severe requirements of the traction segment and can be classified I2F2 per NF F 16-101 and NF F 16-102 standards; HL3 per EN 45 545 standard and V0 per UL94 standard. It complies with NFPA 130 per ASTM E 162 and ASTM E 662 standards tests and with FR238.103 and BSS 7239 standards. The IRIS certificate guarantees the respect of international railway industry requirements.

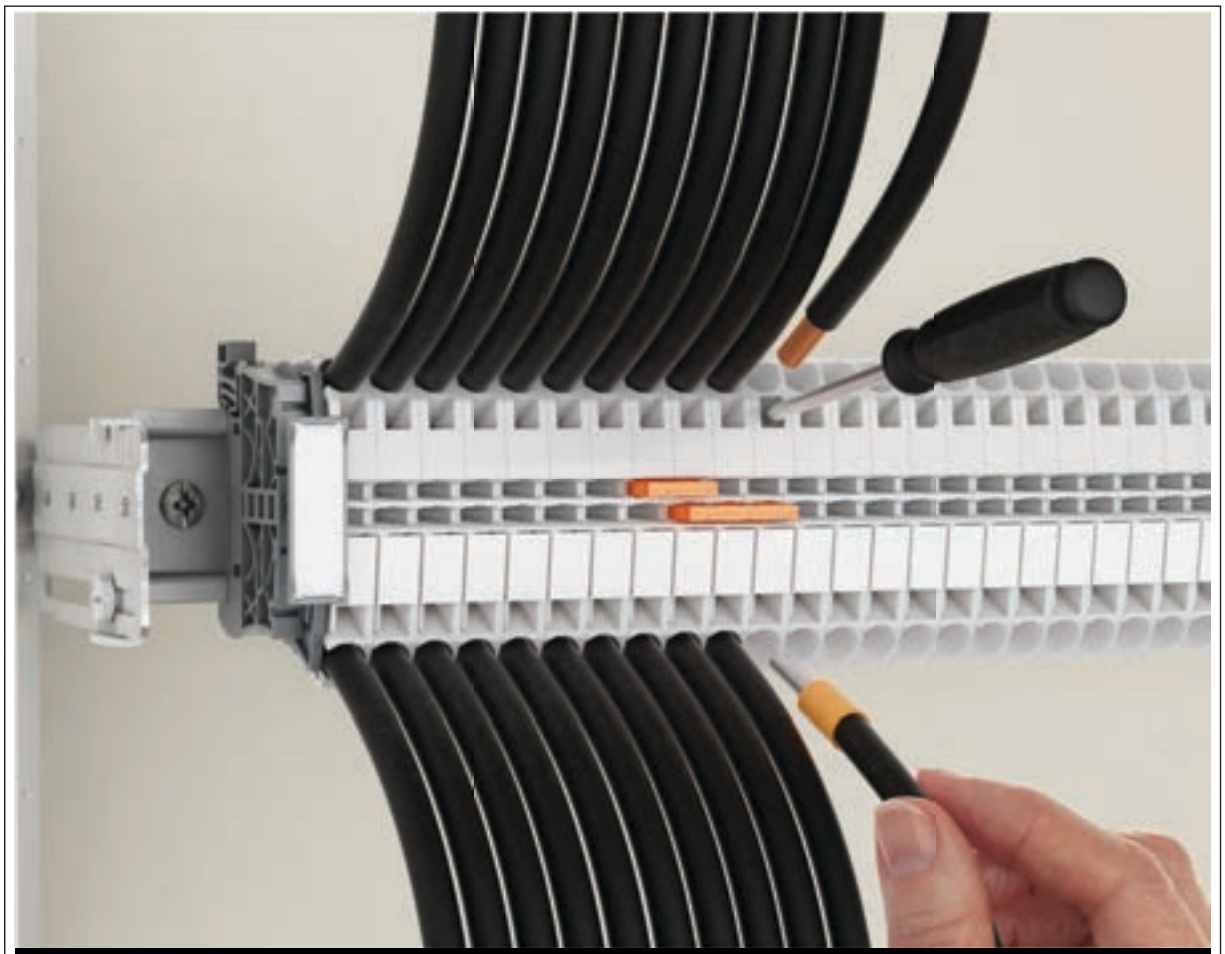
Hazardous locations

SNK series is certified IEC Ex in accordance with IEC 60079-0 and IEC 60079-7 (increased safety “Exe”) world international standards for products used in explosive atmospheres. In order to serve specific local market requirements, some SNK products have additional local certifications such as: ATEX, UL hazardous locations or BR-Ex. SNK products have successfully passed the toughest tests such as the thermal endurance test: 2 weeks in a hot environment at 95 °C / 90 % RH followed by 2 weeks at 125 °C and one day in a cold environment at -65 °C. This proves the high mechanical performances of the SNK products.

Marine

SNK products have proven their performance by successfully passing tests required for the most extreme conditions (eg: salt mist, damp or dry heat and cold environments) per IEC 60068… standards. In order to serve the worldwide marine markets requirements, SNK products have the following Marine certifications: BV Marine, DNV, RINA, RMRS.

Bruno Ricard, Jr. Eng.
Product Specialist
Tel.: 514-420-3144
bruno.ricard@ca.abb.com



You want a two-in-one screwless connection?

Absolutely.

SNK PI-Spring terminal blocks perform in both Push-In and Spring modes. ABB, the leading power and automation technology group, launches the new patented PI-Spring terminal blocks dedicated with high performances and certifications. In addition to the established SNK series Screw Clamp range, the new PI-Spring range provides 2 modes: the direct insertion for efficiency and speed, and the use of a screwdriver for long series and ergonomic comfort. The best of 50 years of experience in the electrical connection market. www.abb.ca/lowvoltage

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MOBILITY RULES!

Day in the life of a field technician

Mary Brittain-White

Three years ago, Fred would start each day at the office at 8 am, picking up his van, replenishing his van stock and being handed his list of preventive maintenance work orders for the day.

Most mornings, a couple of his co-workers would have time for a quick break, which would see them on the road at around 9 am. Fred's day was spent attending to each of the sites on his list unless an unscheduled job was phoned through, which would mean stopping his current work at the next feasible stop, marking it as a work in progress and heading out to the new, urgent job.

What he could not understand is why the company had him traversing the city so many times in one day. By 3 pm, he would usually find somewhere quiet to do his paperwork—his favourite spot was in front of the TV at home!

Back at the office, business was hectic. As new unscheduled jobs came in, the customer care operators would frantically look for a technician to do the job. They would page or text the technician, but the phone queues to respond to the operator were so long that, often, the technicians would ignore the message or be terse by the time they got through, as they had often waited for over 10 minutes.

Then there was the paperwork: getting it in from the technicians was like pulling teeth and, when paperwork was finally received, it was often incomplete or illegible. The average time for paperwork to get from the field to an invoice raised is over 20 days in a typical paper environment, and this has obvious cash-flow impact.

The costs? Who knew what they really were? Parts would be used on a job, but not marked in the paperwork; fuel and time travelled were charged in part to customers, but often represented more than a third

of a technician's day. And that's before even thinking about enforcement of safety procedures, achieving Service Level Agreements or accounts payable issues when Proof of Delivery was argued. Without better information, how accurate could costing new contracts be?

Since then, life has changed for Fred and the office staff.

Flexing mobile power

At the start of each day, Fred now does a check of his van, which he enters into his smartphone before setting out from home. As he starts, the app notes his map position and the time, which it does again when he arrives at his first job. The system has arranged his work in an optimized route to minimize his travel. As he starts the job, he is prompted to complete his safety checks; then, as he completes them, he enters work done, parts used and gets the customer's signature on glass.

When unscheduled work arrives on his smartphone, Fred knows he has been selected as both the closest technician to the new work and the closest technician to finishing a job. His work is more enjoyable, as the paperwork has disappeared. He gets his tasks done during the job, and the drop list and selections are faster than paper. The office operators are also sending him asset history with each job so that he can see what has been done before or when there is a pattern to the issues—which he finds really helpful.

Best of all, when Fred has a problem that he cannot resolve, he can video the issue and place it on the company's electronic board, and the old hands back at the office will help him resolve the issue.

Once a week, Fred is back at the office to get his parts replenished and to meet the rest of the team. He gets more work done and prefers this, as it has gotten rid of the paperwork pile at the end of each day, eliminated the phone time waiting to connect with the office and taken time away from sitting in hours of traffic.

Life is also better back at the office. The system schedules work based on technician skills, distance travelled and customer preferences. Operators can see on a map where everyone is and, when a customer calls about a completed job, they can review it right there on the scheduling board. Arguments over accounts payable disputes are dramatically reduced, and the time from work done to cash received has halved.

The costs? All parts consumed on a job are now accounted for, allowing both better billing and future understanding of what a specific job type demands in time and parts used. Governance of safety has reduced days lost due to injury and, most importantly, Fred's company began to see ROI on the mobility project in just months.

Mobility has come of age for field technicians; in fact, it is an essential tool of trade. EB

Mary Brittain-White leads Retriever Communications. Prior to founding Retriever 16 years ago, Mary worked for a Silicon Valley-based Motorola subsidiary, Radio-Mail, which pioneered wireless email. From university, Mary joined IBM and, over a 14-year career, held sales and marketing executive management roles.

EMT

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THE BEST CABLE PROTECTION

- Fast & easy press-on installation
- Holds tight as cables are pulled
- Protects cable from abrasion
- Less expensive alternative to costly fittings when used just for wire

In a variety of sizes for 1/2" to 4"
- EMT
- Rigid
- PVC

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LOW COST • ZINC

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MC CABLE FITTINGS

TO FIT SEVERAL CABLE SIZES

Save time and money! Arlington's new, low cost MC cable fittings, for dry locations only, are super-convenient and cost-effective. They come with a built-in end stop *and end stop bushings* that vary the size of the opening – *ONE trade size fits several cable sizes!*

Changing end stop bushings is fast and easy. There's no need to remove the strap. Insert the bushing that works best with the cables you're installing.

Our MC cable fittings reduce inventory... cost much less than steel or malleable iron fittings.

Catalog Number	Trade Size	Cable O.D. Min	Cable O.D. Max	Wire Bundle O.D. Min	Wire Bundle O.D. Max	Conductor size # of Conductors* (AWG/KCMIL)
8412	1"	.780	1.120	.660	1.000	6/3, 6/4, 4-3, 4-4, 2-3, 2-4, 1-3
8413	1-1/4"	1.000	1.460	.870	1.370	2-3, 2-4, 1-3, 1-4, 1/0-3, 1/0-4, 2/0-3, 2/0-4, 3/0-3
8414	1-1/2"	1.360	1.770	1.250	1.590	2/0-4, 3/0-3, 3/0-4, 4/0-3, 4/0-4, 250-3, 250-4
8415	2"	1.700	2.200	1.550	2.050	250-4, 300-4, 350-3, 350-4, 500-3
8416	2-1/2"	2.100	2.700	1.950	2.400	500-3, 500-4, 600-3, 600-4, 750-3
8417	3"	2.500	3.300	2.350	3.000	600-4, 750-3, 750-4

8415
2" trade size

IN MULTIPLE SIZES

*Examples of 3- and 4-conductor cables accommodated.

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MOUNTING BOX for CATHEDRAL CEILINGS

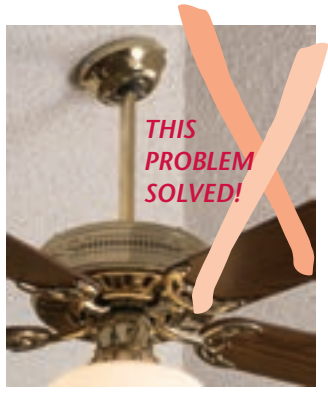
NON-METALLIC • NEW CONSTRUCTION

Get a safe, secure fan/fixture installation on cathedral ceilings with Arlington's FB900GC Mounting Box.

It installs quickly and easily next to a rafter, for easy centering. Taller sides on the box allow it to fit cathedral ceiling angles greater than 80°.

- No loose parts – self-contained
- Large, 8" square mounting surface handles large fan canopies
- 14.5 cu. inch box for new construction

FB900GC



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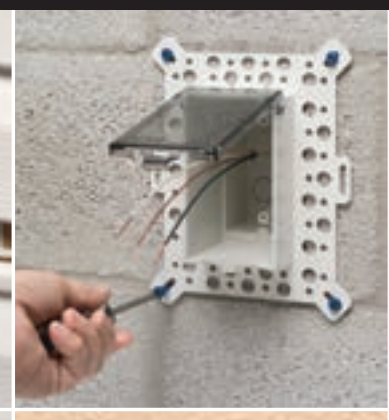
IN BOX™ RECESSED BOX

EXTRA DUTY WEATHERPROOF IN USE COVER • LOW PROFILE



Scan for Info

With **IN BOX**™ there are no extra parts to purchase or handle. You'll save big on labor and materials.

One-piece IN BOX, the recessed electrical box for exterior use, eliminates installing multiple pieces – an electrical box, bubble cover assembly and a siding block on siding. The job looks great because IN BOX installs *in the wall* – so less shows outside. It's that simple.

Cost savings. Time savings. A great-looking job.

- Non-metallic, 22.0 cu. inch electrical box with ***extra duty*** weatherproof-in-use clear or white cover
- Single and two-gang, vertical and horizontal, for a variety of applications in new and old work
- Accepts single-gang devices - no gaskets required

LISTED

IN BOX meets 2012 CEC (Rule 26-702), NEMA 3R, NEC 406.8 (b)

Where a weatherproof in use cover is required for 15 or 20 amp receptacles installed outdoors.

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Awareness and education always key to advancing electrical safety

A REPORT FROM ESFI-CANADA'S 2013 NATIONAL SAFETY SUMMIT

Continuous awareness, training and promotion are required to support the adoption of safe work practices.

Summit speakers addressed the growing risk of harmful counterfeit electrical products and electronics that are finding their way into the Canadian market.

EBMag interviewed four industry players to learn why electricity is "uniquely unforgiving". Watch videos at ebmag.com/video.html.

Gavan Howe

Back in 2012, ESFi-Canada gathered insights and feedback from more than 60 industry leaders and experts to identify those concerns that present the greatest risk to public electrical safety. Concerns identified by participants included the need to increase awareness and education of electrical risks and hazards for consumers, and to support ongoing efforts focused on addressing electrical incidents in the workplace.

This feedback was used to define a 2013 work plan for ESFi-Canada, which included a Safety Summit that would focus on providing important information and encourage collaboration to advance electrical safety in these two particular areas:

- Consumer safety: Battling unsafe counterfeit electrical products
- Worker safety: Steps to reducing electrical workplace incidents

The 2013 Safety Summit focused on providing participants with updates and information on increasing concerns associated with unsafe counterfeit electrical products and the threat of electrical workplace incidents. We were fortunate to have 12 industry leaders volunteer their time to speak at the 2013 summit.

Consumer safety:
- Lorne Lipkus, partner, Kestenberg Siegal Lipkus LLP Barristers and Solicitors
- Rod Jones, investigations manager, Anti-Counterfeiting Operations, ULC
- Katalin Molnar, manager, Global Intellectual Property Protection, CSA Group
- Aaron Chapman, special agent, Homeland Security Investigations
- Nadira Rambritch, regional manager, Consumer Product Safety, Health Canada
- Brett Brenner, president, Electrical Safety Foundation International (ESFi)
- Brian Isaac, partner, Smart & Biggar/Fetherstonhaugh

Worker safety:
- Stevan Horvath, president & CEO, Canadian Centre for Occupational Health & Safety
- Joel Moody, strategic safety analyst, Electrical Safety Authority
- Dave Shanahan, OHS standards project manager, CSA Group
- G. Rae Dulmage, director, government relations office & external affairs, and director standards & development, ULC
- Elizabeth Mills, president & CEO, Workplace Safety and Prevention Services

The 2013 Safety Summit was supported with sponsorships from: CSA Group, Electrical Safety Authority, Electrical Safety Program Solutions and Underwriter's Laboratories.

More than 60 stakeholders received new insights and information, and participated in segment group discussions to identify the next steps for addressing hazards associated with counterfeit electrical products, and electrical safety in the workplace.

CONSUMER SAFETY
Battling unsafe counterfeit electrical products

In the past seven years, the number of harmful counterfeit products has more than doubled and, in 2012, consumer electronics and electrical products represented 12% of all products seized by the RCMP.

Summit speakers addressed the growing risk of harmful counterfeit electrical products and electronics that are finding their way into the Canadian market, and the challenges associated with enforcing standards and regulations that aim to protect consumers. The expansion of counterfeiting efforts now present threats to unknowing consumers with everything from a $5 electrical outlet to a $5000 appliance. Investigations of seized products have identified that materials used in these products—and their construction—do not meet safety standards, and present shock and fire hazards.

The magnitude of offshore manufacturing challenges investigators and enforcement agencies as they respond to new manufacturing sites. The increasing presence of harmful counterfeit products has become even more challenging as counterfeiters now work to infiltrate the Canadian market by including counter-certification marks on these unapproved products.

The Department of Homeland Security in the States reported that 17% of counterfeit products seized in 2011 were electrical articles. The RCMP's 2012 Intellectual Crime Statistics Report identified that electrical products and electronics represented 12% of all products seized.

Changes to buying channels is not only making shopping easier (e.g. online), but has opened new channels to offer counterfeit products. From 2009 to 2011, Homeland Security reported a 250% increase in products seized through express mail services, making this channel the single greatest shipping environment associated with seizures of counterfeit products.

In 2011, Health Canada introduced the Consumer Product Safety Act (CPSA) to protect the public by addressing or preventing dangers to human health or safety posed by unsafe consumer products. The act established mandatory reporting requirements for manufacturers, retailers and members of the distribution channel. With its introduction, the number of reports quadrupled throughout 2011 and 2012, and were consistently double early 2011 numbers throughout 2013. Reports since the introduction of the Act in June 2011 to February 2013 demonstrate concern associated with electrical and electronic products, comprising

62% of industry mandatory reporting and 40% of consumer voluntary reporting.

Mandatory reporting has resulted in an industry-wide effort to address the supply side of counterfeit products with cost-effective tools. Sophisticated approaches to enforcement and supply line security have heightened awareness of the need for increasing collaboration to battle unsafe electrical counterfeit products.

However, the increasing presence of harmful products in the marketplace, and changes in consumer shopping channels, has heightened concerns for public electrical safety. An extensive collaborative effort is required to impact harmful counterfeit electrical products.

The stakeholder challenge

Participants from a number of segments were engaged in discussions to advance common safety objectives, and to identify:

- specific steps they are taking or could take in their segment to ensure consumers are aware of potential hazards, and that they buy safe, and
- opportunities for working together to achieve common safety goals and objectives.

Steps to address

A coordinated national effort is needed to ensure consistent messaging, validate risks and provide easy access to helpful and relevant information to influence consumer buying behaviour. The identification of an oversight organization would strengthen a collaborative approach to planning and respond to the issue of harmful counterfeit electrical products.

Consumer engagement is critical for ensuring success in the battle against unsafe counterfeit products. Awareness the hazard and validation of the concern is needed to assist in addressing the increased presence of these products in traditional channels and new online channels.

Consumers need a compelling campaign that creates awareness and demonstrates the impact of harmful counterfeit products in a way that will decrease consumer acceptance of these products in the market.

To support sound purchasing decisions, consumers need to know what to look for and what steps they should take to avoid harmful counterfeit products.

Communication channels and networks need to leverage social media, news media and point-of-purchase promotions with messages that resonate with consumers by sharing statistics and consumer stories that will impact and change consumer buying behaviour.

Consumer associations and the Retail Council of Canada need to be engaged to strengthen messaging and to build additional channels for providing information to help consumers make safe purchasing decisions.

Targeted intervention points should be identified and leveraged. Point-of-purchase information, Q&As and consumer reminders can influence and reinforce change in consumer behaviour. As a next step, there should be access to electrical product recall information in stores to support employees and consumers. In addition, financial institutions should be encouraged to stop online credit transactions for specific high-risk products.

Stronger relationships between national counterfeiting networks and enforcement agencies are required to share resources and develop compelling data and newsworthy consumer stories. Working together, Health Canada, provincial and municipal governments and the

Retail Council of Canada should ensure the public has access to a list of supply chain members that are providing harmful counterfeit products.

Further coordination across federal, provincial and municipal jurisdictions is required to strengthen product safety initiatives and response. In cooperation, governments can influence changes to legislation to mitigate the risk and proliferation of harmful counterfeit products. Provincial and municipal business licensing requirements could encourage decreases in the sale and distribution of potentially harmful electrical products by incorporating a provisions into the condition of licensing.

Ongoing cooperation between technical and standards organizations is required to develop initiatives to strengthen marketplace surveillance, investigation efforts and reporting. Collaboration between certification bodies is needed to educate members of the supply channel on how to identify and avoid these products. The Retail Council of Canada needs to be a partner to support the development of stronger processes to assist retailers in identifying and avoiding harmful counterfeit products.

WORKER SAFETY

Understanding the risks and reducing electrical incidents

In 2010 and 2011, the Association of Workers' Compensation Boards of Canada reported that more than 350 workers were impacted by exposure to electrical contact, flash and blast. Summit speakers shared incident data, defined worker harms, provided an overview of worker safety standards and shared insights into the challenges and requirements for advancing a safety culture.

Increasing efforts to gather accurate data is helping us to understand where, why and how electrical incidents occur, and the risk factors that need to be addressed to protect electrical trades and workers who could be impacted by electrical incidents. With increased awareness comes opportunity to influence change. However, leadership is critical for ensuring risks are addressed and longer-term prevention strategies are in place.

Root cause investigations have identified that the lack of adherence to health and safety is directly related to the majority of incidents. Efforts to reduce fatalities and incidents involving electrical trade workers continues to be challenged by the fact that improper procedure is associated with over 60% of electrical worker incidents. The majority of incidents occur during routine repair and maintenance work.

Investigation reports and root cause analyses indicate that codes and standards, and health and safety requirements and procedures, need to be integrated into a broader safety management system that is supported through leadership and prevention strategies. As incidents occur, cause and risk needs to be clearly defined and prevention strategies updated to address these to reduce electrical workplace incidents.

National standards have been developed with stakeholder input to advance workplace electrical safety, update guidelines for the maintenance of electrical systems, and to protect electrical utility workers. These efforts support and complement provincial health and safety requirements, and strive to introduce higher levels of worker safety through establishing a national baseline to protect a mobile utility workforce and members of the electrical trades.

These standards reinforce the importance of broader safety management systems that recognize risks and ensure the identification and avoidance of these risks. This should include careful planning that addresses health and safety regulations, legal obligations, and procedural requirements to ensure appropriate safety operating practices and measures are in place.

This extends beyond ensuring compliance, and starts a process that engages managers and leaders in committing to awareness and education requirements, development and adoption of best practices and audits, and regularly updating safe work practices and safety management systems.

The creation of a safe work culture requires interventions that motivate employees and strengthen leadership commitment.

Leadership is key to influencing and sustaining a workplace safety culture. It starts with a management commitment and involves clearly defining expectations and responsibility, encouraging cooperation and commitment, reinforcing consistency and avoiding complacency.

The motivation goes beyond ensuring compliance requirements to keep workers safe. It represents a commitment to organizational health and aligns this with leadership, culture, risk and corporate social responsibility. A health and safety commitment that manages risk can impact business success. A business strategy that elevates risk enterprise management to include health and safety risk introduces a level of corporate leadership that starts with board governance and impacts longer-term business benefits associated with engaged and productive employees, reduced absenteeism, fewer injuries and lower insurance premiums.

The stakeholder challenge

Participants from a number of segments were engaged in discussions to advance common safety objectives, and to identify:

- what steps are critical to advance ongoing efforts to reduce electrical workplace incidents, and to
- explore opportunities for organizations to advance a safe work culture

Steps to address

Continuous awareness, training and promotion are required to support the adoption of safe work practices. This is critical to establish and reinforce the importance of safety expectations and to introduce important updates to advance safety management.

A comprehensive safety management system that incorporates regular audits, reporting, and assessment and response is required to impact safety. Employees should be engaged in, and have opportunity to provide feedback on, safety expectations to ensure all employees at all levels understand risk and responsibilities. A safety management system must be dynamic to create a measureable safety difference that serves as a safety reminder to all employees to avoid complacency.

Regular review and updating of safety procedures is required to reflect changes in operation and technology, new incident data and root cause findings, response to audits, and the evolution of best practices or more advance safety standards. A root cause analysis, as well as a human factor analysis, should be conducted when any incident occurs to identify and understand causal factors. The outcome of this analysis should be reflected in modifications to processes and training to avoid similar incidents. Regular updates to safety processes should be incorporated and supported by safety training for electrical and non-electrical workers.

Increased collaboration between management and employees, and clearly defined responsibilities will increase engagement and commitment to safe work practices. Establishing compliance and performance reporting across an organization serves to further demonstrate commitment.

Employees need to understand risks: why accidents occur, how risk links to specific activities, and what steps they are expected to take to identify and avoid workplace risks. A comprehensive safety management system should include communication and education. Ongoing updates that share information on work incidents and why these have occurred serve as a safety reminder, validate and heighten concerns, and reinforce the importance of reviewing, and following proper safety procedures.

A comprehensive safety management system should also include engineering solutions to advance safety, auditing to enforce safety work practices and economic incentives to reward compliance.

Responsibility for safety and the adoption of zero-tolerance policies needs to part of the enterprise risk management system governed by the board and senior leaders. This will elevate safe work requirements to a level that will influence and ensure a prevention culture that addresses risks to workers.

The cost of avoiding incidents is far less than the cost of an incident. The rewards of avoidance support effective and efficient business operations, decrease insurance costs and improve corporate brand reputation. The lack of safety consideration can result in fines, legal costs, insurance penalties and tarnished brand reputation, which can decrease business opportunities.

It is important to establish responsibilities linked to reward, recognition and compensation benefits to motivate employee, manager and executive safety performance. Worker safety needs to be a priority at every level.

Concluding thoughts

The battle against unsafe counterfeit electrical products is part of a larger threat that continues to impact business, government and consumers. However, consumers need to understand that counterfeit electrical products present a real concern to their safety and their homes. Feedback from the Safety Summit reinforced the need to increase consumer awareness, establish national oversight, develop collaborative action plans, increase ongoing cooperation across

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organizations and government jurisdictions, and to engage new partners to:

- assess and validate concerns
- support enforcement efforts
- educate supply chain members on avoiding harmful products
- strengthen response to product safety initiatives
- impact changes to legislation to further mitigate risks

The 2013 Safety Summit provided an opportunity for participants to join forces to identify steps for advancing ongoing efforts to address unsafe counterfeit electrical products. On November 1, 2013, ESFi-Canada introduced a Beware and Buy Safe campaign focused on heightening consumer awareness, securing a national reach of 13.6 million from November 1 to December 20, 2013.

Steps for reducing electrical workplace incidents focused on accurate risk assessment, response and commitment to a safe work culture to make a measureable difference to worker safety. Increased understanding of why incidents occur, supported by a root cause analysis, is critical to identifying causal factors that need to be addressed to protect workers. Continuous awareness and communication is required to strengthen the adoption of safe work practices. Safety systems and standards reinforce the importance of safe work practices, but comprehensive and ongoing training, auditing and system updates are required to sustain worker safety.

Comprehensive safety management systems include the adoption of engineered solutions to protect workers. However, communication continues to be paramount to impacting safety behaviour. Increased collaboration between management and employees is needed to define safe work expectations and reinforce responsibilities. A positive reward and recognition program is required at all levels to modify behaviour and to strengthen safety commitment.

Safety-focused leadership is integral to advancing safety goals and objectives. A safe work culture depends on addressing worker risks as part of the broader risk enterprise risk management governed by the board and senior leaders.

The 2013 Safety Summit provided an opportunity for worker safety organizations and stakeholders to share insights and feedback that demonstrate a strong national and provincial commitment to addressing worker safety issue and ongoing efforts to better understand and reduce electrical workplace incidents. Opportunities for collaborative plans that would ensure consistent collection, assessment and analysis of incident data and share resources to develop and introduce targeted initiatives can advance the adoption of a safe work culture across Canada.

ESFi-Canada is committed to providing a safety forum that brings safety stakeholders together to share information and collaborate on critical next steps and initiatives to advance public electrical safety. As we work to define the objectives and approach for the 2014 Safety Summit, we will respond to participant feedback to continue to make this a memorable event. ESFi-Canada will continue to encourage that participation, collaboration and discussion to support the development of its strategic direction, and to provide stakeholders with new insights on steps they can adopt to support their safety goals and objectives. EB

Gavan Howe is the vice-chair of ESFi-Canada (www.esfi.ca) and president & CEO of Howe Brand Communications. His Master's thesis included studying occupational risk-taking by electricians, and those approved to work on electrical equipment.

Visit EBMag.com and click Calendar to see an extensive list of upcoming events.

IN CASE YOU MISSED IT...

VIDEO • We caught up with Schneider Electric's electric vehicle champion, Lorne Hedges, who discussed the simplicity of charging station installation for electrical professionals. Visit bit.ly/1cqCH6u.

PHOTOS • EBMag was pleased to attend the 5th annual Energy Summit put on by Clarington's Board of Trade and Office of Economic Development. Visit bit.ly/1hX2jzu.

PHOTOS • Check out photos from when EBMag's Alyssa Dalton was on an exclusive press tour in Taiwan to visit select LED lighting manufacturers. Visit bit.ly/1fMP3dl.

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Visit www.masterpromotions.ca/Previous-Events/meet-2014/

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Canadian Solar Industries Association (CanSIA)
May 7-8, Ottawa, Ont.
Visit www.cansia.ca

Canadian Utility Fleet Forum 2014
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Visit www.cufconline.com/forum.html

Energy Summit 2014
May 14-15, Niagara Falls, Ont.
Visit bit.ly/19zznnH

Canadian Hydropower Forum: Refurbishment Expansion Growth
Canadian Hydropower Association
May 27-28, Ottawa, Ont.
Visit canadahydro.ca/events/21

EFC Electrical Council Annual Conference
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May 27-30, Montreal, Que.
Visit www.electrofed.com

CAF-FCA National Apprenticeship Conf. 2014
Canadian Apprenticeship Forum
June 1-3, Ottawa, Ont.
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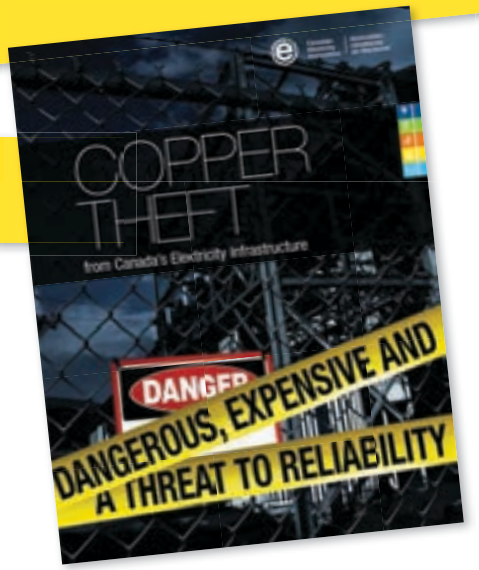
Copper theft is "Dangerous, Expensive and a Threat to Reliability"

"Copper Theft from Canada's Electricity Infrastructure: Dangerous, Expensive and a Threat to Reliability" is the title of a new policy paper released by the Canadian Electricity Association (www.electricity.ca) that aims to draw attention to the serious impacts of this issue, and outlines four key recommendations to deter copper theft in Canada.

"Given the high price of copper, copper thefts across the country are on the rise," said CEA president and CEO Jim Burpee. "These thefts pose a real and significant threat to the safety of Canadians and the reliability of our system."

The policy paper, complete with case studies drawn from incidents that have taken place across Canada over the last few years, paints a picture of the impacts of copper theft on electricity utilities, businesses and Canadians. CEA says that, since 2010, media reports have shown people suffering serious injuries as a result of copper theft—eight of which lost their lives. While



costly to the electricity sector—about $40 million each year—copper theft is also costly to other sectors and businesses across the country, insists the association, and puts Canadians in vulnerable situations, such as loss of access to 9-1-1, medical care and other critical services.

The policy paper identifies four detailed recommendations to combat copper theft across the country:

Action by all: The development of a national action plan on copper theft by federal, provincial and territorial governments will help ensure copper theft isn't pushed from one jurisdiction to another. It will also provide a forum for governments to share best practices and actions in an effort to reverse current trends.

Coalitions to combat copper theft: Some utility companies have formed working groups that bring together law enforcement, the legal community, security personnel and others interested in deterring the theft of copper. These on-the-ground local approaches serve as models that should be implemented across the country, insists CEA, as "there is no greater force than individuals who are directly involved on the ground in impacted communities".

Provincial regulation of scrap metal dealers: British Columbia, Alberta and Nova Scotia have passed legislation to crack down on metal theft in their jurisdictions. All provinces should take action to pass legislation to regulate the sale of copper. Currently, the lack of regulation in other provinces allows copper thieves to steal copper in one jurisdiction and sell it in another.

Amendments to the Canadian Criminal Code: At present, the Criminal Code penalties do not accurately reflect the severity of copper theft, argues CEA. An individual apprehended for stealing copper is currently charged with "theft under $5000" (the same as stealing a bicycle, adds CEA). The code should be updated to reflect the dangers copper theft poses to emergency first responders and local residents. It should also reflect the impact to the reliability of Canada's grid.

"In my line of work I have seen first-hand the tragic and damaging impacts of copper theft in Ontario and across the country," explained Scott Tod, deputy commissioner, investigations and organized crime, Ontario Provincial Police. "Lives of innocent Canadians are put in danger by copper theft. It is time to take action to crack down on copper theft in Canada." EB

— With files from CEA

SOME FACTS FROM CEA ABOUT COPPER

THE PRICE OF COPPER

- Over the past 10 years, the value of copper in Canada has increased 209%.
- Copper cost currently costs about $3.55/lb US.
- As the price of copper increased, so have copper thefts from electricity infrastructure.
- Copper theft not only puts the lives of the thieves at risk, but also the safety of emergency first responders, utility workers and local residents.
- The media has reported eight deaths from copper theft since 2010, and multiple injuries.
- Many who steal copper in an effort to make quick cash do not realize the voltage of electricity in transmission towers, poles and substations is over 6000 times higher than the electricity entering their homes. The consequences can quite easily be fatal.
- With hundreds of copper thefts occurring at utility sites across the country every year, copper theft is costly to the electricity sector.

CEA members across the country estimate copper theft costs the Canadian electricity sector about $40 million every year.

- Other sectors are also affected by the costs of copper theft. Telus estimated the theft of copper wire in 2011 cost the company $20 million in Alberta and British Columbia alone.
- In the United States, the Department of Energy recently estimated that copper theft costs U.S. businesses nearly $1 billion in losses annually.
- Like all consumer-based sectors, these costs are passed on to Canadians through higher utility bills.
- While the dangers and costs of copper theft are significant, the impacts on system reliability have the potential for the greatest impact.
- Power outages affect families, jeopardize critical infrastructure (e.g. emergency care in hospitals) and cause disruptions to vital service, and result in lower productivity and losses for businesses.

— With files from CEA

LANGLEY COPPER HEIST BEGS QUESTION: "WHAT THE [EXPLETIVE] WERE THEY THINKING?"

In a brazen act that us asking, "What they [expletive] were they thinking?", the 5700 block of Production Way in Langley, B.C., looked like a war zone, as a BC Hydro crew and the RCMP investigated a copper wire heist that involved two powerline poles being chopped down, and three attached electrical transformers being opened and their contents stolen, along with the connecting cables.

The damage and repair costs are believed to be more than $75,000.

Members of the public and BC Hydro employees are put at risk, explained BC Hydro's chief security officer Rob Marshall, because removing copper wire may mean removing critical safety measures (e.g. grounding). People could unknowingly come into contact with live electrical wires.

The good news, says BC Hydro, is the province's metal theft law (which tracks scrap metal sales across B.C.), does help deter copper thieves while protecting 911 emergency service, preventing theft-related outages and saving utilities, municipalities and taxpayers millions of dollars per year. Since the introduction of this provincial legislation in August 2012, BC Hydro says it has seen a noticeable decrease in the number of incidents.

BC Hydro's security team says it is also focused on prevention, working with telecom companies and law enforcement agencies to increase public awareness and share information. As Marshall explained, people are becoming more aware of metal theft, and are reporting suspicious behaviour in their neighbourhood.

As another measure to deter thieves, BC Hydro is also actively replacing copper grounding wire with a multi-metal product that, it says, has no value for recycling.

— Source: EBMag.com

BREAK-IN AND COPPER THEFT AT NEWFOUNDLAND POWER'S BOTWOOD SUBSTATION

"Public safety was placed in jeopardy," said Newfoundland Power when it discovered a break-in at its Botwood substation. About 3500 customers in Botwood and surrounding communities lost power shortly after 6 am, September 19, 2011, as a result of "deliberate actions that caused outages affecting three of Newfoundland Power's distribution lines".

The act of vandalism involved stealing copper grounding wire attached to high-voltage equipment. "This type of activity creates a serious safety risk for Newfoundland Power employees, contractors, the general public and the thieves themselves," added the utility.

Gary Smith, Newfoundland Power's VP of customer operations and engineering, called the incident extremely disturbing. **"This action was taken without any regard for the consequences."**

Newfoundland Power crews were immediately dispatched to the area, and successfully restored power to all affected customers in just over two hours. While no injuries have been reported, Newfoundland Power and the RCMP are taking this incident very seriously. An investigation is already underway.

"Our customers rely on us to deliver safe, reliable service, every day," said Smith. "Besides the inconvenience to our customers and the cost to the company, our primary concern is the potential for injury or even death."

Newfoundland Power will pay $5000 to any individual for information leading to the arrest and conviction of the person, or persons, responsible for this crime. Anyone with information regarding this incident, or any act of theft or vandalism to electrical equipment, is encouraged to contact their local Royal Canadian Mounted Police, Royal Newfoundland Constabulary detachment or Crime Stoppers.

— Source: EBMag.com

WIRE THEFT FORCES BC HYDRO TO SHUT DOWN COMMUNITY OF DITIDAHT

- BC Hydro crews were forced to de-energize the village of Ditidaht on Vancouver Island on March 15, 2013, after a substantial wire theft in the community made electrical distribution equipment unsafe for local residents.
- BC Hydro received a call from a resident in the area about the safety of the nearby distribution equipment. After an investigation by crews, it was discovered that copper grounding wire had been stolen from about 300 utility poles along a remote 62-km section of line between China Creek and Ditidaht.
- This is an example, says the utility, of how metal theft not only affects public safety, but can significantly impact the reliability of the electrical system.
- BC Hydro is also working with the Port Alberni RCMP as it conducts an investigation into the theft. If you have any information about this crime, contact Crime Stoppers at (800) 222-TIPS. EB

— Source: EBMag.com

Inefficient lighting phase-out in Canada... simply put

Jonathan Farkouh

New standards affecting the importation or interprovincial shipment of bulbs used in general service applications have now come into effect. The standards affect 75- and 100-watt bulbs manufactured on or after January 1, 2014, and 40- and 60-watt bulbs manufactured on or after December 31, 2014.

The standards are designed to remove an inefficient 100-year-old technology from the marketplace while ensuring that viable, cost-effective and environmentally-sensitive lighting technologies of all types are available for sale. These new standards are implemented under the federal Canadian Energy Efficiency Regulations. They do not have any effect on bulbs currently in use.

Background

In December of 2008, as part of its effort to reduce energy consumption and greenhouse gas emissions, the Government of Canada amended the Energy Efficiency Regulations to implement standards that phase-out inefficient light bulbs.

The standard for lighting efficiency is a performance or technology neutral standard. It does not prescribe any particular light source technology and is set at a minimum performance level that ensures a wide array of choices will be available to Canadians once it comes into effect. The standards apply to medium screw-base, A-shape incandescent bulbs.

A revision to the 2008 minimum energy performance standards (MEPS) for general service light bulbs was proposed on October 4, 2013. This amendment to the regulations provides greater choice for Canadians and reduces costs for industry through better alignment with U.S. standards. These changes mean that, in addition to compact fluorescent light bulbs and light-emitting diodes or LEDs, Canadians can purchase an incandescent halogen light bulb that looks and performs like a traditional incandescent but that uses 28% less energy.

The United States and a number of other countries are either developing or have already implemented similar standards for the elimination of the least-efficient light bulbs from their markets.

Current status

Consumers will have a variety of energy-efficient lighting options to select from when shopping for light bulbs. The lighting industry is working diligently to develop more energy-efficient light bulbs, and the next few years will bring further developments. Retailers can offer consumers a variety of technologies, such as LED, fluorescent and halogen incandescent, in all shapes and sizes, light outputs and colour temperatures. EB

Jonathan Farkouh is manager, member programs with the Retail Council of Canada.

Consumers still in the dark (somewhat) over inefficient lighting phase-outs

(The information below is based on a survey of American consumers, and references American inefficient lighting phase-out legislation. That said, Canadian consumers are not much different, nor are our inefficient lighting phase-out schemes. — Editor)

The 6th annual Sylvania Socket Survey finds 65% of Americans plan to switch to more energy-efficient lighting technologies as a result of federally mandated legislation pushing increasing efficiency standards, yet 30% of consumers say that they plan to buy a lot of less-efficient traditional incandescent light bulbs (where still available) and will continue using them.

The survey measures public attitudes about energy-efficient lighting and the awareness of lighting legislation, and shows that 64% of those polled were generally aware of the phase-out of incandescent light bulbs, which is up from 52% last year and a drastic increase from just 21% in 2008.

While these findings show an increase in consumer awareness of the legislation, nearly 60% of Americans are still unaware that 60W and 40W incandescent bulbs will be phased out starting in January of 2014. These bulb wattages will join the 100W and the 75W, which were phased out in 2012 and 2013, respectively.

When asked about switching to more efficient lighting technologies, 46% of consumers polled plan to switch to CFLs, 24% will opt for LEDs and 13% say they will choose halogen. Additionally, consumers uniformly agree on what is important when making their lighting choices:

- brightness (92%)
- lifespan (87%)
- energy usage (82%) and price (82%)

Consumer habits and trends

- While 30% of respondents report owning LEDs, only 11% own stand-alone LEDs in sockets. Others use LEDs in holiday lights (55%) and in electronics (40%).
- Of the new lighting technologies, respondents were most likely to have heard of halogen bulbs (84%), followed by LEDs (72%) then CFLs (64%).
- The top sources of information on lighting for consumers are in-store displays or employees (53%), friends and family (37%) and consumer reviews (36%).

Phase-Out feelings and new technology adoption

- More than half (59%) of consumers are excited about the phase-out, as it will help Americans use more energy-efficient light bulbs.
- Millennials tend to be less aware of the phase-out. Only 38% of Millennials know about the phase-out in general, while 68% of those aged 35-54 and 71% of those over the age of 55 are aware of the legislation.
- While almost 9 in 10 consumers have heard of some form of new, energy-efficient lighting technology, only 65% plan to switch to these bulbs as a result of the phase-out.
- Half of consumers are aware of smart lighting options, but only 1 in 10 consumers are interested in purchasing a smart lighting system to control home lighting remotely. EB

— With files from Osram Sylvania

After the incandescent light bulb, what's next?

(The information below is based on a survey of American consumers, and references American inefficient lighting phase-out legislation. That said, Canadian consumers are not much different, nor are our inefficient lighting phase-out schemes. — Editor)

A new survey conducted by Lutron shows that most Americans are in the dark about lighting options in 2014—and even dimmer about dimmers. Early this year, the last of the "general service" incandescent bulbs—descendants of the original bulb invented by Thomas Alva Edison in 1879—can no longer be manufactured or imported into the U.S.

This requirement marks the final stage of the Bush-era Energy Independence and Security Act legislation (EISA) of 2007, spelling the end of the 40W and 60W standard incandescent bulb. The 100W and 75W bulbs were phased out previously, in 2012 and 2013.

To explore some of the ramifications of the phase-out, a panel of experts gathered in New York City just before the law went into effect to discuss the dimensions of the problem, as well as options available.

According to the survey, which was conducted for Lutron Electronics—the company that organized the NYC panel—very few Americans are even aware of the phase-out. The survey—which polled 1000 American adults in the U.S. in November 2013—revealed that fewer than 1 in 3 understood that the familiar 40W and 60W bulbs were soon to disappear.

"Manufacturers, retailers and others in the lighting industry—including the trade and general press—have been working to get the word out for the past two years," said Terry McGowan, director of engineering for the American Lighting Association and a member of the panel. "But since the 40 and 60 watt incandescent bulbs represent more than 60% of all U.S. household bulbs sold annually, some people will definitely be in for a shock."

Conducted by independent research organization The Futures Company, the survey also found that only 1 in 10 adults is familiar with other options, including LED lamps CFLs. This corroborates a report by the National Electrical Manufacturers Association (NEMA) to the effect that CFL market penetration remains flat and LEDs are being used in only about 1% of all American sockets.

Another member of the panel, NYC-based lighting designer Jason Byron Teague, said his clients have very low awareness of the post-phase-out options. "I hear the same things from all my clients—'halogen bulbs are higher priced, the curly bulbs (CFLs) don't look good' and 'LEDs are unfamiliar as well as new and expensive'—so it's clear people don't have enough information to make a decision. I tell them there's room for all of these new bulbs in a home and that the placement of them is really dependent on lifestyle."

While most people seem to be in the dark about their options, 3/4 of those surveyed said it's important that the new energy-efficient bulbs be dimmable.

For Ethan Biery, Lutron's LED lighting expert, that's a mandate for manufacturers to come up with better compatibility between the lamps and the dimmers.

"All halogen bulbs are dimmable, as are most LEDs—provided that the package indicates as much—but the majority of CFL and LED bulbs will not perform the same way as an incandescent when actually dimmed," explained Biery. "Consumers may experience buzzing of the lamp or dimmer, flickering lights, long start times, non-smooth dimming or lights dropping out or popping on when the dimmer is operated."

To eliminate some of these problems and accelerate the transition to more energy-efficient bulbs and lighting systems, Lutron says it working with lamp manufacturers to improve dimmer compatibility.

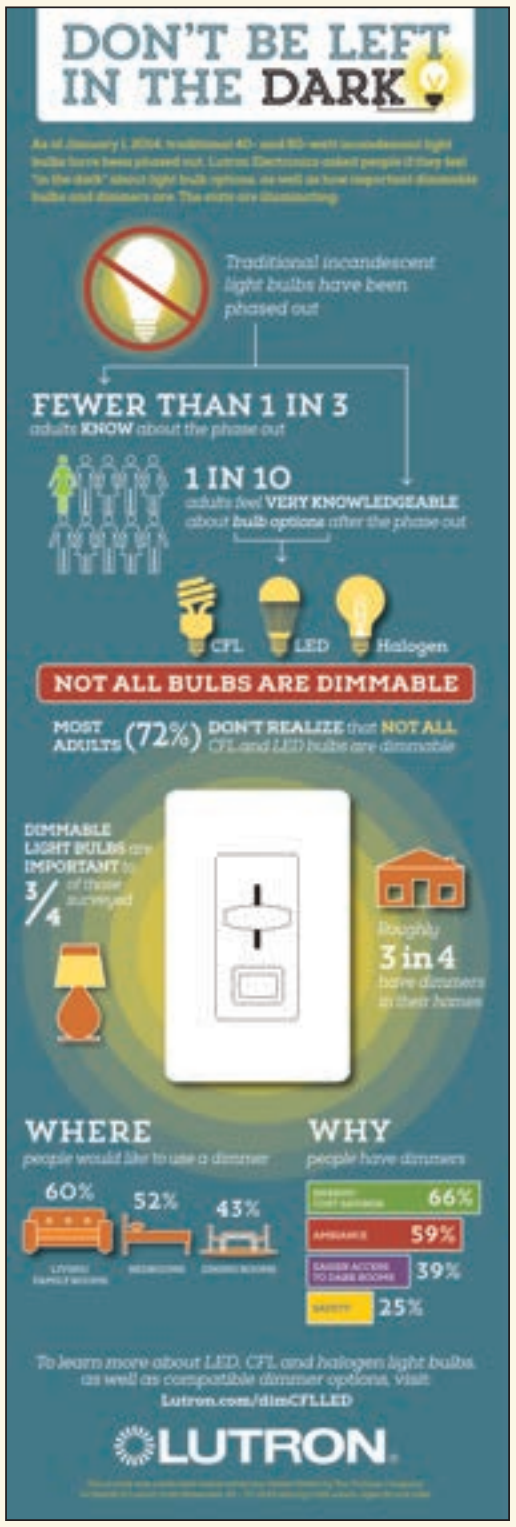
People have been dimming their lights electronically since the early 1960s, says Lutron, but those original dimmers were designed for incandescents, not the LEDs and CFLs of today.

Another member of the panel, Stan Mertz, director of operations for Applied Proactive Technologies—a firm that designs and implements residential incentive programs—credited utility companies for providing incentives to reduce the cost of purchasing energy-efficient products such as CFLs, LEDs, dimmers and occupancy sensors.

"At the moment, less than half the households in America have converted to energy-efficient bulbs. Homeowners would be more inclined to make the switch if they were presented with an incentive that reduces the cost for these types of bulbs," said Mertz.

While no one knows for sure which option consumers will embrace in 2014—LEDs, CFLs or halogens—one thing is certain, insists Lutron: consumers may be in the dark about their options, but they are nearly unanimous in hoping that the light at the end of the tunnel will be dimmable. EB

— With files from Lutron



LED DRIVERS: driving lighting performance and energy savings

Antony Corrie

The benefits of using LED lights are well-known: they use less energy than traditional lights, have a long lifespan and can make a massive contribution globally to the reduction of greenhouse gases. Their growing acceptance is borne out by January sales figures from Philips, which show that LEDs accounted for 34% of overall lighting sales in the final quarter of 2013—up 48%, with three-quarters of lighting sales being business-to-business.

LEDs are one of the most rapidly developing technologies; white LED efficiency increased by a factor of 10 since 2000. Crucial to the high performance and sophisticated lighting options that we have come to expect from LEDs are the drivers which, although performing a vital supporting function, are less well understood. Technological developments in this field are necessarily equal to, if not greater than, those of LEDs themselves.

The driver's central role is to provide a constant light output, converting the alternating current from the main supply to direct current. LEDs are low-voltage light sources and require a constant current to operate optimally. There is a wide variety of LED drivers and each lighting scheme demands an individual driver design to maximize performance and energy savings.

There are two main versions of drivers: constant current and constant voltage (with numerous variations). Constant current drivers clearly supply a constant current to the LEDs while constant voltage drivers need an additional interface circuit to control the LED current.

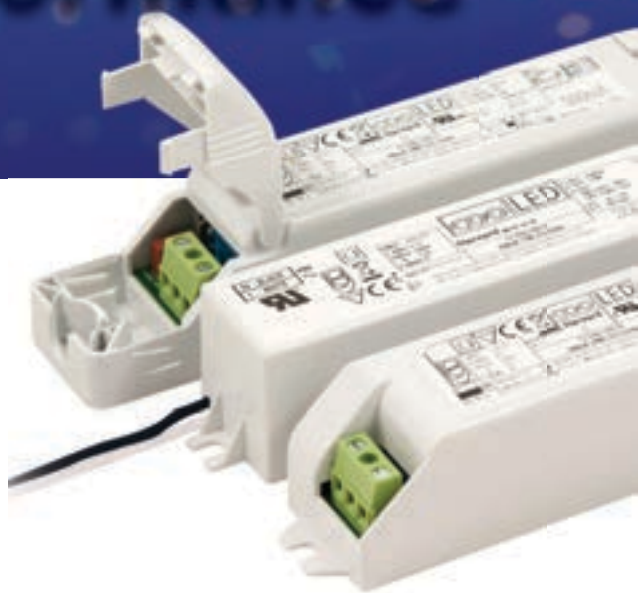
Brightness consistency

Constant current drivers give better control over brightness consistency among different LEDs in the same lighting application, as well as increasing the life expectancy and the power efficiency rating of the LEDs. No matter how many LEDS are in the fixture, the current from the driver will remain the same. Overloading the driver by connecting too many LEDs in a series, however, means that it will not be able to deliver the full design current, and guidelines should be checked.

Constant voltage drivers are often used in applications when the user requires flexibility with the number of fixtures connected to one power supply; as lamps are added, the current will increase to the maximum limit. It's important to note that LEDs should not be connected directly to a constant voltage driver; an interface circuit should be used, which will regulate the current going into the LED string.

Not so dim

Drivers may come with a multitude of control options, or dimming functions, which can lead to significant energy savings. The reduction of light levels from 100% to 90% is virtually indistinguishable to the human eye but will lower energy bills and extend the lifespan of LEDs, resulting in further savings.



Dimming LEDs also means that lights can be controlled to create ambience, enhance particular applications and add flexibility in any given space. LEDs can usually be dimmed between 100% and 5% (or even lower), and are controlled by a phase dimmer switch, digital addressable lighting interface (DALI) controller or analogue 0-10V controller.

DALI is widely recognized as the leading intelligent dimming protocol for LEDs in Europe, offering innovative dimming capabilities. DALI drivers allow users to program their LED installations using digital signals to send control information to each light. Users can then set different lighting and ambient levels for displays, maximizing their investment.

Analogue 0-10V drivers are the most popular in the States and offer a less costly and more basic dimming solution to the DALI digital protocol. They can be easily programed with a simple passive controller or a fixed or variable resistor. These controls use voltage input to

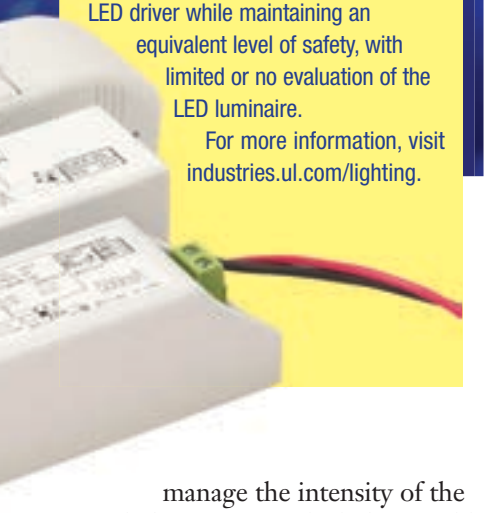
UL aims to create more efficient path for LED luminaire OEMs

UL recently introduced the Type TL Program, which offers a set of certification guidelines designed to create "a more efficient path for manufacturers in developing new LED luminaire products".

Through the UL Recognized Component program, LED drivers (the electrical devices that regulate power to an LED or string of LEDs) are often designed with varying constructions and tested in a variety of ways. This new UL approach helps ensure LED drivers are interchangeable without requiring additional testing (in most cases).

UL's Type TL Program creates a set of evaluation and testing guidelines to allow for more standardized LED driver constructions and ratings. LED luminaire manufacturers will now be able to select LED drivers for new designs that have the desired parameters, and limit the level of evaluation required of the driver during evaluation of the LED luminaire. Also, LED luminaire manufacturers may identify a substitute LED driver while maintaining an equivalent level of safety, with limited or no evaluation of the LED luminaire.

For more information, visit industries.ul.com/lighting.



manage the intensity of the light. For example, lights would be on at 100% at 10V, at 5V lights would be powered at 50% and, at 0V lights would be off.

There are two main dimming protocols that typically use a phase control dimmer switch: TRIAC (leading edge) and trailing edge. TRIAC (from Triode for Alternating Current) is the cheapest and most common method of dimming, though it generates an undesirable amount of electromagnetic interference. Trailing edge dimming is more expensive than TRIAC, but produces much less EMI.

Not costing the earth

When it comes to cutting energy costs and saving the planet, LEDs and their driver support are being hailed as leading contenders. LED pioneer Roland Haitz, former chief technology officer of the semiconductor products group at Hewlett-Packard, says that using LED lighting can save more electricity than solar power will ever produce.

According to the International Energy Agency (IEA), lighting represents almost 20% of global electricity consumption—similar to the amount of electricity generated by nuclear power—resulting in CO2 emissions that are equivalent to two-thirds of the world's cars. Were inefficient light sources to be replaced by the equivalent LEDs, global lighting energy demand would be up to 40% less. Larger savings still could be realized through the intelligent use of controls, lighting levels and daylight.

The U.S. Department of Energy (DoE) estimates that converting to LEDs would save $53 billion in annual costs in the States alone. Lighting can be responsible for as much as 40% of annual electricity costs in a typical American office building, using an average of 17kWh of electricity, and 50% to 60% of expenditure in warehouses and factories. It's an obvious target when identifying ways to reduce energy consumption.

Performance

LEDs and their drivers offer not only energy savings but also sophisticated levels of control and high performance that enhance modern environments and new ways of working. Computer software giant Microsoft recently won an award for its Stockholm office, named 'Sweden's Most Stylish Office 2013' following a complete interior redesign. Choosing the right lighting and control equipment was fundamental to the project's success.

Before commissioning the refurbishment, Microsoft carried out a survey into exactly how the existing layout was being used. The surprising results are an indication of how new flexible working patterns (e.g. using laptops, iPads and smartphones) have changed the way we think about the office environment and the way it is lit. It was found that 3/4 of the 600 desks—which occupied about 60% of the premises—were not regularly occupied.

Interior designer Wivian Eidsaunet, working for Murman Architects, took this into account in her award-winning design. The desktop areas have been replaced with 1800 different types of working spaces so that employees can choose the location that best suits their mood and the task with which they are involved that day. This way, Microsoft has released 30% of the office space for more creative use, and the required lighting reflects this.

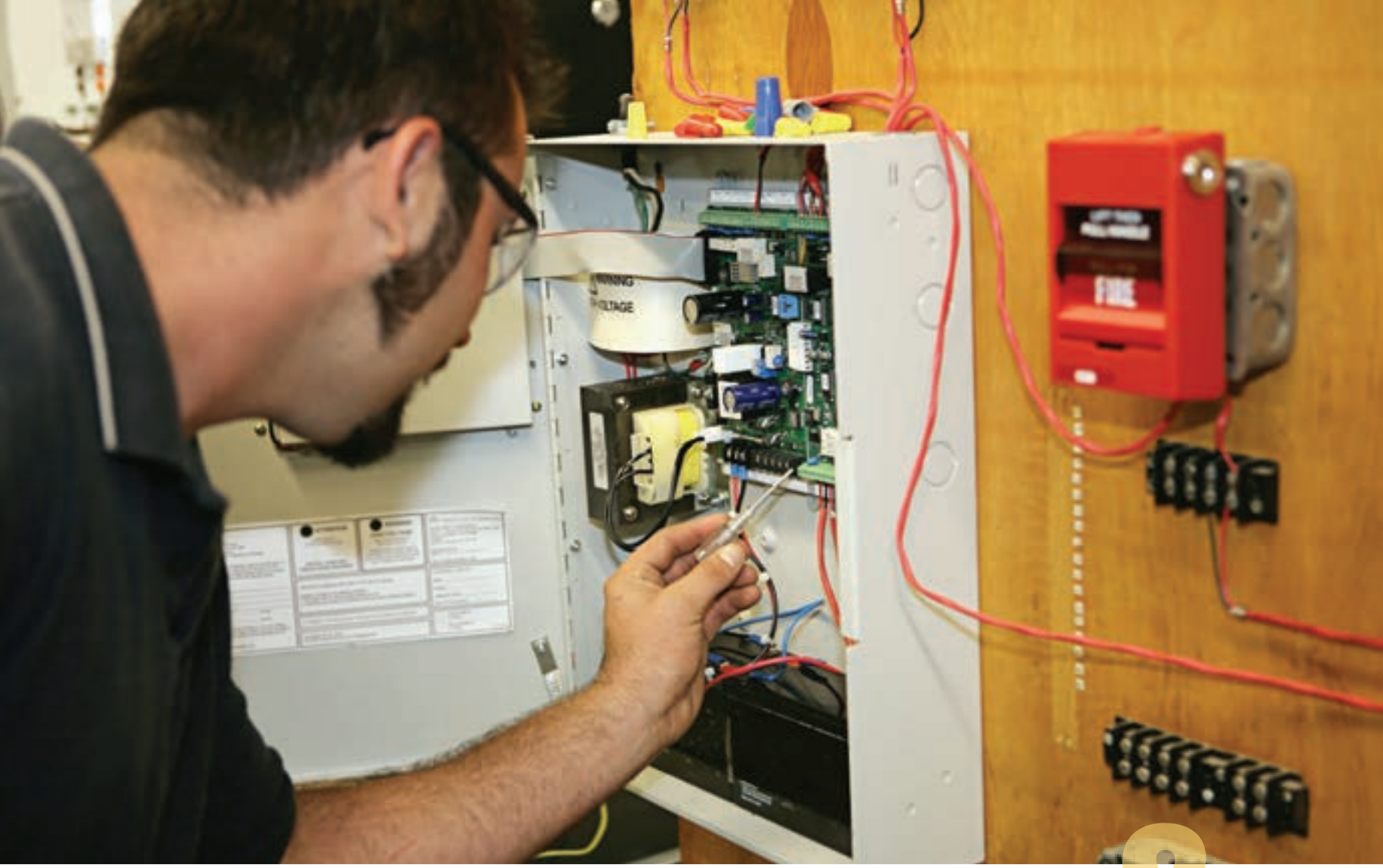
Flexible lighting

Microsoft Stockholm's working areas are now more informal, relaxed and conducive to creative thinking. Colleagues are able to work together in clusters around small tables, sit on high stools at counters or work in a more relaxed style on sofas. The new spaces are inspiring, well thought-out and stimulating—and the lighting demands equal flexibility.

The building's low ceilings led lighting designer Ronnie Eckervig from Exengo to choose sleek and discreet recessed downlights throughout that offer up to 42° manual tilt, good glare control and dimming capabilities. This demanded a driver solution that would power high-brightness LEDs from the main supply and offer intelligent, programmable digital dimming. 30W DALI, constant current drivers were chosen. The installation will provide Microsoft with energy savings of up to 85%, and the LEDs' life expectancy of around 50,000 hours will keep maintenance costs low.

LEDs and their drivers promise even greater energy savings in the future. DoE estimates that commercial LED lighting efficiency will be as high as 258 lumens per watt by 2020—2x as efficient as today's fluorescent lamps, pushing energy savings up to 90%. By 2020, they expect the cost of LEDs to fall by 80% and global penetration to be 60%. Despite standing in their shadow, LED drivers will nonetheless play a fundamental role in achieving this goal. EB

Antony Corrie is vice-president of Harvard Engineering Americas. UK-based Harvard is a global player in the design, development and manufacture of energy-saving lighting solutions, including LED drivers, light engines and control products. Visit www.harvardeng.com.



Essential electrical & life safety systems: *is there a difference?*

Ark Tsisserev, P.Eng.

Essential electrical systems versus life safety systems is not consistently understood by the users of the Canadian Electrical Code (CEC). I will attempt to separate facts from misconceptions by means of a simple Question and Answer (Q&A) format.

Q1. What is the essential electrical system and where does it apply?

Although all definitions of the CEC are placed in Section 0, some sections provide special terminology that is applicable only under the scope of those specific sections.

"Essential electrical system" applies only to a healthcare facility. CEC Section 24 CEC covers the installation of electrical wiring and equipment within patient care areas of healthcare facilities (HCFs), and the portions of their electrical systems designated as essential. Section 24 defines "essential electrical system" in Rule 24-002 as follows:

Essential electrical system: an electrical system that has the capability of restoring and sustaining a supply of electrical energy to specified loads in the event of a loss of the normal supply of energy.

CSA Z32 "Applications of electricity in health care" (which covers electrical safety and essential electrical systems in HCFs) provides a similar definition.

Q2. What does "essential electrical system" comprise?

CEC Subrule 24-302(1) provides the following requirement on this subject

24-302(1) An essential electrical system shall comprise circuits that supply loads designated by the health care facility administration as being essential for the life, safety, and care of the patient and the effective operation of the health care facility.

This requirement of Rule 24-302 states that a typical essential electrical system consists of circuits that supply loads designated by the HCF administrator as being essential for life safety, patient care and overall effective operation of the HCF. It should be noted that Clause 6.1.1 of Z32 offers the following description of an essential electrical system:

6.1.1 The requirements of Clause 6 shall apply to electrical systems that are considered essential for life and fire safety as specified in Article 3.2.7.9 of the National Building Code of Canada (NBCC), for effective and safe patient care, and for the effective operation of the HCF during an interruption of the normal electrical supply for any reason.

Table 7 of Z32 lists and classifies loads and branches of the essential electrical system. Such classification clearly demonstrates that the first eight items on this list represent

applicable components of a life safety system as mandated by the NBCC for any building required to be equipped with such systems, and that the remainder of the list covers specific loads intended to provide reliable patient care (e.g. loads in intensive care units, surgical suits, recovery rooms), and those loads of the entire HCF (outside the patient care area) that are deemed by the HCF administrator to be essential for the effective operation of the entire facility.

Thus, it becomes clear that "life safety systems" become an integral part of "essential electrical system" when such life safety systems are located in HCFs where the loads are designated by the administration "as being essential for the life, safety, and care of the patient and the effective operation of the health care facility".

Q3. Who is this mysterious entity, "HCF Administrator", who possesses such sweeping powers to designate loads of "essential electrical system"?

CEC Section 24 is silent on this subject. However, Appendix B Note on the application of Section 24 (on Rule 24-000) provides reference to Z32, which offers the following definition in this regard:

Administrator: the person responsible for operating the health care facility (or his or her designee). Note: The term "administrator" is used in this standard to denote the authority representing the health care facility and charged with responsibilities specified in this standard. The administrator may (and usually does) delegate these responsibilities to appropriately qualified individuals.

This fact demonstrates that users of CEC Section 24 should understand the relevant provisions of Z32 to effectively apply the requirements of CEC Section 24.

Q4. What are the "life safety systems" and where do they apply?

Life safety systems are described and mandated by various NBCC provisions. Equipment comprising these electrically connected life safety systems includes (but is not limited to):

- fire alarm systems, with or without voice communication capabilities
- emergency lighting, exit signs
- fire pumps, firefighter elevators
- smoke control and smoke venting equipment, including fans and dampers
- hold-open devices and electromagnetic locks

NBCC Subsection 3.2.7 requires that the emergency source of power be provided by generators or batteries to equipment such as fire alarm systems, emergency lighting and exit signs.

Article 3.2.7.9 of the NBCC specifically mandates the use of an emergency generator capable of operating under a full load for not less than two hours for life safety equipment such as electrically connected fire pumps, every elevator in a building that is more than 36-metres high, for every firefighter elevator, for smoke control and smoke venting equipment, for fans intended to limit passage of smoke in a vestibule located at an exit opening into interconnected space (e.g. atrium), in accordance with NBCC Article 3.2.8.5, and for the mechanical exhaust fans intended to remove air from the interconnected floor space, as specified in NBCC Article 3.2.8.8.

Special terminology provided in CEC Rule 46-002 offers the following definition of "life safety systems": Life safety systems: emergency

lighting and fire alarm systems that are required to be provided with an emergency power supply from batteries, generators, or a combination thereof, and electrical equipment for building services such as fire pumps, elevators, smoke venting fans, smoke control fans, and dampers that are required to be provided with an emergency power supply by an emergency generator in conformance with the National Building Code of Canada.

Provisions of Rule 46-108 for wiring life safety systems apply to all buildings where they are mandated by the NBCC.

Where such life safety systems are installed in an HCF, these life safety systems become part of the HCF essential electrical system, and additional separation of wiring connecting loads of life safety systems in an HCF from wiring to other loads of the HCF essential electrical system is unnecessary, as all wiring of the essential electrical system must be installed separately from all other wiring in accordance with Rule 24-302(3).

It should be noted that, from the perspective of good engineering practice (and not from CEC safety requirements), it is advantageous to separate circuits supplying vital, delayed vital and conditional branches in an HCF so as to facilitate effective and reliable operation.

Q5. Is it permitted for a fire alarm system, emergency lighting and exit signs installed in an HCF to be provided with an emergency power supply source, such as battery (as indicated in Q4)?

When a fire alarm system, emergency lighting and exit signs are installed in an HCF, and such life safety systems are part of the HCF's essential electrical system, the emergency power supply source for the essential electrical system loads must be an emergency generator conforming to CSA C282 "Emergency electrical power supply for buildings" as stated in CEC Rule 24-306.

Of course, a typical central battery or UPS could be used as a temporary backup to the required emergency generator but these additional power supply sources should *under no conditions be used as a substitution* for the required emergency generator.

Q6. What are minimum required components of a typical fire alarm system?

Clause 3.1.1 of ULC S524 "Installation of fire alarm systems" states that a fire alarm system must comprise at least the following interconnected devices:

- control unit
- manual station
- audible signal device

Of course—depending on a type of building occupancy classification—a fire alarm system would be required to be equipped with voice communication capabilities, visual signal devices, various fire detectors (including sprinkler waterflow-detecting devices), annunciators, and central alarm and control. NBCC Subsection 3.2.4 provides specific requirements in this regard.

Q7. What is electrical supervision of fire alarm systems?

Electrical supervision is a specific means of detecting abnormal conditions on a fire alarm system (e.g. open circuit, short circuit, ground fault, movement of a valve handle that controls the water supply in a standpipe or sprinkler system, loss of power to a fire pump). The definition of electrical

supervision is provided by ULC S524.

ULC S524 Clause 3.3 lists all components of fire alarm system wiring that must be electrically supervised. In addition, NBCC Article 3.2.4.10 requires that electrical supervision must be provided for fire suppression systems (such as a standpipe or sprinkler system) and that such supervisory signals must be indicated on an annunciator of the building fire alarm system. It should be noted that the operation of all components of a fire alarm systems (including electrical supervision) must be verified in accordance with ULC S537 "Verification of fire alarm systems" upon completion of the installation. This requirement is mandated by NBCC Sentence 3.2.4.5.(2).

Q8. Are hold-open devices, electromagnetic locks, smoke control and smoke venting equipment part of a fire alarm system?

This equipment is considered by ULC S524 as "ancillary devices":

> a device which has life safety application, and is activated by the fire alarm system, but is not part of the fire alarm system.

Ancillary devices are not subject to the electrical supervision requirements, as they are not integral components of a fire alarm system. A verification procedure of a fire alarm system also includes a review as to whether a signal is sent to each ancillary device upon fire alarm system activation.

However, evaluating the operation of these ancillary devices (equipment "which has life safety application" by the ULC S524 definition) is done—not via fire alarm verification—by the field commissioning of these integrated life safety systems, as required by NBCC Article 3.2.4.6. Thus, wiring to these ancillary devices does not have to comply with CEC Section 32, as such life safety equipment is not an integral part of a fire alarm system.

Note that signals to the fire department cannot be electrically supervised by a fire alarm system. When a fire alarm system is activated, an output signal is sent this system to a transmitter. The transmitter, communication channels between it and a monitoring station, and the facilities containing the monitoring station are components of the ULC listed "Fire signal receiving centres and systems", conforming to ULC S561 "Standard for installation and services for fire signal receiving centres and systems" (see NBCC Sentence 3.2.4.8.[4]). Electrical supervision of communication channels is provided at the monitoring station.

Hopefully, these eight Q&As are enough to provide some clarity around essential electrical systems, life safety systems and fire alarm systems. In each particular case, however, a relevant Authority Having Jurisdiction (AHJ) should be consulted. EB

Ark Tsisserev is president of EFS Engineering Solutions Ltd., and senior technical manager with AES Engineering. Before becoming a consultant, Ark Tsisserev was an electrical safety regulator for more than 25 years, having retired from the City of Vancouver as its chief electrical inspector. He chairs the CE Code-Part I and the Canadian IEC TC64 committees, and represents the CE Code committee on NEC's CMP 1. Ark is a registered Professional Engineer with a Master's Degree in Electrical Engineering, and can be reached at ark.tsisserev@efsengineering.ca.

Philips unveils 2nd gen 75W, 100W LED equivalents

Philips claims its new second generation 75W and 100W LED equivalent bulbs gain 2 watts in efficiency over the first generation predecessors, which were introduced two years ago. Now Energy Star qualified, the 15W A19 (75W equivalent) and 19W A21 (100W equivalent) fit into existing fixtures and work with standard dimmers, and boast savings of $160-$180 per bulb.
PHILIPS
www.philips.com

Halco Lighting offers ProLED smooth sided PAR lamps

Halco Lighting Technologies has introduced the new ProLED smooth sided PAR series to replace its previous PAR series lamps. The new series features redesigned PAR20, PAR30S, PAR30L and PAR38 housings with smooth sided, lighter weight construction. With chip-on-board (COB) LEDs and 82 CRI, the lamps are UL Wet Location (IP65) rated and offer Energy Star qualified options. Users can choose between 2700K, 3000K, 4000K and 5000K models in both flood and narrow flood beam angles. Dimmable to 5%, the series lamps are a suitable replacement for standard halogen lamps.
HALCO LIGHTING TECHNOLOGIES
www.halcolighting.com

Holophane offers Predator LED floodlights

Acuity Brands has announced the Predator LED floodlights from Holophane, which it says will save up to 60% in energy costs while cutting maintenance by up to 50% as compared to a metal halide floodlight. The Predator PMLED and PLLED floodlights are available with 4000K or 5000K colour temperatures and 70 CRI. The series also boasts die-cast aluminum housing for longevity; optional tool-less entry and integral three-stage terminal block to ease installation; and surge protection. Users can choose between fixture mounting options include tenon-slipfitter knuckle, galvanized steel yoke or stainless steel yoke.
HOLOPHANE
www.holophane.com

ConTech Lighting offers Super High Output LED tape light

ConTech Lighting has released its Super High Output tape light, describing it as a flexible, low voltage linear LED accent lighting system for indoor applications. It is available in four colour temperatures (2700K, 3000K, 4000K and 6500K), as well as four colours (blue, green, red, and yellow). Users can also choose between the standard mounting channel, a 45°-angled channel and a recessed channel.
CONTECH LIGHTING
www.con-techlighting.com

Patlite introduces LP8US flash pattern LED lights

Patlite's next generation LP8US surface mounted lights feature eight LEDs and a wide angle output lens cover boasting superior visibility in four available colours: blue, red, yellow and clear. The lights can be operated as a single unit or synchronized with up to four units, and are programmed from a selection of 33 different flash patterns for warning and indicator light applications including: automated guided vehicles (AGVs); garbage, plow, fuel, utility, municipal and emergency trucks; and logistics, warehousing, access control and security applications. Rated for indoor and outdoor use, the surface-mounted light is 4.79 in. x 2.66 in. with a recessed depth of 1.31 in.

PATLITE
www.patlite.com

Dual-Lite's Eve LED exit sign promises reliable illumination

Hubbell Lighting has introduced the Dual-Lite Eve LED exit sign, boasting efficiency, long life, fast installation and low maintenance. The Nickel Metal Hydride (NiMH) battery provides 90 minutes of emergency exit illumination in the event of a power failure, and a low voltage battery disconnect (LVD) helps protect the battery during prolonged outages. It accepts 120/277VAC input at 60Hz and optional 220-240VAC input at 50 HZ or 60 HZ with a self-diagnostics option and includes a constant current charger. It is NFPA 101 and NFPA 70 certified and the panel face meets UL924 requirements.

DUAL-LITE
www.dual-lite.com

Arlington releases One-Box indoor vapour boxes

Arlington Industries has introduced non-metallic fan, fixture and device vapour boxes with built-in flanges and installed gaskets, boasting a protective barrier against air infiltration and helping to obtain an Energy Star rating. Designed for interior use in new construction, the One-Box vapour boxes can be secured with captive installation screws for wood or steel, or captive nails for wood. The series is UL/CSA Listed.

ARLINGTON INDUSTRIES
www.aifittings.com

Hammond Mfg introduces HWSSHK 304 and 316L enclosures

The HWSSHK 304 and 316L stainless steel wallmount enclosures from Hammond Manufacturing are available in 30 sizes, ranging from 24 in. x 20 in. x 6 in. to 60 in. x 36 in. x 16 in. The units boast excellent corrosion resistance that do not degrade after scratching or other surface damage with high resistance to chemical attack. Sealed to NEMA 4X (IP66), the enclosures feature three-point heavy-duty padlockable handle mechanism, which gives excellent sealing with minimum effort in opening and

closing the door, says Hammond, adding that the locking mechanism is more secure, easier to operate and gives a more even pull-down on to the poured gasket.

HAMMOND MANUFACTURING
www.hammondmfg.com

Dialight offers SafeSite integrated LED obstruction lighting system

Dialight launched its Class I Div 2 (CID2) -certified SafeSite integrated LED obstruction lighting system for medium-intensity signalling installations, such as smokestacks, towers and other obstructions. It includes Dialight's CID2-certified SafeSite L-864/L-865 dual Red/White flash head, CID2-certified L-810 Red side markers, CID1/CID2 integrated power supply/controller and CID2 long-life photocell. The controller is mounted at the base of the structure for easy access and features a dual-certified CID1 and CID2, Groups B, C and D enclosure, with real-time data reporting from the lighting system to the controller. Panel-mounted Red and Green LEDs indicate system status at a glance, while the enclosed backlit display simplifies event and alarm monitoring and diagnostics.

DIALIGHT
www.dialight.com

Eaton unveils ALERiTY line of IP network-based mass notification

Eaton's Cooper Notification business has introduced a "holistic" line of IP network-based mass notification systems (MNS). The newest solution from the company's ALERiTY line of unified interoperable platform offers WAVES over IP (WoIP) for emergency communications, and can launch messages across all three layers of MNS: in-building, wide-area and distributed recipient. It promises bi-directional interoperability, integrating with other systems, software and devices for situational awareness. Examples include fire alarm control panels (FACP), chemical sensors, detection systems and paging systems. A wireless solution is also available via ethernet radios.

COOPER NOTIFICATION
www.coopernotification.com

ADVERTISER INDEX

David Pilon

The lies we tell ourselves

We've all heard this at some point in our training: electricity will take the path of least resistance. If this is true, then why do Canadian Electrical Code, Part 1 (CEC) 4-004 and 12-108 go into such detail on parallel conductors? If it were true, then only the conductor with the least resistance would carry the entire load.

It would be better to say electricity will take all paths in relation to their resistivity. This is why we need to ensure that all conductors for each phase in parallel installations be as similar to each other as possible in length, circular mil, insulation, conductor material and termination so as to avoid one conductor carrying excess current.

This is also the reason CEC 10-200 is so important. Parallel neutral paths are an issue of which a number of installers are unaware. When you ground a service to the water main that is interconnected to your neighbour's service, which is fed from the same source, what happens when you lose your neutral back to the transformer? Your ground wire carries your neutral current back through your neighbour's system.

Even when the neutral is fine, your ground is actually carrying a small amount of current—but how much? That depends on the resistivity of the two paths. The methods of correction are in Subrule 3 which says:

> one or more grounds shall be abandoned; the location of the grounds shall be changed; the continuity of the conductor between the grounding connections shall be suitably interrupted; or other effective action shall be taken to limit the current.

Another lie we propagate is that you can have too much grounding. In terms of grounding, the code is slowly separating and clarifying the difference between bonding and grounding. As installers, inspectors and users, we need to understand clearly the difference between these two.

The current definition in the code is erroneous, at best. Grounding has nothing to do with the operation of protective devices, and will not conduct fault current on an average system.

I define grounding as an interconnection between the grounded circuit conductor or electrical equipment and the earth to establish an equipotential plane, and to maintain as close to zero as possible any voltage difference between the earth and the electrical equipment we are operating—even in the event of a ground potential rise.

CEC Tables 17 and 18 were removed for this reason, and the change was made to 10-812 that a grounding conductor connected to a grounding electrode shall be not smaller than No. 6 AWG. It will set the equipotential plane, but has no ability to carry any fault current. Bonding, on the other hand, is closely described but missing the portion that it will facilitate the operation of protective devices in the circuit.

The code is a living document that continues to change and grow as we change and grow, and I look forward to seeing how it addresses some of our lies in the 2015 edition. EB

David Pilon has been an electrical inspector with SaskPower since 2000, and is currently the vice-chair of the Canadian Certified Electrical Inspector (CCEI) committee of the International Association of Electrical Inspectors (IAEI), Canadian Section. David can be reached at dpilon@saskpower.com.

Questions and answers compiled by the Electrical Safety Authority | VISIT WWW.ESASAFE.COM

Tackle The Code Conundrum... if you dare!

Answers to this month's questions in May's Electrical Business.

How did you do with the last quiz? Are you a...

Master Electrician ? (3 of 3)
Journeyman ? (2 of 3)
Apprentice ? (1 of 3)
Plumber ?! (0 of 3)

Question 1

Flexible cord type STO is suitable for interconnection of photovoltaic panels within an array.

a) True **b)** False

Question 2

For general power and lighting circuits, the maximum rating of overcurrent protection for No. 14AWG copper conductor is:

a) 15A **c)** 25A
b) 20A **d)** 30A

Question 3

The radius of the curve on the inner edge of bends made on corrugated aluminum-sheathed cable or corrugated copper-sheathed cable shall be not less than [___] times the external diameter of the sheath.

a) 9 **c)** 12
b) 10 **d)** 15

Answers: EBMag March 2014

Q-1: The CEC does not permit a furnace to be cord-connected using an attachment plug and receptacle.

b) False. Ref. Rule 26-744(8).

Q-2: Where a flexible cord is used to plug an appliance, no live parts shall be exposed when one end is connected to the supply and the other end is free.

a) True. Ref. Rule 4-012(5).

Q-3: For residential applications, when a transfer device is used to connect a portable and/or standby generator to feed essential loads, the transfer device is required:

d) all of the above. Ref. Rule 6-106.

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