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# Electrical Business

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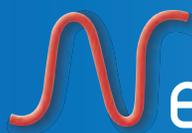
- CSA committee on marine energy
- Selecting an ECAD software
- Hazardous gases and vapours

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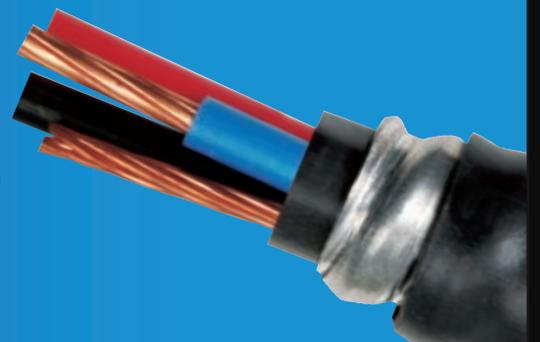
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It served as a forum for brainstorming and discussion on the electrical safety issues of greatest concern...

## ESFi Canada gets serious about electrical safety

**W**hat do you get when you fill a room with professionals who range from codes & standards bodies to electricians, from electrical trainers, manufacturers and distributors to retailers and firefighters?

You get the first National Electrical Safety Summit conducted by ESFi Canada in May, which I was privileged to attend.

The invitation letter from Peter Marcucci—formerly chief public safety officer with Ontario’s Electrical Safety Authority, now interim chair of the fledgling ESFi Canada—reads “Electricity is present in so many aspects of our everyday work and home lives, yet its significant potential risk for severe injury or even death is often overlooked. Until now there has been no national voice for electrical safety”.

ESFi Canada’s summit brought together thought leaders in our industry to discuss challenges and opportunities for improving electrical safety in Canada. It served as a forum for brainstorming and discussion on the electrical safety issues of greatest concern, and the opportunities and priorities for a national electrical safety organization.

Delegates were first divided into groups representing different stakeholders e.g. electrical contractors, manufacturers, safety and fire professionals, etc. They were then asked to consider electrical safety in the

context of workplaces, residences, children, awareness and education, and counterfeit product, and itemize their priorities according to: issues of greatest concern; biggest challenges to promoting electrical safety among workers/consumers; biggest opportunities; role and priorities for a national electrical safety organization (and who should be included); and the issues that require a national strategy.

Among the issues that emerged (which I know to be of concern to many of you) is that of unqualified employees working on electrical systems, lack of training around new technologies (e.g. solar photovoltaic systems, electric vehicles), DIYers who believe they can easily rewire their own homes and working live.

One of ESFi Canada’s long-term visions is to “Attract a broad-based, national coalition of private and public organizations involved in all aspects of electricity in Canada,” and that’s where you come in. How do you ensure your voice is heard when it comes to electrical safety and keeping Canadians safe? I encourage you to visit our Photo Gallery at [bit.ly/NLjb94](http://bit.ly/NLjb94) to see who was at the summit, then contact them and help create and deploy “highly effective electrical safety campaigns and programs aimed at consumers, workers, supervisors and organizations”. **EB**

*Anthony Caplan*

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Canada has the ideal environment for tapping the potential of renewable marine energy, and the establishment of international standards will assist in mitigating the technical and financial risks associated with the diverse range of technologies that currently exist, enabling a quicker uptake of commercial marine energy production.

### 20 Selecting an ECAD software for wiring design

Moving toward a new ECAD software for wiring design can be very exciting and can have a very positive impact on your company. Treating this as an opportunity to innovate is a healthy approach, but being realistic with timing and budget is also important to ensure there is support from upper-level management.

### 22 Respect fiber’s bend radius—despite bend-insensitivity

Each person should weigh the risks and rewards of using bend-insensitive fiber. They will, of course, examine the advantages and, if they are aware of the risks, they will make a wise decision.

### 23 Increase your business with strong power supplier partnerships

When an electrical contractor can position his firm as more responsive and nimble than his competitor’s, the result will be more business and, in some cases, even windfall contracts. One supply chain often overlooked in this strategy is your provider of generators and engines.



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On the cover and page 12

### Building solar energy vs building with Lego: how solar projects really work (or not)

I used to love Lego as a kid. We had adventures with castles, knights and monsters... but as simple as solar energy projects may seem, they can break just as easily as our childhood Lego fortresses when you don’t plan properly.

Photo courtesy Lego.



**"Take it to the Beach" in Mexico with Ty-Rap promotion**

Summer is here and it's heating up with the new Ty-Rap "Take it to the Beach" promotion! Until August 31, 2012, specially priced, beach-themed Ty-Rap kits will be available at participating electrical distributors across Canada. In addition to Ty-Rap cable ties at a promotional price, each kit contains a practical cargo trunk organizer with cooler, a beach blanket and a chance to win one of three, all-inclusive beach vacations for two in Riviera Maya, Mexico.

Complete promotion details are available at participating electrical distributors, through your Thomas & Betts sales rep, or [www.tnb.ca/tyrapbeach](http://www.tnb.ca/tyrapbeach).

Thomas & Betts ([www.tnb.ca](http://www.tnb.ca)) is a global player in the design, manufacture and marketing of components used to manage power in industrial, construction and utility applications.

# Electrical Business

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ELECTRICAL BUSINESS is the magazine of the Canadian electrical community. It reports on the news and publishes articles in a manner that is informative and constructive.

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**JUST conducts Alberta's 3rd Annual Powerline Safety Day**

Every year, hundreds of Albertans risk their lives needlessly by contacting an overhead or underground powerline. In 2011, that translated into about 861 powerline incidents, including one fatality. To leverage the message that powerline risks are 24/7/365, the Joint Utility Safety Team (JUST) has expanded its communications initiatives to include community building through strategic relationships with key stakeholders like Alberta schools.

“Prevention starts with the right attitude. We need to instill respect for the danger of electricity and quash that false sense of invincibility,” said Mark Brabbins, JUST chair. “For Alberta’s youth and future operators, that means education and reinforcement through public awareness and workplace training.”

With this in mind, Alberta’s 3rd Annual Powerline Safety Day focused on the next generation of operators, including some 80 Grade 5 and 9 students from the Edmonton area. Hosted by JUST, the event featured displays and live demonstrations from safety professionals and the Edmonton Fire Department, as well as guest speakers from the government and utilities industry.

“Our priority is to drive home the ‘Where’s The Line?’ safety message to future operators—to remind them to always ask themselves this question and to know the answer before starting any activity around powerlines,” explained Brabbins. “What makes powerlines that much more hazardous is that you often don’t have to actually touch one to be injured or killed. This makes planning ahead much more critical to a safe work environment.”

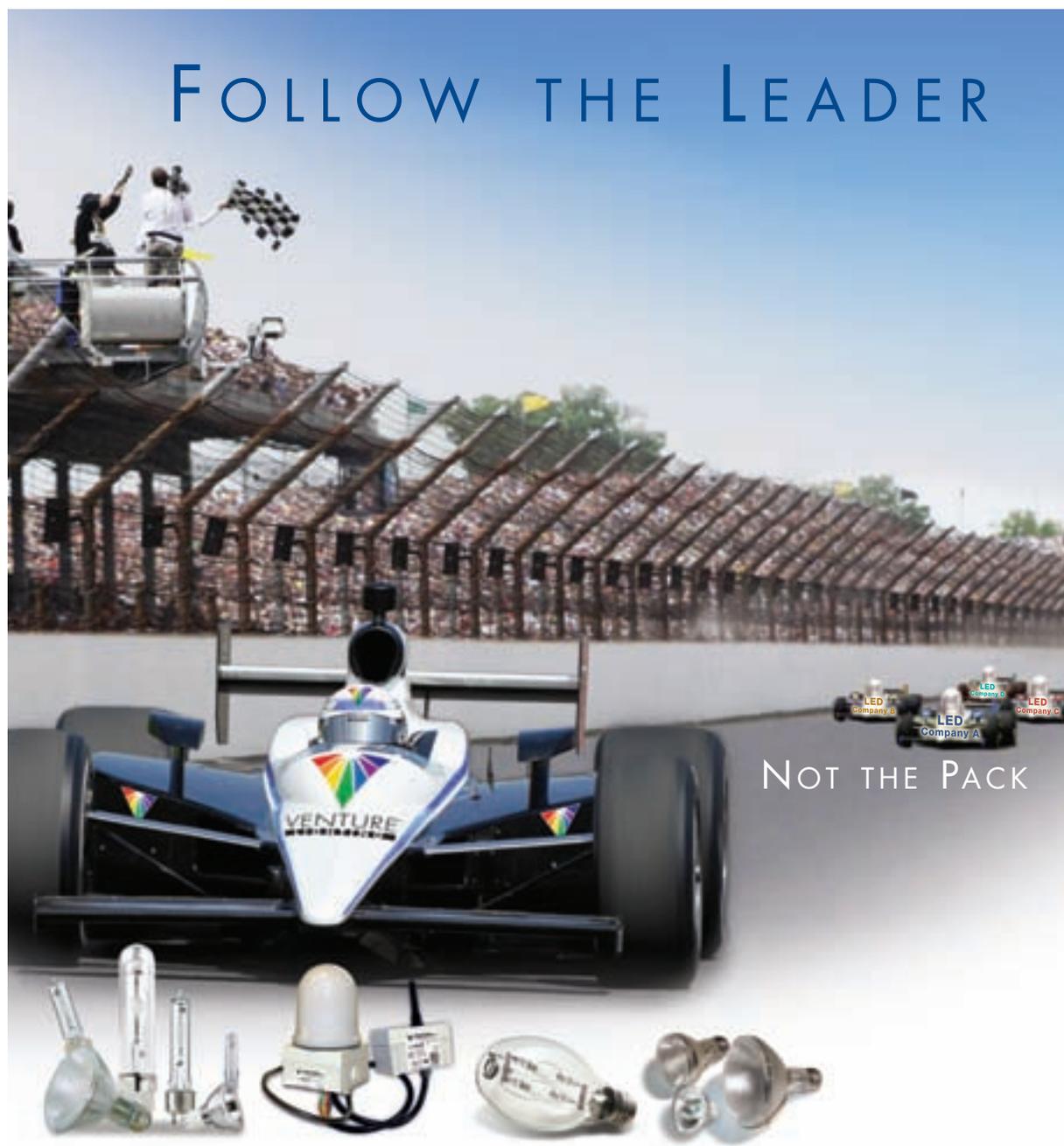
Highest at risk for powerline incidents are operators of large equipment and trucks—typically males between the ages of 18 to 50, says JUST—in the utilities, oil and gas, construction, farming and transportation industries. Despite generally knowing how to protect themselves, deadlines and productivity pressures often lead to skipping safety steps. The problem is further exacerbated by an attitude of complacency born of routine tasks and a false sense of invincibility.

Formed in 2006, JUST members came together sharing a common concern about Alberta’s high volume of powerline incidents. Since 2008, the Where’s The Line? sustained awareness advertising has focused on providing operators “in-the-moment” reminders that looking out for their own safety is their responsibility. In 2011, JUST introduced an employer engagement program as another means to reach and influence operators with its safety message.

JUST partners include AltaLink, ATCO

Electric, ENMAX, EPCOR, FortisAlberta and the Government of Alberta.

Though results to date have been very positive, Brabbins stresses the need for JUST and its various stakeholders to continue to be vigilant about raising awareness of how these deadly incidents can be prevented. As of Fall 2011, awareness among operators of the “7 Metres Safe” message (safe distance between equipment and powerlines) reached 41%, up from 9% in 2008.



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**ABB develops 1100-kV ultrahigh-voltage direct current converter transformer**

ABB (www.abb.com) says it has successfully developed and tested an 1100-kV ultrahigh-voltage direct current (UHVDC) converter transformer, claiming this breaks the record for the highest DC voltage levels, and facilitating more power to be transmitted efficiently over longer distances.

“This new 1100-kV transformer technology will make it possible to transmit even more electricity efficiently and reliably, at higher voltage levels, across greater distances with minimum losses,” said Bernhard Jucker, head of ABB’s Power Products division.



The Xiangjiaba-Shanghai link, commissioned by ABB, was the world’s first commercial 800-kV UHVDC connection. It has a capacity of 6400 MW and covers a distance of just over 2000 km, making it the longest of its kind in operation. The new 1100-kV converter transformer technology will make it possible to transmit more than 10,000 MW of power across distances as long as 3000 km, claims the company.

Higher voltage levels allow larger amounts of electricity to be transported across very long distances with minimal losses using HVDC technology. Converter transformers play a critical role in HVDC transmission, says ABB, serving as the interface between the DC link and the AC network. Development of the 1100-kV transformer addressed several technology challenges such as the size and scale, electrical insulation (including bushings) and thermal performance parameters.

**Master Lock and Mike Rowe partner for work truck security**



Master Lock (www.masterlock.com) and Mike Rowe, creator and star of Discovery Channel program, Dirty Jobs, and founder of mikeroweWORKS.com, have partnered to help raise “respect and appreciation for skilled labour” and provide “innovative security solutions”.

Rowe, who calls himself a perpetual apprentice, has performed more than 300 of the “dirtiest” jobs throughout the country, during the first five seasons of his hit show, Dirty Jobs.

“Getting involved with the hard working men and women who make civilized existence possible, has been an incredible experience, and provided the foundation for my mission at mikeroweWORKS,” said Rowe. “This partnership with Master Lock will allow us to raise the level of awareness for the growing skills-gap in North America.”

Rowe acted as the spokesman for Master Lock’s new line of security products designed to protect tools and equipment in the cargo area of pickup trucks, especially those that are used for work, which launched exclusively at Canadian Tire stores across Canada this spring.

“With his strong connection to men and women working in the trades, we are both excited and honoured to have Mike’s support and participation in this important new security category,” said Jeffrey Ling, Canadian Master Lock product manager. “In addition, we are incredibly proud to support Mike’s mission and vision at mikeroweWORKS.com.”



Left to right: Richard Attwood, plant manager, GE Canadian Assembly Centre; and Michel Roy, GE sales director, Eastern Region.

**GE Energy celebrates Canadian Assembly Centre’s 5th year of service**

EBMag was there as GE Energy’s Industrial Solutions business celebrated the five-year anniversary its Canadian Assembly Centre (Mississauga, Ont.), saying the centre exemplifies “the company’s commitment to providing timelier, cost-effective service to its customers operating in Canada”.

“The Canadian Assembly Centre acts as the perfect conduit to quickly transform customer product requirements and feedback into real-world product solutions for the construction, commercial, institutional and industrial markets in Canada,” said Rick Attwood, facility manager of the Canadian Assembly Centre. “We’re committed to serving Canadian customers with localized expertise and greater flexibility, and will continue to bring job creation and high-tech training opportunities to the next generation of Canadians.”

The centre offers a range of electrical distribution product solutions, including power panelboards, switchboards and lighting panelboards.

As part of the five-year anniversary celebration, GE Industrial Solutions’ Electric Odyssey Tour was onsite, showcasing technologies that touch all parts of the electrical infrastructure, including low-/medium-voltage switchgear, circuit breakers, transformers, arc flash mitigation products and life cycle services.

GE has operated in Canada for more than 100 years, beginning with a manufacturing facility in Peterborough, Ont., founded by Thomas Edison in 1892. Today, GE Canada has numerous manufacturing, sales and service locations across the country, dedicated to serving customers in energy-intensive industries, including the mining, metals, oil and gas and commercial construction industries.

Visit [bit.ly/KWvOv3](http://bit.ly/KWvOv3) for our Photo Gallery. Visit [bit.ly/KWvKLX](http://bit.ly/KWvKLX) for Video.

**PowerStream launches eStream social blog and news network**

PowerStream (www.powerstream.ca) customers and industry colleagues are invited to connect with the electricity distributor through its new social blog and news network, eStream (blog.powerstream.ca).

Claiming to be the first for electric utilities in Canada, this social blog and news network will serve as the hub for PowerStream news, where visitors can read, share and comment on corporate news and blog posts by PowerStream employees who specialize in areas such as smart grid, renewable generation, environment, corporate social responsibility, conservation and demand management, and special guest articles. It also contains social media links to PowerStream TV (www.youtube.com/user/PowerStreamTV), PowerStream’s YouTube channel, and @PowerStreamNews (www.twitter.com/PowerStreamNews) on Twitter.

“PowerStream is committed to providing customer-focused communications and reaching out to our customers in ways they want to be communicated to and where they want conversations to take place,” said Linas Medelis, director of customer relations. “The use of social media enhances our ability to engage our customers and offers greater accessibility to them. It also enables us to reach out to specific audiences on specific issues.”

“Our contributors are eager to share news about innovations in smart grid and renewable generation technologies, as well as relating their own personal experiences in taking advantage of conservation programs or perhaps even in their accomplishments like cycling 200 km in the Ride to Conquer Cancer,” added Eric Fagen, director of corporate communications.



### Electrical contractors among 2012 Ontario apprenticeship training award winners

Big congratulations to Bergeron Electric Ltd. ([www.bergeronelectric.com](http://www.bergeronelectric.com)) and Fred Hook Ltd. ([www.fredhooklimited.com](http://www.fredhooklimited.com))— two of four Ontario employers being recognized for their dedication to training the next generation of skilled workers.

This year, six of the 16 employers nominated are from our own industry. Visit [bit.ly/KIdPeA](http://bit.ly/KIdPeA) to see which other electrical contractors were nominated.

Now in 10th year, the annual Minister's Awards for Apprenticeship Training celebrate employers that show leadership in training apprentices, support the apprenticeship training system, and promote careers in skilled trades.

"Ontario's apprenticeship system is an integral part of our economy. By training apprentices, these exceptional companies are helping build our skilled workforce of the future," said Glen Murray, minister of Training, Colleges and Universities.

According to the government, more than 120,000 apprentices are learning a skilled trade today— 60,000 more than in 2002-03.

### OPG celebrates 100 years of power at Wawaitin Generating Station

Ontario Power Generation (OPG, [www.opg.com](http://www.opg.com)) recently celebrated 100 years of hydroelectric generation at the Wawaitin, Ontario site. Placed into service in June 1912 to produce electricity for local mines in the early days of the Porcupine Camp, the original Wawaitin GS continued to generate electricity until March 2010, at which time it was replaced with a new GS.

"Wawaitin GS has produced clean, reliable hydroelectricity for the people of Ontario for a hundred years due in large part to the efforts of hundreds of men and women who built, maintained and operated the Wawaitin stations over the last century," said OPG plant manager Peter Murray as he and Timmins city councillor Gary Scripnick unveiled a plaque commemorating the individuals who worked at the station during its 100-year history. The plaque reads:

*This plaque commemorates the 100th anniversary of first power production at Wawaitin Generating Station in June 1912. It is dedicated to those*



*who helped build the Wawaitin station and to the people who operated and maintained the station during its first 100 years.*

Now standing in the place of the original Wawaitin GS is a new 15MW generating station with enough capacity to power up to 15,000 homes. Wawaitin GS was replaced as part of OPG's \$300-million larger Upper Mattagami and Hound Chute Redevelopment Project, which included the redevelopment of the Sandy Falls, Wawaitin and Lower Sturgeon sites on the Mattagami River, and the Hound Chute site on the Montreal River.

### RECALL - Thomas Lighting ceiling flush-mounted light fixtures RCL12-36

The Electrical Safety Authority (ESA, [www.esasafe.com](http://www.esasafe.com)) is notifying the public that Thomas Lighting ([www.thomaslighting.com](http://www.thomaslighting.com)) has announced a voluntary recall of its ceiling flush-mounted light fixtures. Consumers should stop using recalled products immediately; the wire insulation in the socket of these fixtures can degrade, posing a fire and electric shock hazard, as the exposed energized wires may contact the metal canopy of the fixture.

Thomas Lighting has received 11 reports of defective fixtures in which the homeowners' arc fault circuit interrupter (AFCI) tripped. No injuries have been reported.

This recall involves 28 different models of

ceiling flush-mounted light fixtures. All affected fixtures have a round base or canopy affixed to the ceiling and a dome or cylindrical-shaped cover with diameters ranging from 7.5 in. to 13 in. The recalled fixtures have a variety of finishes, including metal and/or clear or frosted glass and contain one, two or three light bulbs. Canopies are a range of colours including white, bronze, brass (gold) and nickel. Most models have a nib in the centre of the dome cover in the same colour as the canopy.

The recalled models were manufactured between June 1, 2010, and November 25, 2010. Although the manufacturer's name, fixture model number and production date can be found on a printed label on the ceiling-side of the fixture's metal canopy, consumers are

advised not to remove the metal canopy from the ceiling to access this label.

The affected products were sold through electrical distributors and lighting wholesalers in the United States between July 2010 and July 2011. They were manufactured in China. While the affected products were intended for sale and distribution in the States only, the recalled products are certified to Canadian standards by Underwriters Laboratories (UL) and labelled with Canadian certification mark (cULus).

Consumers should contact Thomas Lighting to arrange for a free in-home repair of the fixtures by a qualified electrician. Contact Thomas Lighting at (800) 764-0756 between 9 a.m. and 5 p.m. ET Monday through Friday, or visit [www.thomaslighting.com](http://www.thomaslighting.com).

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**New ESC report examines Aboriginal procurement strategies in electrical sector**



The Electricity Sector Council (ESC) has released the findings of a new report which examines the Aboriginal procurement strategies employed in the electricity and renewable industry. The report includes a number of case studies from employers in the sector and provides guidelines and information that other businesses in this sector can use to increase Aboriginal procurement.

It also hopes to increase awareness for Aboriginal businesses of the various opportunities within the sector, examine the business case for having an Aboriginal procurement strategy, and provide a practical template for businesses looking to develop an Aboriginal procurement strategy of their own.

“This is a great opportunity for employers, not only in our industry but throughout Canada, to see the benefits of working with Aboriginal businesses and Aboriginal people across the nation,” said Michelle Branigan, executive director of ESC. “This report is a valuable resource for both companies and Aboriginal businesses alike and offers insight into the procurement strategies and policies that make up Canada’s electricity sector.”

Procurement opportunities over the next decade will be extensive as electricity companies undertake new capital projects and require maintenance on existing facilities, said ESC.

ESC predicts Canada’s Aboriginal businesses will play an increasingly larger role in the national economy, as its people and the resources they control represent a “massive untapped supply chain”.

“The issue for industry employers becomes how

to develop relationships with Aboriginal businesses and how to increase their capability to participate in the industry whereas, for suppliers, the main issue is that of building capacity to produce and market quality products and services,” it said.

“Our Government is proud to partner with the ESC on the development of this report and we look forward to working with the council on future initiatives that increase jobs and opportunities for Aboriginal businesses and individuals in the electricity and renewable energy sector,” said John Duncan, minister of Aboriginal Affairs and Northern Development.

**Confirm your Canadian Airports National Electrical Workshop attendance**

The Canadian Airports Electrical Association (Association Électrique des Aéroports Canadiens) reminds you to book your attendance at the 2012 edition of the Canadian Airports National Electrical Workshop a.k.a. CANEW ([www.canew.ca](http://www.canew.ca)).

Electrical Business’ editor, Anthony Capkun, will be joining delegates in beautiful St. John’s, N.L. this September for this unique event.

The workshop runs September 24-28 and is being held at the Delta St. John’s Hotel & Conference Centre, where a special rate has been negotiated. The venue is conveniently located in downtown St John’s, close to the harbour and many fine restaurants and watering holes.

Discover one of the oldest cities in North America, cradled in a harbour carved from 500-million-year old rock. Meantime, a spousal program will be offered, involving culture, food and shopping. Full details will be posted on the website.

We look forward to seeing you in St. John’s in September!

**SkyPower having a fit over Ontario’s new FIT Program**

SkyPower Group of Companies ([www.skypower.com](http://www.skypower.com)) issued an Application for Judicial Review in the Ontario Superior Court of Justice against the minister of energy and the Ontario Power Authority (OPA). SkyPower also notified the minister and OPA of a claim for damages in excess of \$100 million.

The application concerns the minister’s recent directives to “fundamentally change the Feed-in-Tariff (FIT) Program, retroactively affecting existing applications for FIT contracts that had previously been deemed complete and eligible by OPA”.

In its application, SkyPower says it spent considerable resources identifying eligible properties, securing land rights and meeting the government’s timeline for application. It further states OPA has held more than \$20 million in security for over two years, during which time SkyPower has waited for OPA to complete the connection availability testing that was required by the existing FIT rules and to issue FIT contracts.

Read the full story online at [EBMag.com](http://EBMag.com) under News. **EB**

**Government keeps power-producers onside**

Your opening letter in the June 2012 edition of Electrical Business, “getting government out of power”, leaves me wondering where the ownership of all this infrastructure lies with respect to the public ownership of right-of-way, water leases, land ownership of dams, transmission right-of-way, etc.

When we talk about getting government out of these ‘private’ power companies, what becomes of the public’s share in these projects?

The government is supposed to be the agent of the public and hold the utility responsible to us. A hydroelectric dam may be utility-owned, but the river was (and is) a public resource that we allowed the utility to dam... obviously for mutual benefit, but we still need government in the equation to ensure the utility does not forget who grants them permission to hold that water back.

Even a simple power pole has joint ownership. Sure, the pole is the property of the utility, but the ground in which it is set is not. The government gives utilities an easement or exclusive use agreement that, for practical purposes, means the utility must deliver power to my house. Only government can hold utilities to public account.

No company that benefits from this relationship should ever be free of government oversight. Further, almost any time we give these kinds of companies freedom from oversight, they inevitably use such freedom to fatten their personal wealth—often at the expense of the public that owns the land under them.

Of course, we could sell the right-of-way. Any idea how much the land costs from, say, Site XYZ to Vancouver? I’d bet the utility could never afford the interest charges, never mind the land cost, plus transmission lines, plus royalties to the province for use of the public-owned water and land value lost from flooding. Now apply a lease cost to a utility for leasing the ground space for 10,000 utility poles!

I might agree that a lot of these benefits are essential to the public interest but certainly not free from responsibility or recognition that none of this works without both sides.

Finally, I just don’t trust profit motivation as the arbiter in public/private relationships.  
— Michael S., Victoria, B.C.



For writing such a thought-provoking letter, we shipped Michael S. a new Milwaukee M12 hammer drill valued at \$230, courtesy of our friends at Milwaukee Tool ([www.milwaukeetool.com](http://www.milwaukeetool.com)).

**GOT SOMETHING TO SAY? All Letters to the Editor should be sent to Anthony Capkun, [acapkun@annexweb.com](mailto:acapkun@annexweb.com).**

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Worth looking into.

**Hubbell Inc.** ([www.hubbell.com](http://www.hubbell.com)) has named **David G. Nord** its president and chief operating officer, effective yesterday.

**Timothy Powers** will remain as chair and CEO of the company. Nord has served as senior vice-president and chief financial officer of Hubbell Inc. since 2005. Prior to this, he spent nearly 10 years at United Technologies in a number of senior leadership positions, including VP finance and chief financial officer at Hamilton Sundstrand. With the appointment of Nord to the position of COO, **William R. Sperry** has been named SVP & CFO for the company. Previously, he served as VP corporate strategy & development.

**John Kay**, senior product specialist for **Rockwell Automation** ([www.rockwellautomation.com](http://www.rockwellautomation.com)),



John Kay

Medium-Voltage Business, has been named an **IEEE Fellow** for his contributions to arc-resistant, medium-voltage control and protection technologies.

IEEE Fellow ([www.ieee.org](http://www.ieee.org)) is the highest grade of membership, and is recognized by the technical community as a prestigious honour and an important career achievement. He has made significant contributions to arc-resistant control equipment designs and industry standards, says the company, providing protection for machine builders and end users.

**Victor Wittmann** has been appointed as **HessAmerica** ([www.hessamerica.com](http://www.hessamerica.com))'s new vice president of sales to its North American ranks. In his new position, Wittmann will head the growth and management of sales and specifications for HessAmerica's



Victor Wittmann

range of architectural-design outdoor area, roadway and landscape energy-saving luminaires, and its range of outdoor architectural site amenities such as public benches, bicycle racks and tree grates. In this capacity, he will direct the company's network of independent professional lighting sales organizations across the country, as well as strategic efforts by HessAmerica regional sales management.

**Westinghouse Lighting** ([www.westinghouselighting.com](http://www.westinghouselighting.com)) has appointed **Ron Saccomano** to vice-president of global business development, where he will focus on growing existing strategic relationships and developing new growth opportunities. "Our company is now well-positioned to build upon our 65-year history as a trusted lighting supplier," said **Ray Angelo**, president/CEO Westinghouse Lighting. "Ron's sales and marketing experience makes him ideally suited to focus on the company's strategic and global growth plans."

**Magic Lite** ([www.magiclite.com](http://www.magiclite.com)), a Canadian supplier of commercial and residential architectural lighting products, has appointed **Prolux Lighting Edmonton** ([www.prolux.com](http://www.prolux.com)) as its newest sales agent representing Northern Alberta, which includes Edmonton North, The Northwest Territories and The Yukon. "Prolux Lighting is an agent committed to integrity, service, satisfaction and continuous improvement," said Magic Lite's **Jeff Harris**, senior VP of business development.

## Ferraz Shawmut is now

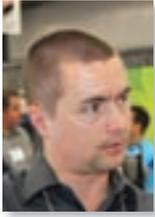
We've shortened our name. And increased your expertise in the safe and reliable transmission, distribution, and control of power.

**What's in a name?** More products, solutions, and support than you've ever had before to keep everything running safely. Changing our name changes the game, giving you all of Ferraz Shawmut plus even more resources to increase your expertise in the protection of power electronics, controls, transmission, and distribution. Ready for the next level? It's waiting for you at [fsisnowmersen.com/us/CAEB2](http://fsisnowmersen.com/us/CAEB2)

[mersen.com](http://mersen.com)

Mersen  
Toronto, ON  
T: 416.252.9371

**Lind Equipment** ([www.lindequipment.net](http://www.lindequipment.net)) has appointed **Jeremy Meyer** to the role of electrical channel sales manager where he is responsible for leading Lind's sales to electrical distributors throughout Canada. He will lead Lind's electrical sales agent team, and help expand the company's presence among electrical distributors. A graduate of Conestoga College in Management Studies, Meyer has worked in sales and marketing positions throughout his career. "His industry expertise and leadership will further enhance the service that we deliver to our electrical distributors and end customers," said **Brian Astl**, VP sales and marketing.



Jeremy Meyer

**Universal Lighting Technologies** ([www.unvlt.com](http://www.unvlt.com)) is expanding its sales force in Canada with the addition of **Chris Eckertt** as regional sales manager, Western Canada. Headquartered in Vancouver, Eckertt will serve the provinces of British Columbia and Alberta. He holds more than 10 years of experience in sales and customer support, including five years in the lighting industry focused on distribution customer management, new business development, and client relations.



Chris Eckertt

**S&D Marketing** ([www.sdmarketing.ca](http://www.sdmarketing.ca))—a Dartmouth, N.S.-based manufacturer rep serving Atlantic Canada—has announced that Juno Lighting's regional vice-president sales-Canada, **Colin Wrobel**, is joining the team as owner of S&D Lighting Group. Wrobel will relocate to the Halifax area and work from the Dartmouth office. "His experience in the lighting industry will be instrumental in continuing the growth of S&D Lighting Group in Atlantic Canada," said S&D's **Dave Flemming** and **Derek Johnston**.

## New Smart Meters From E-Mon D-Mon!

*Electric Submeters with Dual Protocol Communications*

E-Mon D-Mon Smart Meters provide advanced energy monitoring features for billing/allocation, power quality, load control, net metering and green building initiatives. The new line of Smart Meters provides dual protocol communication for simultaneous operation with multiple BAS systems, billing packages, M&V reporting and/or E-Mon Energy AMR software.

### E-Mon D-Mon®

The Original Submeter™

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### Congratulations contest winners!

Congratulations to **Nathan Handley** of **Handley Electric** (Owen Sound, Ont.) who has won a \$10,000 travel voucher as a grand prize winner in **Schneider Electric** ([www.schneider-electric.ca](http://www.schneider-electric.ca))'s Homeline "Load up to Win" contest. The contest ran from June 1 to December 31, 2011. Those purchasing a Homeline loadcentre could complete the Load up to Win ballot for each purchase, and deposit the ballot into their distributor's ballot box to be eligible to win a monthly prize and the grand prize!



Left to right: Glen Terrien, Schneider Electric; Nathan Handley, Handley Electric.

Thanks to a special promotion from **Universal Lighting Technologies** ([www.unvlt.com](http://www.unvlt.com)) exclusively for IED member companies ([www.ied.ca](http://www.ied.ca)), **Chris Sawatzky** (middle of photo) of **EECOL Electric** ([www.eecol.com](http://www.eecol.com)) in Winkler, Man., won a Panasonic LCD HDTV, while **Rob Klingbeil** of **Robertson Electric Wholesale** ([www.robertson-electric.com](http://www.robertson-electric.com)) in Hamilton, Ont., took home a Panasonic digital camera, and **Michael Blake** of **McLoughlan Supplies Ltd.** ([www.mcloughlansupplies.com](http://www.mcloughlansupplies.com)) in Corner Brook, N.L., won the Panasonic Blu-Ray DVD player. Another 51 salespersons at distributor locations throughout Canada received a \$25 Visa Reward card. The promotional rewards program was launched to celebrate being named an IED Approved Supplier for 2012, following a 10-step process that requires manufacturers to demonstrate their dedication to the distribution channel in Canada in regard to volume of sales, reliability, customer service and promotional marketing programs.



Left to right: Jason Thor of Thor Technical Sales; Chris Sawatzky of EECOL Electric; Chris Eckertt of Universal Lighting Technologies.

**GE Lighting-Canada** recently announced additions and appointments within the GE Professional Lighting Canada team:



Kevin Podmore

• **Kevin Podmore**, area manager, Western Canada. With over 14 years of lighting sales experience with GE Lighting, most recently as a sales account manager, Kevin is now responsible for sales of GE Lighting products in British Columbia and Alberta.



Steve Parent

• **Steve Parent**, district manager, lamp and ballast sales, Midwest, Central and Atlantic. Formerly district manager for Eastern Canada, Steve has over 21 years of service with GE. In this new role, Steve assumes leadership and responsibility for lamp and ballast sales in the Midwest, Central and Atlantic.



Victor Cardoso

• **Victor Cardoso**, channel sales specialist, Western Canada. Victor joins GE Lighting from Alliance Marketing Ltd. where he worked for 12 years as a senior sales rep. In his new position, he will play a key role in working with distribution partners to grow lighting, LED, ballast and lighting controls sales.



Michelle Mercer

• **Michelle Mercer**, field sales developer, GTA Region. Reporting to Steve Parent, Michelle will work with the professional sales team to build awareness for GE Lighting products and solutions and to maximize growth opportunities within specific vertical markets in the Greater Toronto Area.



Ed Allen

• **Ed Allen**, lighting sales rep. Reporting to Kevin Podmore, Ed joins GE Lighting from HD Supply where he worked in a range of sales leadership roles, most recently as branch manager. Ed will play a role in generating end user demand and increasing market share through GE's distribution channel partners in Southwestern Alberta.



Melanie Elliot

• **Melanie Elliot**, OEM manager-Canada. Reporting to Kevin McMaster, manager OEM Sales for North America, Melanie is responsible for developing and managing GE Lighting OEM customer accounts within Canada. **EB**

More **news** can be found online.  
Visit us at **EBMag.com**

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

**IN CASE YOU MISSED IT...**

- VIDEO** • Watch why good electrical safety is good business. Visit [bit.ly/MRRLIH](http://bit.ly/MRRLIH).
- GALLERY** • EBMag checks out Milwaukee Tool's New Product Symposium. Visit [bit.ly/KUkRMn](http://bit.ly/KUkRMn).
- GALLERY** • EBMag attends IAEI Prairie Chapter Meeting in Manitoba. Visit [bit.ly/OB8ZT9](http://bit.ly/OB8ZT9).
- VIDEO** • How DID they make Popcorn in the Early 1900s? Visit [bit.ly/NeDNtk](http://bit.ly/NeDNtk).
- GALLERY** • Snapshots from CSA Annual Conference & Committee Week in Quebec. Visit [bit.ly/OB9Blr](http://bit.ly/OB9Blr).

**Ridgid Reputation Roadshow 2012**

*Various Canadian dates/locations,*

**May through August**

Visit [www.ridgid.com/roadshow](http://www.ridgid.com/roadshow)



**12th Annual EFC Federation Cup Golf Tournament**

*Electro-Federation Canada*

**August 22**, Milton, Ont.

Visit [www.electrofed.com](http://www.electrofed.com)



**CUEE 2012**

*Canadian Utilities Equipment & Engineering Show*

**September 11-12**, Toronto, Ont.

Visit [www.cuee.ca](http://www.cuee.ca)



**RETScreen Training Institute**

**September 11**, Montreal, Que. - 101:

Introduction à l'analyse de projets d'énergies propres

**October 16**, Toronto, Ont. - 201:

Energy Efficiency Project Analysis

**November 20**, Montreal, Que. - 201:

Analyse de projets d'efficacité énergétique

**December 4**, Toronto, Ont. - 202:

Heating & Cooling Project Analysis

Visit [www.retscreen.net/ang/training\\_institute.php](http://www.retscreen.net/ang/training_institute.php)



**IAEI Fall Convention**

*Canadian Section & Ontario Chapter, Int'l Assoc. of Electrical Inspectors*

**September 21-23**, Toronto, Ont.

Visit [www.iaeidnconvention.org/fall.htm](http://www.iaeidnconvention.org/fall.htm)



**CAEA Canadian Airports National Electrical Workshop (CANEW)**

*Canadian Airports Electrical Association*

**September 24-28**, St. John's, N.L.

Visit [www.canew.ca/canew\\_2012.htm](http://www.canew.ca/canew_2012.htm)



**CIGRE Canada Conference**

*International Council on Large Electric Systems*

**September 24-26**, Montreal, Que.

Visit [www.cigre.ca](http://www.cigre.ca)

**59th PCIC Petroleum and Chemical Industry Technical Conference**

*IEEE Industry Applications Society (IAS), Petroleum and Chemical Industry Committee (PCIC)*

**September 24-26**, New Orleans, La.

Visit [www.ieee-pcic.org](http://www.ieee-pcic.org)

**Nova Scotia Feed-in Tariff Forum**

*Canadian Clean Energy Conferences*

**September 24-25**, Halifax, N.S.

Visit [www.amiando.com/nsfit2012.html](http://www.amiando.com/nsfit2012.html)

**14th Annual IDEA E-Biz Forum**

*Co-hosts: IDEA, NAED, NEMA, Electro-Federation Canada (EFC) and NEMRA*

**September 25-27**, Dallas, Texas

Visit [www.idea-ebizforum.com](http://www.idea-ebizforum.com)

**NECA**

*National Electrical Contractors Association*

**September 29 - October 2**,

Las Vegas, Nev.

Visit [www.necaconvention.org](http://www.necaconvention.org)



**A-D North American Meeting, Electrical Supply Division**

*Affiliated Distributors*

**October 10-12**, Grapevine, Texas

Visit [www.adhq.com](http://www.adhq.com)



**IALD Enlighten Americas:**

**"Speaking of Light"**

*Int. Association of Lighting Designers*

**October 11-13**, Vancouver, B.C.

Visit [www.iald.org](http://www.iald.org)

**Built to Protect and Defend.**

**AFC Liquid-Tuff™ Conduits**

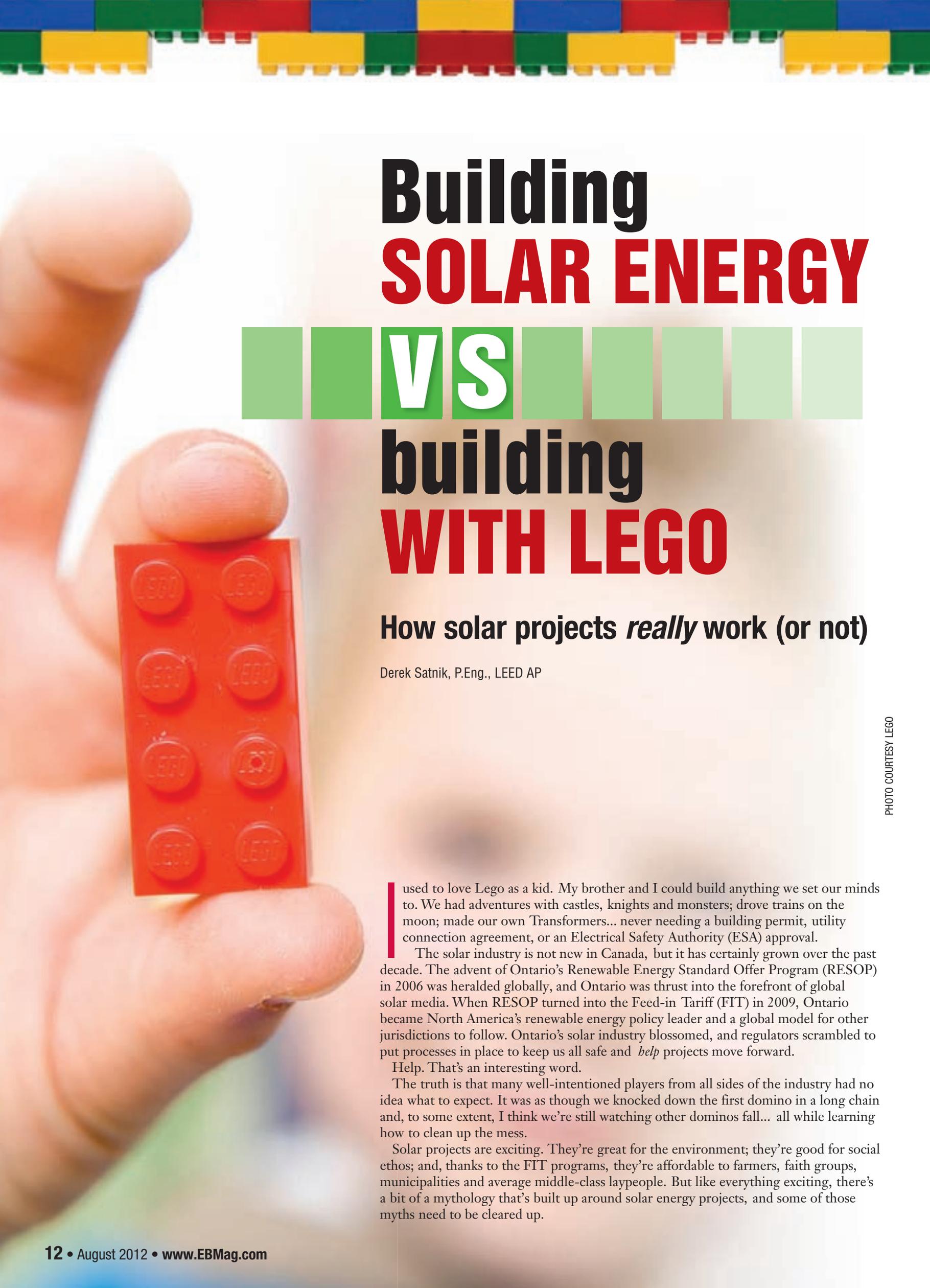
Whether you need to protect wiring from extreme temperatures, harsh environmental conditions, or halogen free requirements, AFC has the right solution for your job. This completely re-engineered line of industrial and commercial liquid-tight flexible metal and non-metallic conduits offer variety, strength, and flexibility to shield wiring in any condition.

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# Building SOLAR ENERGY

## VS building WITH LEGO

### How solar projects *really* work (or not)

Derek Satnik, P.Eng., LEED AP

I used to love Lego as a kid. My brother and I could build anything we set our minds to. We had adventures with castles, knights and monsters; drove trains on the moon; made our own Transformers... never needing a building permit, utility connection agreement, or an Electrical Safety Authority (ESA) approval.

The solar industry is not new in Canada, but it has certainly grown over the past decade. The advent of Ontario's Renewable Energy Standard Offer Program (RESOP) in 2006 was heralded globally, and Ontario was thrust into the forefront of global solar media. When RESOP turned into the Feed-in Tariff (FIT) in 2009, Ontario became North America's renewable energy policy leader and a global model for other jurisdictions to follow. Ontario's solar industry blossomed, and regulators scrambled to put processes in place to keep us all safe and *help* projects move forward.

Help. That's an interesting word.

The truth is that many well-intentioned players from all sides of the industry had no idea what to expect. It was as though we knocked down the first domino in a long chain and, to some extent, I think we're still watching other dominos fall... all while learning how to clean up the mess.

Solar projects are exciting. They're great for the environment; they're good for social ethos; and, thanks to the FIT programs, they're affordable to farmers, faith groups, municipalities and average middle-class laypeople. But like everything exciting, there's a bit of a mythology that's built up around solar energy projects, and some of those myths need to be cleared up.

PHOTO COURTESY LEGO

# IPEX NEW PRODUCTS FROM IPEX ELECTRICAL SYSTEMS

## Universal F Series Double Gang Boxes and Covers



Scepter® F Series double gang boxes, weather-proof covers and cover plates have been redesigned for universal compatibility with any industry standard double gang box or cover. CSA approved, the new universal boxes and covers are easy to use, have more internal wiring space and include reducer bushings to accommodate various sizes of conduit. All the weatherproof covers have been designed to ensure a watertight seal using a new foam gasket, with an adhesive layer for ease of installation.

## Round Floor Box and Stand



Simple yet innovative, the new Round Floor Box Stand is designed to raise the Round Floor Box off the concrete form allowing the ENT or conduit to enter

the Box in a flat and straight path. Installed together, the Floor Box and Stand accommodates the different rebar and post-tensioned cable heights and slab depths found from job-site to job-site.

Sold as a kit, IPEX Electrical offers the Round Floor Box and Stand conveniently packaged together as one complete product offering.

## SceptaCon Trenchless Raceway for Traffic Signal & Street Lighting



The new 2" SceptaCon is ideally suited for street lighting and traffic signal cables where installation requires a smaller diameter pipe than your typical electrical raceway.

Now contractors can install RW cables instead of the more expensive TECK cables required with the use of HDPE pipe.

**For more information call  
Toll Free: 1-866-473-9462  
or visit  
[www.ipexelectrical.com](http://www.ipexelectrical.com)**

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**INEXO**  
THE ICF BOX

Insertion depth of 2-1/4"

'TEETH' can be easily removed and replaced.

'TEETH' lock in place providing a rigid hold in the EPS foam.

Greater installation versatility with 3 screw hole choices and flanges on both sides.

Full flange prevents box from twisting and sinking into foam if over-tightened.

INEXO provides a 1/2" drywall setback resulting in a professional finish.

Single gang box provides 19 cubic inch capacity.

Scan to view or purchase this video at our website.

**THE INNOVATIVE ELECTRICAL BOX FOR INSULATED CONCRETE FORM CONSTRUCTION**

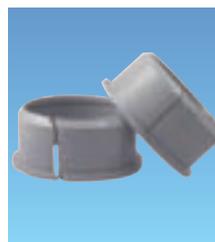
**INEXO™ Commercial Boxes - the only approved electrical box for ICF construction!**

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Products are manufactured by IPEX Electrical Inc.

## EPR Kit Adapters make Duct repairs quick & easy!



New Adapters for our EPR Conduit Repair Kits allow contractors to repair a broken section of DB-II duct while leaving the cables inside and restoring the duct to its original form. The pre-cut adapters easily open

around existing cabling to make repairs quickly and effectively, reducing end-user downtime and complaints, and saving contractors time, labour and money.

## The Perfect Expansion Fitting for Short Runs!



The One Piece Expansion Joint (OPEJ) is designed to accommodate thermal expansion and contraction on shorter runs of PVC Conduit. The efficient design of the One Piece

Expansion Joint provides fast trouble-free installation and will ensure the owner receives a secure and appealing installation that will last the life of the system.



PHOTO COURTESY LEGO



### **FIT contract... not subsidy**

FIT contracts are not subsidies, and they won't help anyone get rich quickly. Subsidies aim to support an undertaking held to be in the public interest, like reduce or offset construction or other development costs for new gas or nuclear energy plants. FIT contracts are quite the opposite: they only pay for delivered energy. Project proponents absorb 100% of the project risk up to the day energy is sold to the grid.

Nuclear energy plants typically have special contract provisions that ensure they get paid even when experiencing downtime. FIT contracts offer no such luxury: payment is only made for kWh delivered to the grid. This is great for the ratepayer and taxpayer, but it poses an interesting challenge to the project team: the project needs to be designed right and implemented precisely as planned, or all the losses fall to the project owner.

### **Common project pitfalls**

We consult on a variety of solar energy projects. Our clients are spread across Ontario, and range from homeowners to farmers to commercial developers or industrial factory operators. They have many different needs, but they tend to struggle with the same things when considering solar energy projects. Like any project, solar energy projects succeed or fail based on planning. As the proverb goes, if you fail to plan, then you plan to fail—or at least learn some hard lessons along the way.

The single greatest project killer we've repeatedly encountered is when project teams neglect to contact all of their approving authorities before starting the project. You may need approvals from the any or all of the local municipal building departments, the Ontario Power Authority, Electrical Safety Authority and, sometimes, even a local conservation authority. Any one of these can stop a project in its tracks, regardless of how much money you've spent before calling them.

The most tragic case we've seen involved nearly 200kW of fully installed solar panels that could not be connected to the grid because the owner neglected to first get approvals. And there are more than a few homeowners across Ontario currently attempting to connect microFIT systems (less than 10kW) who, similarly, neglected to first talk to their local electrical utility. They may not be able to get connected whatsoever. Some have even withdrawn their retirement savings to finance their project—a costly and tragic mistake.

We've watched other projects get hung up in the fine print. In this market, it happens all too often: contractors get hired in good faith based on a talented sales call and a thin purchase agreement, and the fine print doesn't include some of the important details that the property owner doesn't understand, like securing the FIT or microFIT contract to sell electricity to the grid.

Sometimes, this falls between contracts in larger projects. A good example is when a general contractor delivers a 'turnkey' system design and installation by hiring engineering consultants to do the design and electricians and roofers to do the installation, but forgets to clearly spell out who will apply for the FIT contract. Without a FIT or microFIT contract, solar panels can be very expensive decorations!

Especially in progressive and exciting new markets, I cannot overstate the importance of having clear contract documents, and of ensuring the whole project team has a complete and clear understanding of each other's responsibilities so that nothing falls through the cracks.

Even when you do everything right, some projects still get jinxed over the most unexpected of things. Most contractors don't think to check for CSA certifications on the products they install, but I've seen equipment arrive on site that was not CSA certified; that equipment ultimately needed to be torn out and replaced with something that was. Unless products are certified to CSA or equivalent standards, the Electrical Safety Authority will not allow them to be connected to the grid—and with good reason. No one wants to be involved in a project that causes a fire or, worse, a fatality.

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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



EMT400

Also for rigid, IMC and PVC rigid conduit



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

Listed for Air Handling Spaces



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NON-METALLIC

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NEW  
Box set too far forward or back? Back the screws out and reposition.

OLD  
Secure mounting to stud (not the drywall)



F101HGC  
Single Horizontal



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ONE-BOX mounts to a wood or steel stud for an extra-secure installation.

- Angled screws INSIDE attach box to stud
- No wings – no wobble
- Fast, easy to install
- Extra-large 22 cu. in. capacity (single gang)



F101GC  
Single gang



NM cable connector supplied

FOR ANY SIDING TYPE

# OUTLET BOX

FOR DRY LOCATIONS

Try *this* outlet box for fast, easy installations of single-gang devices on siding – in dry locations.

- Works with all single-gang devices, including GFCIs
- Installs on any siding, before or after it's up
- For use where a weatherproof in use cover is not required - also accommodates a bubble cover for wet locations



FS8091FGC



Ground clip



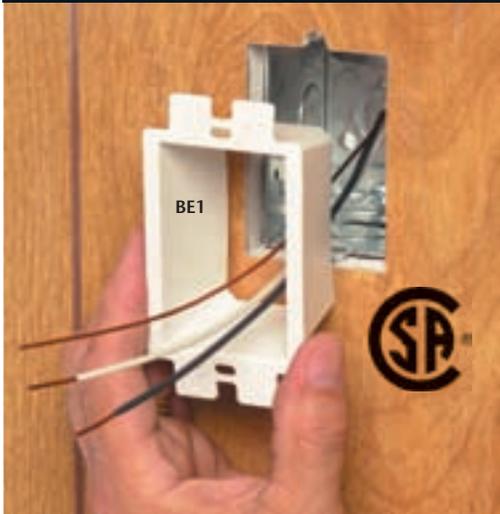
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BOX EXTENDERS

# CSA LISTED

FOR SETBACK ELECTRICAL BOXES

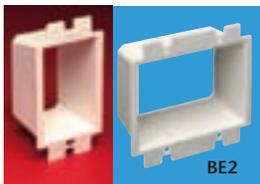


BE1



Our CSA/UL Listed Box Extenders extend set back electrical boxes up to 1-1/2".

- Heavy-duty, non-conductive plastic
- Level, support wiring devices
- Protect wires against damage, stripping

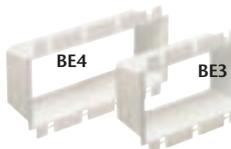


BE2

BE1R for round or octagonal boxes, the single and two-gang for all standard devices, switches and GFCIs – now three- and four-gang box extenders for multiple gang boxes!



BE1R



BE4

BE3



View Video



Try them *all* for the safe, easy way to meet CEC 12-3018 (1) for flush boxes!

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FOR SIDING

# FIXTURE BOXES

INSTALL BEFORE OR AFTER THE SIDING



Arlington's boxes give you the fastest, easiest way to install light fixtures and receptacles on siding!

**BOTH** 8081FGC & 8141FGC...

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



8141FGC  
Fixture Box

8081FGC  
Electrical Box



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8141FGC Costs 20% Less than 8081FGC

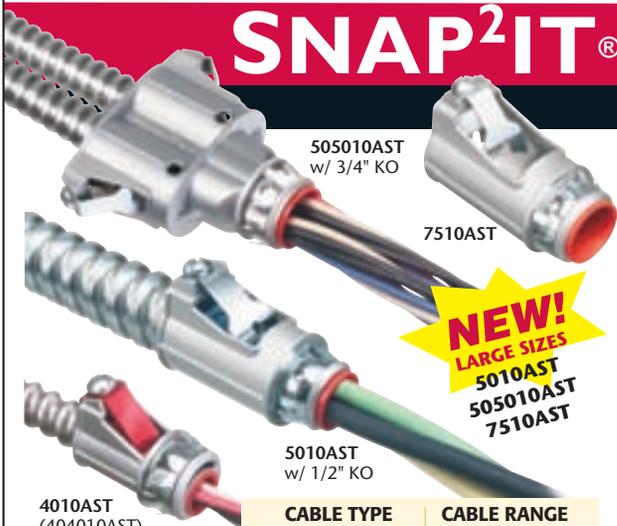
**ONE-piece**  
No extra cover to lose or store  
For light fixtures

**TWO-pieces**  
electrical cover & box  
For light fixtures; standard receptacles

WIDEST TOTAL CABLE RANGES

# SNAP<sup>2</sup>IT® FITTINGS

EASIEST CABLE INSERTION



505010AST w/ 3/4" KO

7510AST

5010AST w/ 1/2" KO

4010AST (404010AST)

**NEW!**  
LARGE SIZES  
5010AST  
505010AST  
7510AST

Arlington's 3810AST and 4010AST series and our LARGER SNAP<sup>2</sup>IT® fittings 5010AST, 505010AST, 7510AST are the easiest to insert snap-on connectors. And they handle the widest total cable ranges for AC cable; 14/2 to 3/3.

- Easiest cable insertion
  - Widest variety of cables: AC, AC90, ACG90
  - Secure installation – no pullout
  - Easy to remove, reuse – just loosen screw on top
- Fully assembled, ready to use!  
Easy SNAP-IN installation.  
NO TOOLS!

SAVE 17 seconds per connector!



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## Public misinformation

One of the most unexpected challenges our projects sometimes face is social friction. One of our clients was chastised by a neighbour, who said "My taxes are paying for your [profanity removed] panels, you thief!". It is remarkable how little Ontarians know about how our energy markets work, and how hypocritical some misinformed people can be.

False information is free and widely available. Good information takes effort to compile, and often costs money. And while any bigot can level heavy accusations with little effort, the 'good guys' have to work hard and invest heavily to give solid answers to those accusations.

We've spent considerable effort compiling a long list of all the myths and misunderstandings that are commonly levied against wind and solar energy, and have published this FAQ with answers and references online at [bit.ly/LRGNKU](http://bit.ly/LRGNKU). The truth is that solar energy is already cheaper than the power we import during the sunny midday, cheaper than new nuclear in Germany, and will match all major fossil fuels in the United States by 2020, across the EU by 2017 and China by only 2015. Any new nuclear plants built today will take 10 years to be commissioned and brought online; by then, solar will be cheaper than nuclear across every major market in the world.

## Where to find help

If there's one key lesson we've learned about solar energy projects, it is this: they are not as simple as they seem. Thankfully, good help is available, and a properly implemented project can be a dream when done... when you plan it right!

The Renewable Energy Facilitation Office (REFO) within the Ontario Ministry of Energy is tasked with facilitating renewable energy projects as they navigate their way through the various government approvals required. They handle enquiries about

everything from biomass to hydro to wind and solar and, compared to everything they handle, solar is blessedly simple. Don't hesitate to call them for advice.

The Ontario Sustainable Energy Association (OSEA) is the non-profit agency whose efforts brought together all the stakeholders that first gave us RESOP, then the Green Energy and Green Economy Act with its FIT programs. OSEA is at the heart of the community power sector in Ontario, and loves nothing more than to help local community groups (e.g. farmers, co-ops, churches and or even private landholders) to plan and implement their own energy projects.

The Community Energy Partnership Program (CEPP) has several grants available to help local community groups navigate the government approvals process.

Any good accountant will be able to help you plan the tax write-offs in your project: proper use of Class 43.2 depreciation allowances can double the returns on your investment, and are sometimes the key element that makes a project possible.

In short, plan early, get help and do some research, and your solar energy projects will consistently come out right. As simple as these projects may seem, they can break just as easily as our childhood Lego fortresses when you don't plan properly. **EB**

*Derek Satnik is a professional electrical engineer and managing director at Mindscape Innovations Group Inc., a wind and solar energy consulting company with offices and projects across Ontario. Visit [www.mi-group.ca](http://www.mi-group.ca).*

## Notes

- REFO, [www.energy.gov.on.ca](http://www.energy.gov.on.ca)
- OSEA, [www.ontario-sea.org](http://www.ontario-sea.org)
- CEPP, [www.communityenergyprogram.ca](http://www.communityenergyprogram.ca)

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# Flowing with the

# tide

## CSA committee on marine energy issues first publication

**W**ith extensive coastal and inland waters, Canada has the ideal environment for tapping the potential of renewable marine energy. The International Electrotechnical Commission (IEC) Technical Committee (TC) 114 is responsible for international standards for marine energy conversion systems. The primary focus for this TC is to develop standards related to conversion of wave, tidal and other water-current energy into electrical energy.

While other conversion methods, systems and products are included, tidal barrage and dam installations (as covered by TC 4) are excluded.

TC 114 standards will address:

- system definition
- performance measurement of wave, tidal and water-current energy converters
- resource assessment requirements, design and survivability
- safety requirements
- power quality
- manufacturing and factory testing
- evaluation and mitigation of environmental impacts

This technology is now being deployed, and a few are already grid-connected. For there to be significant market entry of offshore renewables, suitable grid infrastructure is required.

Given the intermittency of wave power, it is unlikely that it will be suitable to support baseload power. Tidal power is more predictable, hence it is likely to contribute to baseload power supply.

Marine energy also has the potential to power remote communities that are otherwise reliant on diesel generators. It can be combined with other sources of renewable energy, given a suitable energy storage system is in place.

### Ensuring Canadian interest

IEC created TC 114 in 2007. Soon after, the Canadian Subcommittee to TC 114 was established, with initiation from Natural Resources Canada's CanmetEnergy, which has provided active participation from the beginning. Along with support from CSA Group, a strong Canadian voice has been demonstrated.

Of the 22 countries that contribute to this technical committee, 13 have 'participating'

status (including Canada) while nine others have 'observer' status. The Standards Council Canada has granted CSA Group 'subject area recognition', meaning only CSA Group can develop standards related to marine energy within Canada. By combining technical requirements developed through the Canadian Subcommittee to TC 114 and a CSA Group Committee on Marine Energy, Canada is positioned to adopt international standards with or without deviations to meet national requirements.

With its commitment to renewable energy, CSA Group has developed codes and standards for the manufacture and installation of solar photovoltaic, solar thermal, wind, geothermal and marine energy systems by working closely with industry, government, regulators, manufacturers and researchers to address cross-cutting energy issues. By combining its expertise in standards, certification, personnel certification and energy efficiency verification, CSA Group has a unique ability to leverage global resources that facilitate the uptake of technologies meeting stakeholder needs.

### Technical spec facilitates communication

In December 2011, IEC TC 114 issued its first publication, IEC/TS 62600-1, "Marine energy - Wave, tidal and other water current converters - Part 1: Terminology". This publication specifies the most important renewable energy terms relating to ocean and marine energy. Providing uniform terminology embraces international collaboration.

Ghanashyam Ranjitkar of NRCan, project leader for IEC/TS 62600-1, commented on how the different people in the team—all very familiar with the context—had different understanding of terminology. "It was interesting during the process of developing this TS [technical specification] how even established terms were understood differently by the experts in the field," he said.

Terms are not always used consistently across the globe and one of the aims of the TS is to add clarification. "I believe that this publication will help provide better knowledge of the emerging sector of marine energy and remove any ambiguity that may have arisen," said Ranjitkar.

### Way forward to help future work

There has been modest investment in marine energy in comparison to other, more-established renewable energies. Although there has been ongoing research in this field for the last 30 years, the technologies developed to harness the energy from waves, tidal and water currents are in early stages of development. In the last few years, more focused attention has been

given to this technology as countries are looking for alternative options to increase the amount of renewable energy production in their power production mix.

Scientists recognize that the Earth's oceans present a vast amount of power that could theoretically be extracted. Current theoretical ocean energy resource estimates range between 8000 TWh/y to 80,000 TWh/y for ocean wave energy, and greater than 800 TWh/year for marine currents. Lowering the costs of these technologies through more-efficient designs while using low-cost materials and components—along with economies of scale—aim to improve the

overall economic viability and acceptability of wave, tidal and water current energy converters.

The establishment of international standards will assist in mitigating the technical and financial risks associated with the diverse range of technologies that currently exist, enabling a quicker uptake of commercial marine energy production. **EB**

*This paper was authored by IEC e-tech and CSA Group. For more information, contact Muktha Tumkur, renewable energy program manager with CSA, at [muktha.tumkur@csagroup.org](mailto:muktha.tumkur@csagroup.org).*

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# Selecting an ECAD SOFTWARE for wiring design

Eric van Essen

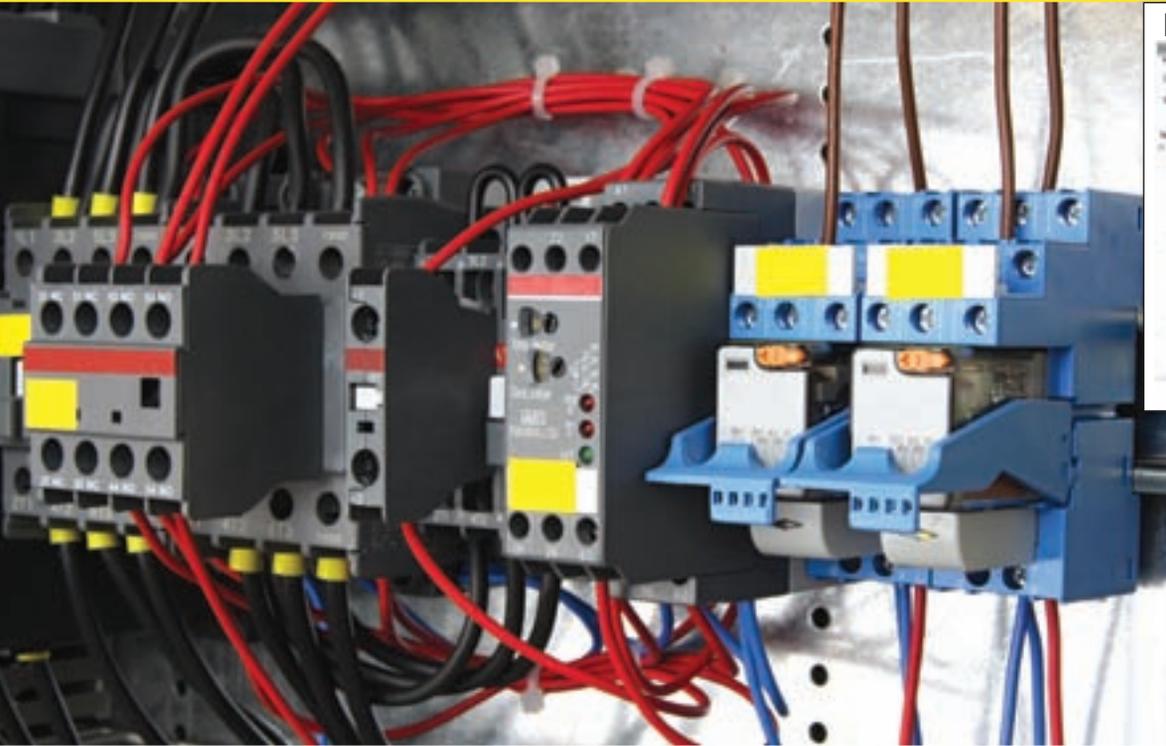


FIGURE 1

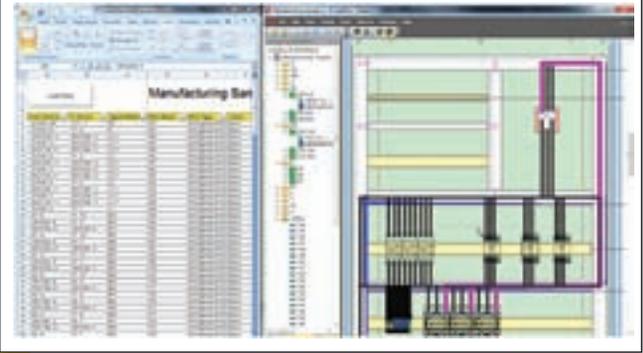
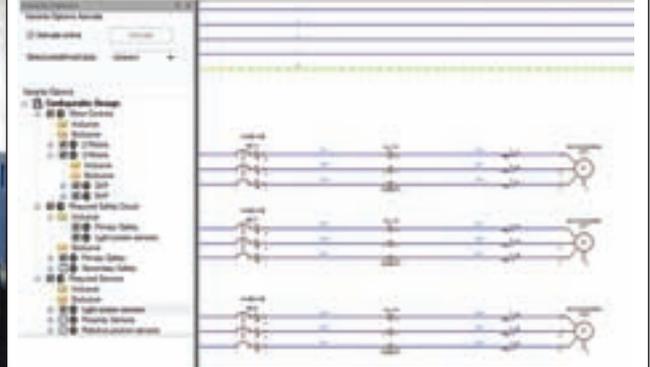


FIGURE 2



Selecting new software to use for electrical wiring design can be a difficult decision. There are many considerations and the result can have ramifications for years. To start off, let me clarify there are two main categories for ECAD (electronic computer-aided design) software:

1. Electronics-based software for printed circuit board design.
2. Design software focused on wiring.

Here I will focus on selecting electrical wiring design software for interconnect electronics with cables and harnesses, or interconnecting electrically controlled components that are scattered around a design or in an electrical enclosure.

## Establish electrical design requirements

Electrical design requirements are typically derived by the type of industry or electrical design you are creating, combined with the current frustrations with which your team is dealing. Here are some quick thoughts on design requirements that are derived from industry:

- Aerospace: MIL-spec standards, complex multi-level harness.
- Power: Complex devices, connection wiring diagrams, greenfield v brownfield designs.
- Automation: Heavy design reuse, detailed control panel layouts.
- Vehicles: Complex harness, MCAD Integration

Many niche industries have their own mix of common requirements. (For a more detailed list related to your industry, please contact me.)

Expanding on your common industry requirements, it is important to work with your team to understand current frustrations. Remember that your team is anyone that creates or interprets your electrical design. Many companies overlook the extended team members in the mechanical, purchasing or manufacturing departments. Here are some sample frustrations from different team members:

### Electrical design team

- Keep device tags and references up to date
- Automate wire numbers
- Create required reports more easily
- Manage consumed and available pins and symbols

### Mechanical design team

- Understand space requirements for electrical wiring
- Communicate selected devices with electrical

### Purchasing

- Produce accurate bill of materials
- Load data more easily in to ERP system

### Manufacturing

- Specify recommended wire paths
- Send data to tag printers more easily

## Include innovative goals of new software

Far too many companies have narrow visions when selecting new design tools. Design requirements are typically focused on doing the same thing faster with a higher quality. However, introducing a new electrical design tool should be treated as an opportunity to innovate.

Ask bold questions and also make sure to ask “Why?” when examining your current design process. Shift your focus to fundamentals such as sales and product delivery, and decide what your dream tool would look like were it to bridge the gap between the two. Electrical design tools are becoming more automated and integrated into other systems every day, and it is important to identify whether reinventing your process will result in significant advantages.

A common area of innovation related to ECAD is on the manufacturing end. If manufacturing could be supplied with the perfect step-by-step instructions, what would it look like? Could having such robust, consistent information result in more consistent builds completed with less upfront training? Many companies are realizing that this is indeed the case, and are striving toward it. Figure 1 shows a screen capture of an ECAD software using an Excel list of wiring to be done, and automatically highlighting the recommended wiring path in the panel.

The modular design approach is another common area of innovation. If you had the ability to link commonly designed circuits and drawings with frequent customer or sales requests, what would that do to your process? Companies are realizing incredibly large benefits in their design work done for quoting when they move toward an automated, configurable approach. Even without quoting being a step in your process, getting a jump-start on a similar project by selecting options and variants from a list of questions can commonly save 50-80% of the required engineering work. Figure 2 shows a screen capture of an ECAD software using options and variants to drive design circuits.

## Selecting a vendor

With a well-established list of requirements and some innovative ideas, it is time to select a vendor that will enable you to achieve these goals. There are a number of vendors in Canada that supply electrical wiring design software, so selecting the right one for you can be challenging. A good vendor will be knowledgeable about your industry challenges and will help you solidify your needs. Working through a rough budget early in the process is important due to growing costs related to sophisticated ECAD systems with niche industry requirements.

Being upfront about your requirements and financial benefits to the company will help establish a reasonable budget. When you do not have a well-established list of requirements that includes perspectives from different roles, it is advisable to allow your vendor to work with other team members to develop a more complete list. When your needs are addressed to your satisfaction, and the budgetary cost of the implementation is within your expectations, it likely makes sense to narrow your potential vendor list to one or two that you believe come out ahead.

## Making a plan for a successful implementation

Before moving forward with the decision of a new ECAD system, it is important to make a rough implementation plan. Many vendors will have sample implementation plans they have worked on with previous clients that you can review and modify to suit your own company's situation. When you use the new system out of the box, you may be able to get away with a quick implementation that requires training and installation.

When you have a larger design team or specific requirements that the out-of-the-box setup does not support, you should plan to spend two to eight months setting up your standards and electrical library. It can be tempting to put a larger team on this type of implementation to speed up the process; however, unless work is properly segregated, having a

larger number of people making decisions can have the opposite effect.

Moving toward a new ECAD software for wiring design can be very exciting and can have a very positive impact on your company. Being organized with requirements and goals can be one of the most important steps to ensure proper tool and vendor selection. Treating this as an opportunity to innovate is a healthy approach, but being realistic with timing and budget is also important to make sure there is

support from upper-level management. Remember that you should deal with your vendors as partners on this project, as you will get much further when working effectively together. **EB**

*Eric van Essen is the electrical product manager with Javelin Technologies Inc., which has been helping companies with solutions for electrical/mechanical design and rapid prototyping since 1997. Contact Eric at eric.vanessen@javelin-tech.com or (905) 815-1906 ext. 250.*



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FIGURE 1

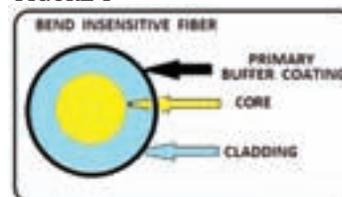


FIGURE 2

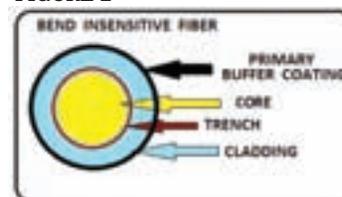


FIGURE 3



# RESPECT FIBER'S BEND RADIUS— DESPITE BEND-INSENSITIVITY

William Graham

The communications industry is an 'upgrade' industry... hey, they sold you copper cable from Category 3 to the proposed Category 7. It was a great run! Fiber, on the other hand, is harder to upgrade, and salespersons love dealing with you and don't want to let you go. They aren't giving up though; they will find some things to become obsolete that need upgrading.

## The basic fiber

A typical fiber has a core and cladding (Figure 1). This is one piece of glass, a core and a cladding, with a primary buffer coating surrounding the cladding to protect the glass from shock. Each part (core and cladding) has a different refractive index (resistance to the travel of light).

The refractive indices are less than 2% different. Typically, a fiber would have a refractive index of 146 and 148. The light travels through the core in a sinusoidal manner reflecting off the cladding as it moves down the fiber. This is called total internal reflection.

When the fiber is bent, some light leaks into the cladding causing loss. This is a normal occurrence and has been since the start of fiber installations. To manage this loss, we have always installed fiber with a minimum bend radius.

Exceeding the minimum bend radius not only causes loss but it can cause hairline cracks in the fiber that cause premature failure. Often, it will take weeks or months for the cracks to worsen and the fiber to fail. We can relate this to the small nick in our vehicle windshield: not a problem at the time but, oops, it starts to spread and is eventually across the entire windshield.

## What are bend-insensitive (BI) fiber cables?

Bend-insensitive (BI) fibers exploit changes in the fiber manufacturing process that make

them transmit light with lower loss even when they are bent beyond the normal recommended bend radius.

This is accomplished by producing the fiber with an optical trench, using a lower refractive index material or barrier between the core and cladding, as we see in Figure 2. This causes the light to be reflected back into the core, minimizing perceived data loss.

When Category 5 copper cable first came out, bend radius figures were established, which were also applied to fiber. Most installers did not see any problem with these bend radius figures and, for years, systems worked fine.

When it comes to BI fiber cables, we are told the BI fiber will allow tighter bends in crowded panels with less loss. We can install the fiber cables with a tacker (staple gun) the same as copper. Oh, and don't worry if you should break the fiber: you'll know it. All you have to do, apparently, is just tack it along the baseboard and go around corners with no fear of damage.

Patch cords made with BI fiber can take more rough treatment during maintenance and installation. Accidental bending can be tolerated with less loss. Normal fiber connectors and accessories are compatible with BI fibers. Don't worry about a bit of stressing and microscopic installation cracks. (The system will probably work and not fail for a few weeks. But make sure your invoice is paid in 30 days or less, just in case.)

## Are there any disadvantages to BI fibers?

Straight, outdoor fiber runs experience no advantage with these fibers, but are more sensitive to bends in the long band (1625 nm). Also, the Numerical Aperture of different fibers can be different, depending on the location of the trench.

There may also be compatibility issues between multimode BI fibers and traditional multimode fibers, which may cause misalignment of the modes. This problem can be much worse and unpredictable in field-installable connectors with a fiber stub in them. With so many makes of these 'quick-and-dirty' connectors on the market, results are surely predictable. What we save on bend loss we can lose on connector loss—at least in one direction.

Measuring back reflection with the required mandrel and back reflection tester is now an impossibility. However, I am sure the industry will sell us some additional products to compensate for this.

## Should you use bend-insensitive fiber?

Each person should weigh the risks and rewards of using this product. They will, of course, examine the advantages and, if they are aware of the risks, they will make a wise decision.

There are no standards requiring us to use BI fiber, though I am sure someone out there is trying to develop them.

Be assured that installers who destroy traditional fiber on installation will manage to do the same with bend-insensitive fiber.

Last but not least, we are talking about glass, which is fragile and will crack just as readily as the glass in Figure 3. The promoters of bend-insensitive fiber often forget to remind users of this fact, which promotes careless handling. That should be reason enough not to exceed the minimum bend radius we used in the past. **EB**

*William Graham is a master fiber optic instructor and a director of the Fiber Optic Association (FOA). He has been certifying fiber optic technicians through Mississauga Training Consultants for the past 17 years. Visit [www.fiberopticttraining.com](http://www.fiberopticttraining.com).*

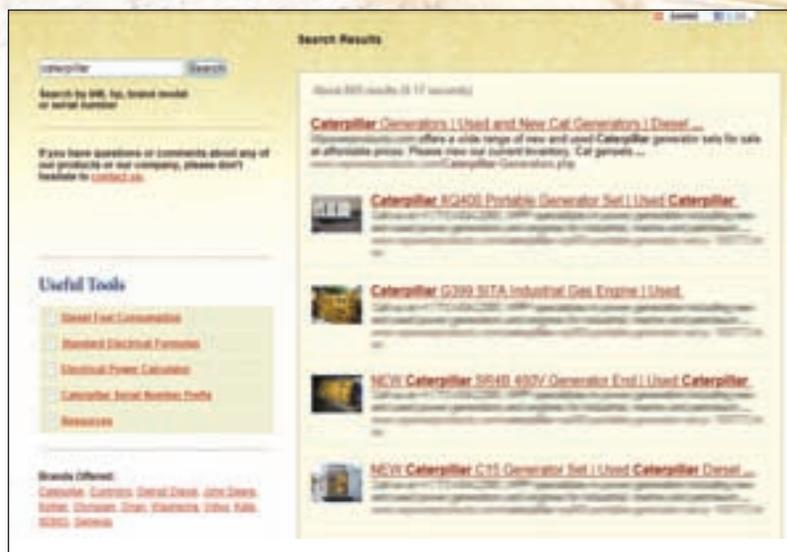
# Increase your business with strong power supplier partnerships



Mark Lum

Competition for contracts is fierce in the current economic climate. When an electrical contractor can position his firm as more responsive and nimble than his competitor's, the result will be more business and, in some cases, even windfall contracts. Partnerships with reliable suppliers are an important part of achieving this nimble stance. However, one supply chain often overlooked in this process is the provider of generators and engines.

We hear from many contractors who are asked to provide power equipment—whether it's a generator for a construction site or a replacement engine or generator for a plant. Clients often prefer to have their electrical contractor provide power supplies and roll them into the total cost of the job rather than have their own purchasing agents bid them out. Although this is an added financial burden on the contractor, it also presents a beneficial opportunity.



## Beat the clock

Many clients—and their contractors—take for granted that ordering a new generator or engine from a Caterpillar, Cummins or other such manufacturer will take from 20 to 24 weeks. With so many model variations available, large equipment dealers rarely keep industrial engines or generator sets in inventory—especially larger megawatt or specialty units. To find the right generator or engine quickly can involve dozens of phone calls to dealers and, even then, the search may not bear fruit.

This mismatch of supply and demand is creating a secondary market, whereby third-party suppliers procure new surplus and used equipment from a variety of sources then sell it to contractors. The best suppliers have strong partnerships with manufacturers and dealers and keep tabs on national inventory to provide the most comprehensive selection possible.

Imagine the good will you could generate with a client were you able to reduce delivery time for an

engine or generator from 24 weeks to just four or less. Not only would you likely help reduce the total timeframe for job completion, you would position yourself as a just-in-time solution provider who can deliver emergency, replacement or primary power quickly—no matter the reason.

## Grab the bid

Not only will accelerated delivery of power equipment enhance your reputation as a dedicated, high-quality company, it may also help you land a bid. One of the few loopholes in

## Nicklos Drilling

When natural gas-drilling company Nicklos Drilling experienced failure of a drilling rig generator, taking the rig offline for months was not an option. The small firm had all of its other rigs in service and needed a replacement quickly to prevent unacceptable drilling delays and lost revenue.

Nicklos also wanted to use the opportunity to upgrade to a larger model than the 20-year-old generator it had previously used on the rig. However, six months was the best estimate Nicklos could obtain from area dealers for a generator meeting its specifications.

The drilling company then turned to a power-generation equipment provider that was able to identify a match for Nicklos' specifications—a new surplus Caterpillar 3512C genset with the original warranty—and ship it immediately. The contract drilling firm had its genset installed and operating in just three days.



the procurement process for both corporations and government entities is delivery time.

When a firm or agency needs a power supply quickly, they can sometimes circumvent the normal bidding process and award the contract to the supplier who can deliver and install equipment in the requested timeframe. Even when the current bids you are working don't specify accelerated delivery, letting customers know you have that capability could land you a later bid, or even a second opportunity on a current bid should the process drag out and deadlines become jeopardized.

Another way of leveraging accelerated delivery capabilities to grow your business is by exploring pending legislation. An increasing number of local agencies are being required to have emergency power supplies to keep wastewater treatment, emergency operation centres and other critical

services running in the event of a power failure. Meantime, cash-strapped municipalities often put off these purchases for as long as they can, hoping for a budgetary windfall. Making it known that you may be able to provide and install emergency power equipment—even at the 11th hour—could land you a windfall of your own.

### Make it happen

Of course, none of this potential can be realized unless you partner with a provider that can procure equipment for you quickly and reliably, rather than on an occasional basis. Here are some tips to help you identify a power-generation supplier that can give you the business boost you seek:

### Expansive database

How large is the total database of products to which

the firm has access? Is it easily searchable? Can they tell you within minutes (or at least hours) whether they can meet your needs?

### Equipment flexibility

How broad is the selection of equipment in terms of megawatts, varied models and geographic location?

### Partners who partner

Does the provider have strong partnerships, not only with manufacturers and dealers, but even with other equipment sellers? The more potential sources of equipment to which your supplier has access, the better your chances of finding a match.

### Government seal of approval

For many companies, entities and agencies, circumventing the competitive bid process is only possible when they procure the equipment from a pre-approved supplier. Ask your customers and prospects whether they are pre-approved to purchase through specific associations or clearing-houses, then look for a supplier that is pre-qualified.

Depending on your location and budget, it may take some time to find one or more partners who can provide rapid delivery of power generation equipment, but the work (and wait) will be worth it. Your customers will be more satisfied and willing to make referrals, and you'll have an edge over competitors for new business. **EB**

*Mark Lum is executive vice-president of Worldwide Power Products (WPP), a power-generation equipment provider to industrial clients. For more information, visit [www.wpowerproducts.com](http://www.wpowerproducts.com).*

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Dave Smith

## Maintain your equipment; reduce your risk

### Part five

One of the most fascinating stories I've ever read was the history of the development of standards for nuts and bolts.

It was truly amazing to learn that, in the late 1800s, there was a plethora of bolt head sizes, styles, threads and diameters. For those of us who curse metric vs. imperial and fine vs. coarse threads, you can imagine the chaos that existed back then.

Naturally, many manufacturers made proprietary sizes and threads so that customers were forced to come back. This situation was finally resolved in the early 1900s when a committee was formed to standardize nuts and bolts in the marketplace.

In 1997, I became aware of a set of electrical maintenance standards created by an organization that had originated as NETA, the National Electrical Testing Association ([www.netaworld.org](http://www.netaworld.org)). NETA had started as a group of American electrical testing and field service firms sharing knowledge among themselves to improve their industry. As it grew beyond the borders of the States, the name was adjusted to InterNational Electrical Testing Association (keeping NETA as the acronym), and it has published several sets of standards specific to electrical systems.

ANSI/NETA "Standard for Maintenance Testing Specifications for Electrical Power Distribution Equipment and Systems" (2011), for example, covers suggested field tests and inspections for assessing the suitability of continued service and reliability of electrical power distribution systems.

It addresses such topics as: Applicable Codes, Standards, and References; Qualifications of the Testing Agency; Division of Responsibility; General Testing Equipment Information; Short-Circuit Analysis and Coordinating Studies; System Function Test; and Thermographic Surveys.

It also includes tests to be performed on: switchgear and switchboard assemblies, transformers, cables, circuit breakers, protective relays, grounding systems and other apparatus.

ANSI/NETA "Standard for Acceptance Testing Specifications for Electrical Power Equipment and Systems" (2009) was developed for use by those responsible for

assessing the suitability for initial energization of electrical power equipment and systems, and to specify field tests and inspections that ensure these systems and apparatus perform satisfactorily, minimizing downtime and maximizing life expectancy.

Use ANSI/NETA ATS 2009 as a guide when specifying and performing the necessary tests to ensure your electrical systems and apparatus not only meet project specifications, but that the manufacturer of the equipment supplied you with a product that will perform safely and reliably for many years.

NETA has a four-level certification process (Levels I, II, III and IV) for its technicians, and they expect technicians to continue their professional development according to ANSI/NETA "Standard for Certification of Electrical Testing Technicians" (2010). It provides a recognized procedure for qualifying electrical testing technicians and the agencies that certify them. This standard defines competency on the basis of experience, education and an examination.

In further support of our industry, NETA provides its Frequency of Maintenance Tests, which is a time-based maintenance schedule and matrix. NETA recognizes that the ideal maintenance program is reliability-based, unique to each plant and each piece of equipment but, in the absence of this information, Frequency of Maintenance Tests is an excellent reference.

Historically, electrical standards were developed by individual utilities and, many times, the information was considered proprietary. As many utilities had the benefit of being monopolies, they had the business drive and resources to invest in the development of internal standards. Many large companies had similar drive and resources, but medium to smaller

businesses were at a huge disadvantage.

NETA specifications have filled a huge void in a superb fashion. The organization has worked very diligently and is now accredited with ANSI (American National Standards Institute). Again, providing more credibility to these standards, NETA companies contribute to these standards, which are updated every three to four years.

In addition to standards, NETA's website has a bookstore listing many valuable reference materials. As well, NETA hosts PowerTest ([www.powertest.org](http://www.powertest.org)), an annual conference that brings together subject matter experts from all electrical fields. I was fortunate this past February to speak on electrical safety at NETA's conference in Fort Worth and, in 2013, I am doing a 4-hour session on maintaining and testing low- and medium-voltage circuit breakers at PowerTest in New Orleans. If you are an electrical maintenance professional, you need to attend PowerTest.

You must be a field service firm to become a full member of NETA, but anyone can join as an Associate, as have I, and it has been an excellent investment.

Every NETA firm has seen unimaginable damage to equipment, production, materials and, unfortunately, people due to poor maintenance. Its standards have saved companies billions of dollars in avoided losses and, more importantly, innumerable lives.

Until next time, be ready, be careful and be safe. © **EB**

*Canada Training Group has been providing consulting services to industry since 1980; Dave Smith, the president, can be reached at [davesmith@canada-training-group.ca](mailto:davesmith@canada-training-group.ca). At [www.canada-training-group.ca](http://www.canada-training-group.ca), you will find this article (and others) to help support your own safety initiatives.*

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# Documentation helps ensure success

**A verbal contract is not worth the paper it is written on. When all else fails, read the contract.**

Communications can be our greatest asset and our greatest downfall. We need to manage our communications effectively. With so many books written on the subject—and so many programs about effective communications—you could, literally, spend your life just studying effective communication.

The biggest gap I see in business communications is the lack of understanding. (For this reason, I often record meetings with clients [visit [www.livescribe.com](http://www.livescribe.com) to find out about one of the processes I use]. This certainly minimizes the He Said, She Said scenario.)

I do a lot of work with custom homebuilders and renovators, and the biggest area of conflict is around their customers' expectations. The client always seems to be expecting more for less, while the contractor thinks he has already gone to the ends of the earth for the client.

When dealing with customers, these and other residential trade and service contractors need to understand they are dealing with people who have little to no expertise in their business. As a result, misunderstandings are rife. Educating the customer is a critical first step in the relationship.

When working with trade and general contractors in the ICI market, I find communications issues take a different turn. The general contractors, developers, owners (and I include government bodies here) tend to be far more sophisticated than trade contractors. The majority of the people working for trade contractors have trade backgrounds (this is changing faster in the States than in Canada), while the majority of the people working for generals have a professional, or non-trade background.

As a result, the generals tend to be far better at managing paperwork than the trades which, in turn, causes trade contractors to lose out due to a lack of documentation.

The five most important elements in planning and controlling operations and resources when managing a construction



contract (as quoted by Barrie and Paulson in "Professional Construction Management") are:

1. Documentation.
2. Knowledge of contracts and the law.
3. DOCUMENTATION.
4. Good working relationships between all parties to the contract.
5. D-O-C-U-M-E-N-T-A-T-I-O-N.

Did I mention documentation? When I explore the many issues my contractors face, we often trace their problems back to poor communications, incorrect expectations or broken promises.

I encourage them to develop proper scripts, contracts and written formats for as many eventualities as possible. This is an arduous and ongoing task, but the benefits they reap are many:

- They make money.
- Employees are happier, as there is less customer conflict.
- Customers are happier, as their expectations are being met.
- The value of the company increases due to a greater reliance on formal systems.

### The takeaways

- Identify the recurring areas that create problems for you.
- Work with your team to develop processes, checklists and systems to minimize the issues that cause the problems.
- Educate your customers so that both you and they are on the same, *documented* page. **EB**



*Ron Coleman, a member of the Institute of Certified Management Consultants of British Columbia, just published his latest book, "Building Your Legacy: Lessons for Success from the Contracting Community", which teaches you how to make more money while having more fun. A noted speaker, he has completed many interfirm financial comparisons of groups of construction companies in Canada and the United States. Ron's numerous published education programs include a 36-hour business management course specifically designed for the Electrical Contractors Association of British Columbia (ECABC). Visit [www.ronaldcoleman.ca](http://www.ronaldcoleman.ca).*

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- September 26 DAY 2 - INNOVATE**  
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- September 27 DAY 3 - CONNECT**  
OEMs, MOEMs, System Integrators

**September 25-27, 2012**  
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Mississauga, Ontario, Canada

Agenda and registration details at:  
[eatoncanada.ca/etectoronto2012](http://eatoncanada.ca/etectoronto2012)



### Standard Products expands Definity series with MR16HO, PAR30SN and BR20 lamps



Standard Products has added the MR16 Hi Output, PAR30SN, and BR20 lamps to its Definity series offering. The mercury and leadfree lamps are dimmable to 5% of light on most dimmers and are suitable for use in damp locations. The MR16HO lamp serves to replace 50W MR16 halogen lamps and boasts over 65 lumens per watt in 8W 3000K colour temperature. Meanwhile, the PAR30SN serves as a replacement option for 65W halogen lamps, and the BR20 aims to replace 50W halogen/incandescent lamps.

**STANDARD PRODUCTS**  
[www.standardpro.com](http://www.standardpro.com)

### Lighting Science Group Definity 8W LED MR16 bulb

Lighting Science Group has launched an 8W LED MR16 bulb as a replacement for traditional MR16 50W halogen bulbs. Suited for track lighting, recessed ceiling lights, desk lamps, pendant fixtures and retail display lighting, the Definity bulb claims to be up to 33% more efficient than competitive products.

**LIGHTING SCIENCE GROUP**  
[www.lsgc.com](http://www.lsgc.com)

### Acuity Brands launches ROAMview lighting control system



Acuity Brands has released its ROAMview lighting control system, an expansion of the company's ROAM (Remote Operations Asset Management) suite of wireless outdoor lighting monitoring and control systems. ROAMview features a pre-configured server and software package that can be deployed in smaller site, area or roadway applications such as car dealerships, shopping malls and campuses. The system tracks and reports individual fixture performance, and reports outages. It also helps to reduce the need for nighttime audits, the waste of day-burned lights and the elevated risks associated with lighting outages.

**ACUITY BRANDS**  
[www.acuitybrands.com](http://www.acuitybrands.com)

### Cooper Wiring Devices passive infrared occupancy sensors

Cooper Wiring Devices has created new wall & corner mount passive infrared occupancy sensors. Featuring self-adapting sensors, the solution boasts of complete, no-gap coverage to ensure proper illumination and increase efficiencies in any space. The sensors reply on Instinct Technology which continuously self-adjusts sensitivity and time delay in real-time to help

users maximize potential energy savings. Additional features include a self-adjusting Auto Off delay of five to 30 minutes and adjustable ambient light level feature from 0 – 300 foot-candles.

**COOPER WIRING DEVICES**  
[www.cooperwiringdevices.com](http://www.cooperwiringdevices.com)

### Lind Equipment redesigns LE990 portable floodlight

The new redesigned Lind Equipment LE990 108W portable fluorescent flood light features a strong plastic housing with rubber gasketing, and a "virtually" unbreakable polycarbonate lens. At 8,250 lumens, the LE990 produces approximately the same light output as a 500W quartz halogen, while using less energy.

**LIND EQUIPMENT**  
[www.lindequipment.net](http://www.lindequipment.net)



### Lumenpulse announces Lumentalk lighting technology

Lumenpulse is now offering Lumentalk, a patent-pending technology enabling digital control of LED lighting over existing AC power lines to help maximize cost and energy savings. Lumenpulse

boasts that Lumentalk allows traditional lighting systems to be upgraded to LED without the cost and hassle of opening up walls and ceilings to rewire for data, leading to a 30% reduction in total installation cost. Lumentalk users will be able to dim and control LED fixtures from different manufacturer over existing power lines, and is compatible with any dimming and control standard (Triac, ELV, 0-10V, DALI, or DMX) and AC voltage (100VAC - 277VAC).

**LUMENPULSE**  
[www.lumenpulse.com](http://www.lumenpulse.com)

### Toshiba 180 series candelabra LEDs



Claiming to deliver "impressive energy savings", Toshiba's new dimmable candelabra 180 series LED lamps aim to replace the 25W incandescent candelabra, while using up to 84% less energy than incandescent candelabras. The lamp comes in a 2700K colour temperature and fits standard E12 and E26 socket fixtures.

**TOSHIBA**  
[www.toshiba.com/lighting](http://www.toshiba.com/lighting)

### Arlington non-metallic vapour boxes



Arlington claims its new non-metallic vapour boxes feature built-in flanges and gaskets which form a protective barrier against air infiltration, meeting local codes where required. The boxes mount to wood or steel joists with captive installation screws or nails. It is available round for fixtures, and single-, and multiple gangs for devices for single or double drywall.

**ARLINGTON INDUSTRIES**  
[www.aifittings.com](http://www.aifittings.com)

### Rittal RiTherm app for enclosure assemblies

Rittal is now offering RiTherm—an iPhone, iTouch and iPad app which calculates climate control requirements for individual enclosure assemblies. The app provides a compact variant of the full software version "Therm 6.1" and guides users to the most suitable, climate control component: project title, parameter, enclosure, selection, recommendation.

**RITTAL SYSTEMS**  
[www.rittal.ca](http://www.rittal.ca)



### Legrand/Wiremold Work Surface Modular Power kits



Legrand/Wiremold is offering a way to provide power in meeting rooms, even when tables are moved to reconfigure the space with its new Work Surface Modular Power kits. The kits are sized to outfit 5' or 6' tables with plug-and-play power, and include table boxes, power whips, mounting clamps and cable covers. Tabletop portals have power outlets and openings for RJ45 network connections. The backbone of the kit

is the UL Listed 4-wire, 2-circuit non-sequential wiring system.

**LEGRAND/WIREMOLD**  
[www.legrand.us/Wiremold.aspx](http://www.legrand.us/Wiremold.aspx)

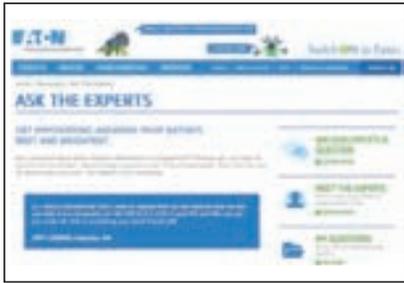
### General Cable UL 4703 PV wire



General Cable expands into the distributed solar market with its new SunGen brand of UL 4703 photovoltaic (PV) wire. The wire is UL 4703 and CSA RPVU90 listed and VW-1 rated for reliability in longterm outdoor sun exposure, and in compliance with NEC Code with properly coloured PV wire for source circuit identification. It is available in smaller reel lengths of 500', 1000' and 2500'.

**GENERAL CABLE**  
[www.generalcable.com](http://www.generalcable.com)

**“Ask The Experts” portal connects IT pros with Eaton community**



Eaton Corp. has launched an interactive “Ask the Experts” online portal, where IT professionals and resellers can submit technical questions to be answered by Eaton’s community of product managers and industry players. The toolkit is available at [www.SwitchOn.Eaton.com](http://www.SwitchOn.Eaton.com) and is a continuation of Eaton’s “Things Have Changed” campaign, an initiative dedicated to the IT community and expertise in IT and data centre solutions. Questions range from specific inquiries about replacing uninterruptible power system (UPS) batteries and power management software recommendations, to general questions about power distribution, airflow management and rack enclosures. **EATON**  
[www.eaton.com](http://www.eaton.com)

**Smartphone app commemorates Freightliner Trucks’ 70th anniversary**

Freightliner Trucks has launched a free smartphone application for iPhone and Android users to commemorate the company’s 70th anniversary. The app is an extension of [www.freightlinertrucks.com/70years](http://www.freightlinertrucks.com/70years), which provides a snapshot of Freightliner’s “legacy of innovation” with videos and a detailed timeline that celebrates the company’s products and technological milestones. Also included in the app is an interactive dealer locator, Freightliner’s schedule of trade shows and special events, and product information. Users can download the free Freightliner Trucks app in their respective app stores.



**FREIGHTLINER TRUCKS**  
[www.freightlinertrucks.com](http://www.freightlinertrucks.com)

**Transglobal Systems of Canada TSOC launches company video**

TSOC has just published a new company video ([bit.ly/JGRift](http://bit.ly/JGRift)) showcasing its capabilities. Transglobal Systems of Canada Inc. has manufactured industry-compliant connectors, cables and tools since 1983. Its facility has a custom cable assembly lab offering termination

and testing of copper or fiber cable assemblies. Continuous education and awareness of industry best practices through hands-on termination and testing of network cabling products is provided at TSOC’s training centre.

**TRANSGLOBAL SYSTEMS OF CANADA**  
[www.tsoc.com](http://www.tsoc.com)

**Centrosolar Canada unveils T-Series PV modules**



Centrosolar Canada, the Canadian subsidiary of Centrosolar Group AG, has introduced its T-Series photovoltaic (PV) modules to Canadian solar developers and installers for residential and commercial applications. The module comes in 60 cell and 72 cell to provide a power output per module of up to 255Wp and 300Wp, and are designed to resist different climatic conditions, such as ice, hail, snow, storm and high humidity.

**CENTROSOLAR CANADA**  
[www.centrosolarcanada.com](http://www.centrosolarcanada.com)

**Terex hot line tools now available for North American pros**

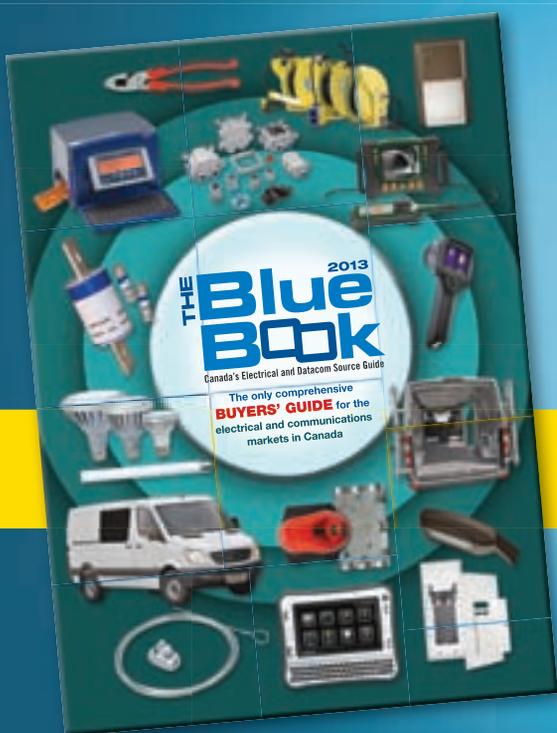
Terex Utilities now offers a range



of tools and solutions for work on energized power lines to electrical industry, electric cooperative and municipal utility customers in North America. Terex hot line tools are specifically designed for use by linemen, electricians and workers in the construction and maintenance of live power lines up to 800kV. The tools help electrical generation, transmission & distribution customers reduce the risk of working with live power lines and the cost associated with shutting down electrical networks for maintenance services. The equipment includes all the necessary tools—as well as personal and collective protection equipment—for different hot line working methods, including hot stick and bare hand methods. In addition to selling these specialty tools and solutions separately, Terex also offers customers the ability to custom-fit their Terex utility trucks with the hot line equipment electric crews need the most.

**TEREX UTILITIES**  
[www.terexutilities.com](http://www.terexutilities.com)

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# Hazardous gases and vapours (Section 18)

The Canadian Electrical Code (CEC), Section 18 covers electrical equipment and wiring in locations where the ignition of flammable gases, vapours, dusts and fibres could result in fires or explosions. Such places are identified as hazardous locations. To minimize risks, they are classified as to the level of risk. Naturally, electrical equipment and wiring requirements are more stringent for higher-risk locations. Let's look at hazardous locations and equipment identification for flammable or explosive gases and vapours.

Flammable gas and vapour locations are classified as Class I under Rule 18-004. Under the IEC Zone system of classification, Rule 18-006 further divides Class I locations into three Zones, depending on the level of risk:

- **Zone 0:** Flammable gases/vapours are present continuously or for a long time.
- **Zone 1:** Flammable gases/vapours are likely or next to Zone 0.
- **Zone 2:** Flammable gases/vapours are unlikely and may only be present for a short time, or the location is next to a Zone 1 with positive pressure ventilation in Zone 2.

There is a second method of classifying Class I locations. Under the North American system

of classification, Rule 18-006 divides hazardous locations into two Divisions:

- **Division 1:** An explosive gas atmosphere may exist continuously, intermittently or periodically.
- **Division 2:** An explosive gas atmosphere is unlikely, may exist for only a short time or the location is next to a Division 1 with positive pressure ventilation in the Division 2.

(The North American system of classification is specified in Rule J18-006, CEC Appendix J).

As indicated in Rule 18-000, the Zone classification method must be used to classify new, first-time facilities where hazardous gases and vapours will be present, but Rule 18-000 also permits the continued use of the Division system for modifications to existing facilities previously classified by the Division method.

Electrical equipment and wiring is selected for Class I locations by Zone or Division and by atmospheric groups. Under the IEC Zone system, atmospheric groups are designated by Rule 18-050 as Groups IIA, IIB and IIC for a range of gas and vapour groups. For equipment approved under the North American Division system, the same gases or vapours are identified as atmospheric Groups A, B, C or D.

Hazardous gases and vapours may have different characteristics; as such, equipment tested and approved for use in one atmospheric group may not provide the required protection when misapplied. For example, when electrical equipment approved for gasoline atmospheres is used in the presence of acetylene, the equipment will not provide the necessary protection against fires and explosions.

Class I electrical equipment must also have maximum surface temperatures lower than the minimum ignition temperatures of applicable gases vapours. Rule 18-052(4) contains a list of temperature codes (T1 to T6) for marking electrical equipment to identify maximum surface temperatures. It would be wrong to install heat-producing equipment (e.g. lighting) where gases having minimum ignition temperatures below the maximum surface temperatures of the luminaires are present. A fire or explosion would surely result.

Rule 18-052 specifies that electrical equipment must also be clearly marked to show where it can be installed. Class I electrical equipment is marked for Class, Zone or Division, atmospheric group and maximum surface temperature, but minimum marking requirements between the IEC and the North American systems may be somewhat different. **EB**

Questions and answers compiled by the Electrical Safety Authority | VISIT [WWW.ESASAFE.COM](http://WWW.ESASAFE.COM)

## Tackle The Code Conundrum... if you dare!

Answers to this month's questions in September'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

Receptacles required for maintenance of rooftop HVAC equipment shall be protected by a ground fault circuit interrupter of Class A type.

- a) True
- b) False

### Question 2

Only inverters approved and identified as interactive are permitted in interactive systems.

- a) True
- b) False

### Question 3

Receptacles located between \_\_\_ and \_\_\_ of the inside walls of a pool shall be protected by a ground fault circuit interrupter of Class A type.

- a) 1.0m, 3.0m
- b) 1.5m, 2.5m
- c) 1.0m, 2.5m
- d) 1.5m, 3.0m

### Answers: EBMag July 2012

**Q-1:** Utility interactive inverters are permitted to be mounted on roofs that are not readily accessible, provided that:

- d) All of the above. Ref. Rule 64-106.

**Q-2:** Receptacles shall not be located within \_\_\_ of the inside walls of the pools.

- c) 1.5 m. Ref. Rule 68-064.

**Q-3:** Bare conductors or insulated conductors not enclosed in grounded metal shall be used in electrical equipment rooms accessible only to authorized persons.

- a) True. Ref. Rule 36-100.

Les Stoch is president of L. Stoch & Associates, specialists in quality management/engineering services. He is a member of PEO, OEL and LAEI, and develops and delivers electrical code and technical workshops for Dalhousie University. He also developed the Master Electrician training program and exam (Ontario) for the Electrical Contractor Registration Agency. Visit L. Stoch & Associates online at [www.lstoch.ca](http://www.lstoch.ca).



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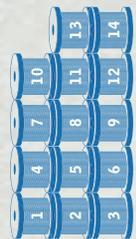
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