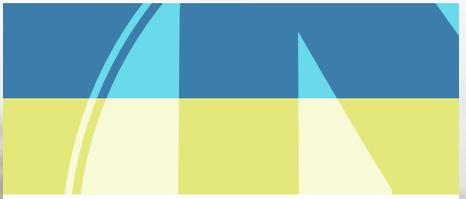


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OCTOBER 2015



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■ Also in this issue...

- "It's the workers that do the work"
- Classification system for cable ties
- Automotive exhaust never looked this good

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IPEX

Finding our competitive advantage in manufacturing

CHRISTIAN RYAN PHOTOGRAPHY



Canada is not just a nation of awesome natural resources, but of naturally resourceful people.

It shouldn't come as a surprise that manufacturing in Canada has seen significant declines since the turn of the last century. Between 2000 and 2014, manufacturing GDP declined some 11% and exports shrunk by 26%, yet the sector continues to make a critical contribution to our economy. Just consider how much electrical work alone is involved in setting up and maintaining new manufacturing facilities.

So what can be done to prop up Canada's manufacturing sector, which accounts for so many direct and indirect jobs?

In pursuit of answers, the Lawrence National Centre for Policy and Management released a research paper in partnership with Siemens Canada that, for manufacturers, emphasizes the production of high-value-added, high-quality goods and related services, meeting rapidly evolving skill requirements, and embracing new processes—like the Internet of Things—to optimize product design and production.

That paper was released just prior to an Ivey Idea Forum—a panel discussion—in September that included (left to right): Ivey professor Paul Boothe; Linda Hasenfratz, Linamar Corp.; Robert Hardt, Siemens Canada; and Jayson Myers, Canadian Manufacturers & Exporters.

While at the panel, I expected to hear nothing but tales of doom and gloom, but I instead got an earful of—dare I say it?—hope for manufacturing in Canada.



“Canadian manufacturing has the opportunity to reinvent itself,” said Hardt. “We have to make the case for Canada as a technological hub.”

And Linamar has definitely risen to the challenge. According to Hasenfratz, the company has tripled its sales over the last several years and significantly enhanced the productivity of its Canadian plants. “Let's have a culture of having the best!” she enthused.

We may or may not have a new direction in Ottawa by the time you read this, but I take comfort in the fact that—whatever the outcome federally—Canada is not just a nation of awesome natural resources, but of naturally resourceful people. “Let's start being positive... talk about how great we are instead of all we do poorly,” said Hasenfratz. I agree completely. **EB**

Anthony Capkun

PHOTO A. CAPKUN



On the Cover and Page 12

Let Them Eat Pie... for Power2Feed

Back in August, Hubbell Canada's VP & GM Kevin Mallory—along with several other electrical industry leaders—took it on the chin (so to speak) to raise about \$18,000 with the very first Power2Feed Pie Challenge in support of Canadian Feed the Children.

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8 Automotive exhaust never looked this good

Tenneco is one of the world's largest producers and distributors of automotive exhaust systems. In 2013, it began looking for an energy-efficient alternative to its costly, hot and high-maintenance 1000W MH high-bays at its 675,000-sf facility in Cambridge, Ont.

16 The ties that bind: A guide to the new classification system for cable ties

If in the last year you've felt a little mystified when buying or specifying cable ties and their associated fastening devices, you're not alone. Ever since the new standard for positioning devices officially replaced its predecessor, buyers and specifiers have been playing catch-up.

19 Say good-bye to boring receptacles

We continue to explore electrical technologies, products and systems for the discerning homeowner... where cost is not an issue! This month we take a peek at wiring devices and the changes receptacles have undergone to catch up with today's technology and style.

22 Saskatoon Skills competition brings out the crème de la crème

For two days in late May in Saskatoon, over 500 young Canadian students and apprentices in skilled trades showcased their talent, reaching for Gold, Silver and Bronze by competing in over 40 disciplines across six industry sectors in front of a crowd of thousands at the 21st Skills Canada National Competition (SCNC)—the 'Olympiad' of skilled trades in Canada.

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Who's taking the Ultimate Hockey Road Trip in 2015?

AD Canada Rewards ran its "Light It Up & Win" hockey promotion for a chance to win the "ultimate hockey experience" (adrewards.ca). Congratulations to the following six grand prize winners...



- Twin Electric (winner from Bartle & Gibson Co. Ltd., www.bartlegibson.com)
- Mid-Lite Electric (winner from E.G. Penner Building Centres, www.egpenner.com)
- Current Electric (winner from Eddy Group Ltd., www.eddygroup.com)
- Security Electric Ltd. (winner from Eddy Group Ltd., www.eddygroup.com)
- Malone Electric (winner from ElectroZad Supply Co. Ltd., www.electrozad.com)
- Reynov Electric (winner from Gerrie Electric

Wholesale Ltd., www.gerrie.com)
 The promotion ran from March 30 to June 30, 2015. Customers shot the puck for a chance to win the grand prize, which includes flights, accommodations, meals, three 'Original 6' hockey games and more. The six customers that scored the most goals on the "Light It Up & Win" online game during the promotion period became the grand prize winners.

Each winner also gets to invite someone from the AD Canada Affiliate distributor branch to join them on the Ultimate Hockey Road Trip.

BCIT offers new Industrial Electrician Apprenticeship Program

British Columbia Institute of Technology (BCIT) now offers specific training for industrial electricians through its Industrial Electrician Apprenticeship program.

BCIT (www.bcit.ca) explains industrial electricians are employed throughout the province, typically working in the pulp & paper industry, lumber mills, utility plants, manufacturing industries, and in the resource extraction and processing sectors. These industries are experiencing rapid growth and, as a result, industrial electricians are in high demand.

The BCIT Industrial Electrician Apprenticeship program (tinyurl.com/oac7qnb) is a 4-year apprenticeship that contains a 10-week technical training session in each of the four years. Industrial electrical apprentices complete the same Level 1 and Level 2 curriculum as those in the Construction Electrician Apprenticeship. However, Levels 3 and 4 have been revised to reflect a curriculum more in line with an industrial environment.

The apprenticeship is aligned to the Industry Training Authority's program outline that describes

the training requirements, says BCIT, and "provides a pathway to a Red Seal Apprenticeship program in the Industrial Electrician trade" (National Occupancy Classification 72422) for students.

Gross Sales now Thomas & Betts' Emergi-Lite agent

Thomas & Betts (www.tnb.ca) has appointed Gross Sales Ltd. (www.grosssalesarchitecturallighting.com) as the sales agent for Emergi-Lite emergency lighting products in the southwestern Ontario, Tri-City and Golden Horseshoe regions.

Gross Sales is a lighting service company representing lighting manufacturers to the design, engineering, distribution and contracting communities.

"Thomas & Betts is proud to welcome Gross Sales as our Emergi-lite agent for this key territory", said Rick Humphrey, commercial sales manager for the Thomas & Betts Central Sales Region. "We are confident that Emergi-lite products will be well represented."

Gross Sales is located at 26 Glebe Street in Cambridge, Ont. They can be contacted by phone at 519-267-6262 or by email at grosssales@rogers.com.

EB letters

✉ If I had a screwdriver... I mean, hammer

I look forward to every issue of Electrical Business. As a master electrician, I've learned a lot from it over the years. I do not typically comment on issues I notice in magazines, but couldn't help shaking my head while reading the August 2015 issue.

I had just finished the "Electrical Safety 360" column (Mike made some good points!), then turned to "How late is late?" concerning GPS software, which included a photo of a (I'm guessing) service technician who was apparently using pliers and a screwdriver as a hammer and chisel... and no safety glasses.

I'm probably nitpicking, and am hopefully not the first reader to point this out... just saying.

— Jack F., Ontario



We always welcome your Letters to the Editor, and you may even score a sweet prize for your efforts. In Jack's case, we sent him a Stanley FatMax 26-ft tape measure, courtesy of Stanley Black+Decker (www.stanleyblackanddecker.com), and a Milwaukee 4-pc hollow shaft nut driver set, courtesy of Milwaukee Tool (www.milwaukeetool.com). Email your Letters to acapkun@annexweb.com.

Electrical Business

October 2015 • Volume 51 • Issue 10

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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Published by Annex Publishing & Printing Inc.
 222 Edward Street, Aurora, Ontario L4G 1W6
 Tel. 905-727-0077 • Fax 905-727-0017

Publication mail Agreement #40065710

United States Second Class Postage paid at Lewiston, NY

(USPS-741-470) US POSTMASTER: Send address changes to ELECTRICAL BUSINESS, P.O. Box 8145, Lewiston, NY 14092

Printed in Canada
 ISSN 0013-4244

SUBSCRIPTION RATES:

Canada: Single issue \$7.00
 12 issues: \$35.00

USA: \$59.00 (US)

International: \$75.00 (US) per year

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Electrical Wholesalers Edmonton Ltd. joins IMARK Canada

Electrical Wholesalers Edmonton Ltd. (EWEL) has become an IMARK Canada (www.imarkcanada.com) member.

Now celebrating its 40th anniversary, EWEL (www.ewel.ca) supplies the electrical, lighting, heating and fire alarm needs of residential and commercial contractors. The company operates three locations in greater Edmonton—two in the city and a location in Sherwood Park, Alta.

IMARK Canada is a member-owned, member-governed marketing group for independent electrical and lighting distributors.

EHT awarded Senegal contract for micro-utility systems

Canadian-owned and operated Enerdynamic Hybrid Technologies Corp. (EHT) has been awarded a contract by IQ TPI Engineering to build 87 micro-utility systems in Senegal, Africa.

The systems will be deployed on the rooftops of existing housing units, which require an independent power source, according to EHT (www.ehthybrid.com). EHT will supply up to 2kW of power for each installation, including battery storage. The end-user will “gain energy independence and be able to access energy 24 hours per day without the requirement to be connected to the local electricity grid,” EHT said.

Globe Electric, Hydro-Quebec, Manitoba Hydro and PowerStream win Energy Star Awards

Globe Electric, Hydro-Quebec, Manitoba Hydro and PowerStream have been awarded 2015 Energy Star Market Transformation Awards for “exemplary performance in developing and

promoting the most energy-efficient products and homes in the market”.

The awards, hosted by Natural Resources Canada (NRCan, www.nrcan.gc.ca), are presented to utilities, manufacturers, retailers, associations and homebuilders.

Globe Electric (www.globe-electric.com) took home the award for Manufacturer of the Year in lighting while Hydro-Quebec won Utility of the Year (www.hydroquebec.com) in the provincial

category. PowerStream (www.powerstream.ca) won Utility of the Year in the regional category and Manitoba Hydro (www.hydro.mb.ca) took home the award for Promotional Campaign of the Year.

“This year’s Energy Star recipients are setting an example for the Canadian business community through their sustained leadership in promoting responsible energy use,” said Greg Rickford, Canada’s minister of Natural Resources.

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VRCA celebrates its electrical contractors' achievements

The Vancouver Regional Construction Association (VRCA, www.vrca.bc.ca) recently announced the Silver Award winners for its 27th Annual Awards of Excellence—an industry event honouring the region's construction leaders—and several electrical service providers were included among those winners. Kudos to:

Up to \$2 million

- Western Pacific Enterprises GP (www.wpe.bc.ca) for Cache Creek Landfill Gas Utilization Project (Cache Creek).
- Status Electrical Corp. (statusteam.com) for UFV Student Centre (Abbotsford), also a Silver Award-winning project & general contractor.
- Houle Electric Ltd. (www.houle.ca) for Wood Innovation and Design Centre (Prince George).

Over \$2 million

- Canem Systems Ltd. (www.canem.com) for 443 Maritime Helicopter Squadron Hangar (Sidney).
- Protec Installations Group (protecgroupp.com) for Anvil Centre (New Westminster), also a Silver Award-winning project & general contractor.
- Status Electrical Corp. for Vancouver Aquarium Expansion and Revitalization Project (Vancouver), also a Silver Award-winning project & general contractor.

Each year, VRCA recognizes the best companies, individuals and projects in the construction industry (including more categories than just Electrical). Three Silver Award winners are selected in 12 project categories for their use of innovative techniques, new materials and/or exceptional project management. One Silver Award winner from each category will win Gold at the Awards of Excellence event in October 2015. In this year's competition, 128 entrants and 37 projects were considered.

GE to supply 61 turbines for B.C.'s Meikle wind project



GE has confirmed it will supply Pattern Development (www.patterndev.com) with 61 wind turbines for the 180MW Meikle Wind Project (www.meiklewind.com), located about 33 kilometres north of Tumbler Ridge in the Peace Region of British Columbia.

The 61 turbines will combine 35 of GE's 3.2-103 units with 26 of its 2.75-120 turbines. GE says the wind project will be the largest in British Columbia once operational, and increase the installed wind power capacity in the province by 38%.

The contract with Pattern Energy includes a full service agreement provided by GE. Commercial operation of the Meikle Wind Project is expected to begin in late 2016.



PHOTO COURTESY SB&D CANADA

Joe Di Ilio, president, Stanley Black & Decker Canada (left) and Liz Etsell (right), volunteer site coordinator for Habitat for Humanity GTA, with the Dewalt Canada team.

Stanley Black & Decker builds for Habitat, leaves tools behind

Stanley Black & Decker (SB&D) Canada employees participated in the Habitat for Humanity Adopt-a-Day Challenge GTA (Greater Toronto Area); after their day onsite, the Dewalt and Stanley tools used in the build were donated to Habitat GTA.

“Our involvement with Habitat GTA is a significant part of the company's 100 Days of Giving campaign. Not only will our employees be able to brush-up their construction skills, we will all leave with a greater sense of pride and accomplishment,” said Joe Di Ilio, president of SB&D Canada.

Habitat for Humanity GTA's Adopt-a-Day Program is an employee engagement experience with a 28-year-history of giving employees a way to give back to their community. Habitat GTA serves the areas of Brampton, Caledon, Toronto and York Region.

Bruce Power employees raise \$14,000 for fire victims



Bruce Power (www.brucepower.com) employees stepped up to help the families left homeless from fires in Owen Sound, Ont.

A fundraising drive on site at Bruce Power raised over \$14,000 for the United Way of Bruce Grey's Owen Sound Fire Victims Fund, which will assist the 15 families who lost their homes during a string of early-morning fires on Aug. 10, 2015. The company also donated \$12,000, while President and CEO Duncan Hawthorne made a personal donation of \$10,000 to the fund.

The Owen Sound Fire Victims Fund is providing food, shelter and clothing to the families impacted by numerous fires. Bruce Power's donation pushes the total raised for the fund to over \$200,000, the United Way said.

Remember that LED carpet thing? Well, it's finally here...

A new centre for start-ups in Paris, France, called Le Village (an initiative of the French bank Crédit Agricole), is sporting an installation of carpeting that can display logos and internet content.

Back in December 2013, EBMag brought you news of Philips (www.philips.ca) and carpet manufacturer Desso partnering to develop solutions that combine LED lighting with light transmissive carpet to “transform the way people interact with information and their environment”. That solution is now known as Luminous Carpets (www.luminous-carpets.com).



In the entrance hall of Le Village, Philips installed a 1.20 x 2.00 m LED carpet border on which text and logos glide over the floor. Each message is fine-tuned to the visitors and/or linked to their brand. Thanks to its own central web server, the content can be controlled from a laptop, tablet or smartphone. **EB**



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Mike Doherty

Approach your workplace electrical safety plan with rigour

In the high-voltage sector, daily electrical safe work planning principles always employ quality, documented *tailgates* as a foundational best practice.

Before they start any job, linemen, for example, will gather as a crew with their supervisor and plan all aspects of the job (which should be documented in a simple and effective manner). In this sector, being officially authorized to start work is not only expected but *mandatory*. Were these job planning principles not followed, the safety consequences to the crew—and even those around them—can be catastrophic.

This sector shows abundant rigour for safe work practices; by rigour, I mean the dictionary definition of “the quality of being extremely thorough, exhaustive, or accurate”. For example, take a look at CAN/ULC-S801-14 “Electric Utility Workplace Electrical Safety for Generation, Transmission and Distribution” Clause 4.4.3.1 “Safe Work Planning”:

A safe work plan shall be completed for every job and it shall be revised whenever conditions at the worksite change. Safe work plans identify job steps, associated hazards and the methods to be used to eliminate or control the hazards. The plans may identify specific duties for each job step. Emergency response for the work activities are also part of the safe work plan.

Note that the word “shall” used in S801 is something that is considered mandatory. Meantime, S801 Clause 4.4.6.1 “Record-keeping” makes it very clear that best practice requires the following:

Where the employer’s process or where the authority having jurisdiction requires a documented safe work plan, the hazard assessment and the methods used to eliminate or control the hazards shall be recorded.

Record-keeping is a critical best practice in the electrical sector. Employers or jurisdictions that choose not to require a documented safe work plan from themselves or their contractors raise the risk of an electrical incident. All the very best companies, tradespeople and contractors document their safe work plans.

(S801 has Appendix A: Figure A-1, “Safe Work Plan Hazard Assessment and Emergency Response Plan Template”, which can be used as a guide for safe work planning.)

A similar concept for electrical job planning is captured in CSA Z462-15 “Workplace electrical safety” in Clause 4.1.5.8 “Job Briefing”. The goals between the two standards are comparable, but the rigour required for a documented safe work plan differs significantly. Z462 Clause 4.1.5.8 states:

that before starting each job, the worker in charge shall conduct a job briefing with the workers involved. The briefing shall cover such subjects as the following:

- hazards associated with job
- work procedures involved
- special precautions
- energy source controls
- PPE requirements; and
- the information on the energized electrical work permit, if a permit is required

Additional job briefings shall be held if significant changes that might affect the safety of workers occur during the course of the work.

There is also a note that directs you to Annex I, Figure I.1 for an example of a job briefing and planning checklist, but this is not a mandatory part of the standard.

While both documents share similar concepts, S801 Clause 4.4.6.1 “Record-keeping” in particular has outstanding work practice rigour—*but only when* the employer and AHJ make it mandatory. That same rigour is somewhat unclear in Z462 Clause 4.1.5.8—in fact, a verbal job briefing is acceptable *unless*, for example, an energized electrical work permit is required. There is a huge gap in best practices between documented and verbal job briefings.

There is much to learn and gain by studying and comparing various standards from around the world that are written to help you establish and maintain a safer, more productive workplace. As you can see from the examples above, neither document is perfect in all regards, yet each contains important information and guidance for helping you establish a safe work plan and exercising due diligence. **EB**

A subject-matter expert on electrical safety, Mike Doherty is the director of learning & continual improvement at Shermco Industries Canada Inc. He is a licensed electrician and an IEEE senior member, and has served as the Technical Committee chair for CSA Z462 since its inception. His specialties include electrical safety and health & safety management, maintenance, consulting, training, auditing and electrical incident investigations. Mike can be reached at mdoherty@shermco.com.

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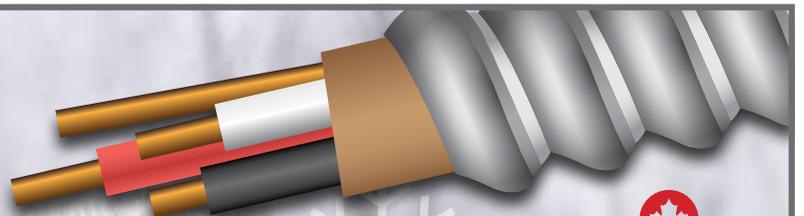
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Automotive exhaust has never looked this good

Kevin Ablett

Tenneco is one of the world's largest producers and distributors of automotive exhaust systems for the replacement and original equipment markets, including clean air and ride performance products and systems for the automotive, commercial truck and off-highway markets and aftermarket. Its customers include several blue chip behemoths, such as Toyota, General Motors and Lexus.

In 2013, Tenneco began looking for an energy-efficient alternative to its costly, hot and high-maintenance 1000W metal halide high-bays at its 675,000-sf manufacturing and distribution facility in Cambridge, Ont.

The existing facility was filled with hundreds of 1000W MH fixtures that generated an enormous amount of heat which, during the hotter days of a typical Ontario summer, had become a major contributor to heat-related mandatory production shutdowns.

These shutdowns were exceptionally costly, so Tenneco sought a solution that would reduce the heat load in the building without adding additional cooling expense. Additionally, the 1000W MH fixtures were causing inefficiencies because their start-up sequence took upward of 15 minutes and, any time the power went out (which was known to happen periodically), the whole plant had to shut down to wait for the lights to cool down and restart, resulting in more lost revenues and unwanted downtime.

Time to do some homework

Tenneco conducted extensive due diligence into various lighting technologies over a 1-year period, including concurrent high-bay testing of T8, LED and induction lighting fixtures.

Jeff Johnson, Tenneco operations manager, began testing with T8s. "Our corporate standard was T8s, so we started to go down that path. When we went to some other facilities, we didn't really like what we had seen... fluorescent fixtures high up in the ceiling with multiple bulbs burned out. In talking with the maintenance staff, [the T8s were] high maintenance," he explained.



Tenneco's existing 1000W metal-halide fixtures generated an enormous amount of heat and sported a tedious start-up sequence. In 2013, this manufacturer began looking for an energy-efficient alternative... maybe this induction lighting solution?

They then moved on to testing LED fixtures, which have been generating a lot of publicity and are being aggressively promoted by many suppliers and consultants.

"The LED lighting [...] produced a lot of glare and overshadowing on the parts. We just couldn't really see. We've got to make sure that our welds are perfect for our customer," said Sean Kavanagh, Lexus Division supervisor at Tenneco.

In the end, "The LED lights that we put up were only up for about a month," explained Tony Melo, plant manager at Tenneco. "Nobody really wanted to work underneath them. We went back to just the metal halide light".

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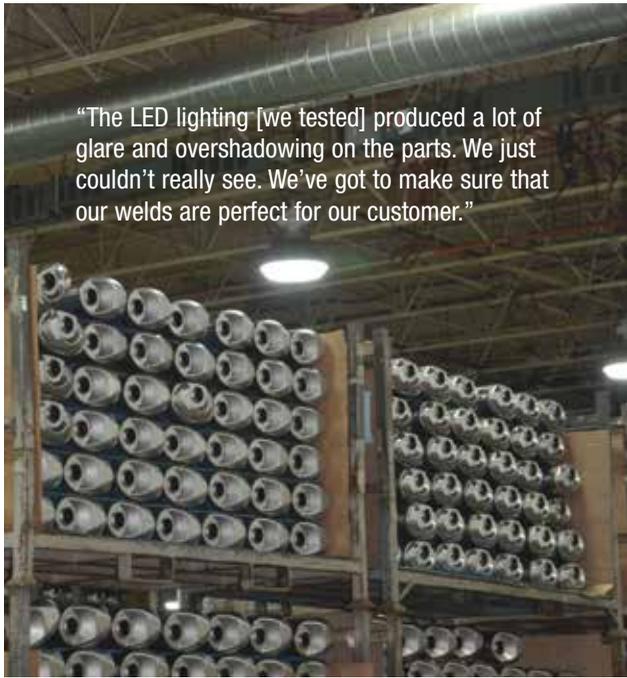
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“The LED lighting [we tested] produced a lot of glare and overshadowing on the parts. We just couldn’t really see. We’ve got to make sure that our welds are perfect for our customer.”



Then Tenneco began testing induction lighting that, in this case, was sourced from Reonac Energy Systems (reonac.com)—a Canadian company headquartered in Montreal, with regional offices in Ontario and Alberta. Induction lighting is known for its long life (100,000 hours), high efficiency and high quality of light. It is most commonly found in commercial and industrial applications such as warehouses, factories, parking lots and sporting facilities.

“We did intensive seminars with the local hydro facility, and we spoke to other facilities that had induction lighting. We really did our homework! The [induction lighting] was a better product and, in the long run, a cheaper product,” noted Melo. “We are seeing the savings in our hydro consumption. We’ve been tracking it and the savings are real. The feedback from the team members on the shop floor has been phenomenal. They love the lighting. They can’t believe how much brighter it is.”



The manufacturer tested induction lighting that boasts a 100,000-hr life, and is commonly found in commercial and industrial applications, such as warehouses, factories, parking lots and sporting facilities.



The retrofit project went on to receive over \$450,000 in rebates, and will save Tenneco over 50% in lighting costs (with a payback period of less than one year).

Lead hand and welder John Pereira finds the induction lighting “brighter, but more uniform, without casting too many shadows,” adding that, “It’s easier for us to catch a small miss or a hole or a crack. It has made it easier on our job.”

A decision is made

After all the research, testing and employee feedback, Tenneco ultimately settled on Reonac’s Think induction high-bay lighting for a complete retrofit of the Cambridge production facility. The solution met Tenneco’s original goals for a lighting system that offers energy and maintenance savings while reducing heat.

The retrofit project went on to receive over \$450,000 in rebates—one of the largest single-project lighting rebates granted by the province’s saveONenergy program. The retrofit will save Tenneco over 50% in lighting costs, resulting in over \$8 million in savings over the next 10 years, with a payback period of less than one year. **EB**

Kevin Ablett is an energy efficiency specialist focused on helping commercial and industrial businesses increase their profits by decreasing energy and maintenance costs. He can be reached at kablett@reonac.com.

Want to get inside Tenneco’s facility without a Visitor’s Pass. Check out their lighting retrofit video at youtube.com/watch?v=JJt4VTQP07k.



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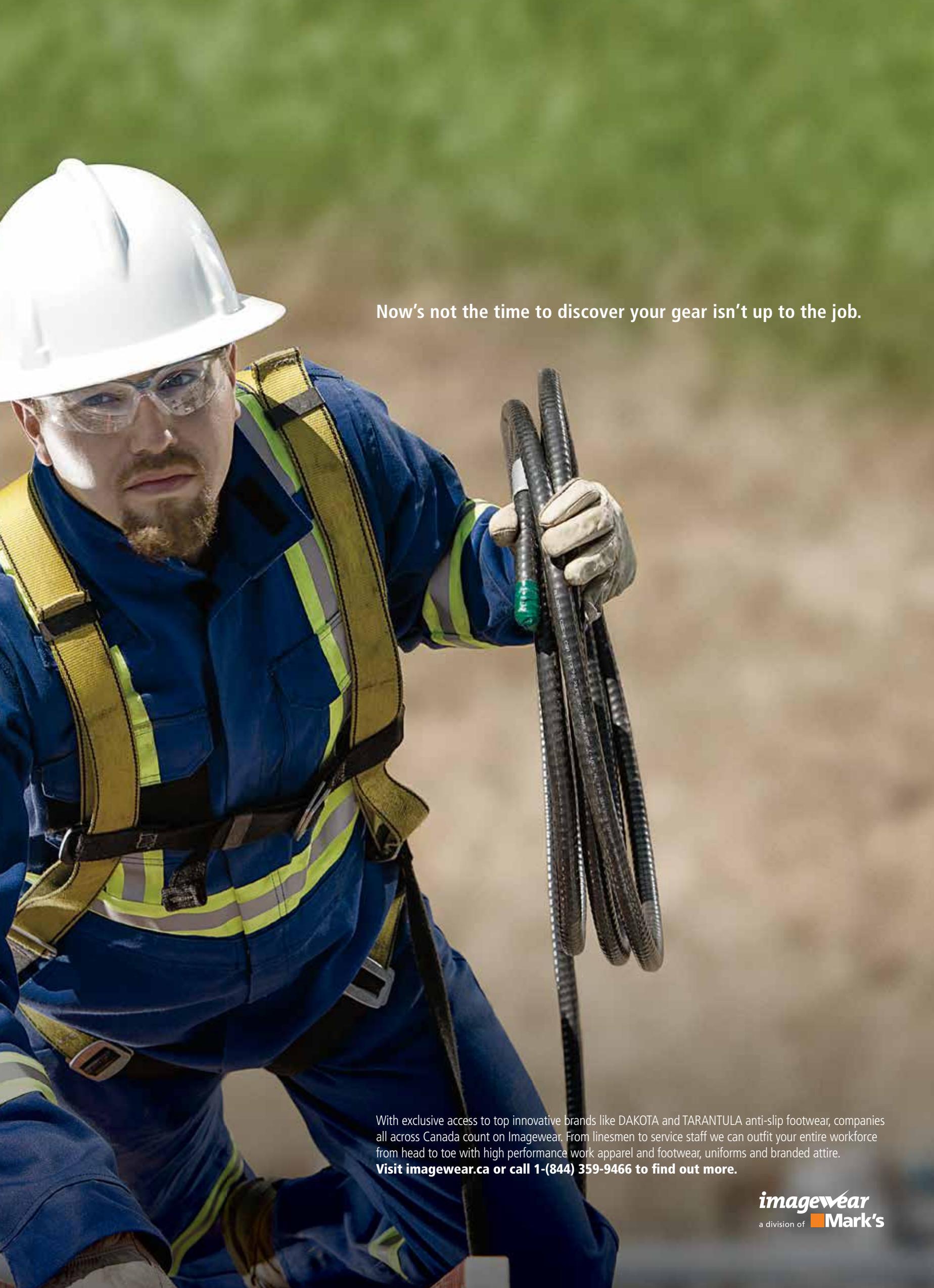
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Let Them Eat Pie... for



PHOTOS A. CAPKUN.

POWER2FEED

^ Remember, Jay... a pie in the face puts childhood hunger in its place!

Back in August, several electrical industry leaders took it on the chin (so to speak) to raise about \$18,000 with the very first Power2Feed Pie Challenge in support of Canadian Feed the Children. Kudos to the following *victims*:

- Dave Syer: VP vendor relations & business development with Sonepar Canada
- Jim Milne: president, AD Canada
- Jay Fleet: Canadian national sales manager, Electrical Products, IPEX Electrical Inc.
- Kevin Mallory: vice-president & general manager, Hubbell Canada LP

The cream-pie action went down at Electro-Federation Canada's 15th annual Federation Cup Golf Tournament, where about 225 participants enjoyed a day of golfing and networking (www.electrofed.com). Golf was followed by the inaugural pie challenge and reception, silent auction (where \$15,675 was raised) and dinner.

With the Pie Challenge, each \$1000 raised per pie victim bought them one pie in the face. All the funds raised through this challenge will support the 2015 Power2Feed campaign. To learn more about Power2Feed (www.power2feed.com), check out our video of an earlier fundraising initiative, "Four "intrepid cyclists" catch the Power2Feed spirit", at tinyurl.com/ml5puzy.

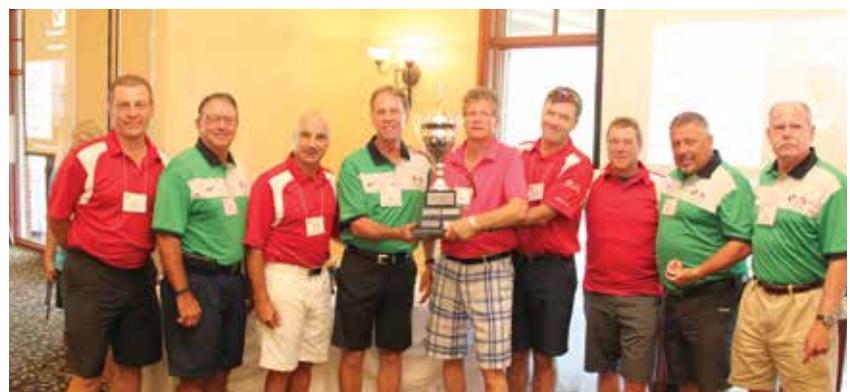
Meantime, proceeds from the golf tournament help support EFC's Scholarship program. Now entering its 20th year, the program has funded Canadian university and college students' education with over \$1 million since its inception.

The tournament also saw the introduction of a new trophy—the Barry MacGowan Memorial Cup for Low Gross Team (Copperhead course)—and the match between Team Canada and Team USA for the Waterman Cup ended in a draw this year.

Stay tuned to Electrical Business Magazine and EBMag.com for details on next year's event. **EB**



Inaugural pie challenge victims (left to right): Dave Syer: VP vendor relations & business development, Sonepar Canada; Jim Milne: president, AD Canada; Jay Fleet: Canadian national sales manager, Electrical Products, IPEX Electrical Inc.; Kevin Mallory: vice-president & general manager, Hubbell Canada LP.



The match between Team Canada and Team USA for the Waterman Cup ended in a draw this year. Team Canada (red-and-white shirts) consisted of Stephen Kleynhans, O'Neil Electric; Andre LeBlanc, Sonepar Canada (Lumen); Mike Genjaga, DSG-Canusa; Bruno Ardito, Beghelli Canada.

"LET THEM EAT PIE!"

Be sure to visit EBMag.com for a ton of photos from that day, as well as our video montage of pie pummeling "Let them eat pie!" at tinyurl.com/o8okdss. The video is also found on our YouTube Channel at tinyurl.com/nrz7wcq.



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8415
2" trade size

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



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

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CE130 entry device w slotted cover



CE1 facing OUT



CER1



CE1 facing IN



CE2 facing OUT

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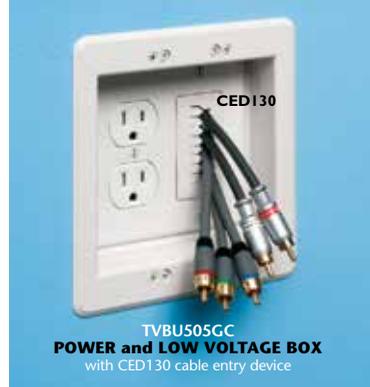
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for NEW WORK ...or RETROFIT



CE130 CABLE ENTRY DEVICE



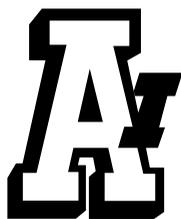
DVFR2GC with voltage separator installed

DVFR2GC POWER and/or LOW VOLTAGE COMBINATION BOX



View TV BOX Video

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Arlington

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- NEW WORK Box screw-mounts to stud
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DVFR2GC IN BOX™ with separator for Power and/or Low Voltage



3-GANG TVBU507GC



4-GANG TVB613GC

2-GANG TVBU505GC, DVFR2GC

Patented. Other patents pending.

www.aifittings.com Scranton, PA 18517 800/233-4717



Nathalie Pilon

Nathalie Pilon, president of **Thomas & Betts** (www.tnb.ca) in Canada and vice-president of the Low-Voltage Products Division for **ABB** in Canada, has been named the new managing director

for **ABB** in Canada (abb.com/ca), replacing **Daniel Assandri**. In 2011, Pilon was named one of Canada's Top 100 Most Powerful Women by the Women's Executive Network and, in 2015, she received the Leadership Award from the Association of Quebec Women in Finance. (Photo A. Capkun)



Ken Clune

Ken Clune has been appointed national director of sales for **Lafert North America** (lafertna.com), a Mississauga, Ont.-based supplier of metric motors, gearboxes and pumps. Clune brings over 19

years of experience in the electrical industries to the role, Lafert says.

Warren Calder has joined the **Nedco West** (west.nedco.ca) Calgary branch, accepting the position of branch manager. Calder has spent the last 29 years with **Wesco**, his career evolving from the warehouse through various roles, Nedco says. He most recently held the title of datacom specialist.

Franklin Empire's Sean Bernard (www.feinc.com) has been promoted to the position of contractor sales manager for Ontario. Bernard previously held the position of contractor sales manager for the GTA (Greater Toronto Area). In his increased capacity, he will lead the Contractor Sales and Quotes teams responsible for all of Ontario (except the Ottawa region). Bernard continues to report to **Cliff Backman**, and will work closely with **Michael Almeida**, general manager for Franklin Empire Southwest Ontario.

Nick Sabatino is **Banvil 2000's** new manager of sales and marketing. Before joining Banvil 2000 (www.banvil2000.com), Sabatino worked in various marketing and management positions in both the B2B and consumer sectors, Banvil 2000 states. He has been responsible for several hundred applications through the saveONenergy program in Ontario, and securing rebates across the country, the company says.

Tim O'Neill, has been appointed chair of Ontario's **Independent Electricity System Operator** (ieso.ca), replacing **Jim Hinds**. Joining the IESO board is **Carole Workman**, who previously served as a Hydro One board member, where she sat on the Audit, Finance & Pension Investment Committee, and the Regulatory & Public Policy Committee. **EB**

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IN CASE YOU MISSED IT...

VIDEO • Several electrical industry leaders took it on the chin (so to speak) to raise about \$18,000 with the very first Power2Feed Pie Challenge in support of Canadian Feed the Children. The cream-pie action went down at Electro-Federation Canada's 15th annual Federation Cup Golf Tournament. More at tinyurl.com/o8okdss.



PHOTOS • We joined Ontario Electrical League members and supporters on the links for OEL's 18th Annual Industry Golf Tournament at Nobleton Lakes Golf Club. See the gallery at tinyurl.com/pl8xnqa.



PHOTOS • Franklin Empire hosted its 3rd annual Customer Appreciation Day & Tradeshow at its Greater Toronto Area location on Carlingview Drive. Speaking with Sean Bernard and Cliff Backman, we learned the location is imminently going to break ground on a 25,000-sf warehouse expansion, with completion anticipated next year. See the photos at tinyurl.com/pu3oldt.

Annual OWA Power of Water Canada Conference

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Oct. 18-20, Niagara-on-the-Lake, Ont.
Visit www.owa.ca

Security Canada Central

Oct. 21-22, Toronto, Ont.
Visit www.securitycanadaexpo.com

InfraCanada IR Training

Infrared Training Centre
Various dates/locations
Visit tinyurl.com/pa26njc

IEEE Canada Electrical Power & Energy Conference

Oct. 26-28, London, Ont.
Visit epec2015.ieee.ca

WiN-Canada Conference

Women in Nuclear
Nov. 8-10, Ajax, Ont.
Visit www.wincanada.org

APPrO - Canadian Power Conference

Association of Power Producers of Ontario
Nov. 17-18, Toronto, Ont.
Visit conference.appro.org/conference2015

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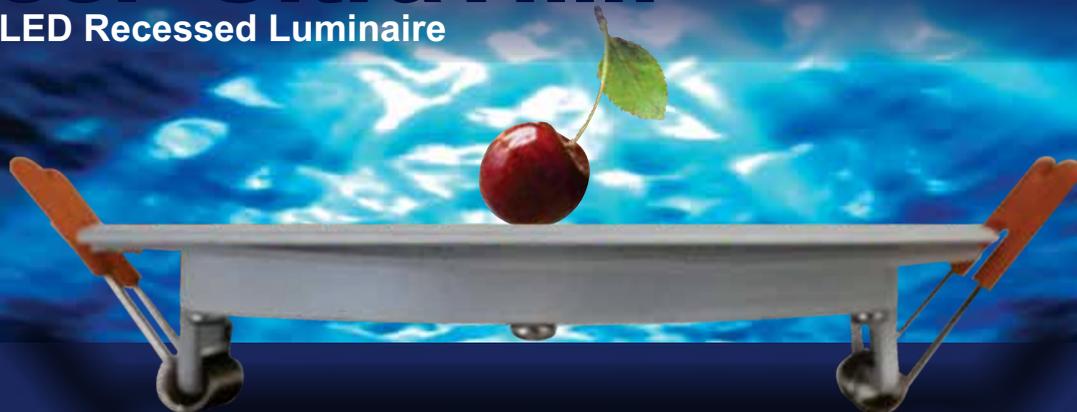
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THE TIES THAT BIND

A guide to the new classification system for cable ties

Suzanne Kasnakian

If in the last year you've felt a little mystified when buying or specifying cable ties and their associated fastening devices, you're not alone. Ever since the new standard for positioning devices, CAN/CSA C22.2 No.62275-10 officially replaced CSA C22.2 No. 18.5-02 on June 1, 2014, buyers and specifiers have been playing catch-up. I will explain the new classification system and its key terms.

Why the standard was changed

Cable ties are now sourced from around the world, so it was important for North American industry to base its classification system on an international standard, the International Electrotechnical Commission's 62275 "Cable management systems - Cable ties for electrical installations".

The harmonized North American version of IEC 62275 applies to all of North America, and is identified in Canada as CAN/CSA C22.2 No.62275-10, UL 62275 in the States, and as NMX-J-623-ANCE in Mexico.

For buyers and specifiers, this international standardization makes cable tie selection simpler, and promotes consistent quality, and safe and efficient application.

Although cable ties may look alike, it's important to remember they perform differently depending on how and where they are being used.

Recognizing compliant product

Although cable ties may look alike, it's important to remember they perform differently depending on how and where they are being used. Under the new standard, compliant product will indicate both its "Type" as well as its "Standard Performance Rating" as declared by manufacturers and confirmed by third-party certification. To get a clearer understanding of these revised classifications, let's first review some background.

Mechanical strength isn't everything

Traditionally, cable tie performance was classified primarily by mechanical strength. Expressed as "minimum loop tensile strength", this measure refers to the cable tie's ability to continue bundling, securing or supporting electrical cables, and flexible conduit and tubing when its locking mechanism is engaged.

The most frequently used cable ties have the following tensile strength ratings: 18-lb, 30-lb, 50-lb, 120-lb and 175-lb.

But while the cable tie has demonstrated its usefulness in so many applications and environments, it's important to recognize that mechanical strength may not be the most important selection criterion. Factors like temperature and environment will impact the mechanical performance of the cable tie.

That's why the Type classification in the new standard is such a useful guide for buyers or specifiers: Type is based on the testing of mechanical performance both prior to, and following, various testing conditions set out in the standard. These conditions include required exposures of products for the declared performance rating (e.g. installation and operating temperatures). Table 1 details the performance characteristics of the different Types.

When assessing your needs for mechanical strength in cable ties, remember to:

TABLE 1: Type classifications defined

	<p>Type 1 Nonmetallic & Composite Cable Ties Retains at least 50% of declared loop tensile strength after all test conditions. Equivalent to , the component recognition mark for UL.</p>
	<p>Type 11 Nonmetallic & Composite Cable Ties Type 11 cable ties pass the same tests as Type 1 but are made from a UL recognized material. In addition, they pass pre-qualifications to long-term performance characteristics of nonmetallic molding materials.</p>
	<p>Type 2 Metallic, Nonmetallic, Composite & All Cable Tie Fixing Devices Retains 100% of declared loop tensile strength after all test conditions.</p>
	<p>Type 2S Metallic, Nonmetallic, Composite & All Cable Tie Fixing Devices Type 2S cable ties pass the same tests as Type 2 but must also have additional qualifications for suitability to support flexible conduit and cables for building construction in accordance to national installation codes. The key here is that metallic can only be 2S, but composite can be 2S or 21S.</p>
	<p>Type 21S Nonmetallic, Composite & All Cable Tie Fixing Devices Type 21S cable ties pass the same tests as Type 2 but must also have additional qualifications for suitability to support flexible conduit and cables for building construction in accordance to national installation codes. ● ● TY25M, TY25M-2, TY25XM, TY28M, TY28M-2, TY28MX</p>
	<p>Type 21 Nonmetallic, Composite & All Cable Tie Fixing Devices Type 21 cable ties pass the same tests as Type 2 but are made from a UL recognized material. In addition, they pass pre-qualifications to long-term performance characteristics of nonmetallic molding materials.</p>

TABLE 2

Performance rating category	Description
	Mechanical: Minimum loop tensile strength is a reference mechanical characteristic of a cable tie with its locking mechanism engaged
	Thermal: Indicating minimum and maximum operating temperatures for application, and minimum temperature for installation
	Fire effects: Reflects degree of resistance to flammability
	Environmental: Reflects resistance of non-metallic or composite materials to UV light and of metallic cable ties and accessories (or those containing metal) to corrosion

a) **Take fastening devices into account.** To ensure a suitable installation, you must always consider both the cable tie's loop tensile strength and the declared mechanical strength of the fastening device (mounting base).

This fastening device may be separate or integral to the cable tie. The device's declared mechanical strength will be expressed as the static load rating with no safety factor applied. To ensure intended performance, follow the manufacturer's installation instructions.

b) **Respect the recommended spacing intervals** of cable ties in support conduits and flexible wiring. In the Canadian Electrical Code (CE Code), cable ties are considered support in some flexible wiring methods. They are also frequently identified as "other support hardware" in the majority of wiring systems.

For each raceway and cable type, the CE Code specifies the maximum spacing interval for support. Follow these code recommendations closely to ensure the security of the support system.

Here is where you will find some relevant CE Code clauses for:

- Cable: 12-510, 12-706
- Flexible metal conduit: 12-1010
- Liquid-tight flexible conduit: 12-308
- Electrical non-metallic tubing: 12-1504

Note that Type classifications 2S and 21S indicate that cable ties and their fastening devices are suitable for supporting some flexible wiring methods. Only cable ties with a minimum declared loop tensile strength of 50 lb (220N, 23 kg) and higher are allowed for flexible conduits or flexible cables and cord. When either rigid conduits (metallic or non-metallic) or EMT are being used, non-metallic cable ties are not recommended as primary support.

Standard Performance Ratings

Once you've selected the Type of cable tie, your next step is to consider which categories of Standard Performance Ratings correspond to your cable tie needs (Table 2).

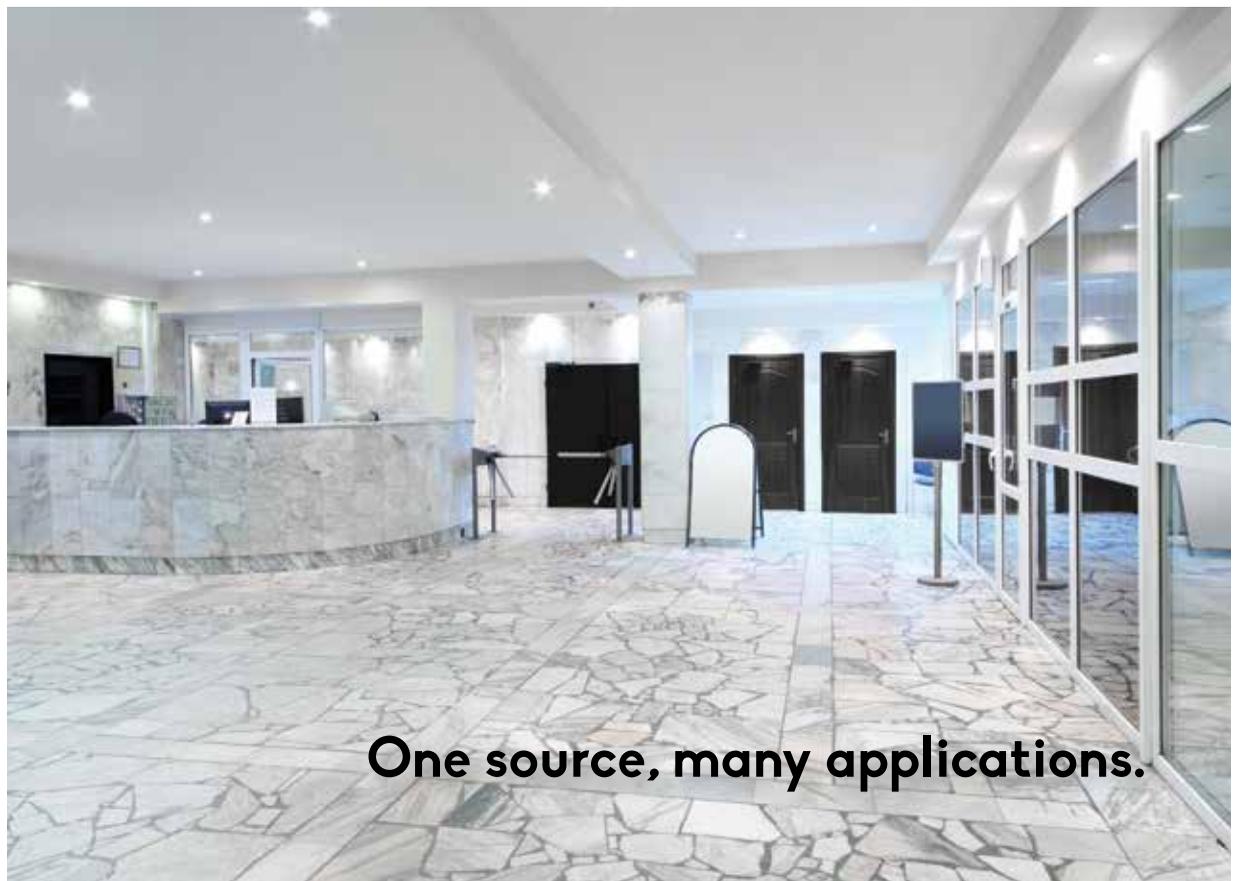
Thermal

When selecting the appropriate cable tie, the minimum and maximum temperature of the operating environment is one of the most important factors to consider.

a) **Range of operating temperatures.** The minimum and maximum temperatures of the operating environment reflect the extremes at which the cable tie or accessory is expected to continuously fulfil its intended function. Extended

exposure to temperatures beyond the declared range will lead, of course, to a loss of performance in the cable tie or accessory.

b) **Installation temperature.** When using non-metallic cable ties or fastening devices, a low temperature during installation can make the products brittle or lead to breakage. The minimum recommended temperature should be considered 0°C, unless the manufacturer specifies otherwise.



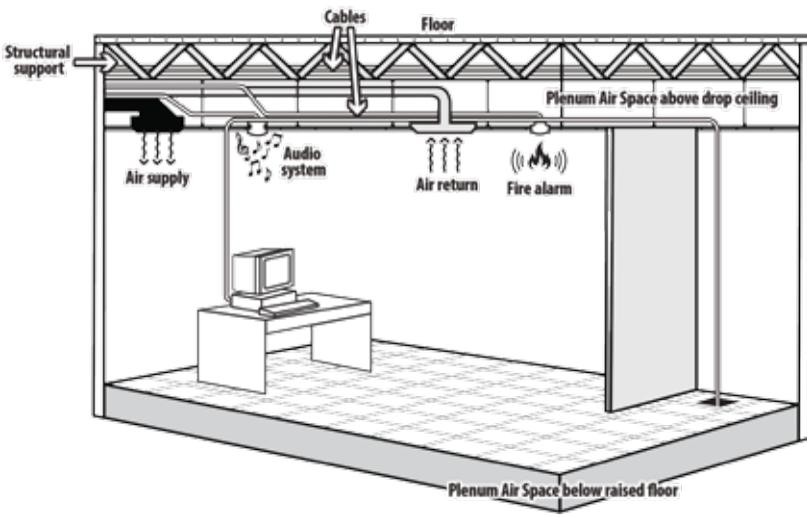
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FIGURE 1



Flammability and fire effects

Is the flammability of materials a primary concern in the wiring system? The National Electric Manufacturers Association (NEMA) defines flammability as the “relative ease with which a material will ignite, continue to flame, and spread [...] a flame over a distance”. Fire effects are defined as a flame’s resulting heat and smoke, including the smoke’s volume, toxicity and corrosiveness.

Air-handling plenums

Generally, the spaces above a drop ceiling or below a raised floor are air-handling spaces (plenums). When non-metallic cable ties are installed in plenums and exposed to fire, they are expected to have verified properties that limit the amount of smoke and heat (Figure 1).

When cable ties are suitable for air-handling spaces, manufacturers label them either AH-1 or AH-2. Table 3 shows how these classifications relate to the relevant parts of the CE Code and U.S. NEC (National Electrical Code).

Environmental performance

The application environment can strongly influence cable tie performance.

- a) **Ultraviolet (UV) light** can reduce the performance of polymer-coated materials, like non-metallic cable ties and fastening devices. The most common source of UV light is direct or indirect sunlight. UV-modified polymers or specialized materials can offer protection against a decline in performance.
- b) **Corrosive atmospheres.** Any number of application environments may be considered corrosive: wet or damp areas, salt-laden air, acid rain, harsh industrial environments and areas exposed to radiation. To be labelled “corrosion-resistant”, stainless steel must contain at least 16% chromium (except in Mexico). Only metallic cable ties and accessories, of course, can earn the “Resistance to Corrosion” declaration.

Table 4 is a quick guide that identifies the changes from the old CSA standard to the new one.

Summary

To learn more about the categories of Standard Performance Ratings, visit NEMA online at nema.org where, under “Member Products”, you’ll find the “Cable Ties” section. 

Suzanne Kasnakian is a product manager at Thomas & Betts (www.tnb.ca), the manufacturer of Ty-Rap cable ties. The firm invested directly in the development of the new international standard, IEC 62275, and supported its adoption in North America.

TABLE 3

Product type	Standard label marking	New short-form coding (proposed)
Metallic cable ties and fastening devices	“Suitable for use in Air-Handling Spaces [plenums]” in accordance with Subrules 12-010(3)(4)(5) and Rule 12-020 of the CE Code-Part I, and Section 300.22(B)(C)(D) of the NEC (or an equivalent wording)	AH-1
Non-metallic or composite cable ties and fastening devices	“Suitable for use in Air-Handling Spaces [plenums]” in accordance with Subrules 12-010(3)(4)(5) and Rule 12-020 of the CE Code-Part I, and Section 300.22(C)(D) of the NEC (or an equivalent wording)	AH-2

TABLE 4

Performance rating/declaration	Old CSA 22.2 No. 18.5	New CSA 62275-10
Optional third-party certification mark (manufacturer self-declaration is possible). Marks of other nationally recognized testing laboratories are also possible.		
Declared Type (e.g. Type 1, Type 11, Type 2, Type 2S, Type 21, Type 21S)	Not applicable	Required*
Declared mechanical strength (loop tensile strength)	Required	Required. Value in newtons (N) required; values in kilograms (kg) and/or pounds (lb) optional, in addition to newtons
Declared usable wire bundle size or range (minimum/maximum)	Maximum required	Range required. Minimum and maximum value in degrees Celsius (C) required. Value in degrees Fahrenheit (F)—in addition to Celsius—optional.
Declared minimum temperature at which the cable tie can be installed	Not applicable	Required
Optional declared resistance to UV light	“Indoors Only” if not declared “Outdoor”, or “Indoors/Outdoors” if declared	“Resistant to Ultraviolet Light” or the equivalent if declared
Optional declaration: For use in air-handling spaces (plenums) as follows: For metallic cable ties and fastening devices: “Suitable for use in Air-Handling Spaces [plenums]” in accordance with Subrules 12-010(3)(4)(5) and Rule 12-020 of the CE Code-Part I, and Section 300.22(B)(C)(D) of the NEC (or an equivalent wording). AH-1 For non-metallic or composite cable ties and fastening devices: “Suitable for use in Air-Handling Spaces [plenums]” in accordance with Subrules 12-010(3)(4)(5) and Rule 12-020 of the CE Code-Part I, and Section 300.22(C)(D) of the NEC (or an equivalent wording). AH-2	If declared	If declared, new codes AH-1 or AH-2, respectively, may replace the lengthy marking.

* Due to the small size of most cable ties and fastening devices, the CSA Mark and Type certification is allowed to be marked on the packaging (in compliance with CSA 62275, Section 7.1DV.1, Marking and Documentation).

References

- NEMA, National Electrical Manufacturers Association, www.nema.org.
- “Physical Properties: Flammability and Fire Effects,” Cable Ties, NEMA Application Guide No. 5, April 2009.
- University of Michigan, Information and Technology Services.
- “Application Environments: Air-Handling Spaces (Plenums),” Cable Ties, NEMA Application Guide No. 1, February 2009.



We continue to explore electrical technologies, products and systems for the discerning homeowner... where cost is not an issue! This month we take a peek at wiring devices and the changes receptacles have undergone to catch up with today's technology and style.

Say good-bye to boring receptacles

PHOTO COURTESY LEGRAND.



The Adorne series from Legrand gives a sleek, modern look to wiring devices.

Wiring devices with colour, USB ports and pop-ability!

Renée Francoeur

Wiring devices seem pretty standard, right? GFCIs and AFCIs. Tamper-resistant (TR), splashproof, water-tight, etc. But receptacles today have more options than before—they're evolving to keep up with all of our personal devices, as well the demands of customizable home design features.

"With wiring devices, I don't want to say they're exactly like tires for a car, but they all pretty much do the same thing, give or take," says Lynda Merrick, brand manager for Hubbell Canada's Electrical Systems. "That being said, there are ways to soup them up."

Doing away with adaptors

The 3-prong smiley-face of receptacles has had a makeover. Incorporating USB port connections is a new trend and the demand for this is greater than many anticipated, including Leviton, says Pierre Desilets, the company's regulatory affairs and product training manager.

"People want these receptacles with USB ports as well as the standard plug face in their kitchens and living rooms," Desilets says, adding this typically does away with a need for power bars and chunky adaptors that take up space and undermine overall room aesthetics.

Leviton offers a USB charger/TR single receptacle, a USB charger/duplex TR receptacle, as well as a four-port USB charger. They are more expensive than regular receptacles, typically around \$20-\$35, Desilets says.

"Of course, the USB connection is evolving. If you have a new Apple device, you have a USB 3 interface—the third generation of USB connectors—and our manufacturers are looking at that now, too," Desilets adds.

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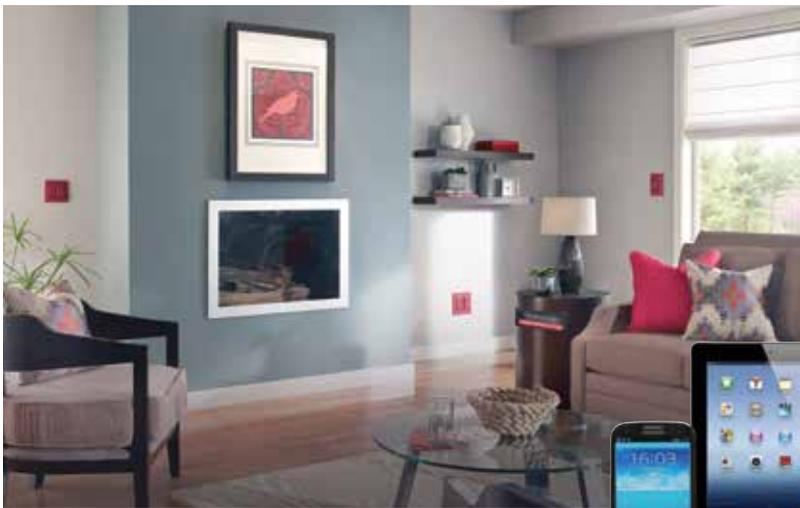


PHOTO COURTESY LEVITON.

^ Outlets and switches in Red Delicious from Leviton's Renu line compliment a room's décor.

Similar USB charging devices are offered at Legrand, such as the Decorator USB charger with duplex receptacle in white or nickel, and many more finishes. But it's the Adorne series USB outlets that create a "high-end and upscale" mood, according to Legrand's marketing manager Uri Levy.

Adorn USB outlets run from around \$27 to \$31 for the half-size single port. The collection (launched about a year-and-a-half ago) features an array of outlets and wallplates with catching, atypical modular dimensions and various finishes to match walls and furniture.

Likewise, the "latest and greatest" from Hubbell Canada is the 3.8A USB charger duplex TR receptacle, which provides USB and electrical power in a standard single-gang opening. The duplex TR provides "maximum charging" as its two USB ports are capable of charging two completely depleted tablets or smart devices simultaneously, Merrick says.

"[With] some devices out there, you can't do that, as the charge is not enough. Our device has enough. And you can't overcharge the device either."

Hubbell also offers a four-port USB, single-gang wiring device capable of delivering a total of 5 amps to multiple electronics simultaneously. This device, revealed in 2014, also features a port door switch. When nothing is plugged in, this switch shuts off all power to the device for a zero no-load draw.

"This is great for someone who wants something totally energy efficient such as in a high-end, energy-conscious home," Merrick says.

Applications include offices, designated home "charging stations" common in renovations and new builds, and even kitchen nooks.

"USB provides more power options and no charger is required; you just need a cord. So it cuts down on some of the clutter with the devices and frees up a receptacle portion of the device for other things, like lamps," Merrick explains. "There is more technology now and people are using it everywhere and expect it to move into their wiring devices."

Let there be light

Some receptacles also stand apart by including a lighting component. The Adorne nightlight from Legrand includes ambient light level sensors to allow the nightlight's LED to only be visible

when the room is dark. Light levels include Always Off, Low, Medium and High, and can be changed by pushing on the square in the upper right-hand corner of the nightlight.

The Adorne collection also boasts a portable nightlight/flashlight wiring device for about \$61. It fits in your existing electrical box and does not require new wires for typical installation. It pops out to become a portable flashlight when needed, such as during power outages or for children making the journey to the bathroom in the middle of the night.

Hubbell has a family of nightlights paired with wiring devices, including the duplex TR receptacles (with two LED sources for 0.5 lumen output). This family is designed for permanent installation, consumes between 0.5-1 watts, and have a photocell to automatically turn On and Off, depending on the amount of ambient light present. Like Hubbell's USB devices, they also range from \$30-\$35 MSRP.

"This is about safety in the home," Merrick says, noting the aging demographics. "Adding light is the way the industry is going now."

Beyond beige and ivory

A vast choice of colour is another newer element giving receptacles an edge. Leviton's Renu line comes in 24 colours of engineered plastics from Fresh Pink Lemonade to Toasted Coconut.

Coined "the smart way to update the look of a room", Renu receptacles have screwless wallplates (slightly larger than standard ones) that snap directly onto the devices. This means the wallplate as well as the face colour of the receptacle can be changed whenever by squeezing the tabs and pressing down on the hooks.

The Renu line makes painting around receptacles a snap as well, Desilets says, as they're easy to remove and no tools are required.

"They're very high-end but very discreet... unless you choose a striking colour that creates an emphasis," Desilets says. "If a basic receptacle is 75 cents, for the sake of the argument, a Renu one is about \$1.75". A USB Renu receptacle is in the works for the near future, Desilets adds.

Similarly, colour is of the upmost importance at Legrand, Levy says. The company specializes in glossy colours and finishes for its wallplates,

Hubbell's 3.8 Amp USB charger duplex TR receptacles provides "maximum charging".
v



PHOTO COURTESY HUBBELL CANADA.



PHOTO COURTESY LEGRAND.

^ This receptacle from Legrand's Adorne collection is a 1-gang, 3-module configuration featuring a USB outlet and a custom wall plate with white trim.

and the Adorn collection features plates in Hubbardton Forge (oil-rubbed bronze to burnished steel to natural iron), cast metals (aged brass to satin nickel), real materials (French oak to black leather) and 19 colours in plastic.

There is also a customizable option where homeowners can print off their own image, texture, or colour and fit it to a wallplate.

Pop-out plugs

The Pop-Out receptacle from Legrand allows for an outlet to be flush with a wall and hidden when not in use. Users just push on the centre square and a cube pops out, revealing three outlets.

"There's a lot going on in the back-end for all three sides to work and not disturb each other," Levy explains. "Mechanically and electrically speaking, it is challenging to do something like this."

The Pop-Out requires a special frame and a deep box, such as a Pass & Seymour S122R for installation (a minimum box size of 22.5 cubic in.).

The solution is ideal for busy countertops, such as in a kitchen, where the toaster, blender and coffee maker, for example, do not need to be plugged in 24/7, Levy explains. The device comes in white or magnesium and offers a choice of 32 colours/finishes for wallplates. The company is currently working on a self-testing Pop-Out product.

While it may not be the most thrilling topic, any new build or retrofit needs to be thinking about wiring devices. They do not just enhance or complement the interior design of a room, but they can also cut down on tangled cord nests and simplify the endless charging process of our ever-growing list of devices. And for luxurious homes, especially, why settle for a typical, stacked white receptacle? **EB**



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EBMag LAUNCHES CANADA-WIDE ELECTRICAL SAFETY AWARDS PROGRAM

Canada's leading electrical industry publication, **Electrical Business Magazine**, has launched its **Electrical Safety Champion Awards Program** this year, which aims to recognize Canadian companies and individuals who are passionate about promoting the health & safety of Canadian electrical workers.

The awards program recognizes this commitment across several categories AND you are permitted to nominate yourself!

These awards recognize both individuals and organizations as evaluated against criteria that reinforce:

- Leadership and influence
- Education, information and awareness
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Eligibility requirements, deadlines, etc., have been posted at EBMag.com/esca. Good luck!

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“It’s the workers that do the work”



PHOTO COURTESY SKILLS CANADA.

Saskatoon Skills competition brings out the crème de la crème

Anthony Capkun

“The competitions create excitement, and they give students the opportunity to step in the shoes of an electrician, or any other skilled trade,” said Sara Daniel of Southwire Canada, speaking from the 21st Skills Canada National Competition (SCNC)—the ‘Olympiad’ of skilled trades in Canada.

For two days in late May in Saskatoon, over 500 young Canadian students and apprentices in skilled trades showcased their talent, reaching for Gold, Silver and Bronze by competing in over 40 disciplines across six industry sectors in front of a crowd of thousands.

“To qualify to get here, the individuals have to compete in the provincial Skills [competitions]; the winners from those Skills then can compete and move on to the national level,” explained Jim Martin, the program head of Electrical Training at Saskatchewan Polytechnic.

SCNC is the only multi-trade and multi-technology competition for young students and apprentices in the country. The Olympic-style event draws competitors from



Eric Koster
Notre Dame H.S., Red Deer

“Just doing this, it’s a really great way to help you get a job and get some good experience.”

every province and territory. Competitors are evaluated by independent judges from a cross-section of sectors that demand a pool of skilled workers. The judges’ decisions are based on industry standards.

“I love Skills [Canada] because they focus in on that segment of the student population that are very hands-on oriented... very clever, very smart. Any tradesperson you talk to has a lot of math skills, a lot of science skills,” said Leigh Smithson, an educator at Notre Dame Secondary School (Red Deer, Alta.).

The competition is conducted by Skills/Compétences Canada (www.skillsCanada.com), which was founded in 1989 as a national, not-for-profit organization that works with employers, educators, labour groups and governments to promote skilled trades and technology careers among

Canadian youth.

The event provides competitors with an opportunity to further develop their skills through hands-on competition with their peers, not to mention the distinction of being named the nation’s best in their chosen field.

The competitors are divided into Secondary and Post-Secondary categories. Eric Koster, a student of Notre Dame Secondary School (Red Deer, Alta.), explained the Electrical Installations competitors had to work on a residential installation on Day One. “The biggest issue is just trying to figure out what was to code [and] how to keep everything within specs.”

“Just doing this, it’s a really great way to help you get a job and get some good experience,” added Koster, who hopes to pursue Electrical and get his journeyman’s ticket. He must have been successful at figuring out what was to code and within specs, as he took home the Gold in his category.

Raising awareness of a viable career

The competition brought together representatives from industry, government and educators along with more than 5000 visiting students who took



Be sure to pop over to EBMag.com and check out our interviews with Leigh Smithson, Eric Koster, Shaun Thorson, Jim Martin and Sara Daniel in the video “Saskatoon’s Got Talent... skilled trades talent!”. Visit tinyurl.com/o23bude.



Leigh Smithson
Notre Dame H.S., Red Deer

“I love Skills [Canada] because they focus in on that segment of the student population that are very hands-on oriented... very clever, very smart.”

part in interactive Try-a-Trade and Technology activities. Through these competitions, Skills Canada seeks to raise awareness about skilled trades and technology sectors to all Canadian youth and their influencers.

“Without skilled people, you’re not going to have a robust economy. It’s the workers that do the work,” said Martin.

“At Southwire Canada we are very invested in our community. We help to promote our industry in order to help attract and retain interested youth that could potentially become a contractor or electrician... we want them to think of our industry as a viable career option,” said Daniel.

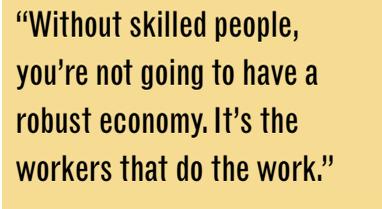


you on your win,” said Thorson during the medals presentation and closing ceremony. “We applaud all the competitors who walked through the doors on that first day of competition. You gave it your all. You

demonstrated tremendous pride in your craft and in your ability and you showed unbreakable determination to be the best you can be.”

Jim Martin could not agree more.

“The apprentices are remarkable. It’s an excellent opportunity for them, not only to showcase the skills they live with and do every day, but also to compete against other people and be able to have those opportunities to move on,” said Martin. “It looks great on a resume, and employers are very, very fortunate to have somebody with those skills in their employ.”



“Without skilled people, you’re not going to have a robust economy. It’s the workers that do the work.”

Shaun Thorson, head of Skills Canada, explained the success of the national competition relies on “the different stakeholder groups coming together around the cause of [...] developing a strong workforce, a skilled Canadian workforce” and that the competition “is about connecting with youth and engaging youth in this process”.

“We as an industry have to be invested in our youth and the next generation of electricians and contractors. I think it’s a great opportunity for Southwire as a company to get ourselves out there,” said Daniel. “We will always have the need for skilled, educated tradespeople that can safely and properly install wire and cable.”

And Southwire Canada is walking the talk, having signed on this year as a Long-Term Gold Level Supplier.

“To those who return home with Gold, Silver and Bronze in your hands, we salute you for your perseverance and congratulate

A very special Thank You! to our sponsor, Southwire Canada, for helping us send our correspondent, Mike Edwards, to Saskatoon.

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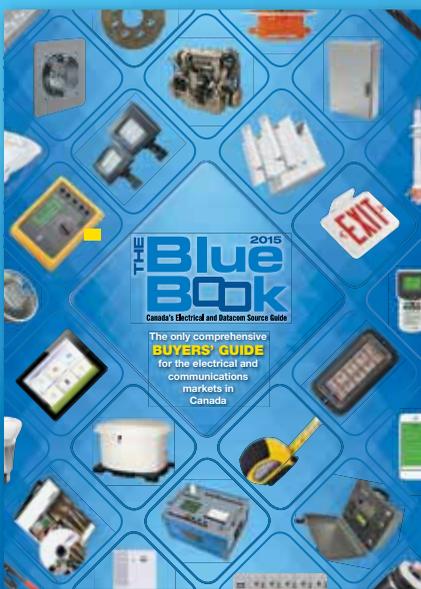
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EB lighting products

Tune colour with Jesco's DL-Flex-CTA



Jesco Lighting's DL-Flex-CTA 24V LED lighting strips give you the ability to select specific white colour temperatures— from 2400K to 7000K—using a radio frequency remote or a DMX controller. The strips are available in 4-in. or 12-in. lengths, and plug together for runs up to 20 ft. **JESCO LIGHTING**
www.jescolighting.com

Energy Efficient Lighting's eel

The eel, a LED recessed luminaire from Energy Efficient Lighting, can be installed anywhere along the ceiling by drilling a hole in the drywall or tile, the company says. It's available in 4-in. and 6-in. white or brushed nickel, round and square. The eel is 120V dimmable, Energy Star and cETLus certified, and requires no recess can.



ENERGY EFFICIENT LIGHTING
www.eelighting.ca

Magnaray driverless WLED-10, WLED-20 floodlights



Magnaray's WLED-10 and WLED-20 outdoor surface-mount LED floodlights require no separate drivers to maintain them. Designed for building facades, landscapes, sign/site illumination and outdoor commercial and residential areas, these AC LED units promise "50,000-hr lifespans, negligible maintenance, high colour rendition and facilitate high visual acuity".

MAGNARAY
www.magnaray.com

WAC's Kube LED vanities and sconces



Geometric-styled metalwork meets etched, opal glass cubes of light in WAC Lighting's newest family. For "fine bath and ambient lighting," the company has introduced the Kube family of LED vanities and wall sconces. The family features both uplighting and downlighting in a 2700K colour temperature, with a 90 CRI and a damp location listing.

WAC LIGHTING
www.waclighting.com

Samsung demonstrates open, secure and connected platform



Samsung Electronics Co. Ltd. demonstrated the company's new open, secure and connected platform for smart lighting, which is designed for integration with LED lighting systems to transform luminaires into digital nodes. This Internet of Things (IoT) platform incorporates processing capabilities, firmware, connectivity and an open architecture connected to sensors for data collection.

SAMSUNG
www.samsung.com

Nordeon Baldur line



Baldur, a new interior LED light line from Nordeon, combines general illumination with accent lighting along with optional Skadi spotlights in one platform. All luminaire modules and cover plates can be snapped into the trunk using the ClickFast system. Trunks are available in 4-ft, 8-ft, and 12-ft lengths to satisfy stand-alone installations or extended-length runs.

NORDEON
www.nordeon.com



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Milwaukee Tool's One-Key unlocks digital jobsite



Milwaukee Tool has launched One-Key—its first digital platform for tools and equipment. By integrating tool electronics with a custom-built, cloud-based program, One-Key creates a central place for users to manage and control all of their tools and equipment. The platform consists of Inventory Management, Tool Reporting and Tool Control, and is available through the web and via mobile app.

MILWAUKEE TOOL
www.milwaukeetool.com

HD Electric Company PRX-4 proximity voltage detector



HD Electric Company's PRX-4 proximity voltage detector provides utility professionals, arborists and first responders with a safety tool that will alert them to potentially dangerous high voltage in their work areas. The product has two voltage range settings of 50V-4kV and above and detects voltages around 3 in. at the 50V setting and 10 in. at 4kV and above.

HD ELECTRIC COMPANY
www.hdelectriccompany.com



AFL expands eABF line with 72-fiber cable

A 72-fiber eABF cable that uses spider web ribbon (SWR) technology has been added to AFL's eABF air-jetted solution line.

AFL says it's smaller than a traditional flat ribbon cable and "optimized for jetting into the Dura-Line 8.5/6 mm Enterprise FuturePath MicroDuct pathway system". The cable does not require furcation tubing when routing through cable management spaces.

AFL
www.aflglobal.com

Cut through nail-embedded wood with Diablo blades



Diablo Demo Demon carbide-tipped reciprocating blades feature a variable tooth design that promises "maximum performance" in nail-embedded wood. Manufactured in Switzerland, the carbide tips are welded onto the blade teeth. Demon blades are available in 6-in., 9-in., and 12-in. sizes.

DIABLO TOOLS
www.diablotools.com

Leviton Lumina Gateway wireless energy management eco-system



Leviton has released the Lumina Gateway and the related wireless Lumina RF energy management product family, which includes occupancy sensors, motion sensors, door and window contacts, load control modules, light switches, thermostats, in-wall touchscreens and mobile apps.

LEVITON
www.leviton.com

HPS offers enclosed option to Centurion R reactor



Hammond Power Solutions' (HPS) Centurion R reactor now features an enclosed option, providing customers with a "complete reactor solution."

The Centurion R is available as an open core and coil, Type 1 (as standard) or Type 3R (as special) enclosed unit. These steel ventilated enclosures are constructed for indoor use.

HAMMOND POWER SOLUTIONS
www.hammondpowersolutions.com

E2S gains more approvals for E2x

The E2x series of non-sparking alarm horn sounders, Xenon strobe beacons and combined devices from E2S have gained approval for Zone 2, 22 applications to the latest IECEx,



and ATEX standards for gas and dust applications, says E2S. These approvals complement its existing Class I & II Division 2 UL and cULs approvals.

E2S
www.e2s.com

"Complete" motor analysis with All-Test Pro 5



The All-Test Pro 5 tests all kinds of motors, including induction, synchronous, AC, DC, brushless DC, servo and wound rotors, as well as single-phase motors. The product has an auto diagnosis function and carries out a stator and rotor analysis to detect faults in low, medium and high-voltage AC and DC motors, transformers and generators

ALL-TEST PRO
www.alltestpro.com

Schaffner ECOSine passive harmonic filters



Schaffner's new ECOSine 60HZ passive harmonic filters remove "harmful harmonics" before they can damage protected loads in electrical systems or equipment. These filters are "ideal for use with non-linear loads such as motor drives (nominally 5 HP to 500 HP), equipment with front-end 6-pulse rectifiers, fans, pumps, HVAC equipment, DC fast chargers, and more", Schaffner said. The filters are suitable for various industrial applications, such as manufacturing, water/wastewater treatment, factory automation, etc.

SCHAFFNER
www.schaffnerusa.com

Get a pistol-grip on Burndy PAT500SJ series



Burndy has added to its Patriot family of installation tools with the PAT500SJ series—a pistol-grip style, 6-ton 18V lithium-ion battery-powered crimper with interchangeable cutting jaws.

The PAT500SJ series accepts all Burndy standard "W" and "X" style crimping dies and offers copper crimping capacity from No. 8 wire up to 500 kcmil, and No. 8 wire to 350 kcmil for aluminum cable. With the interchangeable cutter jaw, the PAT500SJ allows for copper cuts up to 500 kcmil, aluminum cuts up to 636 kcmil and ACSR cuts up to 556 kcmil.

BURNDY
www.burndy.com

Extended features with Triplet's 1201, 1301, 1401 DMMs



Triplet has revealed three new digital multimeters (DMMs) to its 1000 class lineup. New DMM models 1201, 1301, and 1401 will join model 1101-B, and feature backlit screens as well as cases with snap-in slots for probes. The 9007-A DMM's features have also been expanded.

TRIPLETT
www.triplett.com

Legrand's Wiremold wall box



As part of the Evolution series of floor, wall and ceiling boxes, Legrand has introduced the Wiremold hinged wall box to provide access to power, data and A/V connections. It is available in 4-gang and 8-gang configurations and is suited for both remodel and new construction projects.

LEGRAND
www.legrand.ca



Correcting 4-006 Temperature Limitations

In the CE Code 2012, Rule 4-006 introduced the temperature limitation of equipment and its effect on wire selection, which worked in conjunction with changes to Tables 1, 2, 3 and 4 involving the increase in ampacity for wire temperature ratings.

Knowing the termination temperature of equipment affects your wire selection, but when the temperature is not marked, 90°C would be your default. Unfortunately, there was no testing standard for 90°C—the default should have been 60°C. For this year's CE Code (2015 ed.), Rule 4-006 was modified to clarify requirements while adding a caveat regarding temperature testing limitations.

When equipment is rated not more than 100A or marked for use with No.1 or smaller conductors—but with no marked temperature—then the termination shall be considered to be 60°C. When equipment is rated over 100A, marked for use with conductors larger than No.1, and the maximum conductor temperature is not marked, then the limitation shall be considered to be 75°C.

The next change in CE Code 2015 was to clarify that the new Subrule was not for high-voltage equipment; when conductor termination temperatures for equipment are not marked, it shall be permissible to consult the manufacturer to establish the permitted temperature.

Subrules (1) and (2) shall only apply to the first 1.2 m of the conductor measured from the point of termination on the equipment, because the testing standard uses 1.2 m as the test length of conductor, and the conductor works as a heat sink. It is, for instance, where a cable transition is made that we have the requirement that the conductor length be not less than 1.2 m. When the distance is long enough and the wire size large enough, there is likely to be a cost savings in transitioning to a different wire size; in typical installations, however, the costs of labour and material would likely surpass the savings.

The D Tables are also affected by this updated Rule. Also, CE Code 2015 combines the Installation diagrams from Appendix B with the Tables in Appendix D to simplify the use of those Tables in locating the correct wire.

When termination temperature becomes a concern, then the Notes indicate the Tables are for 90°C. Note (2) of the D Tables indicates that for a 75°C conductor, multiply the appropriate ampacity at 90°C by a derating factor of 0.886.

Watch out for a typo in the Notes for Tables 10A, 10B, 11A and 11B.

Note (1) This table gives the allowable current for 90°C-rated single copper/aluminum conductors with spacings directly buried in earth.

A correction has been issued, with this wording:

Note (1) This table provides the allowable ampacity for 90°C-rated copper/aluminum conductor cables containing not more than 3 current-carrying conductors, or not more than 3 single copper/aluminum conductors in direct contact, directly buried in earth. **EB**

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



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

Tackle The Code Conundrum... if you dare!

Answers to this month's questions in November'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

Plug fuses and fuse holders shall not be used in a 240V single-phase, 3-wire grounded system.

- a) True b) False

Question 2

What is the maximum continuous load permitted on a service switch when marked for continuous operation at 80%, and is supplied by single conductor cable in free air?

- a) 100% b) 80% c) 85% d) 70%

Question 3

The radius of the curve on the inner edge of bends made on smooth aluminum-sheathed cable shall be not less than ___ times the external diameter of the sheath for cable more than 38 mm in external diameter.

- a) 9 times c) 12 times
- b) 10 times d) 15 times

Answers:

EBMag September 2015

Q-1: Does the CE Code allow you to have two supply services of the same voltage from the same system of any supply authority enter a building when only one will be used for supplying a fire pump?

a) Yes. Rule 6-102 (1).

Q-2: What is the maximum mounting height for the overcurrent device handle of a panelboard in a dwelling unit?

c) 1.7 m. Rule 26-402(2).

Q-3: For a mobile home, the minimum permitted size conductor for the power supply cord is:

c) #6 AWG. Rule 70-108(4)(a).

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