

# Electrical Business

THE AUTHORITATIVE VOICE OF CANADA'S ELECTRICAL INDUSTRY



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New Brunswick takes major step forward for wind power.

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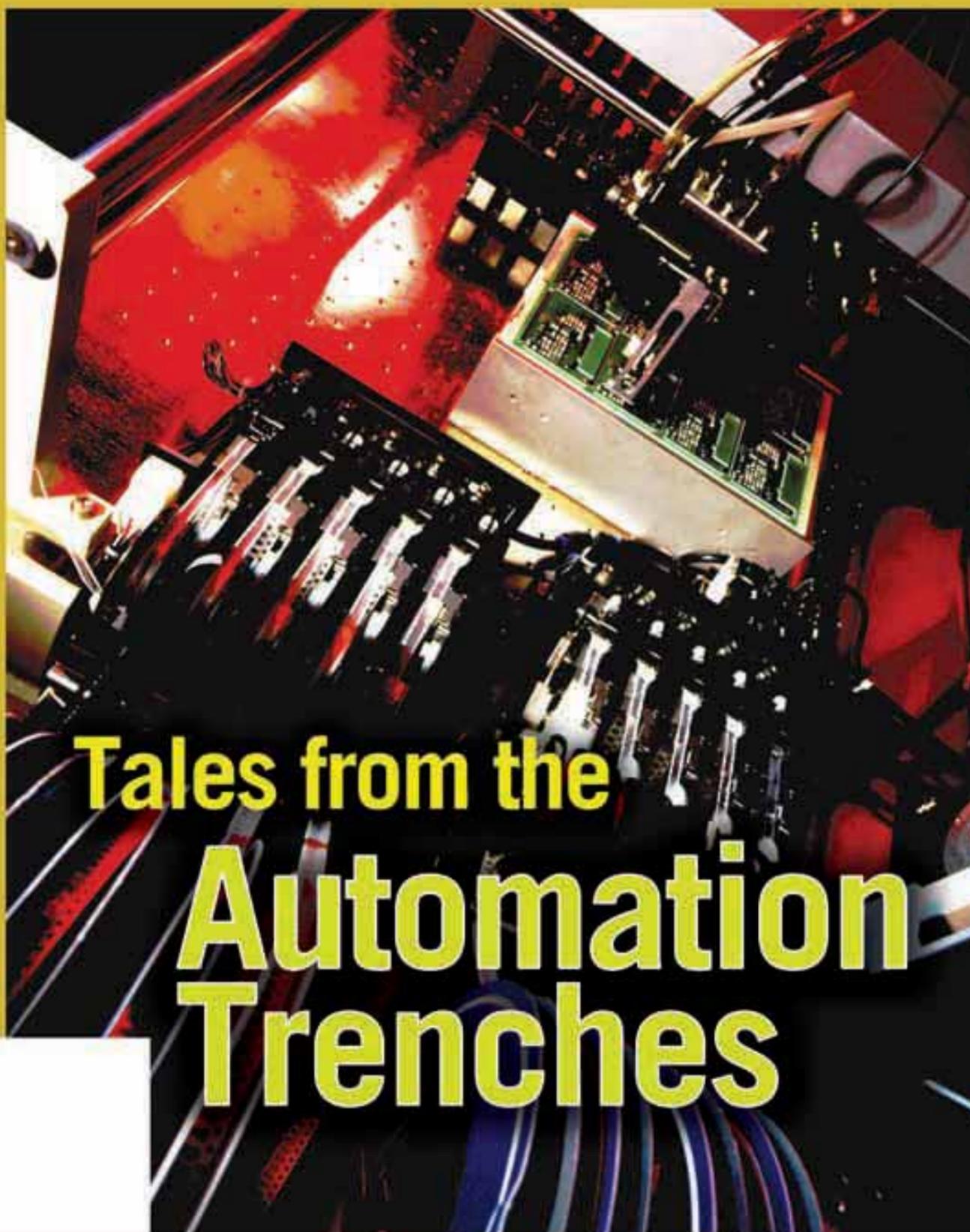


Fully frosted reflector allows a full 360-degree light beam.

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Cargo vans boast a commercial suspension for heavier cargo.



## Tales from the Automation Trenches

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INFO NO. 2



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

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**SUBSCRIPTION RATES:**

Canada: Single issue \$7.00 • Ten issues: \$35.00 (including tax)

USA: \$59.00 (US) and International: \$75.00 (US) per year  
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

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PAP Registration No. 10774

Send address changes to:

**ELECTRICAL BUSINESS**

240 Edward Street, Aurora, ON L4G 3S9

Return Postage Guaranteed

Canada Post - Canadian Publications Mail Sales Products

Agreement 40063602 ISSN 0013-4244

Printed in Canada

"We acknowledge the assistance of the Government of Canada through the Publications Assistance Program toward our mailing costs." 



## From the editor ▼



## Green building and "Integrated Design"



EEMAC's vice-president, Wayne Edwards, with Teknion's vice-president of business development and strategic initiatives, Sholem Prasow.

Quite often you'll see editors put quotation marks around catchphrases like "integrated design"—the way I have in the title—to indicate something that is being talked about but may not yet have become mainstream.

By the same token, you'll notice that I haven't put quotation marks around the word "green" in the title because, by now, we all understand it is used to loosely describe just about anything—from toilet paper and detergents to occupancy sensors and furniture—that's environmentally friendly in some way, shape or form.

So let's talk about "integrated design" and how it relates to green building.

### EEMAC teachings: present and future

I recently had the opportunity to sit in on an EEMAC Lunch and Learn that dealt with LEED building and certification. (EEMAC is the Electrical Equipment Manufacturers Association of Canada, a council of EFC, while LEED stands for Leadership in Energy and Environmental Design, a rating system for green buildings developed by the U.S. Green Building Council.) The great thing about an EEMAC Lunch and Learn is that it not only helps you with your business now, but shows you ways to profit and position yourself down the road.

Sholem Prasow, the vice-president of business development and strategic initiatives for Teknion, started his presentation by explaining that a green building, like all other buildings, first takes care of the owner's needs. However, it differs from regular buildings in that it also takes into account the health of the environment, surrounding community and occupants.

In practical terms, a green building incorporates daylighting into its illumination strategy, enables occupants to dim lights (or shut them off altogether), employs high-efficiency HVAC compo-

nents, and so forth.

Then Prasow explained integrated design. "Typical buildings are built according to a waterfall pattern," Prasow said, meaning that it starts at one end (with the architects/engineers [A/Es]), and flows downward to the general contractor, subcontractors, facility maintenance staff and occupants). "Integrated design," Prasow continued, "is the mindset where you engage all parties simultaneously to optimize all elements of the design." And you do this at the beginning, before any plans are drawn up. The idea, of course, being that the end result is a building that exceeds all performance and environmental expectations.

Green started as a catchphrase, but it's gained so much momentum over the last several years that—for business reasons alone—you really cannot afford to ignore it. And while integrated design has yet to reach that kind of prominence, make sure you're the kind of contractor who can work with a team of A/Es at the outset to bring value to the table—a green building for the owner and green in your pocket.

*Anthony Capkun*



### ON THE COVER

#### Tales from the automation trenches

The world of automation is vast and varied, which is why we present several case studies and articles on different industrial (as well as residential) automation challenges and solutions. Check out the Features below.

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The National Electrical Trade Council (NETCO) is a new organization you'll be hearing more about in the future because its mandate is to promote national standards, apprenticeship and ongoing journeyman skills training for the electrical industry in Canada.



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N.B. wants to add more wind power, while Nova Scotia launches a pilot program to keep more of its skilled trades. Meantime, P.E.I. gets some cash to be greener, and N.L.'s Skills Task Force provides an action plan to address gaps in the skilled trades.



Photo by David Prichard/CSCE.

**Northern National Historic Civil Engineering site recognized**

The mayor of Yellowknife, Gordon Van Tighem, attended a dedication ceremony where the city's Snare River Hydroelectric Power facility was designated a National Historic Civil Engineering Site by the Canadian Society for Civil Engineering (CSCE).

Built in 1948, Snare River is one of the most northerly facilities of its kind in Canada. When it was being built in the late 1940s, materials had to be transported more than a thousand kilometers across an ice road on the Great Slave Lake.

The mayor of Yellowknife, Gordon Van Tighem (left) with A. Ghani Razaqpur, P.Eng., the president of the Canadian Society of Civil Engineering, celebrate the designation of the Snare River Hydroelectric Power facility as a National Historic Civil Engineering site

**Waltech representing TPI**

Waltech Associates is representing TPI test products across Canada. TPI's electrical and industrial catalogue includes products such as: digital meters; clamp-ons; pocket, digital and IR thermometers; and hand-held oscilloscopes. In addition, Waltech offers Alerex UPS productivity improvement software programs for electrical design, electrical simulation, Ladder Logic Design and process instrumentation simulation.

**TIR acquisition a done deal**

Royal Philips Electronics has completed its acquisition of solid-state lighting (SSL) technology company TIR Systems Ltd. Under the terms of the agreement, Philips acquired Vancouver-based TIR for a total consideration of about \$75 million. As a result of the transaction, TIR will be financially consolidated with immediate effect within the Solid-State Lighting business unit of Philips' Lighting division. The transaction was completed by Philips' wholly owned, indirect subsidiary, Philips Electronics Ltd., of Markham, Ont.

**Schneider launches counterfeit dangers campaign**

As part of its commitment to safety, the Schneider Electric North American Operating Division launched a counterfeit dangers campaign. Entitled "Beware of Counterfeit Circuit Breakers Dangers", the campaign warns distributors of the potential risks associated with counterfeit circuit breakers and provides tips for identifying them.

"Distributors need to be aware that there are hidden and potentially deadly hazards associated with counterfeit circuit breakers being distributed on the market today," said Jim Pauley, vice-president of industry and government relations for the Schneider Electric NAOD. "By identifying counterfeit products and reporting counterfeiters, distributors can save lives."

Manufacturers of counterfeit electrical products neglect to use key components or skimp in the manufacturing process to save money, says the U.S. Consumer Product Safety Commission (CPSC), and while many of these products are made in China, the Schneider Electric NAOD recently sued a number of U.S. companies for selling or marketing counterfeits of Square D products, including: Scott Electric, Specialty Lamp, CES Liquidating, TES Liquidating LLC, North American Breaker Co., ABN Direct, Globe Electric Co., Latin American Investment, Maine Circuit Breaker, Miami Breaker and Showmen Supplies.

While at times difficult to discern, some telltale signs of counterfeits include unusual trademark logos and prices that seem too good to be true.

**IRIS Power and ADWEL merge**

IRIS Power and ADWEL International have combined forces, they say, to better serve a broad spectrum of the global electrical testing and measurement market. By merging IRIS's experience in partial discharge analysis (PDA) testing with ADWEL's expertise in generator and motor stator core testing, clients will have direct access to a wide selection of online and offline insulation, stator core and T&D testing products and services. The combined company will trade as IRIS Power LP (wholly owned by Koch Industries Inc.)

**Cooper issues call for 31st Source Awards**

Cooper Lighting has issued a call for entries for its 31st annual Source Awards lighting design competition, which honours projects employing Cooper Lighting fixtures in an interior or exterior design project. The competition requires the primary and predominant use of any or all of the Cooper Lighting brands, which include Halo, Metalux, Portfolio, Neo-Ray, Corelite, Sure-Lites, Lumark, McGraw-Edison, Fail-Safe, Lumière, Shaper, Iris, Ametrix, RSA and Invue Lighting Systems.

There is no minimum/maximum number of awards given, as each project is judged on its own merit. Judging will take place in January 2008. Over

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its 30-year history, the competition has awarded over \$600,000 to winners. For complete rules and details, visit [www.cooperlighting.com](http://www.cooperlighting.com) or call (770) 486-4800.

**McGill will lead Canada toward sustainable lighting**

McGill University students are prepared to lead the country toward more sustainable lighting solutions that will save energy and, in the long term, reduce environmental waste and the need to expand energy plants.

In a unique program fashioned by Future Lighting Solutions and McGill University Professor David Plant, chair of the Department of Electrical and Computer Engineering, fourth-year students were challenged to design and implement an 'intelligent hallway lighting project' using high-power LEDs.

Using Luxeon Power LEDs, the project's objective was to demonstrate an automated lighting system that could be controlled via the Internet. The system also included ambient light and temperature sensors, as well as a motion detector, which enable pre-programming for environmental changes, such as temperature, daylight and occupancy.

The winning four-person student team included Michel Jamati, Yiyi Liu, Nilesh B. Paray and Marc Anthony Hernandez, whose system was deemed by Future Lighting Solutions and Philips Lumileds as showing the most resourceful incorporation of high-power LEDs into a controllable, intelligent system.

"We were delighted and impressed with the results," said Jamie Singerman, corporate vice-president of WW Future Lighting Solutions. "This was a very complex project and the students showed great vision and technical competence in their designs and executions. We look forward to continuing to work with McGill University to develop competencies in solid-state lighting that will benefit the students and the lighting world. Projects such as these serve to assist the industry in understanding the enormous possibilities of the technology."

Plant commented, "With McGill University and Future Lighting Solutions working so closely together, there is an opportunity for Canada to be a significant contributor to the future of solid-state, sustainable lighting".

**Raising the bar by lowering mercury content**



Michael Gentile



Philips Lighting Co.'s 4-ft T8s featuring new ALTO II technology are hitting the streets later this month. Continuing the legacy of ALTO set 12 years ago, ALTO II boasts a 50% reduction in mercury content—just 1.7 mg.

"This new T8 lamp family offers the same long life, energy efficiency and lumen output as the previous generation of ALTO lamps, but with a level of mercury far below the prior version's already low levels [3.5 mg]," said Michael Gentile, vice-president and general manager, Philips Lighting Canada.

Using products like ALTO II can help green-minded designers who are striving for LEED certification, as this could count toward an Innovation in Design credit.

**Protecta brand celebrates 50 years**

Capital Safety is celebrating the 50th anniversary of the Protecta brand. "We are proud of Protecta's 50-year history and are excited for what the future holds," said Dave Thomas, vice-president of global marketing for Capital Safety. Over the brand's history, Protecta has expanded from its founding in France to become an international fall protection player with sales in over 75 countries.



Natural Resources Minister Gary Lunn, along with AMEC's Polly Nahar, launches new program to assist foreign-trained professionals.

**Engineers get help in getting their credentials recognized**

In response to Canada's professional skills shortage in engineering and other areas, the federal government has created a Foreign Credentials Referral Office (FCRO) to help immigrating professionals get their credentials recognized.

The FCRO was launched by Natural Resources Minister Gary Lunn, who stressed that a lack of human resources is limiting

many companies' ability to expand in the natural resources sector.

Polly Nahar, who now works for AMEC—the project management and engineering services company—spoke at the Vancouver launch of the new program stating, "I expected some challenge in getting my credentials properly recognized; however, I had no idea that it would be so difficult".

Nahar struggled for four years to get her foreign credentials recognized in Canada, despite having 17 years experience as an engineer. "There is a disconnect between immigration and industry," added Nahar. "If a government reviews your credentials and states your expertise is needed, a professional should not have to go through the entire process again to become accredited after arriving in Canada."

Her training occurred in the former Soviet Union, though she originally worked in Bangladesh (two countries from which obtaining documentation is a difficult process). When her credentials were verified, she began working for AMEC. "If Canada wants skilled labourers and professionals from abroad, more is needed to help immigrants get their credentials recognized before they arrive," Nahar added.

For more information about the Foreign Credentials Referral Office, visit [www.credentials.gc.ca](http://www.credentials.gc.ca).

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INFO NO. 6



**ELP now representing Danfoss LX**

Danfoss LX—the electric floor heating division of Danfoss Inc.—welcomed its newest manufacturer rep, Halifax-based ELP Marketing, to the team. ELP's territory includes Nova Scotia, New Brunswick and Prince Edward Island. "We look forward to working with ELP as we continue our growth in Canada's Atlantic region," said Lyle Moroz, vice-president of Danfoss North America Floor Heating Division.

**Ontario considers its nuclear options**



The Ontario Liberal government has engaged consultants to provide an independent, strategic assessment of the nuclear energy technologies available to the province. The study is expected to be complete later this year.

The government says it prefers to use Canadian companies and technology, but that the decision will be based on the best technology offered at the best price that provides the greatest benefits and lowest risks over the lifetime of the new facilities. The study will analyze the potential economic impact and technical considerations of each technology option.

Nuclear power currently provides half of the power used daily by Ontarians, but 1000MW of the province's nuclear capacity cannot be economically refurbished, while others may require replacement. Both Ontario Power Generation and Bruce Power have taken initial steps to plan for the construction of new and replacement nuclear facilities.

**New IEC 60947-1 on low-voltage switchgear and controlgear**

The fifth edition of the IEC's flagship international standard for low-voltage switchgear and controlgear, IEC 60947-1—for rated voltages not exceeding 1000VAC or 1500VDC—is now available. This edition replaces the 2004 version, and among the updates are significant changes to Clause 7.1 on "Constructional requirements" and the inclusion of new material to support electromagnetic compatibility (EMC) tests.

In addition, this edition contains new normative annexes covering environmental tests and on digital inputs/output for compatibility with programmable controllers, and an informative annex on dielectric testing. IEC 60947-1 aims to harmonize (as far as practicable) all rules and requirements of a general nature applicable to low-voltage switchgear and controlgear so that manufacturers and users will avoid the need for testing to different standards. Note that IEC 60947-1 does not apply to low-voltage switchgear and controlgear assemblies that are covered in IEC 60439.

IEC 60947-1 sets out general rules and requirements which are common to low-voltage equipment, including:

- definitions
- characteristics
- information supplied with the equipment
- normal service, mounting and transport conditions
- constructional and performance requirements
- verification of characteristics and performance

**EB Power Poll. Where do you stand?**



**Results of EB's Power Poll are in!**

In our April 2007 issue we invited you to have your say in the incandescent bulb ban debate by taking our Power Poll at EBmag.com, and the results are in.

The majority of you (73.33%) feel that government should focus on performance, not prescriptive, require-

ments for lighting products on the market. That same percentage of respondents also feels that prescriptive requirements would stifle product innovation.

Finally, all of you (100%) feel that legislated prescriptive requirements would result in fewer choices for consumers.



**Residential construction investment Q1 2007**

*StatsCan, The Daily*  
Investment in residential construction reached \$18.3 billion in the first quarter of 2007, up 6.1% from the same quarter in 2006. Whereas new housing remained strong and posted some gains, the increase in investment in renovations made the largest contribution to this growth.

The strong economy in Western Canada maintained its positive influence on the housing sector. Other factors favouring the sector's strength were advantageous mortgage rates, attractive financing options, continued strength in full-time employment and personal disposable income, as well as high immigration and, in some instances, net interprovincial migration levels. The high cost of housing, particularly in Alberta, also contributed to the increase in the value of investment in residential construction.

New housing investment was up 4.4% from the first quarter of 2006 to \$8.9 billion. Investment in apartment/condominium construction was the major contributor (in dollars) to this increase, advancing 10.8% to \$2.2 billion. Single-family units were up 2.2% to \$5.4 billion, while semi-detached units rose sharply by 18.6% to \$470 million.

The marked increase in prices of new dwellings was the main factor behind the gains in the value of investment for both single and apartment/condominium units.

In constant dollars, investment in new apartment/condominium units grew 1.2% while expenditures on new single-family units declined 9.5%.

Renovation spending reached \$7.8 billion, an increase of 10.2% over the first quarter of 2006. This represented 42.5% of the total investment on residential construction. The increase in renovation investment was almost double the rise in new housing investment (in dollars). Acquisition costs declined 2.1% to \$1.6 billion.

As in the previous quarter, the largest increase (in dollars) occurred in Alberta, where residential investments climbed 22.4% from the same quarter of 2006 to \$3.2 billion. New housing made the largest contribution to this increase, along with a solid advance in renovations. Quebec also recorded an important gain (+7.7% to \$3.5 billion), renovations having strongly contributed to the growth.

**TCP boosts CFL production**

To meet consumer demand, TCP Inc. has announced it is increasing CFL production by 23% to 800,000 units per day. TCP's CFLs are found in the market through name brand, private label and other lighting manufacturers, including the n:vision line for The Home Depot. The company anticipates its production will jump to one million CFLs per day by Q4 2007.

**Halco Lighting tweaks its name**

Halco Lighting Corp. has changed its name to Halco Lighting Technologies. According to president Allan Nelkin, "... changing our name... better defines and identifies our company direction and focus, as well as our technological reach". Halco manufactures a complete line of ProLume ballasts and lamp types designed for residential, industrial/commercial and special lighting applications. **EB**

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# A minute past midnight

## Tendering on time



### Kennedy Electric heard in Court of Appeal

The Ontario Court of Appeal heard argument on the Kennedy Electric v Rumble decision—which deals with the question of whether the installation of assembly lines and automated robots was lienable—earlier this spring (see EB June 2006). The court has reserved its decision, indicating it would hand down a decision as soon as possible, which could be any time in the next six to eight months. **EB**



By Stephen Tatrallyay

Stephen Tatrallyay is a prominent Toronto construction lawyer and can be reached via e-mail at [statrallyay@rogers.com](mailto:statrallyay@rogers.com) or by calling (416) 482-5164. He is also a member of EB's Editorial Advisory Board.

Construction tender documents usually contain a specific date/time for tender submission, and some language to the effect that any tender received after this time is informal and may not be accepted. Some tenders make this issue subject to the owner's discretion. The purpose, of course, is to prevent bid-shopping by making sure that no bidder's tender—or the information contained therein—is available to any other bidder until after all bids have been submitted.

A problem can arise when it comes to what an owner is permitted to do with a tender that is received within the first minute after the deadline—late, technically speaking. For example, is the owner entitled/required to accept a tender faxed at 30 seconds after the deadline? Surprisingly, the situation has gone to trial on a number of occasions.

Three cases in three separate provinces have considered this issue. A decade ago, in *Smith Bros. v BC Hydro*, the B.C. Supreme Court decided that one second past the deadline was too late. In Ontario, however, the Court of Appeal made the opposite finding in *Bradscot v Hamilton-Wentworth* in 1999. The reason, perhaps, for this disagreement in decisions is that the clock in the B.C. case was more detailed, measuring time in seconds (i.e. 11:00:58), whereas the clock in the Ontario case continued to show just 11:00 until 11:01.

This matter was recently re-litigated in the Quebec Superior Court in *Construction DJL Inc. v Quebec (Procureur-General)* ([2006] CarswellQue 9302; 59 CLR[3d]75). Here, the tenders were due at 15:00. The bid of the successful party was apparently submitted ahead of its competitor but incorrectly stamped at 15:01 by "a civil servant". The challenger's bid was received between 15:00 and 15:01.

The court considered past practice, the reason for a specific date/time of tender and the circumstances in addition to the regulations, and held that the time stamp was not absolute proof of the time the bid was submitted, and that evidence could be admitted to prove that the time stamps were wrong. The purposes of the rule were met (i.e. all bidders were treated equally, no one had time to bid-shop or change their bid to adopt another technique and the ministry *was still able* to accept the lowest bid), so the court ruled that the successful party's bid was not late, nor was the ministry at fault for accepting it.

So until the Supreme Court of Canada rules otherwise, a bid that arrives 59 seconds after the deadline can be considered timely and valid. (This begs the question: will a bid be considered timely when a fax machine prints out a few pages at 12:00 and the rest at 12:01?) **EB**

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**EFC's 2007/2008 board**

Electro-Federation Canada (EFC) has elected Robert Bouchard, president of Guillevin International Co., its new chair, succeeding Carol McGlogan, Canlyte's vice-president of marketing and distribution (who will continue to serve as past chair). In addition, EFC's 2007/08 board comprises: Allan Gibbins, president of Hubbell Canada LP; Ernie Reynolds, vice-president and GM of DSG-Canusa (div. of ShawCor Ltd.); Kathy Henderson, director of marketing for Whirlpool Canada Inc.; Harald Henze, director (Canada) of Wesco Distribution Canada LP; Steve Boccadoro, GM of Eaton Electrical; Todd Barlow, vice-president of Partner Management, Siemens Canada Ltd.; Gary Abrams, president of Schneider Electric NA; Pierre-Paul Riopel, vice-president of manufacturing for Thomas & Betts Ltd.; and senators Paul Frew, Tim MacDonald and Grant Buchanan (all past chairs).

**Richard (Dick) Waterman**, the executive vice-president and CEO of **International Electric Supply Corp. (IESC)**, has become chair of **NAED's** (National Association of Electrical Distributors) board of directors. (IESC is the holding company formed after the Rexel Group's recent acquisition of GE Supply.) Waterman has worked in

the electrical industry for 40 years and, at one time, served as chair of **Electro-Federation Canada (EFC)**.

**Status Electrical Corp.** (Abbotsford, B.C.) welcomed **Gary Pelletier** to its project management team. Pelletier recently returned from Chicago where he spent seven years as a project manager with Delta Controls. His primary duty is to serve as a project manager in the Vancouver region, as well as build a base of business throughout the GVRD.

**Ontario honours leaders in apprenticeship training**

The Ontario Liberals recently honoured four employers for their commitment to apprenticeship training. "Your investment in your employees and their skills provides Ontario with its most effective competitive edge," said Chris Bentley, minister of training, colleges and universities, at the annual Minister's Apprenticeship Employer Recognition Awards.

Among the four recipients of the 2007 award was Gosen Electric Ltd. of Waterloo, which has 19 electricians on staff, including five apprentices. Since 1997, many apprentices have been recruited from a local high school in Elmira—most recently through the Ontario Youth Apprenticeship Program. The students work part-time at Gosen, then join the company as full-time construction and maintenance apprentice electricians after completing high school. (Some Gosen apprentices have won recognition in Skills

Canada provincial and national competitions.)

Company president Don Gosen actively promotes apprenticeship programs within his industry and his community. He is chair of the Grand Valley Construction Association, vice-chair of the Electrical Contractor Registration Agency and a past-president of the Ontario Electrical League (OEL). He also makes presentations to high school students in the community about the skilled trades as a career choice. Don is a member of the Waterloo County Board of Education "Fast Forward" task force—a program designed to assist students making the transition from school to work.

"These employers have demonstrated that apprenticeships are an effective way to train the workforce of tomorrow," said Pat Dillon, business manager and secretary-treasurer, Provincial Building and Construction Trades Council of Ontario. "Their successful efforts deserve our heartfelt congratulations!"

The government also recognized 12 regional finalists for their leadership in apprenticeship training. Among them, Hamilton's Merlo Electric Inc.



Hazel Rempel

**Chris Scott**, vice-president of I/C sales and marketing for **Osram Sylvania Ltd.**, announced the appointment of **Hazel Rempel** to the position of director of sales, I/C western region. She replaces **Peter Hodges** who has retired after serving over 40 years with the

company. Rempel will be based at the company's regional office in Richmond, B.C., and assume responsibility for all sales and business development activities for the industrial and commercial lighting sales channels in Western Canada. She oversees all I/C account managers from British Columbia to Manitoba. Hodges' career with the company began with GTE Sylvania in 1966 as a stock records clerk in production planning in Montreal. He progressed through various sales and marketing positions within the company until he was appointed to his last position in Vancouver in 1999.



Eric Johnston

**Triton Power**—a manufacturer of commercial-grade generators—has promoted to **Eric Johnston** from senior vice-president to the company's first CEO. Johnston's father, **David Johnston**, will continue to serve as company chair.

**The Black & Decker Corp.** has named **Bruce W. Brooks** group vice-president and president—Consumer Products Group of the Power Tools and Accessories segment. Reporting to **Nolan D. Archibald**, chair and CEO, Brooks has worldwide responsibility for the Black & Decker brand.



Aaron Jagdfeld

As part of the management transition brought about by the sale of **Generac Power Systems** and the retirement of **Robert D. Kern**, company CFO **Aaron Jagdfeld** has been named president. Jagdfeld joined Generac in 1994 as a staff accountant and will continue to handle the responsibilities of CFO. The other two members of Generac's senior executive team are COO **Dawn Tabat** and CEO **Bill Treffert**.

**PV Powered**—a designer, manufacturer and marketer of photovoltaic solar inverter solutions—has appointed **Jim Morgenson** to the newly created position of vice-president of sales, and **Dawn Jones** to the new position of direc-

tor of customer service and support. Morgenson comes to PV with 23 years of experience at Rockwell Automation, while Jones most recently served as director of shared services and accounts payable at Microsoft Corp.

Cherry Corp., which manufactures standard and custom electrical switches, sensors, electronic keyboards and controls for several markets, has appointed **Paul E. Kero** to the position of president, **Cherry Electrical Products**. (He also becomes a vice-president of Cherry Corp.)

**Amerlux Lighting Solutions** has appointed **Sam Newberry** to the position of vice-president of sales, while **Bill Plageman** has been promoted to vice-president of specification sales. Both report directly to company president and CEO, **Chuck Campagna**. Newberry is in charge of overall sales and the national sales team, whereas Plageman is responsible for building a sales team to work with high-profile architectural, engineering and lighting design firms.



Tony Vespoli

**Tony Vespoli**, a former independent lighting sales representative who joined **Vista Lighting** (a Genlyte Group company) in 2005, has been promoted to sales manager for Canada and the central and western United States. Vespoli is a long-time member of the Illuminating Engineering Society of North America (IESNA).



Rob Farrell

**Robert Conway**, national marketing manager for **Eaton's Electrical Group (Canada)**, announced the appointment of **Rob Farrell** to the position of construction marketing manager. In his new role, Farrell is responsible for leading and managing the distribution equipment (assemblies and devices) product lines, which includes developing and implementing business strategies and development initiatives. His most recent position was product line manager,



Darko Matulic

low-voltage distribution assemblies. Farrell's 24 years of service with Eaton started in 1983 as a test technician in Mt. Forest. He is located at the Eaton HQ in Burlington, Ont. Meantime, Farrell announced the appointment of **Darko Matulic** to the position he vacated—that of product line manager, low-voltage distribution assemblies, which includes panelboards, switchboards and transfer switch products. Matulic holds a Mechanical Engineering degree from the University of Toronto, and joined Eaton in 1993. He has held several marketing and sales positions of increasing responsibility in Canada and the United States and, most recently, served as sales team leader for the Greater Toronto Area. Matulic is based at the Eaton facility in Milton, Ont. **EB**

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*FLIR Systems and ITC (Infrared Training Center)*  
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**Workplace Electrical Safety Conference**  
*Canadian Standards Association (CSA) and Industrial Accident Prevention Association (IAPA)*  
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*British Columbia Electrical Association (BCEA)*  
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**National Training Symposium**  
National Electrical Trade Council (NETCO)  
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Details to come. Stay tuned.



**Basic Electricity Course at NAIT**  
Alberta Electrical League (AEL)  
November 7  
Visit [www.elecleague.ab.ca](http://www.elecleague.ab.ca)

**Landscape Lighting Solutions**  
*The Source/Cooper Lighting*  
November 14-16  
Peachtree City, Ga.  
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**Lighting Essentials**  
*Lightpoint Canada (Osram Sylvania)*  
November 19-21  
Toronto, Ont.  
Visit [www.sylvania.com](http://www.sylvania.com). Click on Learn Lighting, then Lightpoint.

**Electrical Exposition 2007**  
*OEL Essex Chapter*  
November 21  
Windsor, Ont.  
Visit [www.ibswnet/oel](http://www.ibswnet/oel)

**Lighting Fundamentals/Lighting Basics**  
*The Source/Cooper Lighting*  
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# Designing a home automation system

By Thomas Pickral Jr.



This simple yet effective touchscreen provides a colourful graphical interface for numerous home control systems. Large, easy-to-recognize buttons facilitate access and control of lighting, small appliances, audio, surveillance video, security, temperature (including outdoor temperature/humidity), ventilation, pool/spa temperatures, etc.



Photo courtesy HAI.

Home automation systems (HASs) are one of the hottest technologies today, with many homeowners requesting new systems. These systems can include lighting control, energy management, security, audio and many other subsystems. The difficulty for most electrical contractors is that, even though a homeowner may have an interest, he may not have the knowledge to tell you what he needs or even what he wants the system to do. This makes designing a home automation system more complex, which is why you must become an educator as well as a designer and contractor when designing a home automation system.

The first step in designing a HAS is to have a consultation with the homeowner. Start off by having him tell you as much as he can about what he expects to get out of the system. His expectations are, ultimately, the most important factor when designing the system because, if you cannot meet them, the homeowner will never be satisfied. It is a good idea to educate the client on available HAS options

that complement the products he wants installed, as well as popular options he may not have considered. Once you have a sense of what the customer is looking for, you can start putting together the HAS framework.

### Starting the home automation system design

The most important decision you will make as the contractor is which home automation controller to use. The controllers come in many different shapes and sizes, and a dizzying array of options are available for most of them. Choose a controller that supports all of the subsystems and technologies the client will employ today, as well as possible subsystems or technologies he may want added in the future. There is not one single language or protocol for HASs but many, so the more products and protocols your central controller supports, the easier it will be to integrate different systems and add new ones later. Some of the more popular home automation protocols on the market today are RS-232, Ethernet, UPB,

Zwave and ZigBee, not to mention numerous proprietary protocols. Look for central controllers that support as many of these protocols as possible, and avoid systems that are proprietary and lock you in to one particular product line.

Also make sure the controller is capable of handling the entire home's present—and future—needs. The worst thing you can tell an excited homeowner who wants to add more to their system is, "Sorry, you're maxed out... I can't add any more". For example, choose a controller that can handle every light fixture in the house, even though the client has chosen to start with only a few locations.

### What homeowners are looking for

In fact, lighting control is the primary system that an electrical contractor installs as part of a HAS. Today, lighting control is considered the fastest-growing home technology

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This home automation system provides sophisticated lighting control that is affordable, easy to install and operate, and expandable.



Photos courtesy HAI.

This proprietary software comes on a USB key that plugs into any computer for quick, safe and easy access and control of lights, audio, security and webcams over the Internet. It communicates through a secure Ethernet port on the home automation system.

so, as an electrical contractor, you are in a prime position to profit from this trend. Lighting control systems vary greatly in their design, scope and implementation, meaning there are a host of products to suit every type of project. The cost of these systems can range from \$40 per circuit to the \$200-plus range for some sophisticated systems. Familiarize yourself with at least several different lighting systems in various price ranges so that you never lose a job because "you are too expensive".

Traditionally, there has been a linear relationship between the cost of lighting control products and their performance, and more capable systems have not been available for retrofit installations. A relatively new technology called Universal Powerline Bus (UPB) is a digital communications standard for lighting and home control that bridges the gap between cost and performance. It works over existing power lines in a home, so there's no need to run new wiring. UPB has about 95% of the features found in high-end systems, but the devices have a dealer price of \$55 to \$120, making it cost effective for all but the most price-sensitive installations. UPB has been extensively tested and researched in residential environments and found to be 99.9% reliable.

UPB is for single-phase 120/240V systems. It transmits using a spread spectrum pulse over the AC sine wave with peak strength of 60V. This pulse has a long range and can travel up to one mile through the power lines. UPB has Advanced

Addressing that allows 256 devices per house. And with 256 houses per transformer, it greatly reduces the chance of overlap between houses.

Whole-home audio is another very popular subsystem with residential customers and, much like lighting control, numerous options are available. Basic systems start with manual volume controls while the high-end systems feature massive media music distribution servers and intricate keypads. Differing systems are available, depending upon whether or not one will have a media cabinet, or if the sources will be located in individual rooms. When whole-home audio systems are tied into a home control system, paging features or notifications like "Front Door Open" are obtainable in addition to music distribution.

Energy management is also an integral part of a home automation system. Many people install home control systems to conserve energy while maintaining occupant comfort. A quality system allows for the integration of occupancy sensors, communicating thermostats and a range of sensors for things like humidity and water. The ability to control pool and spa pumps, as well as irrigation systems, is an incredible function.

Security is a popular system to integrate with the HAS because it gives the homeowner the peace of mind that comes with knowing their family and home are as safe and secure as possible. Security systems allow you to use motion detectors and door/window contacts for HAS purposes as well. One of the simplest and most popular examples is for the light in the foyer to come on when the front door is opened and it is dark outside—an easy task when the security system is connected to the HAS. The security system can also activate lights in the event of an alarm, or turn off the HVAC system in the event of a fire. (Be sure to choose a security system that offers RS232 serial connectivity so it can be integrated.)

The last thing on our list is typically the first thing a homeowner thinks of: the interface. The way a homeowner interacts with his system is, in his mind, the system's most important aspect. If everything works flawlessly but no one in the home can figure out how to use it, then the entire system becomes useless. There are many ways to interact with a home automation system, including: keypads, telephone, touchscreens and via Internet.

Touchscreens are probably the most commonly seen example of a HAS interface. Coming in many sizes and styles, they simplify HAS interaction (and impress friends and neighbours to boot!). This is a good time to point out the very lucrative referral business that comes with successful home automation installations.

Your homeowner may want to be able to access his system remotely, so telephone/Internet access is something to consider. (Most systems offer some sort of remote access, and I find that Internet access is very important to a large number of clients.) Still, don't rule out the telephone: remind customers that Internet access isn't guaranteed everywhere, whereas telephones *are* everywhere.

### Getting into the business of home automation

The best advice for getting into the home automation business is to get yourself educated. There are a number of training opportunities with manufacturers all over the country, with courses ranging from a couple of hours to a couple of weeks. Several third-party training schools have popped up in the last several years as well, offering courses in system design and programming, and even how to handle the additional project management that comes with a big system. Recently, some trade schools have started offering classes in CompTIA's Digital Home Technology Integrator program so, if you're hiring new employees, this is a great credential to check.

On a practical note, on every job: a) listen to the client and b) plan for future expansion. <sup>EB</sup>

Thomas Pickral Jr., HAI business development manager, has 16 years of work experience in the home automation industry. He is authorized to conduct NTS- and CEDIA-certified CEU courses covering home automation, lighting, HVAC, security systems, audio and video distribution, and home computer networking. In addition, he is a member of the Security Industry Association (SIA), National Burglar and Fire Alarm Association (NBFAA), Consumer Electronic Association (CEA) and Custom Electronic Design & Installation Association (CEDIA).

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INFO NO. 13

## T&B monthly tips



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INFO NO. 14

# NETCO's focus on the future

## CECA-IBEW partnership addresses human resource issues



The National Electrical Trade Council (NETCO) is a new organization you'll be hearing more about in the future because its mandate is to promote national standards, apprenticeship and ongoing journeyman skills training for the electrical industry in Canada.

NETCO was created as a joint labour-management partnership by the Canadian Electrical Contractors Association (CECA) and the International Brotherhood of Electrical Workers (IBEW), 1st District, Canada. Phil Flemming, IBEW international vice-president, serves as president while Eryl Roberts, CECA's executive secretary, serves as treasurer. The board is representative of contractors (union and non-union) and labour. The council is funded by the two industry partners, and the first board meeting was held in December 2006.

"NETCO is bringing national coordination to the task of addressing human resource issues at a time when both contractors and labour are spending more time dealing with changes in the marketplace," says Roberts. NETCO fulfils the need for a national body to work in conjunction with existing structures, such as provincial/territorial organizations, provincial and local advisory committees, Joint Apprenticeship Committees (JACs), the Canadian Council of Directors of Apprenticeship (CCDA), and so on.

The rapidly changing environment creates threats, such as the demand for escalating skill requirements and competition from other trades and uncertified workers, not mention from other occupations, such as technicians/specialists. It also, however, creates opportunities to capture specialized markets by being first with the necessary skills, and make Canada's apprenticeship system more effective. NETCO's edge is its ability to work with others to capitalize on opportunities and minimize threats.

### NETCO's establishment recommended by industry

Over the last decade, various labour and management stakeholders recommended the creation of such a council. In 1997, the first such recommendation was included in a national labour market study,<sup>1</sup> conducted under the guidance of the CECA-IBEW National Industrial Adjustment Services Committee. More recently, delegates to a national Lifelong Learning Symposium, co-sponsored by the IBEW and CECA in October 2004, urged action. The 2004 symposium reinforced the need for more information sharing and collaboration in developing learning resources to avoid recreating the wheel. In early 2005, Roberts and Flemming reached a pivotal agreement (in principle) to activate NETCO, and began laying the groundwork to start in 2006.

"NETCO enriches the industry-funded, labour-management training partnerships that exist in the electrical industry at provincial and local levels [i.e. Joint Apprenticeship Committees] by providing national coordination and support," says Flemming, who believes the capacity of the electrical industry to effectively address human resource issues declined after the federal government devolved responsibility for training to the provinces/territories. He feels NETCO will fill that void.

In the organized electrical industry, JACs are the bedrock of the electrical construction industry's activities in the area of apprenticeship training. Their training directors often rely on the educational resources and training opportunities provided by the National Joint Apprenticeship and Training Committee (NJATC) in the United States because comparable services are not as readily available in Canada. Flemming and Roberts feel NETCO has the potential to be NJATC's Canadian equivalent.

### NETCO's 2007 action plan

As its lead project, NETCO launched an Essential Skills Initiative to promote national standards, apprenticeship and ongoing journeyman skills training. The project zeroes in on the three Interprovincial/Red Seal<sup>2</sup> occupations in the electrical industry: construction and industrial electricians, and powerline technician. It created a blue-chip steering committee

that includes representation from contractors, labour, community colleges, sector councils (Canadian Apprenticeship Forum, Construction Sector Council, Electricity Sector Council) and CCDA. The objectives are to build awareness of Essential Skills as they link to the Red Seal Program's National Occupational Standards, and articulate best practices for integrating Essential Skills assessment and skill building into current human resource practices (i.e. JAC protocols for evaluating apprentice applicants, Red Seal preparatory training).

The Essential Skills are a set of nine skills these occupations require of workers (to varying degrees) to successfully perform job tasks and acquire new learning. In 1994, the federal government launched an Essential Skills Research Project<sup>3</sup> to develop a methodology to profile occupational requirements for Essential Skills. They then applied that science to prepare Essential Skills Profiles for most occupations in Canada. Since 2002, the federal government developed Essential Skills Profiles for selected Red Seal occupations, including those in the electrical family.

This was done in consultation with industry as National Occupational Analyses were updated. NETCO's Essential Skills Initiative builds on previous research conducted by the IBEW and CECA showing that Essential Skills are often a barrier for apprentices and journeymen working and learning in the electrical industry. For example, poor or rusty Reading Text and Numeracy skills are a root cause of apprenticeship failure or drop-out, and a barrier to journeymen with a provincial/territorial Certificate of Qualification obtaining Red Seal status.

### National Occupational Standards wall charts

NETCO's first product is hot off the press: a set of 27 x 39-in. laminated National Occupational Standards wall charts (available in English and French) for the three electrical Red Seal occupations. (A copy of the chart for Construction Electrician appears on page 14). These charts represent the first step in building awareness of how nine Essential Skills contribute to success in apprenticeship and ongoing journeyman skills training. "We envision these charts being displayed in every training centre and community college involved in delivering apprenticeship training or journeyman skills updating," says Flemming. Roberts reminds us of the importance of these charts: "Those involved in delivering training need to know more about how to interpret these Essential Skills Profiles and the implications for human resource management".

NETCO is in the process of distributing complimentary copies to key electrical industry stakeholders across the country, including directors of apprenticeship, community colleges, JACs and contractors. They will subsequently be available at a cost of \$15/each (incl. T&S). As soon as its available, order information will be posted to the following websites:

- CECA: [www.ceca.org](http://www.ceca.org)
- IBEW: [www.ibew1st.org](http://www.ibew1st.org)
- EBMag.com

### National training symposium

NETCO's Essential Skills Initiative<sup>4</sup> culminates with its sponsorship of a national training symposium in Barrie, Ont., on November 2-4. The Joint Electrical Promotion Plan (JEPP) is the provincial sponsor. A suite of best practices and training tools will be unveiled. As NETCO's exclusive media partner, Electrical Business will be communicating information leading up to, during, and after the event. 

### Notes

1. "The Electrical Trade, Connecting With The Future: A National Labour Market Study", Traurig & Sparks.
2. NETCO endorses the Red Seal Program that CCDA administers throughout Canada; it is a passport to mobility in the trades, enabling certified workers to work anywhere in Canada where their trade is designated. They qualify by passing interprovincial examinations that are based upon nationally validated occupational analyses, often referred to as National Occupational Standards. These standards are the basis for the development of interprovincial standard examinations and are encouraged to be used by the provinces and territories for curriculum development.
3. Visit [www.hrde-drhc.gc.ca/essentialskills](http://www.hrde-drhc.gc.ca/essentialskills)
4. Although NETCO itself is funded by the IBEW and CECA, the Essential Skills Initiative is funded in part by the Government of Canada, along with significant in-kind contributions from NETCO and its industry partners.



*This project is funded in part by the Government of Canada.*



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**DODGE**

# National Occupational Standards: Construction Electrician

**Essential Skills** contribute to success in apprenticeship and ongoing journey person skills training.

National Occupational Standards for Red Seal trades reference **Essential Skills Profiles** ([www.red-seal.ca](http://www.red-seal.ca)) describing how the following nine Essential Skills are used on-the-job:



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**Document Use**



**Numeracy**



**Writing**



**Oral Communication**



**Working with Others**



**Thinking Skills**



**Computer Use**



**Continuous Learning**

<b>Occupational Skills</b> <b>A</b>	Interprets occupational documentation.	Interprets drawings and specifications.	Interprets codes and regulations.	Interprets material and equipment documentation.	Maintains work-related records.
	1	1.01	1.02	1.03	1.04
	Organizes work.	Prepares work site.	Performs lock-out and tagging procedures.	Estimates materials and supplies required for job.	Organizes materials and supplies.
	2	2.01	2.02	2.03	2.04
	Develops and maintains schedule.				
	2.05				
	Communicates in the workplace.	Communicates with other disciplines, co-workers, and clients.	Communicates with apprentices.		
	3	3.01	3.02		
	Uses and maintains tools and equipment.	Uses hand tools.	Uses power tools.	Uses powder-actuated tools.	Uses electrical measuring equipment.
	4	4.01	4.02	4.03	4.04
Uses scaffolding and access equipment.	Uses rigging, hoisting, and lifting equipment.	Uses personal protection equipment.	Maintains tools and equipment.		
4.05	4.06	4.07	4.08		
<b>Distribution and Services</b> <b>B</b>	Installs service entrance.	Installs supply services.	Installs metering systems.	Installs overcurrent protection.	Installs power distribution centre.
	5	5.01	5.02	5.03	5.04
	Installs temporary distribution.	Installs surge protection systems.	Installs power conditioning devices.	Installs uninterruptible power supply (UPS) systems.	Performs start-up and shut-down procedures.
	5.05	5.06	5.07	5.08	5.09
	Installs sub-panels, feeders, and transformers.	Installs sub-panels.	Installs feeders to sub-panels.	Installs low voltage transformers.	
	6	6.01	6.02	6.03	
	Installs bonding, grounding, and cathodic protection systems.	Installs bonding systems.	Installs grounding grids.	Installs ground fault systems.	Installs lightning arresters.
	7	7.01	7.02	7.03	7.04
	Installs power generation systems.	Installs generators and transfer switches.	Installs alternative power systems.		
	8	8.01	8.02		
Installs high voltage systems.	Installs high voltage transformers.	Installs high voltage cables.	Terminates high voltage cables.	Tests high voltage systems.	
9	9.01	9.02	9.03	9.04	
<b>Branch Circuit Wiring</b> <b>C</b>	Installs raceway systems and cables.	Installs raceways.	Creates openings.	Installs seismic restraint systems.	Installs underground wiring.
	10	10.01	10.02	10.03	10.04
	Installs boxes, cabinets, and fixtures.	Pulls conductors in raceways.			
	10.05	10.06			
	Installs power and lighting systems.	Installs luminaires.	Installs devices, switches, and outlets.	Installs lighting controls.	Installs light posts.
	11	11.01	11.02	11.03	11.04
	Installs heating and cooling systems.	Installs electric heating systems.	Connects cooling systems.	Installs heating/cooling control systems.	
	12	12.01	12.02	12.03	
	Installs emergency lighting systems.	Installs exit lighting systems.	Installs battery-operated lighting.		
	13	13.01	13.02		
<b>Motor and Control Systems</b> <b>D</b>	Installs motor controls.	Installs starters.	Installs variable frequency drives (VFD).	Installs overload protection.	Installs manual motor controls.
	14	14.01	14.02	14.03	14.04
	Installs automatic motor controls.	Installs PLCs.			
	14.05	14.06			
	Installs motors.	Installs AC motors.	Installs DC motors.	Installs motor overcurrent protection.	
	15	15.01	15.02	15.03	
<b>Extra Low Voltage Systems</b> <b>E</b>	Installs signalling systems.	Installs fire alarm systems.	Installs nurse call systems.	Installs security systems.	
	16	16.01	16.02	16.03	
	Installs voice and data systems.	Installs telephone systems.	Installs data network systems.	Installs public address (PA) systems.	Installs community antenna television (CATV) systems.
	17	17.01	17.02	17.03	17.04
	Installs building automation systems.				
17.05					
<b>Upgrading, Maintenance, and Repair</b> <b>F</b>	Upgrades electrical systems.	Evaluates existing electrical systems.	Replaces outdated systems with new technology.		
	18	18.01	18.02		
	Maintains electrical systems.	Troubleshoots electrical systems.	Replaces defective components.		
	19	19.01	19.02		
Performs preventative maintenance.	Tests system operation.	Cleans and lubricates systems.	Establishes and maintains maintenance schedule.		
20	20.01	20.02	20.03		

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\*Based on the 2008 F-450 best in class payload and towing. Class being full-size pickups over 8500GWR. † Standard only on the F-450.

\*\* Based on F-450 best in class 5th wheel towing when properly equipped. †† 4x4 model. †† Optional equipment shown. ‡ Cleaner and quieter than past Super Duty Diesels.

## Trucks for the trade

### ■ Dodge trucking solutions

Completely redesigned, the 2007 Dodge Sprinter proves itself a versatile commercial van. It has grown larger this model year, offering more choices and features. Sprinter is available in three vehicle lengths (5910 mm, 6945 mm and 7345 mm) on two wheelbases of 3665 mm or 4325 mm, with an extended version available on the long wheelbase that gives you a 400-mm longer rear overhang. Sprinter also boasts three interior-roof height options: standard (1650 mm), high (1940 mm) and new mega (2140 mm).

Powered by a new 3.0-L CDI turbo-diesel V6 with 154 hp, three different Gross Vehicle Weight Rating (GVWR) configurations are offered, including a higher maximum GVWR up to 5000 kg for cargo vans and chassis cabs.

All Sprinter models are equipped with a standard five-speed automatic transmission and, similar to the previous model, you are able to change gears with an instrument panel-mounted gearshift located on the centre console. Meantime, new 16-in. wheels allow large-diameter brake rotors to be fitted, resulting in an increased braking surface area and simplified cooling-air supply. Fixed-caliper disc brakes are used on all wheels ensuring anti-fade characteristics and stable braking performance. Front and rear brake discs are ventilated on all models.

New standard features include power windows and locks, integrated wide-angle mirrors, halogen headlamps, 16-in. wheels, tilt- and height-adjustable steering wheel, CD radio, one-touch triple-flash function turn signals, and new Adaptive ESP—an electronic stability program that accounts



2007 Dodge Sprinter Cargo Van  
144 Wheelbase Standard Roof.

for vehicle payload for improved functionality and safety.

Meantime, Dodge Caravan and Grand Caravan cargo vans promise you a spacious yet compact interior—along with a commercial suspension for heavier cargo—without sacrificing ride quality. Specifically designed for commercial use, the vans offer 167.9 cf of cargo capacity, up to 5700 lb GVWR (Gross Vehicle Weight Rating), and towing capacity of 3800 lb.

The vans are equipped with a 180-hp, 3.3-L V6 engine delivering 210 lb-ft of torque, mated to a four-speed automatic transmission. Hydraulic power-assist rack-and-pinion steering, heavy-duty ride suspension, front anti-roll bar, rear leaf suspension, rear leaf springs, P215/65SR16 tires, and four-wheel, anti-lock disc brakes combine to provide enhanced driver comfort.



2007 Dodge Sprinter Cargo Van Interior  
With Shelving Upfit.



2007 Dodge Caravan Cargo Van



2007 Dodge Sprinter Cargo Van 170  
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INFO NO. 17

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INFO NO. 18

Photo courtesy Workhorse Custom Chassis.



A hybrid electric chassis for walk-in trucks on display at The Work Truck Show, March 2007.

# Chassis chief

## thinks trucking will be plug-in and go

Don't be surprised when trucking fleets just plug into an electrical outlet to refuel in the not-so-distant future. While hybrid electric cars have been in the news for some time, only just recently have hybrid truck options come forward for heavy-duty pick-up and delivery chores, as well as an array of construction, maintenance and service trucks. Jay Sandler, vice-president of commercial products for Workhorse Custom Chassis, thinks medium-duty work trucks of all kinds—powered mainly by electricity—are only five to 10 years away.

### Looking for alternative power

With environmental concerns coupled to rising fuel and engine costs, the search for alternative fuels and other sources of power has never been more heated in the trucking industry. While major parcel delivery fleets like Purolator Canada have put a variety of hybrids and alternative fuel vehicles into experimental use, hybrid technology remains too expensive for most fleets—despite advantages such as a 30% to 50% reduction in fuel costs, less maintenance, less noise and fumes (helpful in residential areas), and environmental benefits.

However, hybrids are becoming more palatable. "2007 emission requirements have upped the cost of diesel engines \$4000 to \$10,000 more than 2006 models," says Sandler. "And more requirements and price increases are coming in 2010."

### Plugging into off-peak power

"At present, the hybrid battery pack is the most expensive component we add to make a hybrid electric truck," Sandler explains. "With more efficient battery storage, a fleet of 'plug-in trucks' would work quite well."

Such trucks would 'fuel up' by plugging into an electrical outlet overnight—say, between midnight and 5 a.m. when electricity tends to be at its cheapest. This will result in an electric-powered vehicle for most of the day (with a small gas or diesel engine providing supplemental energy, if needed). At the end of a typical day, 70% of a truck's energy may have come from the overnight charging, putting regular fuel consumption at 50 to 60 miles/gallon or more for stop-and-go driving.

"Fleets need to come to grips with the fact that the electric truck is no longer something to dismiss as science fiction," says Sandler. "Just like cars, hybrid electric trucks are here now, and may well be everywhere tomorrow."



### Trailer hitch adapter for UT2 cable puller

Greenlee has developed a trailer hitch adapter designed specifically as an accessory for use with its UT2 cable puller. In essence, it allows you to use a truck as the base for the UT2 for pulling cable. The adapter attaches to the UT2 main assembly and fits into the receiver of standard 2-in. trailer hitches. It swivels so that it can perform pulls vertically, horizontally or any angle in between. It also boasts a right-angle sheave to keep the operator out of the direct pulling path.



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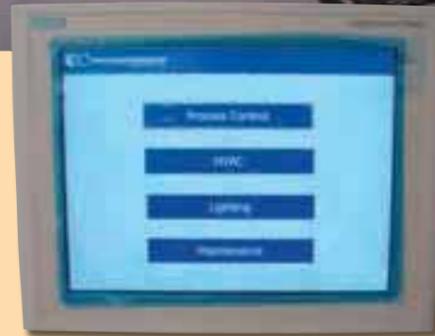
# Total integration of automation and process

By Mike Thomas

Just as advancements in technology continue to accelerate the pace at which products arrive to market and into the hands of consumers, there's also an increasing need for speedier and more innovative total integrated automation and process solutions that are designed to help manufacturers cut production costs while supplying their customers with just-in-time inventories. Technologies such as wireless networks and integrated field busses like Profibus DP and PA, Foundation Field Bus and Ethernet, are fast becoming the key drivers in merging what once was a divided automation and process and instrumentation world.

The Programmable Logic Controller (PLC) is now more than capable of handling the task of the old Distributed Control System (DCS), once the exclusive proprietary technology of large process suppliers. But there's a growing demand by electrical contractors and industrial electricians for turnkey approaches to their projects through an open architecture designed to give them the freedom of choice and featuring ample flexibility to adapt to ever-changing market demands.

A project recently completed by the EB Horsman & Son Process Automation Team illustrates the impacts of total integration in a plant environment.



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## The situation at hand

Faced with intensifying demand for his products worldwide, the owner of a pharmaceutical manufacturing plant recognized that his company had outgrown its current facilities. Purchasing a larger building, the owner believed the new property could encompass a plant that not only met his immediate expansion needs, but gave his enterprise the flexibility over time to offer customers a swelling diversity of product mix, as well as the physical space to continue growing.

The owner also wanted the new plant to be as modern as possible, including the installation of the latest in process technologies. But as a privately owned business, the company didn't boast unlimited resources, so managing the project efficiently within budget and on time were among the owner's most crucial concerns.

Following numerous meetings with plant maintenance, production and upper management, EB Horsman & Son proposed a PLC solution with HMIs (human machine interfaces) at the plant floor, bolstered by Profibus DP as the plant network and Ethernet at the manufacturing execution systems (MES) level.

It was determined that, as a specialized pharmaceutical plant, the process involved required a mixture of controls, automation

and instrumentation, as well as IT networking. Control products consisted of photoelectric sensors, contactors for motors and lighting, and variable frequency drives for agitation. On the instrumentation side, temperature and humidity control, flow measurement, On/Off control and proportional control valves were integrated with HMIs, PLCs and computers at the management level.

As a result of this sophisticated technological combination, the project was delivered both on time and on budget. Due to the reliability and speed of the Profibus Network—including diagnostic tools from various control and instruments set up as nodes on the network—the project's start-up and commissioning encountered few challenges and obstacles. The implementation of a network with diagnostic tools provides the maintenance crew with a critical advantage when called upon to keep the plant running. That translates into minimal downtime and fewer terminations, while faults can be accurately pinpointed.

The centralized control from the HMIs allows the production crew to better view and control the plant's major processes. The crew can punch in pharmaceutical recipes and start the batch. Then they can walk away knowing that the system will automatically fill, batch, agitate, heat and cool as necessary, and also





The centralized control from the HMIs allows the production crew to better view and control the plant's major processes. The crew can punch in pharmaceutical recipes and start the batch.



The main advantage with process automation is the fact that the owner, along with his management team, can view production screens right at his office desk (even from his home computer). With this information, he can generate reports and monitor real-time activity on the production floor.



send an alert whenever there is a need to make changes to the batch. This hands-off technology allows the production team time to do other things and run more products, resulting in increased production output and less chance of human error.

When logging data, the production manager is able to keep track of every batch produced, identify the personnel responsible for each individual batch, and maintain up-to-date records for any batch issues that may arise, as well as track the end customer receiving the final product.

For the company owner and his management team, the main advantage of process automation is that they can view production screens right at their office desks—and even from their home computers—as well as generate reports and monitor real-time activity on the production floor.

In this project, the total automation and process integration strategy provided numerous advantages, including quicker start-up and commissioning times, faster diagnostics of faults as they occurred, and real-time data from the plant floor to the production office—a wealth of information that's instantly relayed to upper management to help them make faster and more accurate decisions, affording better time management, higher cost savings, and maximizing the overall process performance of the plant. 

Mike Thomas is the automation and controls manager for EB Horsman & Son. He's been in the industry for 26 years, with the last eight to nine spent in his current position.



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INFO NO. 21



## Electrical equipment 'recycler' reopens under new name

### Counterfeit labels and certification marks involved



Joseph Neu, EFC's vice-president, engineering, codes and standards

**M**ontreal's Richard Dawe has closed one business—Métropolitain Électrique—only to open a new one under the name Breakers Canada Inc. that, according to a flyer received recently, sells recycled electrical equipment.

Dawe has a criminal record. He and Métropolitain became notorious when, last December, Dawe and his business were found guilty on three charges involving counterfeit-labelled circuit breakers. Dawe was sentenced to three \$23,000 fines while his business, Métropolitain, was fined \$1000 for each charge: a grand total of \$72,000. (The

penalty seems light considering that the crime could have led to both property damage and harm to the general population.)

The RCMP started its investigation into, and organized search warrants for, Dawe and Métropolitain several years ago when l'Enfant-Jésus Hospital in Québec City—one of America's oldest hospitals—had problems with the circuit breakers in its intensive care unit.

### What's going on?

Electro-Federation Canada's (EFC's) Joseph Neu says this punishment might seem unfair when you compare it to an Edmonton business that was given a \$150,000 fine for counterfeit UL marks on its lighting fixtures. It also pales in comparison to the \$600,000-punishment you would get if you reproduced Microsoft software illegally, which doesn't put human lives at risk.

"We know that a lot of recycled electrical material comes to Canada from the United States and other countries," says Neu, which includes materials that have been recovered from the Louisiana and similar disasters. "It's always hard to prove the source of those items, but one thing is for sure: it is illegal to market them and dangerous for the end user to install such equipment." Another real problem, adds Neu, is the fact that some electricians just don't care about it, and install questionable material because it can be profitable.

### What can anyone do about it?

This problem is so far-reaching, says Neu, that numerous stakeholders have come together to form the Canadian Anti-Counterfeiting Network (CACN). Found online at [www.cacn.ca](http://www.cacn.ca), the network comprises individuals, firms and associations who wish to fight counterfeiting, copyright and patent infringement, fraud and cribbing. Also aboard are law firms practicing in the field of intellectual property rights.

Earlier this spring, parliamentary commission hearings convinced MP Garry Breitkreuz to support the fight against this problem, which sucks billions of dollars out of the Canadian economy. Counterfeiting is not a simple matter of fake Gucci perfumes or Prada handbags... when someone like Dawe winds up with a criminal record, it means it's criminal—plain and simple.

On May 7, CACN issued a report entitled "A Road Map for Change", outlining the threats posed by the rampant (and mostly unchecked) counterfeiting and piracy in Canada. The report sets out a practical action plan for government to address this problem and raise Canada to the rank of its more proactive trading partners. (The report is available on CACN's website.)

Small sentences for Dawe and his ilk will do little to stem the counterfeit tide. Only through continuous advocacy and education will the courts understand the gravity of the situation and start imposing stronger punishments that not only fit the crime, but deter counterfeit activity altogether.

— Normand Gosselin

## Chromalox strengthens Quebec presence

Dimplex/Chromalox has added two Quebec territory managers: Rejean Beaulieu and Francois Mercier. Beaulieu will cover the western portion of the province and the Ottawa/Eastern Ontario region. Covering the East, Mercier's territory includes Trois Rivieres, Drummondville and Sherbrooke. Dimplex/Chromalox is also maintaining local inventory for both pick-up and delivery at 30 Carre Sicard in St. Therese. For more information, call (800) 668-6663.



Ouellet Joe Pilieci

## Ouellet appoints Western manager

Roman M. Kicak, Ouellet Canada Inc.'s vice-president of national sales, announced the appointment of **Joe Pilieci** to regional sales manager for Western Canada. Pilieci assumes responsibility for sales and marketing activities in Ontario, Manitoba, Saskatchewan, Alberta and British Columbia.



## Last year San Diego, this year Montreal

### IALD brings lighting education to Quebec

The International Association of Lighting Designers (IALD) is holding its seventh annual educational conference and meeting—Enlighten 2007—in Montreal on October 11-13. The theme for this fall conference is "The Passion of Light". Last year in San Diego, over 200 lighting industry professionals made it a very special event.

IALD provides a network for lighting professionals to exchange information, and serves as an active referral route for architects, interior designers, facility managers, owners, municipalities, etc., seeking professional lighting design. IALD develops a range of services and events to ease the lighting designer's job and bring him recognition through awareness programs and design awards. Most importantly, IALD exists to bring professionalism and credibility to the trade.

Enlighten 2007 intends to set the stage for a discussion on the emotions evoked by lighting, and the motivations behind lighting design. To learn more, visit [www.iald.org](http://www.iald.org).

## A word on trade shows in Quebec

A major trade show in Quebec—Mecanex-Climate—is much like Moncton, N.B.'s MEET Show; that is, similar markets, same players, etc. The agreement among the Mecanex show partners announced in May's Electrical Business means that the 2008 CMEQ/IES electrical and lighting show is postponed until 2009. (And we predict that other partners will join this group to make it a huge event.) This 2009 show remains unnamed.

As a reminder, The Corporation of Master Pipe Mechanics of Quebec (CMMTQ) and the Canadian Institute of Plumbing and Heating (CIPH) made an agreement with the Corporation of Master Electricians of Quebec (CMEQ) to produce a major mechanical and electrical trade show in Montreal in 2009 (EB May 2007, page 5).

Another important electrical show in Quebec is Le Salon Lumen, held in both Quebec City and Montreal. Lumen had always conducted its show every two years, opposite CMEQ's annual event. Its most recent event was held this year, meaning the next was scheduled for 2009. However, the agreement signed by CMEQ forces Lumen to switch years, meaning its next event is being organized for 2008. (With close to 3000 visitors, Lumen's 2007 event was a huge success, becoming Quebec's most important electrical event to date.)



Two rechargeable batteries supply power to the resurfacer's two electric motors.



The resurfacer's charger is affixed to the ceiling, thereby taking up little space in the garage.

## Number of electric ice resurfacers in Quebec rises

Quebec being (sometimes...!) the land of cold and ice, Zamboni ice resurfacers are well known. Pursuant to a decision to reduce the air pollution in its arenas, the City of Montreal just purchased an electric Zamboni—the 30th owned by the city and private arenas in the region. In fact, it's already on the job, calling the St. Michel arena in Montreal's North end home ice. It is Quebec's 45th electric Zamboni.

You may be surprised to learn that the ice resurfacer was not invented in Canada, but in sunny California. There, in 1940, Frank J. Zamboni devised a solution to the resurfacing problem he had at the arena he co-owned with his brothers.

Montreal's newest electric ice resurfacer cost \$170,000 and is able to perform its duties 18 times a day. It is powered by a 17.5-hp motor, while the hydraulic and pump systems work off an 8-hp electric motor. Just two rechargeable batteries are needed to get the job done.



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# New Brunswick takes major step forward for wind power

New Brunswick has asked NB Power to move immediately with the addition of an extra 300MW of wind power in the province, accelerating the initial objective of adding this power over a period of 10 years. Specifically, Energy Minister Jack Keir has asked the utility's board to review

the plan and move as quickly as possible in issuing the RFPs.

"The recent filing for electricity rate increases is a sober reminder of how vulnerable we are to global oil prices. By adding clean energy from wind to the mix, we will be able to offer greater stability for rates in



The provincial government has asked NB Power to move immediately with the addition of an extra 300MW of wind power. Left to right: Business New Brunswick Minister Greg Byrne, Energy Minister Jack Keir, Environment Minister Roland Haché, and Bathurst MLA Brian Kenny.



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the future, because we become less dependent on the uncontrollable price of foreign oil and coal," said Keir.

Unlike the first RFPs, the new ones will contain a certain amount of New Brunswick content criteria to ensure that future projects have greater benefits for companies in the province and the New Brunswickers who work for them.

"It is very important as we grow this sector... that we maximize the benefits to our business sector and the jobs that these projects can bring with them in manufacturing, site preparations, and the jobs of maintaining operations when the plants are producing electricity," said Business New Brunswick Minister Greg Byrne.

The plan is to have wind plants in different regions, thereby having a more steady supply of wind-based electricity, because if it isn't windy in one area of the province, it ought to be in another. Today's announcement fulfils another commitment in the Charter for Change, which specifies that the new government would increase generation capacity from renewable resources to 10% by 2016.

### ■ P.E.I. gets clean energy money from feds

The federal government has announced \$15 million in funding for Prince Edward Island, stemming from a trust fund it has established to support provincial and territorial projects to help reduce greenhouse gas emissions and air pollutants.

The island's government has indicated it will use the funding to move ahead on several projects, which may include:

- support for homeowners to install renewable energy technologies and make their homes more energy efficient;
- investment in renewable energy technologies and energy-saving measures in government buildings;
- a program to introduce renewable energy demonstration projects in several Island schools; and,
- a hydrogen fuelling station for the Prince Edward Island Wind-Hydrogen Village.

In other Island news, construction of the Eastern Kings Wind Farm came in significantly under budget. Initial projections put the price tag at around \$55 million, but the final cost was \$47 million. Jamie Ballem, P.E.I.'s minister of Environment, Energy and Forestry, attributed the savings to a change in site design and the excellent work of the project managers, Frontier Power Systems Inc. and local contractors.

Since Eastern Kings began commercial operation in January, it has generated just over \$1 million in revenue, and produces enough electricity to supply 7.5% of the island's total electricity needs.



prenticeship. Students, or pre-apprentices, are linked with employers early, making it easier and faster to complete apprenticeships in the trade. Program graduates will be certified and qualified skilled tradespeople ready to join Nova Scotia's workforce.

Currently, the pilot only involves one of three trades: automotive service technician, heavy-duty equipment technician or truck and transport mechanic. However, notes NSCC's Dean of Trades and Technology Ron Farrell, "This model allows us to expand trades education based on the demand and enthusiasm of communities. We're able to create new solutions for communities

that don't have other trades education, and those who may have specific workforce development needs."

After the pilot, the province will explore the possibility of similar programs elsewhere. The Department of Education and NSCC plan to work closely with sector councils, employers and other interested partners to develop personalized apprenticeship models. It is expected that collaborative apprenticeship will produce highly trained individuals who have strong connections with employers, a commitment to lifelong learning and who support building successful trades careers in Nova Scotia. 

### ■ NL releases report of skills task force

The recently released report of the Newfoundland and Labrador Skills Task Force, "All the Skills to Succeed", provides an action plan to address gaps in the skilled trades labour force and meet the needs of current and future large-scale development projects.

The Williams government established the task force to gather the expertise and insight of people across business, labour, education and other key sectors with the hopes of providing strategies for building the province's skilled work force. It was chaired by Bob Ridgley, MHA for St. John's North.

The actions identified by the task force are guided by key themes that emerged during consultations. The report provides a strategic direction, an objective and recommended actions in the following areas:

- changing attitudes and opening doors;
- improving access, performance and outcomes;
- improving apprenticeship programs and journey person opportunities;
- supporting access for under-represented groups;
- retaining and recruiting skilled workers;
- assessing and responding to industry needs; and
- ensuring strong partnerships.

The task force has also identified immediate priorities for each sector that will help address existing gaps in the labour force. Burke noted that Budget 2007 has allocated \$9.6 million to address immediate needs in the education and apprenticeship system.

"As a result of this year's budget investments, I am pleased to report that we are already taking actions outlined by the Skills Task Force," said Joan Burke, Minister of Education. "Post-secondary programming in skilled trades and technology will be expanded at College of the North Atlantic, standardized apprenticeship examinations will be introduced, and steps will be taken to strengthen the participation of under-represented groups such as women and Aboriginal persons, just to name a few."

Gus Doyle, a member of the task force and president of the Carpenters Union for Newfoundland and Labrador, said the action plan will ensure a labour market that is well positioned for economic growth and development. "Government has taken the lead in this area and I am extremely pleased to see programs and services for apprentices being enhanced. Apprentices are key to ensuring the province can deliver on large-scale development projects."

### ■ Program to keep skilled trades workers home

A pilot program to keep more skilled trades workers home, and employed, has been launched by the Province of Nova Scotia and Nova Scotia Community College (NSCC). The pilot is based on a new model of skilled trades education: collaborative ap-

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# Flooring machine manufacturer brings "oh yeah" factor to market

## HMI and touchscreens revolutionize cutting equipment

With over 5000 machines worldwide, E-Z Cut Inc. is a prominent manufacturer of carpet and vinyl cutting machines and accessory products for the retail and wholesale sectors of the floor covering industry. Tired of the painstaking and time-consuming job of having to roll out, measure, cut and roll up floor covering on the floor, company president Al Oze decided it was time for a change, and so developed automated machines that make the process easier.

Gord Kostick, product manager at E-Z Cut, sums it up best when he says it's all about coming up with "oh yeah" moments every year for end users. "That's our goal," he says, "and we

want to make sure our products are top dog." Kostick joined the company about four years after it started in 1987, and began looking at ways technology could be used to build on Oze's early success.

"Ten years ago, in the mid to late 90s, we decided to take the machines to the next level," says Kostick. "We had never used PLC technology or HMI before so we had to do plenty of research." After doing a lot of homework, E-Z Cut made Siemens its HMI (human-machine interface) and automation partner. The decision to go with Siemens was made easier by the fact that Indus—E-Z Cut's IT reseller—had been using Siemens products



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There has never been a question of reliability when it comes to copper-to-copper connectors in electrical applications. The real question is how reliable are other combinations of electrical connectors compared to all copper connectors.

Powertech Labs were commissioned to perform an in-depth study on aluminum-to-aluminum, aluminum-to-copper, and copper-to-copper connectors. The photos shown here are documented comparisons of these three combinations before and after 2000 hours of intensive testing, which included current burst testing. The copper-to-copper connectors had the least corrosive build-up and retained the highest electrical conductivity.

The study and its results are outlined in our publication "Connecting with Copper is Connecting with Trust". Please contact us for your copy and information on electrical wire and cable seminars.



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for about 10 years, and was satisfied with the quality and service.

Today, E-Z Cut is using the flexibility offered by Siemens' HMI solution to make its machines easier to use and service—especially the higher-end models. The addition of WinCC Flexible HMI software and a TP 177 touchscreen immediately allowed E-Z Cut to turn heads.

"Nobody had seen a touchscreen panel before. It's high quality and high performance. It gave our machine a whole new look and feel," Kostick explains, adding that this system is less expensive and easier to service than others. "We don't have service people set up all across North America. Now, if a machine needs service or repairs, we can work directly with the customer over the phone or Internet," he says. "Then, if necessary, we can easily get a local tradesperson in there and, using the touchscreen, they can easily work with the product and get it back up running quickly."

In addition to minimizing service costs and maximizing the uptime of customer machines, the HMI solution is making life a lot easier for E-Z Cut customers and eliminating unnecessary costs.

"We used to have digital counters and, prior to that, mechanical odometer-style counters. It wasn't very accurate when it came to measuring the material needed for a specific job," Kostick remembers. "Then electronic counters came along, which allowed the operator to pre-set the cut. This is very important in our business. Not only did it eliminate waste, it freed up the operator for something else. Now he doesn't have to watch the counter all the time and stop it at the desired length."

Not only are the software and touchscreen eliminating unnecessary cost, they're making a difference on a human level. Some of the original counters on the E-Z Cut machines were in feet and decimals, so the operator had to convert them from decimals to inches. That wasn't a big issue for E-Z Cut employees who were used to making the conversions, but it made the process more difficult for end users. Once the foot and inch counters and touchscreen were added to the machine, the process became much easier.

"If we can make one thing easier for the end user, where they don't get as frustrated or confused, then all the better," Kostick says.

And he likes the drives.

"They're quieter. You wouldn't think that means much in a warehouse setting, but it's important to the end user."

Although the HMI technology allows E-Z Cut to earn plenty of repeat business and minimize its selling costs, Kostick knows how important it is to keep meeting customer expectations.

"Every year, when we're at a show and our customers see something improved, they know we're on the ball, which means more sales."

## Emergency pathway illumination



The heart of Dual-Lite's HCX emergency lighting system for extending indoor/outdoor pathway illumination is the company's HCX-

RC12 remote capacity combination emergency lighting unit/LED exit sign. The emergency lighting portion features high-output MR16 lamps that are fully adjustable, with reconfigurable lamp heads to accommodate various mounting installations. The UL 924-listed HCX-R12 assures 90-min. run time under emergency conditions and works in conjunction with Dual-Lite's new CPR and OCR remote lighting heads.

**111 Dual-Lite (a Hubbell Lighting Inc. brand)**

## Versatile touchscreen for lighting control



The Clipsal monochrome touchscreen is designed to provide versatile lighting control for commercial applications—including office buildings and retail outlets—via a simple, compact user interface. In addition to being easy to install, customize and use, the touchscreen offers numerous configurations, making it an attractive alternative to multiple single-operation switches, On/Off toggles, dimmers and timers. It is compatible with all Square D Clipsal devices and the Powerlink NF3000G3C whole-building lighting controller. It can be wall-mounted without external fittings, while a standard built-in receiver allows operation with an included hand-held remote. (A desktop model is also available when wall space is limited.)

**112 Square D (Schneider Electric)**

## Long-life fluorescent lamps

GE's Starcoat SXL lamps provide the same light as standard F32T8 lamps but promise longer life, offering 36,000 hours of life at 12 hours per start on rapid-start ballasts. This decreases burnouts and reduces labour and disposal costs because of longer periods between relamping.

**113 GE Consumer and Industrial**



## Lamp boasts fully frosted reflector

New to the market, Standard's Uni-Frost series of lamps allows light to spill in all directions due to the fully frosted reflector. They allow a full 360-degree light beam, making these lamps suitable for open fixtures and glass pendants where white backlight is required for fully illuminating the fixture. The Uni-Frost series is available in GU10 and MR16 shapes.

**114 Standard Products**



## Voltage performance monitor

Professional and accurate power quality voltage analysis is simplified with Ideal's voltage performance monitor. Select from a menu of preset standards through the easy-to-navigate setup, then plug the monitor into the outlet and watch the unit capture and log voltage events. All the information you need is at your fingertips, presented on a bright OLED (organic light-emitting diode) display.

**115 IDEAL Industries (Canada) Corp.**

## Stainless steel cable ties, banding and tools

Band-N-Go Inc. has introduced Hayata stainless steel cable ties, banding, banding tools and accessories to the Canadian market. These UL-listed products provide banding and clamping solutions to meet industrial, commercial and institutional requirements for MRO and new construction. The stainless steel cable ties and banding come coated or uncoated, in a range of sizes and types, and in a variety of stainless steel grades. Hayata offers a full line of banding tools, both manual and battery powered, including the BTX6000—the first battery-operated banding tool on the market.

**116 Band-N-Go Inc.**



## 275-550kVA UPS available

Eaton's Powerware 9395 275-550kVA UPS was designed to meet the current and future power protection requirements of data centres, manufacturing operations, medical facilities and other large system applications. It's a three-phase, double-conversion, online UPS that integrates the capabilities of a redundant multi-system into an integrated, pre-wired solution. The system operates at 95% efficiency, offers a small footprint and a low weight. The 9395 also features a scalable architecture that addresses a customer's changing power requirements; a 275kVA system can be upgraded onsite to 550kVA, or even to an N+1 275 redundant system.

**117 Eaton Corp.**



module UPS

system into an integrated, pre-wired solution. The system operates at 95% efficiency, offers a small footprint and a low weight. The 9395 also features a scalable architecture that addresses a customer's changing power requirements; a 275kVA system can be upgraded onsite to 550kVA, or even to an N+1 275 redundant system.



## Circuit tracers

The four clearly defined modes of operation of the new SureTest circuit tracers from IDEAL promise to provide precision and minimal set up time. Search High, Search Low, Trace and Breaker Modes help you quickly select the proper sensitivity for the job at hand.

**118 IDEAL Industries (Canada) Corp.**

## Telecom battery

East Penn has expanded its line of Deka Unigy I absorbed, valve-regulated (AVR) batteries for cell sites and other telecommunications applications. The 12AVR-90 complements the Unigy I line, offering more coverage for cabinet sizes and multiple application demands. It is also a direct replacement for batteries used in the Nortel EBE battery enclosure. Special design features like epoxy-sealed posts and recessed terminals extend the design life of the 12AVR-90. In fact, the battery is designed to deliver 10 years in full float applications at 25°C (77°F) with proper charging care and maintenance. Unigy I batteries feature tank-formed plates to ensure full formation for optimum capacity.

**119 East Penn Manufacturing Co. Inc.**



## Data/signal line surge protection devices



Sola/Hevi-Duty has launched the STC Series of data/signal line surge protection devices. Offered in various application-specific voltages and packaging configurations, the devices prevent transient voltages from interrupting data streams or damaging vulnerable electronic equipment. Employing multi-stage hybrid circuitry based on gas tubes, silicon avalanche components and resettable PTC fuses, series devices address over-voltage transients to protect network signal lines entering or leaving control panels, such as PLCs, universal remote I/O, DeviceNet and Data Highway Plus. The five models in the STC Series are designed to guard telecom and video surveillance systems from internally generated transients and noise.

**120 Sola/Hevi-Duty (EGS Electrical Group)**

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## Meet the players



# New EFC chair aiming for **best-in-class**

**Robert J. Bouchard, president of Guillevin International Co.**



Photo from the most recent Annual Golf Tournament for Hôpital du Sacré-Coeur de Montréal Foundation. (Left to right) Robert J. Bouchard, Angelo Tozzi (president, Entreprises Laurentien Electricque), René Marineau (president, Canlyte Inc.) and Florent Laplante (executive vice-president, Bitton Electric Ltd.).

**“Part of my philosophy is to not look at challenges as problems.”**

**R**obert Bouchard was officially made chair of Electro-Federation Canada (EFC) back in April during the association's annual general meeting, but his most recent large-scale public stint was addressing the delegates of the Supply & Distribution Council's conference last month in Fort Lauderdale.

“With the election [to position of chair] comes a job,” said Bouchard, “and to do a good job, one needs a goal... a vision. So please allow me a few moments to share with you my vision for EFC.”

But more on that later on. Let's first answer the question: who is Robert Bouchard?

### Becoming an electrical leader—the long way

Robert was born in Montreal into a small family of a father, mother and one brother. Growing up, Robert proved pretty good with his hands, which he credits to his father, “who was also very handy”.

While his father was never officially involved in the construction industry, his handiness surely rubbed off on young Robert, whose first summer job involved odd construction-type jobs around people's homes. “Oh, I did all kinds of things, like repairing balconies, fixing stairways and locks, painting, and so on.”

Still, Robert was not in love with the construction industry, let alone electrical, so he sought other summer jobs to keep money in his pockets while attending school. “I decided I wanted to learn other things,” says Robert, “and back then, a career in Sales seemed very attractive.” The perception in those days, he explains, was that salespeople had an easy life—so Robert found himself work selling novelties used in advertising.

He also worked for a time at Imperial Oil, where his dad was a superintendent. “Some summers I would work in the refinery, which was a really messy job,” Robert remembers, then adds with a laugh, “They even promoted me to foreman—not so much because of my skill set, but because I didn't quit like so many others!”

Eventually, Robert was faced with the decision as to what he should study after high school. And there was pressure from his folks: “My mom and dad, like many other parents, had always hoped I would become a doctor,” he explains, “especially because I had an uncle who was a doctor who had no son of his own to take over the practice.” Still quite undecided, Robert entered Montreal University/HEC where he studied subjects like Greek and Latin, before having the epiphany that he would, after all, become a doctor—“A doctor of business, and of numbers!” he concludes, chuckling.

With that, he turned his attention and his studies toward Business Administration, graduating with a degree in Accounting. (It must have been the right move, because Robert is a fellow of the Certified General Accountants Association of Canada [FCGA]).

Upon completing his studies, Robert found work in various jobs that kept him travelling, and away from his small-town home that he shared his wife Anne and their two children. But there was a more pressing problem Robert noticed when he looked into the future. “I looked around me and saw people's kids leaving for university,” Robert says. “When those children returned to our small town, they could only ever find dead-end jobs—and only if they were lucky. The smart kids never returned, choosing to stay in the city where there was work.”

Faced with either dooming his children to a limited future, or losing them to the city and rarely seeing them, Robert decided to pack up the family and find regular work in the city that would keep his family together. “1975 is when I got the job with

Guillevin, as comptroller,” he reminisces. “The company was much smaller back then, with only four branches operating and doing about \$10 million in business.”

Guillevin seemed a good fit for Robert, considering both his education and his natural handiness. “I knew the products (and was always involved in operations), which is why in a couple of months I became the vice-president of finance.” Shortly thereafter, Robert was involved in the strategic moves—acquisitions, IPO, etc.—that made Guillevin grow and, in 1990, became its president. “We're at 114 locations now,” beams Robert, adding with a laugh, “and I've never had time to look for another job.”

### On the industry

One thing I noticed about Robert is that he's one of those ‘glass is half-full’ rather than ‘glass is half-empty’ people. Where others see challenges, he sees opportunity. “Part of my philosophy is to not look at challenges as problems.” Speaking from the perspective of distributor, he concedes there have been many changes in the industry that have upset the ‘natural order’, such as consolidations, tons of imports, new players in the market, technical information overload, etc. However, “as a distributor, we're located between the manufacturer and the end user, so we're always adapting to changes so that we can serve their needs. Most importantly,” Robert continues, “we have to remain important.”

In fact, Robert takes it one step further by saying one shouldn't just adapt to changes, but be a part of those changes. “I won't sit in my chair and complain about this and that, or how competition has gotten tougher... No, I want to be the tougher competition that others complain about!” he says.

Robert brings this same philosophy to his role as chair of EFC. “EFC is a non-profit organization,” he explains, “which is why I want to establish benchmarks of performance.” This coincides precisely with his speech to the S&D delegates last month, in which he said: “Ultimately, I want every member to experience that being in this association makes their company stronger and that their company gets an excellent return on investment from its membership.” And being the FCGA that he is, Robert added: “We are introducing financial and productivity benchmarks for the association. This will give you the assurance that your money is always treated with frugality and respect.”

### Robert can cook—and not just the books!

All kidding aside, among Robert's favourite activities (which include golf and travelling) is cooking and hosting. He scours magazines, newspapers and restaurant menus for dishes he'd like to try out. When asked about the most challenging recipe he'd ever tackled, he's quick to respond with, “the Christmas log cake”, on which he spent hours preparing and decorating.

You wouldn't think that the president of such a huge industry player such as Guillevin would list cooking and hosting among his hobbies, but it sounds completely normal when you hear it from Robert. “I like to have people over and cook for them,” he readily admits, “I find it relaxing... as long as I don't have to deal with the mess afterward!”

Robert has also also been involved in various fundraising activities for organizations such as the Cystic Fibrosis Association, the Jean-Talon Hospital Foundation and the Montreal Heart Institute. He currently sits on the board of the Hôpital du Sacré-Coeur de Montréal Foundation, and is a member of its annual golf tournament Organizing Committee (for which he was honorary chair in 2002). More than 50 representatives from the electrical industry participated in this year's tournament, which raised over \$350,000. To-date, the ongoing 2005-2009 major campaign of Hôpital du Sacré-Coeur de Montréal Foundation has exceeded its objective by collecting over \$36,000,000. **EB**

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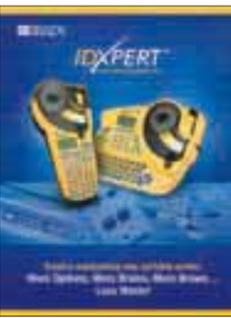


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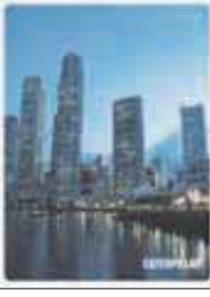
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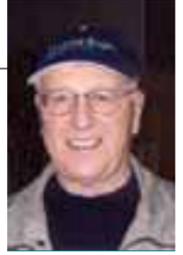
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INFO NO. 52



# Section 28: motor wiring methods

Wiring up a motor may seem like a pretty simple job, but we need to consider a surprising number of details to comply with the code, which covers motor wiring methods in Rules 28-100 through 28-112. Here we'll review some of the more important CEC rules for conductor ampacities as applicable to motor type, insulation class and duty service.

Rule 28-104 refers to Table 37 (see Figure 1), which divides motor enclosures into two categories: 1) all motors except totally enclosed, non-ventilated; and 2) totally enclosed, non-ventilated. For each motor enclosure type, Table 37 specifies the minimum wiring insulation temperature ratings applicable to motor insulation classes A, B, F and H. These letters identify motor insulation temperature ratings based on a 20,000-hour temperature test for each insulation class. (The numbers under each motor insulation class identify the minimum conductor insulation ratings required for connection directly into a motor terminal box.)

For example, a totally-enclosed, fan-cooled Class B-insulated motor requires a minimum 75°C conductor temperature, while a totally-enclosed, non-ventilated Class B-insulated motor requires a 90°C minimum.

A note of caution: the wiring insulation data provided in Table 37 applies only to motors operating in an ambient temperature of up to 30°C. When the ambient temperature exceeds 30°C, the difference between 30°C and the maximum air temperature must be added to the conductor insulation ratings provided in Table 37. For example, a totally enclosed fan-cooled (TEFC) Class B motor operating in an ambient temperature of 40°C must have a minimum conductor insulation of 85°C.

The code also recognizes two separate duty

service categories for motors, each requiring a somewhat different formula for selecting the motor wiring sizes. They are:

1. Continuous-duty service (motors that run all the time), and
2. Non-continuous-duty service (motors that may run for shorter periods and are listed in Table 27 [see Figure 2] as to classification of service and running times).

### Continuous-duty service

Once the conductor temperature ratings have been determined, minimum wire sizes are selected from Tables 1 to 4. Rule 28-106 requires that motor conductors for continuous-duty service motors be sized to at least 125% of motor full load current. (Referring to Table 16 helps you avoid all that complicated math.)

But another note of caution: motor conductor ampacities are not, as is the usual case, based on the allowable ampacities given in Tables 1 to 4, but rather on their 75°C ampacities. In addition to the wiring insulation temperatures specified in Table 37, motor conductor sizes must be selected from the 75°C column of Tables 1 to 4, which often results in larger wire sizes. (Rule 28-104[1] provides an exception for Class A motors to permit the 90°C conductor ampacity.)

### Non-continuous-duty service

For non-continuous-duty service motors, minimum conductor ampacities are specified in Rule 28-106 and Table 27 (see Figure 2) for short time-, intermittent-, periodic- and varying-duty service classifications. Table 27 specifies the minimum motor conductor ampacities as a percentage of full load currents. As shown in Table 27, the minimum conductor ampacities are also based on the length of time during which the motors are expected to operate.

Figure 1 • TABLE 37

Motor enclosure	Insulation class			
	A	B	F	H
All except totally enclosed, non-ventilated	75	75	90	110
Totally enclosed, non-ventilated	75	90	110	110

Figure 2 • TABLE 27

Classification of service	% of motor nameplate current rating			
	5-min.	15-min.	30 & 60-min.	Continuous
Short duty (Operating valves, raising/lowering rolls, etc.)	110	120	150	—
Intermittent duty (Elevators, pumps, drawbridges, turntables, etc.)	85	85	90	140
Periodic duty (Rolls, ore and coal handling machines, etc.)	85	90	95	140
Varying duty	110	120	150	200

For example, the minimum conductor ampacity for an intermittent-duty passenger elevator—which may run for up to 15 minutes—is 85% of the motor full load amperes. If on occasion that elevator motor must run for longer periods, the minimum conductor ampacity is increased to 140%.

Otherwise, the same conditions as continuous-duty motors apply. After selecting from Table 27, the minimum conductor temperature ratings must still be selected from Table 37 and their ampacities determined on the

basis of their 75°C insulation ratings. (There may be other reasons to increase wire sizes, too, such as voltage drop.)

Les Stoch, P.Eng., is president of L. Stoch & Associates, specialists in quality management/engineering services. He is a member of PEO, OEL and IAEL, 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.

Questions and answers compiled by ESA

## Tackle the Code Conundrum... if you dare

So, you think you know the electrical code, eh? Well, we'll soon find out if you're an electrical code junkie or downright code-clueless. Take a look at the following questions and check your answers in August's Electrical Business.

### How did you do?

**3 of 3** — Not only are you smart, you love to show off.  
**1 of 3** — Your understanding of these questions is not up to code.  
**2 of 3** — You're pretty smart, but you still missed one.  
**0 of 3** — Did you come up with your answers by playing Eenie, Meenie, Minie, Moe?

## Question 1

Single-conductor cables shall be permitted in sizes No. 4 AWG and larger for wiring in a midway, provided they are:

- a) rated for the circuit voltage and suitable for the intended application;
- b) of a matched set with the same length for all conductors of the circuit including the bonding conductor;
- c) covered or guarded so as not to present a tripping hazard in pedestrian walkways or roadways; or
- d) all of the above

## Question 2

Conductors for DC cathodic protection wiring shall be not smaller than No. \_\_\_ AWG and shall be suitable for the conditions of use as indicated in Table 19 for the particular location where they are installed.

- a) No. 12 AWG
- b) No. 6 AWG
- c) No. 16 AWG
- d) No. 10 AWG

## Question 3

The installation of wiring and equipment in a battery room shall be in accordance with the requirements for a \_\_\_ location.

- a) Wet
- b) Category 2
- c) Class I Zone 2
- d) Dry

## Answers to Code Conundrum

Electrical Business May 2007

**Q-1:** Where a separate bonding conductor is run with single-conductor cables, it need not follow the same route as the cables.

**b) False.** 10-808 Installation of Equipment Bonding Conductors. (8) Where a separate bonding conductor, required by this Code, is run with single-conductor cables, the bonding conductor shall follow the same route as the cables.

**Q-2:** Sheath currents are not a concern for single-conductor cables installed underground where the ampere rating of the circuit is less than 425A.

**b) False.** 4-008 Sheath currents in single-conductor metal-sheathed cables (see Appendix B). (1) Where sheath currents in single-conductor cables having continuous sheaths of lead, aluminum, stainless steel, or copper are likely to cause the insulation of the conductors to be subjected to temperatures in excess of the insulation ratings, the cables shall be: a) derated to 70% of the current-carrying rating that would otherwise apply; b) derated in accordance with the manufacturer's recommendations and in compliance with Rule 2-030; or c) installed in a manner that prevents the flow of sheath currents.

**Q-3:** Flat conductor cable Type FCC shall be permitted to be installed in the classroom area of a school.

**b) False.** 12-806 Use prohibited. Type FCC systems shall not be used (d) in schools, hospitals, or institutional buildings except in office areas.

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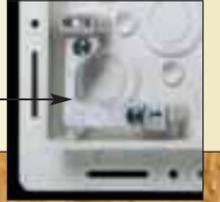
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