

# Electrical Business

THE AUTHORITATIVE VOICE OF CANADA'S ELECTRICAL INDUSTRY

**DON'T MISS**



**THE NEW LHTQ™**  
on page 5.

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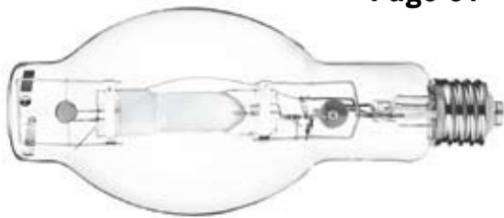
GMC's Yukon Denali and Yukon XL Denali offer a blend of style, performance and refinement.



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HPI polyethylene insulators are suitable for both bare wire and covered conductors.

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Metal halide lamp promises pulse-start performance on existing MH systems.

**SPECIAL LIGHTFAIR 2008 ISSUE!**

# LEDs go mainstream!



PM # 40063602 PAP registration # 10774

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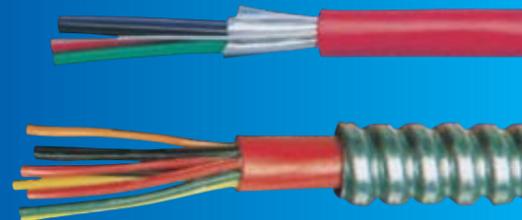
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ELECTRICAL BUSINESS is the magazine of the Canadian electrical industry. It reports on the news and publishes articles in a manner that is informative and constructive.

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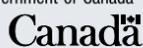
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## Paying for electrical product safety in Ontario

You have to hand it to the Electrical Equipment Manufacturers Association of Canada (EEMAC) and its vice-president, Wayne Edwards... they are quite adept at structuring their Lunch n' Learns to discuss the issues that can impact people right away.

For its most recent event, EEMAC brought in the Electrical Safety Authority's (ESA's) vice-president and chief engineer, Peter Marcucci, and regulatory affairs analyst, Maria Iafano. For those of you in other jurisdictions, ESA is Ontario's electrical regulatory body, or Delegated Administrative Authority (DAA).

Marcucci and Iafano have an intimate knowledge of the sweeping new powers ESA will have with respect to electrical product safety regulation. You see, previously, ESA could do little more than rattle its sabre whenever it came across an unsafe electrical product—though it had some authority, it simply wasn't given any real powers of enforcement. Not anymore.

Back in August 2007, the Ministry of Government and Consumer Services (MGCS) filed Ontario Regulation 438/07 entitled "Product Safety". The new regulation empowers ESA to better deal with the safety of electrical products and equipment sold and used in Ontario. Specifically, it improves ESA's ability to respond by establishing stronger mechanisms to protect consumers and the public. This regulation includes all electrical equipment, appliances and electronic products.

The regulation was made possible through the passage of the Ministry of Government Services Consumer Protection and Service Modernization Act, 2006 (Bill 152), which received Royal Assent on December 20, 2006. Bill 152 amended numerous acts, including Part VIII of the Electricity Act, 1998, to establish a more transparent legal framework for adopting electrical safety standards. It strengthened ESA's enforcement powers and included regulation-making authority to create a product safety regulation and mandatory reporting requirements.

On July 1, 2008, all manufacturers, wholesalers, importers, product distributors or retailers that become aware of a serious electrical incident or accident or defect in an electrical product or equipment **must report it** to ESA.

Electrical Business will have more on ESA's sweeping new powers from ESA itself in our August edition. But for now, one question lingers in my mind. Actually, it was put there by Marcucci himself: who's going to pay for this?

You see, you need money to carry out all the new tasks that come with ensuring electrical safety in Ontario. And this currently is just an Ontario phenomenon. Marcucci says no one else in Canada has something like this, and the feds have yet to get involved (perhaps if they did, he suggests, the concept could go national and everyone would pay into it somehow). Meantime, though, ESA has this mandate and mandates cost money, so where is ESA looking to get that much-needed cash?

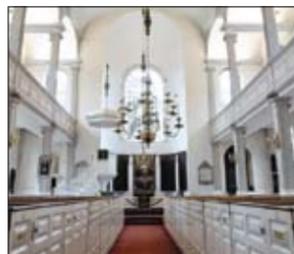
Well, for starters, from you. One of the funding options being discussed is continuing cross-subsidization by increasing wiring inspection fees. If you're a manufacturer or distributor, you're not off the hook. Some of the other funding options include: collect a fee from electrical product manufacturers (brand owner or first importer) with a business presence in Ontario; or collect a fee from electrical product retailers and/or distributors who do not import electrical products into Ontario; or even create an Unsafe Product Fund to be financed by the largest retailers, manufacturers, distributors and CBs/FEAs (certification bodies/field evaluation agencies) in Ontario.

Ultimately, electrical professionals—including its supply and distribution, as well as certification, members—are likely going to be the ones left holding the bag when it comes to ESA's mandate.

What remains to be seen is how much, so get ready for it. ☎

*Anthony Capkun*

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Old North Church photo on cover © John Brandon Miller.

### ON THE COVER

#### 20 LIGHTING SHOWCASE

#### SPECIAL LIGHTFAIR 2008 ISSUE!

This month's Lighting Showcase provides a quick look at the upcoming Lightfair show in Las Vegas, then jumps into articles and case studies on—you guessed it—lighting! Jim Anderson explains how LEDs are making the leap from spectacular to simple as they increasingly go mainstream, while Tony Toniolo explains why LEDs haven't really made it into the home... yet! There are also several lighting case studies showcasing the versatility and ingenuity of products and systems on the market, and a huge lighting products roundup.

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Flat rate pricing can be an invaluable tool that separates you from the competition, though it bears careful observation as it continues to grow and adapt to the market.

#### 36 Security niche can be lucrative for electrical contractors

One of the most significant trends in electrical contracting today is the expansion into the lucrative access control/security business. After all, someone has to perform this service, and electrical contractors are the perfect candidates.

#### 38 Children's hospital designed for speedy recoveries and power reliability

From the state-of-the-art medical facilities that aid patients' recoveries to the standby power system that ensures their safety, Calgary's Alberta Children's Hospital's vision is to reduce stress and promote healing in ways that are uniquely tailored to the children it serves. (Case Study)



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**CSA Z462 update and, possibly, a new maintenance standard**

The latest meeting for CSA Z462 was held early March in Toronto, Ont., with 33 technical committee (voting) members in attendance, along with numerous other attendees from industry. The purpose behind Z462 is to create a Canadian safety document that's in sync with the upcoming revised edition of NFPA 70E, and it is intended to be adopted as a national standard of Canada.

The new draft of Z462 was circulated to the technical committee in February, and a complete review of all sections performed during the March meetings. Many discussions revolved around the content, specifically with regard to definitions, tables and annexes. The technical committee approved new annexes on arc flash and shock hazard labelling requirements, as well as safety-related maintenance.

At the request of the committee, a *completely new* maintenance annex was created to provide a concise two-page document illustrating some of the important items surrounding safety-related maintenance. The new annex references NETA (InterNational Electrical Testing Association) throughout, and includes sections on the following subject matter:

- Hazard risk categories and maintenance justification
- Reliability-centred maintenance

- Maintenance of electrical drawings
- Frequency of maintenance tests
- Maintenance standards

Z462's timeline calls for a completed document to be ready for public review during April and May. These comments will then be reviewed at the June meeting in St. John's, Nfld. The final English version is scheduled for production Q4 2008, with the French version ready for March 2009.

*A new Canadian maintenance standard?*

Working Group 6 on safety-related maintenance met immediately following the technical committee meeting's adjournment to discuss the possible adoption/creation of a national maintenance standard in Canada. Reference documents, such as NFPA 70B and ANSI/NETA MTS 07 were considered. Most of the Z462 technical committee stayed for a discussion on the process involved in getting such a standard developed. Currently, a national standard for maintenance of electrical power distribution equipment does not exist in Canada.

— Submitted by Kerry Heid, A.Sc.T., Magna Electric Corp. president and Electrical Business editorial advisor

**Eaton/Cutler-Hammer recalls rotary/toggle disconnect switches**

Eaton is voluntarily recalling rotary and toggle disconnect switches rated 600V, 60A and 80A only. While no injuries or damage have been reported, the following hazard exists: a user could move the switch or the disconnect handle to the Off position and, if the switch is defective, the contacts could remain in a closed condition. This could result in death, serious personal injury or property damage.

This recall affects the 60A and 80A component switches sold in enclosures or as loose component switches, described as follows:

Switch Cat. No.	Enclosure Cat. No.
C362TW60MD (toggle)	3GAC362NF (with toggle)
C362TW80MD (toggle)	3GAC3680NF (with toggle)
C362NW80MD (rotary)	

The switches were manufactured in the European Union (EU) and sold by authorized Eaton distributors between January 1, 2007, and December 31, 2007. The recall anticipates that the component switches will be replaced at their installations, rather than complete enclosures being removed.

Owners and operators of these switches should immediately take steps to initiate their replacement by contacting the supplier from whom they were purchased for instructions on product return/replacement. Otherwise, contact Eaton in Perth, Ont., at (613) 267-6170 or e-mail WayneKBuchanan@Eaton.com.

Warning: do not attempt to open cover without deenergizing (isolating) the affected enclosed switch assembly via an upstream device.

**Schneider Electric** **Schneider contributes \$500,000 to arc flash research**

The Schneider Electric North American Operating Division announced a \$500,000 contribution to become a Platinum Level sponsor of the Institute of Electrical and Electronic Engineers (IEEE) and NFPA's Arc Flash Collaborative Research Project. The donation will help expand the knowledge of the electric arc phenomena, says Schneider, and enhance worker safety through advances in the codes and standards relating to safe employee work practices.

"We believe this project will produce the data necessary to further our understanding of the arc flash phenomena, which will help us design safer components and provide better guidelines for safely maintaining electrical equipment," said Jim Pauley, vice-president, industry and government relations for Schneider Electric.

An arc flash is an electric current that is passed through air when insulation or isolation between electrified conductors is no longer sufficient to withstand the applied voltage. The flash is immediate, and the results can cause severe injury. According to IEEE research, workers are admitted to burn centres for treatment of extended injuries caused by arc flash more than 2000 times a year.

The results of this collaborative project are expected to provide information for improving electrical safety standards, predict the hazards associated with arcing faults and accompanying arc blasts, and provide practical safeguards for employees in the workplace. The multi-year project is estimated to cost \$6.5 million.

**Scotiabank helps skilled trades build their business**

Scotiabank recently launched its Blueprint for business Solutions package—a suite of advice, tools and products that is specially designed for skilled trades business owners, such as electricians, operating in the construction industry—to help them build their business and improve their bottom line.

"At Scotiabank, we recognize the value of the skilled trades to the Canadian economy," said Scotiabank's Kyle McNamara, head of Small Business. "Their

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Year after year this show continues to grow in scope, delivering more exhibitors every time and more visitors with each passing event. If you want to reach contractors, developers, engineers, technologists, trades people and government officials who are involved in the industrial, commercial, institutional and residential sectors, the most valuable and cost-effective resource you have at your disposal is MEET 2008.

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Photo courtesy Scotiabank



success matters to us and these new resources—combined with the expertise available from our in-branch Small Business advisors—will help skilled trades customers generate stronger bottom line results.”

In addition, Scotiabank announced the new Scotia Blueprint Plus for trades banking package: a suite of banking products that includes both customized business and personal banking features. For more information on Scotiabank’s Blueprint for business Solutions package for skilled trades, visit any bank branch or [scotiabank.com/skilledtrades](http://scotiabank.com/skilledtrades), or call (877) 552-5522.

“Building on our experience in working with small business owners in the skilled trades, this combination of services and products with the unique value of our partnerships results in relevant and innovative solutions for our customers,” concluded McNamara.

### WAGO’s expanded HQ promises increased capabilities



WAGO Corp. has completed the expansion of its North American headquarters in Germantown, Wis. The expansion, which began in August last year, has increased the company’s product manufacturing and storage capacity from 60,000 sf to 75,000 sf, with 36,000 product locations.

“This expansion allows us to provide the same strong levels of quality and accuracy,” said WAGO president, Tom Artmann, adding, “Now, we have the added benefit of delivering thousands of additional items from stock.”

WAGO is a player in spring pressure connection technology designed to eliminate loose wires as a result of vibration and temperature cycling. Its products include DIN-rail-/chassis-/PCB-mount terminal blocks, relays, signal conditioners, power supplies, surge suppressors and the WAGO-I/O-System.



### OEL conference looms, EB sponsors

The Ontario Electrical League (OEL) and Electrical Business invite you to come out to OEL’s Annual Electrical Industry Conference, April 30 to May 3 at the Delta Grandview Resort in the heart of Muskoka. EB is proud to sponsor the delegate binders.

On April 30, golfers can kick things off with a round of golf hosted by the GTA West Chapter at the Mark O’Meara G.C., but the conference-proper kicks off May 1 with presentations from speakers, including Don Muth, an electrical contractor. Invited guests also include representatives from the ministries of, labour, energy, and training, colleges and universities, as well as the Workplace Safety Insurance Board, Ontario Power Authority, Electrical Safety Authority, Construction Safety Association of Ontario and the Jobs Protection Office.

May 2 is Contractor Day, which includes the Lunch & Learn—Product Expo. The conference wraps up May 3 with a grand prize draw for a one-week trip for two (approx. value \$5000). Visit [www.oel.org](http://www.oel.org).



### MEET you in Moncton!

The MEET (Mechanical Electrical Electronic Technology) Show remains Atlantic Canada’s preeminent venue for all things electrical (and some other things besides), and it’s just around the corner. Procrastinate no longer! Make your travel and accommodation arrangements right now, as MEET tends to take over a good chunk of Moncton, N.B.

#### Seminar schedule

Besides a vibrant and engaging show floor, MEET offers numerous seminars on current industry issues and discussions, including:

- lighting management systems
- solar-powered water and space heating
- technology for controlling natural and electrical lighting
- circuit breaker design (current limitation and arc flash protection)
- power quality theory and measurement techniques
- industrial Ethernet standards and applications
- wireless communications in an industrial environment

#### Skills Canada Competition

Like last time, MEET is hosting the Electrical Wiring portion of the Skills Canada—New Brunswick Competitions (Compétences Canada N.-B.). These competitions bring together students from across the province to complete projects that are judged on skills and accuracy. These industry-related contests are an incredible display of hands-on expertise, talent and determination, showcasing the many promising futures to be found in trades and technology.

The winning students from these provincial events will be invited to be part of Team New Brunswick, which will compete at the 14th annual Canadian Skills Competition in Calgary, Alta., later this year.

#### Your official electrical book

Electrical Business is pleased to again be the official electrical publication of the MEET Show this May 7-8 at the Moncton Coliseum Complex. EB will have a booth at MEET, so be sure to stop by and say Hello!

Visit [EBMag.com](http://EBMag.com) for more information, and a link to the official MEET site.

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**Thomas & Betts**

**EB** **Nedco Electrifest around the corner**  
 Nedco's Electrifest trade show happens every three years, and the time has come for Electrifest VIII. The last Electrifest succeeded in attracting over 3000 people to Nedco's Keaton HQ and distribution centre, and displayed an array of products from over 100 manufacturers.

Scheduled for May 12, this year's theme is Las Vegas, and it promises to be the biggest Electrifest to date, displaying a full compliment of products of interest to a range of customers from the electrical, automation, datacom and industrial marketplaces.

**Bussmann recycling program aims to reduce environmental impact**

The Cooper Bussmann Overcurrent Device Recycling Program offers a convenient and environmentally safe way to dispose of any brand of fuse, circuit breaker or electrical contactor, says the company.



"This recycling program is increasing the proper recycling of metal devices... which are often forgotten in everyday recycling procedures," said Kevin Knopf, Cooper Bussmann marketing manager. "By the end of 2007, Cooper Bussmann had recycled the equivalent of 15 million 30A fuses."

Bussmann supplies participating distributors with a recycling box that, again, can be used to recycle any brand of fuse, circuit breaker or electrical contactor. (Note: the program is not yet available in Canada, but plans are underway to make it available in the coming months.)



Universal Lighting's ULTim8 electronic ballast family is part of NEMA's Premium Ballast Program.

Photo courtesy Universal Lighting Technologies.

**Universal Lighting joins NEMA ballast program**

Universal Lighting Technologies announced it is among the charter members of the National Electrical Equipment Manufacturers Association's (NEMA's) Premium Ballast Program, which recognizes excellence in energy-saving technology. The program is designed to identify the industry's most efficient T8 ballasts. NEMA established the program in accordance with standards established by the Consortium for Energy Efficiency (CEE).

**IALD publicizes its position on incandescent bulb bans**

The International Association of Lighting Designers (IALD)—an international organization supporting a network of 800 lighting design professionals—recently issued *its* position on the banning of incandescent bulbs.

While it strongly supports the development and use of technologies, methods and appropriate regulation to minimize the energy use of lighting systems, IALD believes "incandescent bans" must be carefully conceived or will be ineffective. It then lists several points connected to the phasing out of incandescent lamps that should be addressed. IALD explains:

Where established and enforced, existing energy codes have already effectively banned inefficient incandescent lamps from new commercial installations.

There is presently no lighting technology that can replace certain types and uses of incandescent lamps. There are still drawbacks such as poor colour, bad dimming performance and high cost that make replacement technologies ineffective in some applications. A grace period is needed to allow the development of light sources that can replace incandescent in all applications.

Energy-efficient replacement light sources must be adapted to

suit the existing electrical infrastructure. Those with simple and clear-cut applications must be made available as soon as proven, but there will be cases in which an efficient source is not ready for a particular use. When products cannot achieve appropriate goals, continuance of incandescent technology specific to those situations should be permitted.

The complete environmental impact and life cycle carbon footprint of each replacement technology must be understood. Incandescent lamps should not be banned until their replacements are proven to be an overall environmental improvement.

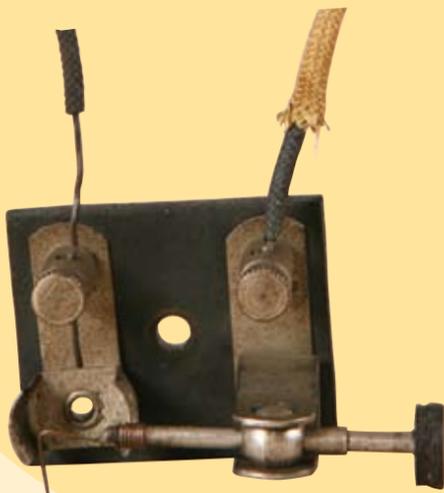
Replacement lamps must be cost-effective. Because replacement light sources are often more expensive than incandescent sources, conversion cost is a concern. Subsidies may be needed to help low-income consumers.

Phasing-out of inefficient light sources is one step in reducing lighting energy use. The most efficient electric light source is the one that is turned Off. Effective use of daylight and aggressive use of lighting control technologies will be needed to significantly reduce lighting energy use.

The lighting designers' position statement concludes with: "We urge consideration of the full ramifications of proposed regulations, and possibly the continued use of some unique types of incandescent lamps until truly better alternatives are available".

# PHOTO CONTEST

**Electrical Business, in association with the Electrical Heritage Society of British Columbia—along with generous industry partners—is excited to present the Heritage "What Am I?" PHOTO CONTEST.**



Pictured at left is an item from the heritage society's collection of electrical artifacts. The contest begins when you think you know what this item is. Of course, we're not going to show the item in its entirety—that would be too easy! (You'll have to wait until next month to see the whole picture, as well as the correct answer.)

**Here's how to play**

Visit [EBMag.com](http://EBMag.com) where you'll find "Electrical Business Photo Contest" right on the home page. This will take you to the online reporting form, where you'll find an entry form along with a multiple choice answers from which to choose (as well as the official contest rules). If you've answered correctly, your name will be added to all the other correct entries, from which one (1) winner will be randomly chosen before next month's installment of "The Heritage What Am I?". Read the small print below for more information. Good luck!

This month's awesome prize was donated by our friends at DeWALT. The heavy-duty 1/4-in. 18V impact driver (DC827KL) with Nano Technology features an exclusive battery that gives you increased battery durability and cycle life. Additionally, the 18V Nano Technology battery works with over 40 tools in the DeWALT 18V platform. The impact driver is built with a high-speed frameless motor with replaceable brushes, and boasts a short length to help you get into tight places. Meantime, a bright LED work light provides increased visibility in dark spaces. The DC827KL also includes a heavy-duty 7.2V–18V NiCd/NiMH/Li-Ion one-hour charger... that's one charger for multiple cordless products.

**Last month's photo: answer**

Pictured here is a **porcelain tube** (part of the knob and tube wiring method). Winner to be announced.



**This month's awesome prize!**



No purchase necessary. Open to residents of Canada of age of majority, excluding Quebec. You must answer a timed skill-testing question to win. Prize valued at about \$400.00. The contest is not open to anyone affiliated with, or related to, members of Electrical Business or the Electrical Heritage Society of British Columbia. (That would be unfair.)



**Electrical Business scholarship news!**

EB is pleased to announce its commitment to, and recognize the importance of, the distribution members of Canada's electrical industry with the launch of The 2008 Electrical Business Distribution Professional Scholarship.

Through the 2008 EFC Foundation Scholarship Program, EB's Distribution Professional Scholarship is open to non-managerial employees of Canada's electrical/datacom distributorships, such as Counter, Order Desk, Inside Sales, etc.

To be eligible, you must have attended a developmental course, seminar, session, etc.—approved by your manager—that is related to improving your knowledge or skills in your daily working environment. The event must have been completed between September 1, 2007, and July 1, 2008 (the scholarship deadline). You will be required to present a certificate/transcript of successful completion, and a letter of confirmation from your manager.

A total of five recipients will be selected, one from each of the following five Canadian regions:

- 1) British Columbia, The Yukon and Alberta;
- 2) Saskatchewan, Manitoba, The Northwest Territories and Nunavut;
- 3) Ontario;
- 4) Quebec; and
- 5) Newfoundland and Labrador, Prince Edward Island, Nova Scotia and New Brunswick.

The 2008 scholarship program wraps up July 1. To apply, visit [www.electrofed.com](http://www.electrofed.com) and, under Student Connection, click Scholarship Program.

Meantime, EB is pleased to announce the winners of the Electrical Business Future Contractor Scholarship for 2007:

- Dustin Christiansen: Apprenticeship Program Electrical, Red Deer College, Alberta.
- Cara DeBruyne: Apprenticeship Training Program, New Brunswick Community College (NBCC), New Brunswick.

"You should feel very proud of what you have accomplished, and I encourage you to continue working hard and focus on your long-term goals," said Electro-Federation Canada's president and CEO, Milos Jancik, in his letters of congratulations.

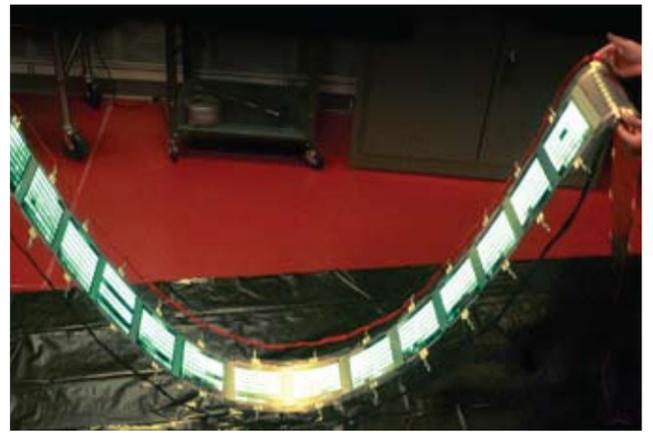
We congratulate these exceptional winners, and thank everyone who entered.

**GE demonstrates first 'roll-to-roll' manufactured OLEDs**

GE Global Research, the centralized research organization of General Electric, and GE Consumer & Industrial successfully demonstrated what they claim is the world's first roll-to-roll manufactured organic light-emitting diode (OLED) lighting devices. This is a key step toward making OLEDs and other high-performance organic electronics products at dramatically lower costs than what is possible today, they said.

"Researchers have long dreamed of making OLEDs using a newspaper printing-like, roll-to-roll process," said Anil Duggal, manager of GE's Advanced Technology Program in Organic Electronics. "Now we've shown that it is possible." Duggal went on to say that this technology could have broader impact in the manufacturing of other organic electronic devices, such as organic photovoltaics for solar energy conversion, sensors and roll-up displays.

OLEDs are thin, organic materials sandwiched between two electrodes, that illuminate when an electrical charge is applied. We're told OLEDs have the potential to deliver dramatically improved levels of efficiency and environmental



performance while achieving the same quality of illumination found in traditional products with less electrical power.

This demonstration represents the culmination of a four-year, \$13-million research collaboration among GE Global Research, Energy Conversion Devices Inc. and the U.S. Commerce Department's National Institute of Standards and Technology (NIST).



**W.A.C. offers "A Whole New World of Opportunities"**

In its 2008 promotion, W.A.C. Lighting—a designer and manufacturer of track, recessed, undercabinet, decorative and monorail lighting—is offering its distributors complimentary trips to China when they participate in the firm's latest sales program.

"The new promotion offers our distributors a whole world of opportunities," explained general manager Shelley Wang. Part of that opportunity involves touring the company's manufacturing facilities that encompass over 750,000 sf. Distributors can contact their W.A.C. Lighting sales rep or the company directly for details. Visit [www.waclighting.com](http://www.waclighting.com).

In other company news, W.A.C. has extended its product warranty for consumers and end-users from two years to five (from date of purchase).

**GE Lighting gives you a "Great Escape"**



The GE Lighting "Great Escape" promotion rewards contractors and end users who purchase \$200 or more worth of GE lighting products through participating distributors with a chance to win over \$35,000 in prizes. Prizes include a choice of six, all-expenses paid, five-day "Great Escape" vacations, four 50-in. plasma televisions and 25 steel wine coolers.

The promotion runs until Friday, May 16, so you'd better hurry! For complete details, visit [www.gegreatescape.ca](http://www.gegreatescape.ca).

**IEC publishes new Fieldbus standards**

IEC (International Electrotechnical Commission) has published the latest series of Fieldbus standards that, it says, respond to the latest technologies. The new edition includes profiles for real-time Ethernet Fieldbus together with other industry sector network profiles not included in previous editions. It also has profiles specifically designed for the use of Fieldbus technology to transmit safety-related data. For more information, visit [www.iec.ch](http://www.iec.ch).

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**Residential construction investment, Q4 2007 and 2007 annual**

The total value of residential construction investment for 2007 reached \$88.7 billion, reports StatsCan, an increase of 8.5% compared with 2006. The good news is that all components of residential construction (new housing, renovation and acquisition costs) and all provinces/territories saw gains. In constant dollars, the increase in the overall residential construction investments in 2007 was 2.3%.

Among provinces, the biggest increases (in dollars) occurred in Alberta (+18.9% to \$14.8 billion) and in Quebec (+8% to \$19.1 billion). In percentage terms, Saskatchewan led the rest with an increase of 37.5%.

New housing investment represented the largest contribution in dollars, posting an increase of 8.5% to \$44.2 billion.

This increase stemmed mainly from investments in single-family homes, which rose 7.2% to \$27.4 billion, and in apartment and condominium construction, which increased 9.7% to \$10.3 billion.

The favourable job situation, growth in disposable income, attractive financing options and strength of the economy in Western Canada continued to support the demand for housing. The rise in the price of houses also played an important role in the increase in investments. The New Housing Price Index (house-only component) increased by 7.4% in 2007 compared with the previous year.

In 2007, construction spending in constant dollars fell 2.2% for new single-family housing and remained unchanged for apartments and condominiums. Renovations increased 9.5% to \$36.8 billion, representing 41.5% of all

residential construction investments. Acquisition costs represented 8.6% of total investments, or \$7.7 billion, up 4.1% compared with 2006.

For Q4 2007, construction investment increased to \$23.1 billion, up 10.6% as compared with the fourth quarter in 2006. The increase came from new housing, renovations and acquisition costs.

Spending on new housing construction reached \$11.9 billion, up 12.4% compared with the same quarter in 2006. This increase stemmed mainly from investments in new single-family housing construction, which came to \$7.3 billion, an increase of 10.5% compared with Q4 2006. Apartment construction rose 14% to \$2.9 billion.

The increase in new housing investment was largely attributable to the increase in the average cost of new units. In constant dollars, spending on new single-family housing and apartment/condominium construction were up 4.2% and 4.4%, respectively, compared to Q4 2006.

Renovation spending grew 8.3% compared with the fourth quarter of 2006 to \$9.2 billion. Acquisition costs rose 10.3% to \$2 billion.

Gains were achieved in all provinces and territories with the exception of Quebec and The Yukon. The biggest increase (in dollars) was in Alberta (+19.9% to \$4.1 billion), largely due to the increased spending on new housing construction.

British Columbia came next with a 19.8% increase in investment to \$3.9 billion. Ontario also had a strong 6.4% increase to \$8.4 billion. Renovations in Quebec fell 4.7%, which contributed to a slight decrease in total investment for the province.



**Building permits, January 2008**

The value of building permits in January fell below the \$6-billion mark for the first time since April 2007, says StatsCan, and an increase in the non-residential sector was insufficient to compensate for fewer construction intentions in the residential area.

Municipalities issued \$5.9-billion worth of building permits, down 2.9% from the December 2007 value of \$6 billion. This was a third-consecutive monthly decline; however, building sites should remain busy in the first part of 2008 since construction intentions were strong in 2007.

In the residential sector, the value of building permits dropped by 13.9% to \$3.3 billion. This was fuelled by a 26.9% drop in multi-family housing. Intentions also decreased in the single-family component (-5.4%). After two consecutive monthly decreases, the value of non-residential permits increased by 16.4% to \$2.5 billion. January's gain was due to increases in institutional, commercial and industrial (ICI) permits.

**Important movement in permits in Ontario**

Provincially, the largest gain (in dollars) occurred in Ontario, where municipalities approved \$2.4-billion worth of permits in January. In fact, a record high was reached in the value of non-residential permits (+68.8% to \$1.4 billion). Ontario's ICI components all had very high values in January. These increases more than offset a 29.1% drop in residential permits, the largest among all provinces. Alberta also posted a significant gain (+4.2% to

\$1.2 billion) in the total value of permits, thanks to growth coming from the industrial and institutional components.

Quebec experienced, to a lesser extent, a state of affairs similar to Ontario. A decline in residential permits (-2.7%) was offset by an increase in the non-residential sector (+14%) leading the total value of permits to \$989 million in January, up 1.9% from December.

The total value of building permits fell in four provinces. With significant drops in both residential and non-residential components, the largest decrease in dollars occurred in British Columbia, where the total value of permits dropped 22.4% to \$815 million, the lowest level since April 2006.

Important retreats also occurred in Saskatchewan (-44.4%) and Newfoundland & Labrador (-54.6%). In both provinces, the drops followed exceptional results in the non-residential sector in December.

**Housing sector: demand for multi-family units drops**

The value of permits for multi-family dwellings fell by 26.9% in January to \$1.1 billion, the lowest amount since February 2007. The number of multiple-family units approved decreased by 17.6% to 8216. Single-family permits decreased by 5.4% to \$2.2 billion. The corresponding number of units declined by 5.5%. Both single- and multi-family units approved have been on a downward trend since the summer of 2007.

Strength in employment, growth in disposable income, the dynamic economy in Western Canada and tight apartment vacancy rates in certain centres are factors that could positively affect the demand for housing. On the other hand, the impact of price increases on housing affordability and the signs of a weakening U.S. economy and their spillover effects in Canada could erode the demand.

**All non-residential components are on the rise**

The value of permits in the institutional component jumped 26.6% in January to \$701 million. This gain followed two consecutive monthly declines. Large projects for medical buildings

in Ontario and Alberta were behind this marked increase.

The value of commercial permits gained 9% in January to \$1.4 billion, thanks to several large projects for office buildings in Ontario. In 2007, this category played a key role in the strong showing of the commercial component.

Having reached a 10-month low in December, the value of industrial permits rebounded with a 28.1% gain in January as the value of permits totalled \$423 million. Construction projects for manufacturing buildings in Ontario and for utility buildings in Alberta led to this gain.

Despite the strong results in January, the value of permits in the commercial and industrial components has been on a downward trend since the summer of 2007. In contrast, the institutional component has been maintaining its upward trend since February 2007.

The non-residential sector continued to be positively affected by low office vacancy rates, the vigorous retail sector and strong corporate profits. Furthermore, business and government intend to increase their spending in non-residential construction in 2008, according to the latest Private and Public Investment Survey released in February.

**Metropolitan areas: sharp decline in Vancouver**

The total value of permits declined in 15 out of the 34 metropolitan areas in January. The largest decline occurred in Vancouver as \$427-million worth of permits were issued, the second-lowest level since April 2006 (the lowest being in September 2007 when there was a municipal strike in the city of Vancouver). Marked declines occurred in both residential and non-residential sectors. Barrie, Ont., and Saskatoon, Sask., also showed substantial declines in January after record levels in December 2007.

In contrast, significant increases occurred in Edmonton, London, Ont., and Montreal due largely to projects in the non-residential sector. In Toronto, a tremendous gain in the non-residential sector (+143.2%) was largely offset by a sharp decline in residential construction intentions.



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**Thomas & Betts Ty-Rap cable ties turn 50**

Thomas & Betts has launched a year-long celebration to mark the 50th birthday of the Ty-Rap cable tie. In February, T&B rewarded the correct identification of their mystery 50th birthday brandname

with weekly draws for Garmin GPS Systems. The next phase of the celebration continues until June 27 with the "Tell us What's Next" promotion.

Whether it's an idea to speed-up installation or to meet the requirements of a specific industry application, Thomas & Betts invites you to submit your suggestions for the next Ty-Rap innovation. All participants will be entered into weekly draws for prizes like \$150 Petro-Canada gas cards and Samsung S85 digital cameras. Visit [www.tnb-canada.com/en/tyrap50](http://www.tnb-canada.com/en/tyrap50).

**Ideal launches Signaltek promotion**

Ideal Industries has launched a promotional offer that allows you to purchase a Signaltek cable performance tester for \$995 until June 30 from authorized distributors. This saves you about \$300! To sweeten the deal, Ideal is throwing in a free Tracetone tone generator and amplifier probe for testing continuity and locating signals of



installed wire and cable. Signaltek is designed for datacom installers, electrical contractors and the IT/network manager to verify within seconds whether installed cabling will support voice, data and video (VDV) applications via simple Pass/Fail testing. **EB**

PERSONALITIES **EB**



Schneider's Claude Desormiers

**Schneider Electric** has appointed a new global marketing director—**Claude Desormiers**—for its oil and gas segment. Possessing over 20 years of automation sales and marketing expertise, Desormiers' new role will actively involve him in Schneider's Global Automation Marketing Business.

**Arlington Industries**—a manufacturer of metallic and non-metallic electrical fittings and connectors—presented 2007 Sales Awards recently to its Canadian reps at the 2008 National Electrical Manufacturers Representatives Association (NEMRA) Convention. The following were recognized for achievement in specialty products sales and overall sales combined: **Mac's II Agencies Ltd.** (Coquitlam, B.C.) and **Leonard Sales** (Mississauga, Ont.).

**Keith Gillum** has been named director of sales, West Region, for **Philips Solid-State Lighting Solutions**, the entity formed by Philips' acquisition of **Color Kinetics** (which he joined in 2004). He will oversee the direct sales team and network of manufacturer reps, dealers and distributors in the Western region of North America. Gillum previously served as director of entertainment sales.

**Daniel Nayda** (Toronto, Ont.) is the winner of the 2007 **Jim & Marion Sinneave Scholarship Award**, which is presented annually to the candidate that best emulates the hard work, commitment and drive that the Sinneave's brought to the Canadian electrical industry. Funded by the General Partner of **I.E.D. Limited Partnership II**, the \$2000 scholarship is awarded to dependents of employees of I.E.D. member companies. Students must be attending, or planning to attend, an accredited university, college or post-secondary educational institute on a full-time basis. Nayda's mother is employed by **Paul Wolf Lighting and Electric Company Ltd.**



Jack Briody

It is with great sadness that **Philips Lighting Co.** announces the passing of former Philips executive **Jack Briody** on March 8 at the age of 72. He succumbed to complications from cancer. Briody joined Philips Lighting in 1969 and held successive leadership positions in sales and marketing until 1991. Following an executive marketing position within the ballast division of MagneTek, he returned to Philips as president and CEO of Advance in 1993, where he led the team until his retirement in 2001. Briody is survived by his wife, Andrea, and

children John and Danielle. Donations in his memory can be made to either the American Cancer Society's "Relay For Life" or the Children's Cancer and Blood Foundation.

**R. Wayne Proulx** has been appointed director of **BOMA Toronto's Conservation and Demand Management (CDM) Program**. Proulx has over 27 years experience in the commercial real estate industry, most recently serving as national manager of Green Initiatives and Health & Safety Services with GWL Realty Advisors. During his career, he has assisted in directing BOMA and other real estate organizations through extensive volunteer service. In his new role, Proulx is responsible for the overall marketing and management of the CDM Program, with a particular focus on driving industry participation. He can be reached at (416) 596-8065 ext. 26 or [rwproulx@bomatoronto.org](mailto:rwproulx@bomatoronto.org).

**Gerry Phillips**, Ontario's minister of energy, has appointed **James Arnett** as the new chair of Hydro One, the provincially owned utility that develops and maintains most of the province's electricity transmission system, and provides local electrical service in many largely rural parts of the province. He succeeds **Rita Burak**, who is stepping down after nearly five years as chair. Arnett holds a Bachelor of Arts degree and an LL.B from the University of Manitoba, as well as an LL.M from Harvard Law School.

**Ontor Ltd.** has two new managers in its Toronto and Burlington (Ontario) offices. **Terrence Francis**



Terrence Francis

has been promoted to regional manager for the Toronto corporate branch. He has over 18 years of experience in the industrial electrical distribution business and has spent the last three years at Ontor working as part of the Automation Team. Meantime, in the Burlington office, **Angelo Sanfilippo** has been promoted to branch manager. Sanfilippo previously worked out of Ontor's Cambridge, Ont., office as motion controls specialist.

Photovoltaic developer **Daystar Technologies** appointed **Ratson Morad** president and COO. He reports to **Dr. Stephan DeLuca**, the company's CEO. Most recently, Morad served as vice-president of engineering and technology at Solyndra Inc. (where he was part of the founding team). There he led the development of new solar panels, as well as the architecture and build-out of production systems. DayStar also announced today the departure of **Jack McCaffrey**, vice-president of manufacturing, who left the company to pursue another position closer to home. **EB**

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- 2006 CEC Changes
- Conductors
- Arc Flash: Measures for Prevention and Control
- Motor Installations and High Voltage
- Transformers/Welders
- CEC/NEC: A Comparison of Requirements
- Static, Transient Voltages and Lightning Protection Systems (Fundamentals, Evaluation, Control)

For a more extensive listing, visit **EBMag.com** and click **Calendar**

**Annual Electrical Industry Conference**  
*Ontario Electrical League (OEL)*  
**April 30-May 3**  
 Huntsville, Ont.  
 Visit [www.oel.org](http://www.oel.org)



**BC Industrial Expo**  
*Abbotsford, B.C.*  
**April 30-May 1**  
 Visit [www.bcindustrialexpo.ca](http://www.bcindustrialexpo.ca)

**Annual Conference**  
*Professional Electrical Apparatus Recyclers League (PEARL)*  
**May 3-6**  
 Costa Mesa, Calif.  
 Visit [www.pearl1.org](http://www.pearl1.org) or e-mail [pearl@pearl1.org](mailto:pearl@pearl1.org)



**Ontario Technological Skills Competition (OTSC)**  
*Skills Canada—Ontario*  
**May 5-7**  
 Waterloo, Ont.  
 Visit [www.skillsontario.com](http://www.skillsontario.com) and click Competitions

**MEET (Mechanical Electrical Electronic Technology)**  
**May 7-8**  
 Moncton, N.B.  
 Check [EBMag.com](http://EBMag.com) and E-Line for updates.



**Nedco Electrifest VIII**  
**May 12**  
 Mississauga, Ont.  
 Call (905) 568-2425



**14th Canadian Skills Competition**  
*Skills/Compétences Canada (S/CC)*  
**May 25-28**  
 Calgary, Alta.  
 Visit [www.skillscanada.com](http://www.skillscanada.com)

**Lightfair 2008**  
**May 26-30**  
 Las Vegas, Nev.  
 Visit [www.lightfair.com](http://www.lightfair.com)



**Fundraising Golf Tournament for Trades College in Dominican Republic**  
**May 27**  
 Royal Ashburn Golf Club  
 Ashburn, Ont.  
 E-mail John Vickery at [john@vickeryelectric.com](mailto:john@vickeryelectric.com)



**Annual Conference**  
*Supply & Distribution (S&D) Council, EFC*  
**June 4-7**  
 Victoria, B.C.  
 Visit [www.electrofed.com](http://www.electrofed.com) and click Events, then EFC Events



**Annual General Meeting**  
*Independent Electrical Distributors (IED)*  
**June 18-20**  
 St. Andrews, N.B.  
 Visit [www.ied.ca/events.html](http://www.ied.ca/events.html)



**Convention and Exposition: "Sharpen Your Edge"**  
*Electrical Apparatus Service Association (EASA)*  
**June 22-24**  
 Dallas, Texas  
 Visit [www.easa.com](http://www.easa.com)

**Industry Conference**  
*Electrical Contractors Association of Ontario (ECAO)*  
**September 6-13**  
 Costa del Sol, Spain  
 Visit [www.ecao.org](http://www.ecao.org)

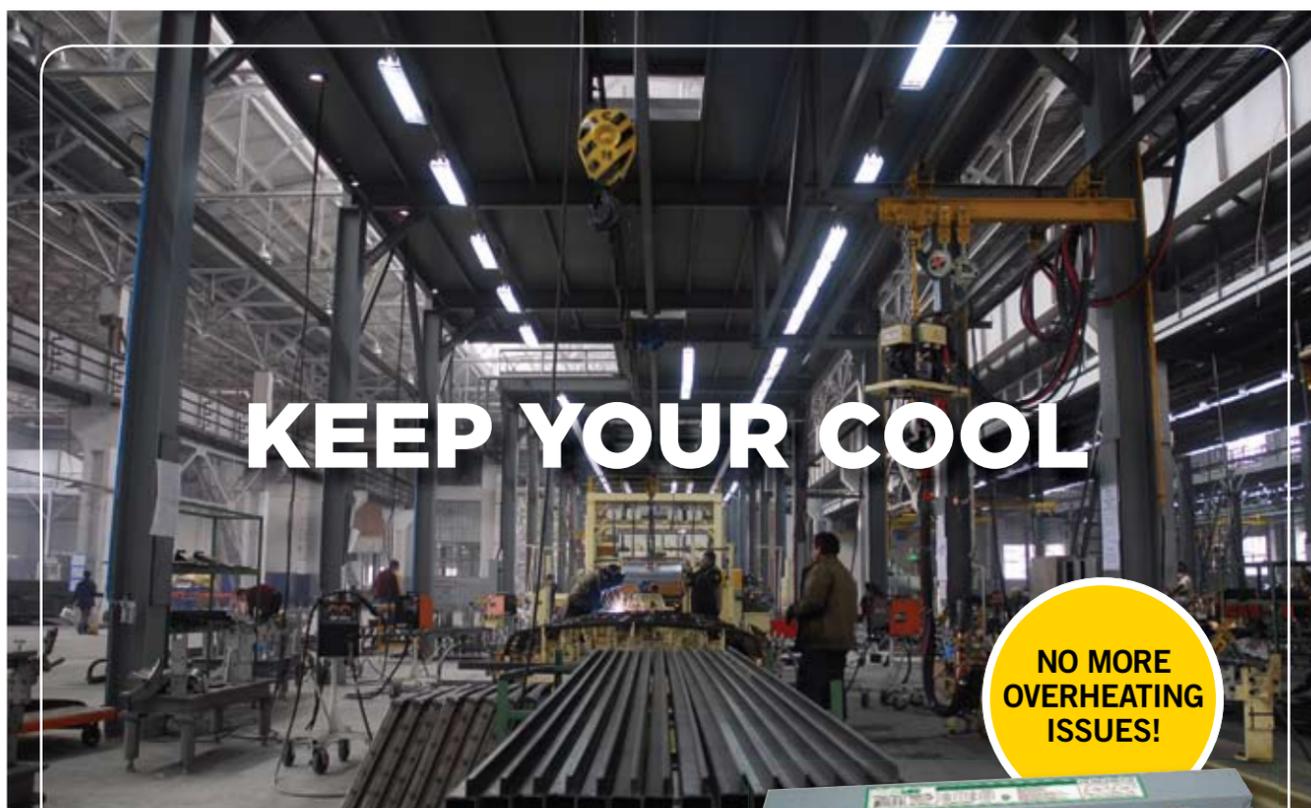
**Electrix Learning Expo**  
*British Columbia Electrical Association (BCEA)*  
**October 1**  
 Vancouver, B.C.  
 Visit [www.bcea.bc.ca](http://www.bcea.bc.ca)



**The NECA Show**  
*National Electrical Contractors Association (NECA)*  
**October 4-7**  
 Chicago, Ill.  
 Visit [www.necaconvention.org/2008](http://www.necaconvention.org/2008)



**The Power Show 2008 (Electric Expo)**  
*Independent Electrical Contractors (IEC)*  
**October 29-November 1**  
 Atlanta, Ga.  
 Visit [www.ieci.org](http://www.ieci.org)



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## From the Legal Desk

By Stephen Tatrallyay, LLB



# Drug testing for employment *could* border on human rights violation

**A**lthough the Alberta Court of Appeal has upheld the province's Human Rights Commission's decision *not to entertain* a terminated employee's complaint that drug testing discriminated against him, some of the court's side comments suggest that many employer guidelines/requirements in this area still have loose ends, and could be suspect for Human Rights Code violations.

In this case, John Chiasson was tentatively hired by Kellogg Brown & Root Canada (KBR)—a construction company hired by Syncrude to assist in an Oil Sands project. At the time, KBR's employment policy required all management new-hires to pass a 'post-offer/pre-employment' drug test before being hired. As such, Chiasson's offer of employment hinged on this condition, so he duly submitted to KBR's drug test on June 28, 2002, and started work—as scheduled—on July 8. Then, on July 17, Chiasson's employment was terminated.

You see, Chiasson was a recreational user of marijuana and, unfortunately, enough of the weed remained in his system from his last use on June 22 that he ended up failing the drug test. So he filed a complaint with the Alberta Human Rights Commission (AHRC).

It was accepted among all concerned that Chiasson was, in fact, just a recreational user—not an addict. The commission found that *no actual disability due to drug addiction* had been demonstrated, nor was one "perceived" because, in that case, Chiasson would not have been offered the work. Since drug testing was in and of itself discriminatory *toward addicts*, the commission held that Chiasson would have been unfairly treated had he been an addict. But because *he was not an addict*, the commission declined to grant his complaint.

At the first level of appeal, the judge overturned AHRC's

decision, saying that the commission's policy was in and of itself discriminatory for not differentiating between addicts and recreational users.

The Court of Appeal overturned this finding, however, holding that KBR believed the policy was a legitimate job requirement; that no employee is to be under the influence of drugs—whether addicted or not—for the purpose of ensuring jobsite safety. (This is similar to a trucking or taxi company that compels its drivers to undergo alcohol consumption testing; it doesn't matter whether the driver is an alcoholic or a casual user when an accident happens.)

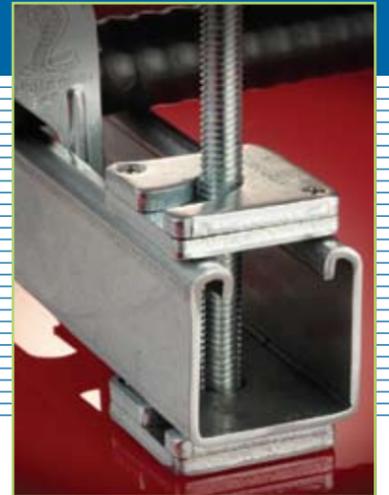
In the end, the Court of Appeal overturned the original appeal judge's decision and restored that of the AHRC to the effect that, in these particular circumstances, Chiasson had not been discriminated against. However, the court pointed out a number of "loose ends" that could result in an employer creating or attempting to enforce a discriminatory drug testing policy; as such, employers *must be very careful* when drafting such policies and, hopefully, seeking input from their legal counsel. **EB**

### Note

• Director of AHRC and John Chiasson v. Kellogg Brown & Root (Canada) Co., decision of the Alberta Court of Appeal (McFadyen, Ritter and Watson, JJ.A) released Dec. 28, 2007 [2007] ABCA 426.

Stephen Tatrallyay is a prominent Toronto Construction Lawyer and one of the members of Team Resolution, which provides neutral, third-party expertise and input aimed at resolving disputes outside of the courtroom ([www.teamresolution.ca](http://www.teamresolution.ca)). A member of EB's Editorial Advisory Board, he can be reached at (416) 482-5164 or via e-mail at [statrallyay@rogers.com](mailto:statrallyay@rogers.com).

## T&B new product alert



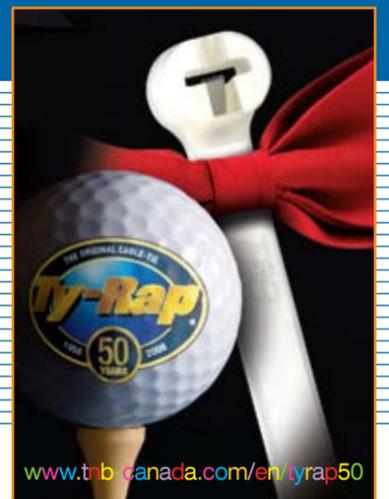
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Look for the Ty-Rap® 50th birthday display at participating electrical distributors or ask your distributor for details.

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■ **2008 GMC Yukons offer style and refinement**

The Yukon Denali and Yukon XL Denali are the flag-bearers of GMC's family of professional-grade vehicles, says the company, offering a blend of style, performance and refinement. The style and refinement come from a distinctive exterior design as well as 18-in. standard polished wheels (20-in. factory-installed chrome wheels are available).

The performance is derived from a 6.2L, 380-hp all-aluminum small-block V8 engine with variable valve timing and six-speed automatic transmission. The Denali and XL Denali were redesigned for the 2007 model year, so changes for 2008 are minor. However, two new exterior colours were added to the palette.

Standard features include power liftgate, power sunroof, power release second-row fold-and-tumble bucket seat, head curtain side air bags, power-adjustable pedals, heated windshield washer system, electrochromic (auto-dimming) inside mirror, RainSense automatic windshield wipers, remote start system and Ultrasonic Rear Parking Assist. From an entertainment standpoint, the vehicles come standard with an AM/FM MP3-capable radio with a six-disc in-dash CD changer, Bose 10-speaker Centerpoint Surround Sound audio system and XM Satellite Radio.

The Denali models are built on GM's full-size SUV platform, which incorporates features such as a fully boxed frame, coil-over-shock front suspension and rack-and-pinion steering. Yukon Denali rides on a 116-in. wheelbase, with an overall length of 202 in., while the XL is about 14 in. longer in wheelbase and 20 in. longer overall. The frames on both models support wide front and rear tracks that enhance stability and driving confidence through a more secure road feel and a lower centre of gravity.

The front suspension consists of a coil-over-shock design that delivers linear, solid and unwavering ride and handling characteristics on all road surfaces. Steering comes from a rack-and-pinion steering system that provides precise and responsive control and enhanced on-centre feel. Larger vented front and rear brake rotors, stiff dual-piston calipers and long-life brake pads contribute to enhanced pedal feel, reduced brake noise, predictable, linear brake response and shorter braking distances.

A Bosch 8.0 four-channel ABS system is standard; it works with the standard StabiliTrak electronic stability control system that incorporates the application of roll-over mitigation software algorithm technology. A six-speed Hydra-Matic 6L80 RWD electronically controlled automatic transmission backs the 6.2L engine. All models come standard with the OnStar system (includes one-year Directions & Connections plan).

The Yukon Denali and XL Denali's style and refinement come from a distinctive exterior design, including the signature honeycomb chrome grille.



GMC Yukon Denali and XL Denali photos © GM Corp.

■ **Super-sized 2008 Dodge Sprinter offers more**

The 2008 Dodge Sprinter has been "super-sized", says the company, offering more choices, features, versatility and innovations, including a choice of two premium engines: a 3.0L V6 diesel or 3.5L V6 gas. The target demographic for this van ranges from small business owners to small and large fleet customers—particularly professional trades.

It's available in three vehicle lengths (233 in. to 289 in.) on two wheelbases of 144 in. or 170 in. (or 170 in. extended with a 15-in. longer rear overhang). It also boasts three interior roof height options: standard (65 in.), high (76 in.) and mega (84 in.). It has a cargo capacity of up to 600 cf, maximum payload of 5649 lb, a low side step-in height of 19.9 in. and wide rear-door opening (270°). Its pallet-friendly cargo sliding door offers a loading width of 51 in.

New for 2008 is a standard four-seat rear bench for cargo vans, electronic sliding door for both cargo and passenger vans, window prep without glass package for cargo vans, front swivel bucket seats for all models and five identification roof lamps.

The Sprinter's 3.0L V6 turbo diesel engine boasts 154 hp and maximum torque of 280 lb-ft at 1200-2400 rpm. Meantime, the 3.5L V6 gas engine distributes a maximum output of 254 hp at 5900 rpm and maximum torque of 250 lb-ft at 2500-5000 rpm. Both engines promise power in a smooth driving experience. All 2008 models are equipped with a standard five-speed automatic transmission, and oil changes are suggested every 10,000 miles.

Standard features on the Sprinter include power windows and locks, integrated wide-angle mirrors, halogen headlamps, 16-in. wheels, tilt-/height-adjustable steering wheel, CD radio, one-touch triple-flash function turn signals, and Adaptive ESP for improved functionality and safety capability. With numerous upfit possibilities, this is the only full-size van in the market, says the company, that is purpose-built for commercial customers.

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With its cross-hair grille and bold styling, the Sprinter is unmistakably a Dodge.



Dodge Sprinter photos © Chrysler LLC

Toyota Tundra photos by Bill Petro. © Toyota Canada Inc.



The new Tundra Grade, positioned just below the SR5, is equipped with all of the key standard features consumers expect in their truck.

### ■ Stahl crane body and cranes

The Stahl crane body combined with a Stahl crane is a field-proven package of strength and performance, says the company. The galvanized steel body features 10-ga body sides and doors; 12-ga treadplate cargo-space floor, compartment tops and bulkhead; flush-mounted doors with three-point D-handles with rollers (for easy operation and secure door closure); plus bulb-style door seals to provide a weathertightness. Optional body equipment includes tank compartments, drawer packages, work bench bumpers and more. Cranes are available with capacities up to 48,000 ft-lb.



Photo shows auxiliary drive shaft that powers PTO on Workhorse chassis.

### ■ PTO-equipped walk-in truck chassis powers up utilities

Workhorse Custom Chassis now offers a PTO (power take-off) that can drive a multitude of products (i.e. air compressor, generator, hydraulic pump) for walk-in trucks built on its heavy-duty W62 diesel chassis. The manufacturer has created an integrated build process that enables the PTO option to be spec'd with the chassis right from the dealer.

The PTO-ready chassis is then upfitted with a selection of products from Vanair, a manufacturer of vehicle-mounted air compressors. Totally contained within the chassis frame rails, the Vanair products exploit the engine's power to drive pneumatic, electric and hydraulic tools and equipment. The auxiliary power is generated from the platform's International Maxxforce 5 200-hp diesel engine.

The PTO can power an air compressor, with capacities available from 125-200 cfm, or a generator, with capacities available for 7200W or 11,600W that produce 120V or 120/240V at 60 Hz. Various-sized hydraulic pumps can be added, and all three functions can be ordered independently or in any combination. The patented Genair product is ideal for utilities, says Workhorse, that use tools such as air spades, jack hammers and pavement breakers, as well as electric power for pipe fusion, emergency lighting, electric tools and arc welding.

The air compressor and the AC generator can run separately or simultaneously. An instrument panel features an hour meter, and pressure and temperature gauges for easy monitoring.

### ■ Time/attendance tracking for mobile work crews

Exaktime's PocketClock/GPS software transforms a Windows mobile PDA into a portable timeclock that uses GPS technology to record the exact location of workers as they clock in/out. Designed for mobile work crews, it's like having a permanent onsite timeclock at every jobsite. The automatic GPS location fix from PocketClock/GPS assures you that your crew is at the correct location when it clocks in/out.



In addition to accurately tracking total hours worked, individuals can select the type of work they are doing each time they clock in, allowing managers to track work by cost code. PocketClock/GPS also offers extended functions for foremen and crew leaders: with just a few taps, an entire crew can be clocked in, saving time and increasing accuracy. (They can also enter detailed field notes about the job that are later sent to the office.)

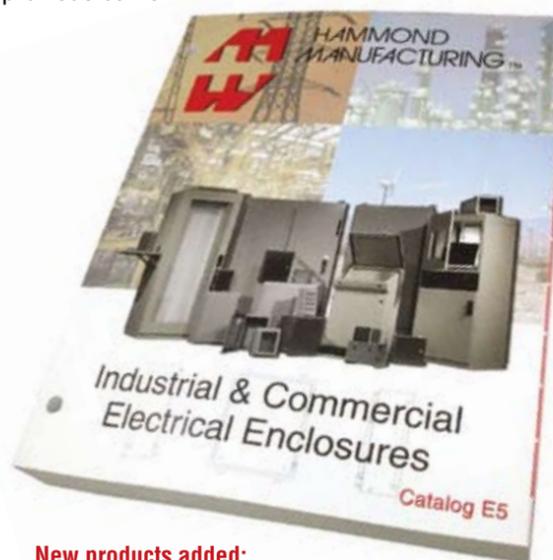
To transfer the time and attendance information into the office computer for review and export into the company's accounting or payroll system, the PocketClock/GPS device is simply carried to the office and synchronized with the PC. In the future, customers will be able to use the JobClock.NET service from Exaktime to send records over the Internet from PocketClock/GPS to the office.

After attendance and location records are transferred to the company's office computer, Exaktime's TimeSummit software enables managers to set a virtual perimeter (a "geofence") around each jobsite to monitor whether employees are within the perimeter when they clock in/out. The system also displays a map of the region, pinpointing jobsites and overlaying attendance data onto the map. 

## Hammond News

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Sloped Top - Page 76



RAL7035 Wallmount - Page 32



Commercial Box - Page 342



OEM Polyester - Page 122

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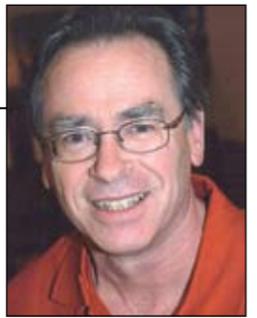
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## Indulge your anger, lose a finger—maybe more

By Dave Smith



I recently spoke to a graduating high school class and tried to impress upon them the importance of making good decisions. I was met with disbelieving faces, however, when I pointed out that they would ultimately learn the most from their own mistakes and bad decisions (although the adults at the ceremony definitely understood me).

This is certainly true of industrial accidents. Any time you talk to someone who has been in one, they'll tell you they learned a valuable lesson—one they're not likely to forget—and have endeavoured ever since to make good decisions. It's also evident they would like to have had a second chance; the greater the stupidity of the accident, the greater their regret.

If you ever meet Tony, he'll willingly tell you how stupid he was. He lost his finger to anger.

We all know how powerful, overwhelming and all-consuming anger can be. Ancient tribes used to spend days preparing for war by slowly building themselves into a frenzy. Blocking off all

mental avenues of logic and rational thinking, they bombarded their minds with thoughts and images of anger, slowly heating their mid-brains until they were overwhelmed with irrational, uncontrollable hate and anger.

The Vikings had a special name for warriors who went crazy in battle: berserkers. And, if you want to see modern-day examples of irrational anger in action, just turn to the 6 o'clock news... you'll be rewarded soon enough.

You would recognize Tony immediately by the index finger on his left hand, which is nothing more than a little nub. He lost it just after having a nose-to-nose, gut-to-gut shouting match with his boss. He was in a great rage when he left his boss' office, slamming the office door so hard that the frame shook. Tony went back to his milling machine and, five minutes later, lost his finger forever.

I met him 10 years after the accident, and he still shakes his head at his own stupidity. Glancing down at his missing finger, he said, "Guess I lost *that* argument, eh?"

You always need to be cognizant and in control of your thoughts and your emotions. When you're working on something energized, make sure you're concentrating on the task at hand. When you feel your mind wandering, you must either get it back under control or get away from the energy.

If you're angry, step away; go for a smoke, grab some coffee, go for tools or supplies, or whatever, just don't go back to work *until you've calmed down*. (And if you can't calm down, go for counselling before you hurt yourself or someone else.)

Our thoughts and emotions control our bodies, and they will work either for us or against us. When you're upset, you are a danger to yourself and anyone around you. There's a reason we're told to "Count to 10": this is a cognitive function, and by counting to 10 we redirect blood flow from our heated mid-brain to our cerebral cortex, which helps us calm down. Long, slow breathing with each count also helps.

When you come across coworkers that are angry and you cannot calm them down, then get away from them. Give them the time they need to calm down on their own.

When you're a supervisor and one of your people is angry, it's important that you keep them away from energy and machinery until they are back in control of their emotions. In truth, we should all be continuously monitoring ourselves and our teams for the sake of everyone's health and well-being.

You're gambling your health and your life—indeed, your very future—when you allow your thoughts and emotions to run amok when you're working. Never give them the opportunity! Always be in control and, when you feel that control slipping, count to 10. You can bet Tony wishes he had.

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

Dave Smith is president of Canada Training Group and has been providing consulting services to industry since 1980. This story and others can be found at [www.canada-training-group.ca](http://www.canada-training-group.ca). Please feel free to use this information to support your safety program. Dave can be reached at [davesmith@canada-training-group.ca](mailto:davesmith@canada-training-group.ca).

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**A reader writes...**

Concerning your column "The Rule of Rules" (EB March 2008) on disconnect handles and switches, I had always heard it as the "Left Hand Rule". I appreciate the advice of what to do when the handle is not on the right side.

During a conversation about this very subject, a question arose as to the best practice when electricians wear the proper PPE. Face shields and other items give you protection straight on, though not necessarily from the side or back. Some argued it is better to face switches straight on. My belief is to use PPE that gives added protection from the side or back and still use the Left Hand Rule (plus the advice you gave).

That's my two cents.  
— AJ (Listowel, Ont.)

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*You are right with facing it straight on. In my courses I explain that some companies have their workers face the switch as they operate it so that their face shield is square to the hazard. (I add that their lungs should be filled with air and their eyes closed.) It is a blinding flash of the obvious (one of my favourite expressions), and I should have added that into the article. Thanks for the feedback!*

— Dave Smith



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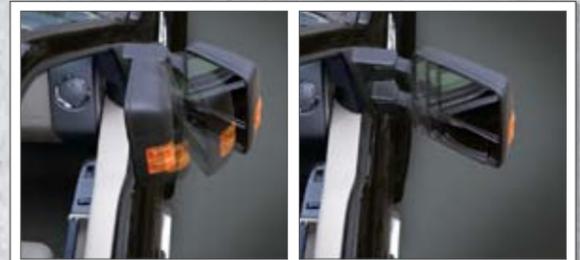
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### Employers encouraged to hire apprentices

A study on the return on investment for apprenticeship shows that, for every dollar an employer invests in an apprentice,

he makes a net return of up to \$1.38. The study was done by the Canadian Apprenticeship Forum, and was presented in Halifax, N.S., at a breakfast designed to encourage more employers to hire apprentices.

"This research study surveyed employers representing 15 different trades across the country," said CAF's executive director, Allison Rougeau, adding, "We are sharing this information with employers from across the country to make a positive business case for apprenticeship, and the hiring of apprentices."

"We are hoping the results of this study show employers that being a mentor not only brings personal rewards, it can bring economic rewards as well," said Karen Casey, education minister.

During the event, trades employers spoke about how hiring apprentices enhances business performance by increasing productivity and decreasing turnover. CAF is holding events for employers across the country in the coming months. Participants will have the opportunity to share perspectives with other employers and discuss apprenticeship training as a competitive advantage. A report summarizing findings will be available in the fall.



### Saskatchewan preparing its people for jobs of the future

The governments of Canada and Saskatchewan signed a new agreement to help Saskatchewan workers improve their skills and prepare them for the jobs of the future. Under the agreement, Canada will invest over \$90 million in Saskatchewan's labour market over the next six years, and over 1000 people annually who are ineligible for training under the Employment Insurance (EI) program will have a better chance at improving their skills (such as high school graduates working in construction who want to be certified in a trade).

The funding will also help workers who lack literacy and essential skills get the training they need to obtain meaningful and sustainable employment.

"This agreement will help more people in Saskatchewan to gain access to employment and skills development programs and ensure that employers' needs for skilled workers are met," said parliamentary secretary Lynne Yelich on behalf of Monte Solberg, HRSDC minister. "With this agreement, our economic plan will continue to pay dividends for families in Saskatchewan."

The new Canada-Saskatchewan labour market agreement comes into effect April 1, and complements the Labour Market Development Agreement signed between the Government of Canada and Saskatchewan in 1998.

### Rankin Inlet asked to conserve energy

The power supply in the community of Rankin Inlet Nunavut, remained very limited late February, though it was available throughout the community. The three schools were open and, to keep peak electrical demand at a minimum over the lunch hour, boxed lunches were provided for students. Government offices were put on a rotating schedule to reduce demand.

While Qulliq Energy Corp. had purchased a new generator, the aircraft that was meant to deliver it experienced mechanical problems and would arrive much later than anticipated. Meantime, a transformer that was being shipped from Winnipeg also experienced transportation difficulties.

Residents were asked to continue limiting their power consumption until the new engine was operational. In fact, conservation measures were required for about two weeks until the power plant was fully operational.

### New trades centre opens its doors at UCFV

British Columbia's so-called "largest recycled training facility"—the \$21.6-million Trades and Technology Centre at the University College of the Fraser Valley's new campus in Chilliwack—recently officially opened its doors. (The centre was built within the shell of an existing building, using large portions of recycled material.)

"Our booming economy means we need more skilled workers than ever before, which is why increasing trades training in B.C. is a high priority for our government," said Murray Coell, the province's advanced education minister. "Every time we invest in skilled workers, it keeps our economy competitive and benefits everyone in the province."

The 2.5-acre centre is part of the Canada Education Park—a collaborative initiative between local, provincial and international schools that offers a variety of programs, including electrical work.

"This new building is part of our master plan for the new campus, which will ultimately allow us to double the number of students we service in Chilliwack," said UCFV president Skip Bassford. "This is great news for our local economy since Chilliwack's business-friendly environment is attracting a lot of new companies that all require skilled workers."

UCFV aims to have 1800 students on the new Canada Education Park campus by 2010 to meet the needs of both employers and students.

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## REGIONAL FOCUS



### Manitoba Hydro reaches 250MW power sale arrangement

Manitoba Hydro has signed a term sheet with Minnesota Power to provide 250MW of clean, renewable hydro power over 15 years starting in 2020, as well as well surplus energy starting this year.

“This is definitely a win-win situation for all parties involved,” said Greg Selinger, finance minister and minister responsible for Manitoba Hydro. “The agreement bolsters our export markets, allowing our domestic rates to remain among the lowest in North America, while Minnesota Power gains clean, reliable, long-term and cost-competitive power.”

Electricity exports generated \$592 million in revenues for Manitoba Hydro last year and are expected to produce \$5.5 billion in revenues over the next 10 years. Manitoba Hydro is pursuing growing export opportunities to the east, west and south, said Selinger.

“The development of clean, renewable energy continues to be part of our long-term vision to build the economy. Construction is well underway on the Wuskwatim dam, a partnership between Manitoba Hydro and Nisichawayasihk Cree Nation, and development work continues on projects like Conawapa Generating Station as well as the Bipole III transmission line that will improve reliability of Manitoba’s power system and increase our export markets.”

Selinger noted that Manitoba’s exports have reduced the production of greenhouse gases by 172 million tonnes over 35 years by reducing the need for thermal generation in the region. The long-term sale will require the construction of hydro-electric facilities in northern Manitoba and a major transmission line between Canada and the United States.



Three electricians who lent their expertise to the off-electricity apprenticeship guide: Michel Gravel from the GE aircraft motors factory in Bromont; Francis Lévesque, master electrician at Alcan Packaging; and Denis Houle, master electrician with Montreal’s transit commission (Société de transport de Montréal).

### Apprenticeship guides for regulated trades in Quebec available

The regulatory authority *Commission des partenaires du marché du travail (CPMT)* recently launched a series of apprenticeship guides, including one for off-construction electricity.

Off-construction electricity qualification requires apprentices to experience over 300 different operations that are listed in the guide, and confirmed by their overseers (as opposed to the 8000 hours—which includes 1800 classroom hours—a construction electrician is to work before getting his diploma). Off-construction apprentices are now permitted to write the final exam after 5000 hours of training so long as they have been exposed to the 300+ operations. This gives a break to apprentices who have, since their teens, been accompanying an electrician to work; most of them already know a lot about electrical on their first day in trade school.

### Ontario aiming for 100,000 solar roofs

A new task force has been established to help Ontario meet its target of 100,000 solar installations at households across the province. This is part of the Ontario government’s “Go Green” climate change strategy.

According to the government, most Ontario households spend about 20% of their overall energy budget on water heating—second only to space heating. By supplementing existing electric or gas water heaters, solar thermal systems can reduce these costs. For example, each year a solar thermal system can save:

- \$325 and 600 kg of greenhouse gas emissions for a typical family of four with an electric water heater.
- \$200 and 760 kg of greenhouse gas emissions for a typical family of four with a gas water heater.



The Solar Task Force members are: Elizabeth McDonald, executive director of the Canadian Solar Industries Association; Brian Rosborough, director of policy for the Association of Municipalities of Ontario; Rob McMonagle, senior energy consultant with the Energy Efficiency Office of the City of Toronto; and Larry Brydon, senior account executive with Reliance Home Comfort.

The task force has been asked to focus on how to expand the residential solar thermal market. Its recommendations will include actions that can be taken by the solar industry, governments at all levels, retail and financial institutions, and others who are active in conservation, such as electric and gas utilities, and environmental organizations. The task force will report by October 31.

### Alberta helps NAIT modernize campus

Alberta government funding of \$7.6 million will enable the Northern Alberta Institute of Technology (NAIT) modernize and expand its power plant facility, resulting in an estimated annual savings on utility expenses of up to \$120,000. This will allow the school to direct more money to learning in priority areas, such as increasing student access and purchasing new equipment.

Addressing maintenance is part of Alberta’s long-term capital plan—a 20-year strategy for public infrastructure that anticipates and addresses longer-term needs of a changing and growing province. **EB**

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By Oliver Post

# Code of conduct

## Helping contractors stay compliant may be your most important role

Among the many challenges distributor personnel face, staying abreast of changes remains constant. Each year, there are scores of changes in products, techniques and practices, and you can play an important role in deciphering this information for your customers, who often have less time and less on-the-job access to information.

Think about it: whereas you can easily pull up something like the Electrical Safety Authority's (ESA's) website—the group responsible for electrical safety in Ontario—your contractor customer will have a hard time of it while he's engrossed in wiring up a building (not that the Internet is typically available on the jobsite, anyway).

This puts some onus on you at the outset—doing what you can to stay informed—to understand the implications of a job a customer may be taking on. That requires training, and easily the most important area in which you should stay informed is building codes, and how the products you sell fit in with them.

While some clinics may seem at times to be tedious, possibly offering little in the way of new information, it is critical you take them seriously, especially when they relate to building codes.

The seeming proliferation of residential and commercial fires this winter got me thinking about the origin of building codes, and the sad fact that they have frequently been a reaction to some dreadful incident or another—as far back as pre-biblical times.

Records of building codes date back to before 1700 B.C. The “The Code of Hammurabi” was named after the Babylonian king who wrote its tenets somewhere between 1795 B.C. and 1750 B.C. This book of laws, which prescribed such punishments as cutting off the hand of a thief, also dictated that a builder would be put to death were he to build a house that fell down and killed the homeowner. Were the falling house to kill the homeowner's son, then the builder's son would be put to death. Were the house to fall onto, and kill, the homeowner's slave, or destroy other property, then... well, you get the idea.

But building codes are living, dynamic things. About a year ago, a tragic fire in New York City spurred action on its building codes. In March, a fire ripped through a two-family home in The Bronx, killing 10 people—nine of which were children. In this house fire incident, investigators cited a number of factors that contributed to the horrific event, including smoke detectors that had no batteries. Still, the house complied with the city's building code. Lessons were learned.

Of course, you don't have to go across the border to find incidents worthy of mention.



In downtown Toronto, when a century-old building started to burn in late February, so did the one next to it, and so on. Nearly a whole block of businesses—and the apartments above—burned right to the ground. Thankfully, nobody lost their lives, just their stuff; which is bad enough, considering it was in a low-rent district and most losses were uninsured. An electrical failure is suspected, but with precious little left of those structures, we may never know the full answer.

While buildings as old as those will always be challenging to maintain, it's also a sure bet that each had been subject to repairs/renovations over the years that were not to code. When people are poor—or don't know any better—they often do things they shouldn't. And that includes doing a repair (improperly) to save a little money; then the right circumstances come together to cause that unprofessional repair to fail and start a blaze.

Playing into the hands of that cost-above-all market is the influx of counterfeit products. These products look just like the legitimately tested and certified ones on your shelf (or nearly like them, anyway), but don't meet the performance standards that their labelling would indicate. For distributors, it can be tough to distinguish the real from the fake—from the outside anyway.

Counterfeits are an insidious fact of the global economy and, when it comes to critical safety items, they are an abomination... like circuit breakers, for example, that are expected to have a 10,000A rating and trip at 3500A (that's if their contacts don't weld first).

There are more than a few cases—some accessible through the aforementioned ESA website—where products have been recalled by a distributor or UL. Many of these do not perform properly and are dangerous. Oh, and they're cheap.

A handful of years ago, authorities raided a distributor in New York State and seized thousands of counterfeit GFCIs falsely bearing the UL mark. The units looked good and, at

one-third the price, were a tempting buy. But the parts possessed no GFCI circuitry whatsoever. Were they installed, they might have passed undetected for years, lying in wait for conditions requiring a GFCI to save someone's life.

The best way to avoid such products is to be extra careful when dealing with unfamiliar suppliers who have special deals on surplus, overstock or auction items that may not be what they seem.

Considering the severity of the consequences, you should pass on the deal if you have any doubts. When you have a question, check with the brand's manufacturer. When you come across counterfeit products on your shelf, contact the authorities.

Thankfully, these are still pretty rare occurrences among distributors. On a daily basis, you'll be more likely called upon to provide the right products for a job.

Building codes that dictate how products are to be constructed and how they are to be used in concert with each other are the result of real world experience, not some isolated engineering exercise in a lab somewhere. (GFCIs were only mandated in the 1970s after one too many lives was lost.)

Even legitimate, quality products can cause problems when used improperly or placed in an environment for which they weren't designed. (You only have to take a quick glance at the “Electrical House of Horrors” at EBMag.com to be reminded of how bad it can get. And, while you can laugh at some of those, thinking about all the substandard repairs we don't know about should make you a little nervous.)

Building codes, and the products that meet them, exist to help keep people safe. Keep this in mind when you're undergoing a building code refresher, or when you're faced with a contractor who you suspect might be making an error: sometimes saving a customer from himself is the best customer service of all. 

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By Valerie Maloney

# Lightfair lights up Sin City

By Valerie Maloney



Photo courtesy Las Vegas News Bureau/LVCVA



Scenes from the show floor at last year's Lightfair in New York.

The saying "What happens in Vegas, stays in Vegas" need not apply to the 19th annual Lightfair International (LFI) event this May. In fact, keeping what you discover at North America's premier event for architectural and commercial lighting products and services to yourself would, indeed, be an error.

LFI is expected to welcome about 550 exhibitors across more than 1500 booths, and 15,000 attendees from over 50 countries. Lightfair runs from Monday May 26 to Friday May 30 at the Las Vegas Convention Centre.

## 2008 show highlights

The Lightfair Daylighting Institute and Lightfair Institute take place on the Monday and Tuesday of the five-day event, with 72 unique courses and over 200 hours of programming. Topics range from software and lighting applications, design applications, sustainability and product updates, as well as a daylighting tour of Las Vegas buildings. All courses are led by renowned lighting designers, educators, architects, engineers and consultants. The Daylighting Institute is the only event of its kind in the industry.

Another can't miss stop during this enlightening event is the educational lighting forum. Now an annual fixture, the forum takes advantage of Lightfair as a global gathering of industry insiders to scrutinize the current state of lighting design education.

For a taste of what to expect at the conference, attend the LFI Innovation Awards (formerly known as the New Products Showcase) on Wednesday; this informative and exciting multimedia presentation kicks off the conference-proper. A panel of renowned lighting professionals serve as

judges for the awards that will be presented to exhibitors whose products exemplify the best in innovative design and thinking. Awards include Design Excellence, which is presented for outstanding achievement in design and application. Other honours handed out during this terrific networking event are Technical Innovation, Judges' Citation and Most Innovative Product of the Year. Product categories for the awards range from chandeliers to daylight integration and everything in between. Admission to this event is included with a full conference pass.

Attendees have yet another cool feature they can look forward to this year: the success of the Design Pavilion has led to the creation of the European Light and Design Pavilion, which focuses on new and cutting-edge lighting products that will be hitting the marketplace from Europe. Lighting products and applications continue to grow globally in scope, says Lightfair, and the number of European companies interested in the North American market is also on the rise each year. This new pavilion will spotlight those European manufacturers as they enter our market.

## Keynote speakers

The topic for the 2008 keynote speaker program revolves around sustainability and lighting for the developing world. Monday's keynote luncheon features Dave Irvine-Halliday, Ph.D., who will speak on solid-state lighting as a proven means to help end poverty in the developing world. The Tuesday luncheon will be headlined by David Gotfried, who will speak about "the new world of green".

Three of the lighting industry's most influential and revered leaders, says Lightfair, will headline the 2008 Lightfair

## TIPS

### for a fun Las Vegas experience

Make sure to pack your summer attire and stay well hydrated, as the average temperature in May is 31°C. Of course, there's always plenty to do in the air-conditioned indoors: casinos, shows and shopping! Speaking of shows, some of the big acts in May include Cher (who's starting her run at Caesars Palace), The Blue Man Group, Cirque du Soleil and Barry Manilow.

#### Some Las Vegas facts

- More than 39.2 million people visit Las Vegas every year.
- 17 of the 20 biggest hotels in the United States are here.
- Vegas Vic, the enormous neon cowboy that towers over Fremont Street, is the world's largest mechanical neon sign.
- When he first played Vegas, Paul Anka was too young to be allowed into the casino.
- Camels were used as pack animals in Nevada as late as 1870.

International Masters lineup on Thursday. Raymond Grenald, FAIA, FIESA, FIALD, LC, will speak on "Effecting Human Behaviour through the Use of Design". He will discuss his unique personal design philosophy that has evolved from a sensitivity to human perception and behaviour response to the physical (particularly visual) environment.

Second on the roster is Dr. Alan Laird Lewis, O.D., Ph.D., who will speak about visual acuity and contrast sensitivity, and the 'dynamic' range of vision and how it's used in lighting design. Last on the bill is Peter Ngai, P.Eng., FIESNA, LC, who was recently inducted into the Architectural Lighting Hall of Fame. He will talk about the fundamental principles of optics, luminaire optical design techniques and how optics can be designed to address the needs of the visual experience.

## Your information source

While everyone is encouraged to attend this *en-Light-ening* event, we realize not everyone has the luxury of time to actually do so. That's where Electrical Business comes in, as we cover everything you'll want to know. Meantime, if you think you can free up a few days to join us in Las Vegas, visit [www.lightfair.com](http://www.lightfair.com) to register, then pack your sunscreen and a couple rolls of quarters, and we'll see you at the show! **EB**

Photo by Oscar Einzsig. Courtesy Lightfair International.

Information courtesy Las Vegas Convention and Visitor Authority

# From spectacular to simple: LED lighting goes mainstream

By Jim Anderson

Whether in a Las Vegas ultra lounge, at a Broadway show or simply passing through Times Square, many people have experienced the multi-coloured visual marvels made possible by LED (light-emitting diode) lighting. The combination of digital control technology with LED sources has enabled completely new uses of light that can transform a façade—or even a city skyline—with the simple push of a button. Case in point? Toronto's own CN Tower.

Yet, while colour-controllable LED lighting systems have inspired creative designs around the globe for some time, white LEDs have advanced at remarkable rates to bring the same practical advantages to simple, daily uses of light as well.

Over the past decade, these solid-state lighting systems have been primarily used for applications of colour and colour-changing light. LEDs inherently produce a discrete colour of light depending on the materials comprising the chip itself. To produce coloured light with conventional sources requires the cumbersome use of gels and filters, which, in turn decreases the source's efficiency.

Moreover, as solid-state devices, LEDs are capable of digital control. This means we can produce near-endless colour combinations by mixing Red, Green and Blue LEDs without the use of mechanical colour scrollers. As such, when it comes to lighting with colour today, there is no better method than with LED sources—especially for the creation of dynamic effects.

But let's get back to those simple, white light applications.

Many architects, lighting designers and owners have been anxiously awaiting the arrival of high-performance, high-quality white LEDs that will afford the same benefits as those multi-colour LED systems. After all, LEDs consume less energy and last much longer than most conventional light sources today; they radiate no heat or UV, contain no toxic materials and require little maintenance. They are rugged and compact, meaning they can be installed in tight spaces or vibration-prone areas.

Just as multi-coloured LEDs dramatically improved in performance over time, so too have their white counterparts. Today, they are suitable for many mainstream lighting applications not requiring all the bells and whistles of digital control.

## Ready for retrofit

There's a perception in the market that LED lighting systems do not easily retrofit existing environments, and are mainly suited to new construction. While many 'true replacement' lamps may still be in development, there are, nonetheless, solutions available today with common form factors and power requirements, making them viable retrofit products.

An excellent example is Boston's historic Old North Church, which—thanks to a recent lighting makeover—combines the best of 18th Century architecture with cutting-edge LED technology.

As part of its ongoing refurbishment,

the 285-year-old church required a new, sustainable lighting system to replace the dated, linear incandescent tube system lining the interior niches of its upper level. For both aesthetic and practical reasons, a low-profile, linear LED fixture was specified for the project.

The fixture generates warm, high-quality white light that properly accentuates the building's historic arches and mouldings. It boasts a projected lifespan of 50,000 hours (compared to the 1000- to 2000-hour lifespan of the previous source) and is expected to cut energy consumption by nearly 85%. Each 8-ft run of LED fixtures consumes just 40 watts of energy, compared to the 240 watts consumed by each 8-ft run of the previous incandescent system. Additionally, the LED fixtures' slim form factor allows them to be discretely tucked into tight architectural niches where light sources requiring ballasts, transformers and other auxiliary equipment simply would not fit.

This project perfectly demonstrates the ease with which LED lighting systems adapt to even the oldest of existing lighting environments.

## Simple to use

There is no shortage of extraordinary applications of 'intelligent' LED lighting systems that can completely transform a space with the push of a button. These systems include LED fixtures, authoring software and controllers to bring dynamic lighting designs to life. But you need not be an engineer or programmer to use LED lighting products in common applications.

LED lighting systems are fundamentally different from traditional lighting technology. As a result, they require different advancements in power technology. For many years, LED products required the use of external low-voltage power supplies, which can make installation more complex. But just as the LEDs have advanced, so too has the approach to power management.

LED products are available today as complete, single-cable line-voltage systems. By integrating power management directly aboard the fixture, the need for an external power supply is eliminated, thereby simplifying installation and increasing overall system efficiency.

Industry has also made strides in dimming, which has historically been a challenge for LED systems. Now we have simple white LED lamps and fixtures that are compatible with standard ELV-type dimmers. This is achieved using technology that allows LED lighting devices to interpret standard dimming signals in a pre-determined manner, essentially allowing the dimmer to become a control interface to the device.

Such advancements have made LED lighting even easier to adopt in a host of environments, be it simple task lighting, downlighting or alcove lighting.

Take Rustic Kitchen for example. This Tuscany-themed restaurant employs an LED system to illuminate the Biltmore-inspired ceiling in its dining room. The slim, linear

fixtures were installed along the ceiling alcove in a continuous run, directly accepting line voltage without requiring external power supplies. What makes the fixtures unique, however, is their ability to produce variable shades of white light within a range of 3000K to 6500K. The restaurant manager, therefore, has the ability to customize the room's ambience with a simple controller keypad: 'cooler' white light during the day and 'warmer' white light in the evening.

## Extraordinary made easy

While LED sources are increasingly being chosen for common mainstream applications, they have, conversely, made extraordinary applications more mainstream. In other words, 10 years ago it may have been impractical, cost-prohibitive or even impossible to achieve some of the lighting concepts we see around us today. Now, it's not so strange to see a façade illuminated with saturated colour, or a sign that gradually changes colour over time. What's important to note, however, is that such uses of intelligent LED lighting are easier than ever before.

Let's go back to the CN Tower, which serves as a terrific example. To conserve energy, it languished for years under minimal illumination, waiting for a better long-term lighting solution. Following extensive evaluation, an LED lighting system was chosen to visually transform the tower's appearance while simultaneously reducing energy consumption and maintenance requirements.

About 1300 LED fixtures were installed within the Tower's elevator shafts, projecting light all the way to its antenna mast. Each fixture is individually programmable and can produce millions of colours and colour-changing effects without requiring glass filters, coloured gels or electro-mechanical colour scrollers. As a result, the CN Tower can display various colours according to national events and holidays.

## Not just promising, but *delivering*

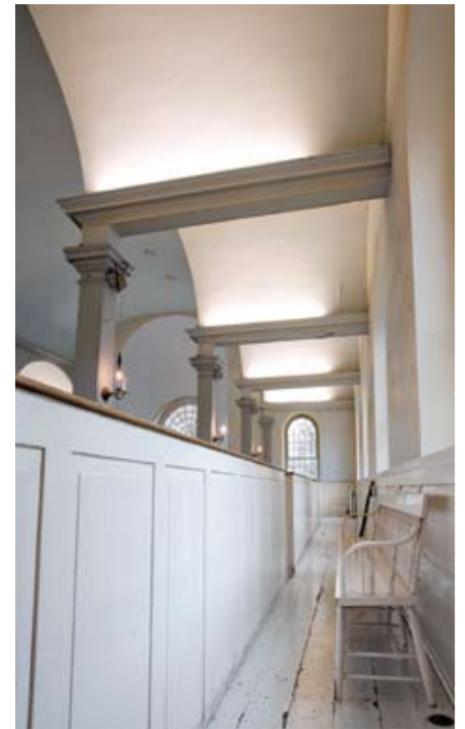
To achieve this type of application in the past may have been unthinkable. But thanks to intuitive and increasingly affordable control systems—along with the durable nature of LEDs themselves—it's no longer inconceivable to paint our city skylines with colour, or customize them on the fly. In fact, creative and dynamic lighting schemes are becoming more common because LED systems have made them easy to realize and sustainable for the future.

LEDs are not just a promising technology: they deliver real benefits in mainstream lighting applications today. While the wholesale replacement of conventional light sources may still be years away, it's important to consider LED lighting systems as a very viable option for many common uses today: from the simple to the simply spectacular. **EB**

Jim Anderson is director of product marketing at Philips Solid-State Lighting Solutions (formerly Colour Kinetics). He is a member of IESNA (Illuminating Engineering Society of North America) and has worked in the lighting industry for over 20 years, spending the last five focusing on solid-state lighting.



Rustic Kitchen photo © John Brandon Miller.



Old North Church photo © John Brandon Miller.



CN Tower photo © George Fischer.

# Studies in Lighting

## ■ Camp Borden illuminated by LED Streetlights



LED streetlight is shown in the foreground and conventional HPS (high-pressure sodium) streetlights in the background.

After four years of R&D, Toronto-based Remco Solid-State Lighting Inc. says it has broken through the barrier to replace conventional streetlighting with its recently patented SSL technology and LED-based streetlight.

Its 'disruptive' SSL technology employs the dynamic resistance of LEDs to provide a light engine that is up to 98% power efficient, says Remco, enabling optimal power and LED lighting efficiencies. Illuminating Engineering Society (IES) -certified photometric lab results and successful pilot field testing conducted at Canada's Camp Borden military base verify these levels of performance, the company says.

"Real LED-based lighting application replacements for existing light sources must be direct lighting replacement solutions—lumen for lumen and lux for lux—plus offer the benefits of energy savings and reduced maintenance cost," said Ron Russell, Remco's CTO and inventor of its patented LED light engine. "Not only is it scalable to all lighting applications but it also offers a significant competitive advantage in high-power LED lighting applications."

According to Alex Savu, energy manager at Camp Borden, conventional high-pressure sodium (HPS) streetlights consume 138 watts (100W bulb plus 38 watts for the ballast) while the Remco prototype (a light engine and LED fixture within a cobra head fixture) consumes only 111 watts to generate 4770 useable lumens—a direct lighting replacement.

Mark Matthews, Remco's president and CEO, feels the test results are excellent, despite the fact that testing confirmed only a 20% energy savings at 40.1 lumens/watt, "considering that we have incorporated our LED fixture within a cobra head fixture and lost 20% of the lumens output absorbed by the standard HPS cobra head lens; whereas we could have generated approximately 5300 useable lumens without the HPS lens".

He confidently explains that when Remco completes its commercial product to replace all models of 100W HPS streetlights with its patented LED light engine, proprietary thermal management and optics—and employing 100 lumens/watt white LEDs—the commercial Remco LED streetlight luminaire will achieve about a 50% energy savings at 72 watts.

Savu is pleased with the pilot test. "The light is phenomenal... it looks good!" He went on to explain that the base would have to change out its HPS units 10 times before having to change one of the solid-state units. "The way we operate our lights, [Remco's] units will last 27.4 years."

Remco says it has also developed a fully integrated pendant linear SSL luminaire prototype to replace fluorescent lighting capable of 66% energy savings, as well prototypes of Edison-based LED bulbs with brightness levels equivalent to the incandescent bulbs they would replace—at energy savings of 85% to 95%.

The company must be doing something right, because it was selected as one of Canada's Top 10 Cleantech technology companies in 2008 by the Ottawa Centre for Research and Innovation. The company is currently seeking capital and licensing to major global lighting/fixture organizations and/or international distributors. Call Mark Matthews at (416) 251-5269. 

## ■ The lighting problem, and its solution

The lighting in Conestoga College's Recreation Centre, Doon Campus Gymnasium, Hockey Arena and Woodworking Centre was 15 to 20 years old, and its age was beginning to show. Conestoga called upon Graybar to help design a lighting solution for these facilities. After extensive consultation with Conestoga and GE, Graybar put forward a complete lighting retrofit solution proposal, including lighting layouts, product and installation, and a detailed financial analysis for the entire project.

GE products were selected for the retrofit; by replacing old, inefficient lighting with energy-efficient GE Ecolux T8 and T5 lamps and ballasts, Conestoga decreased energy demand, reduced operating costs, lowered maintenance expenses and improved the light quality in all these facilities—all while meeting stringent environmental regulations for the safe disposal of fluorescent lighting and ballasts.

The double-size gymnasium accommodates a variety of activities, including basketball, volleyball, indoor soccer, badminton, ball hockey, lectures, demonstrations, concerts and trade shows. Graybar chose 24 new fixtures with energy-efficient T5 Ecolux lamps to light the 13,600-sf gymnasium with a projected energy cost savings of about \$8,000 annually. The new lighting system will improve colour rendering (the ability to see true colours), making an immediate and visible improvement to the effectiveness of the lighting in this space.

"We decided to switch out the HID lighting in our campus recreation centre, not realizing the cost saving potential," explained Tim Schill, long-time manager of plant operations and construction for the college. The lighting solutions installed at the college will reduce energy consumption by over 53% annually. He added, "Once we had the lighting audit done and saw the pay-back time, the project was a no brainer."

An additional benefit of the T5 lamps is their longer life; the lamps in the arena and gymnasium are expected to last up to 2.2 years longer than the previous solution, reducing the amount of stock required and cost of maintenance. The new 4-ft Ecolux T5s are also environmentally friendly, having passed TCLP tests, satisfying the college's environmental and safety committees and reducing disposal costs.

GE's John Pellerin explained that, overall, "we were able to reduce the number of lamp sources in the recreation centre, hockey arena, gymnasium and the Woodworking Centre from six down to two, which made Conestoga's Purchasing group happy". He added: "It's much easier to procure and stock only two SKUs rather than the six that they had to manage in the past."

The hockey arena seats 400 with standing room for an additional 400. It contains an Olympic-size ice surface, concession and adjacent sports lounge, making it an attractive venue for a variety of uses. The need for recreational- and show-quality light levels meant, again, replacing existing lighting with new fixtures and Ecolux T5 fluorescents. This lighting solution delivers higher lumens per watt, reducing the wattage required and delivering better maintained light levels over a longer period.

In the 50,000-sf Woodworking Centre, where clear and even light levels are critical to the safe and precise operation of the over 100 woodworking machines, Graybar recommended replacing 86 HID fixtures in the Wood Shop and 40 HID fixtures in the Machine Shop with high-efficiency 4-ft Ecolux T8 XL high lumen long-life lamps. These changes resulted in higher lumens per watt, truer colour, reduced wattage and better maintained light levels.

The retrofit will result in increased energy efficiency, better light quality and drastically lowered energy costs—so much so that the entire project is expected to pay for itself in just 18 months. 



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## DCO opens LEED-Certified Lighting Institute

Day-Brite Capri Omega (DCO) has opened what it claims is the world's first Leadership in Energy and Environmental Design (LEED) Certified Lighting Institute (specifically, LEED for Commercial Interiors), which is designed to educate visitors about the importance of good lighting and energy conservation.

The 5000-sf institute, located within the company's plant in Tupelo, Miss., will employ products and techniques that represent the best lighting practices, balancing functionality, controllability and energy consumption in accordance with IESNA/ASHRAE guidelines.

"The intended purpose is to be able to demonstrate lighting executions that satisfy energy code requirements for a particular application or task while improving on both the quantitative and qualitative aspects of the overall environment," said Jim O'Hargan, DCO's vice-president and general manager. "Moreover, the Lighting Institute will itself be certified by LEED under the Commercial Interiors category. By following the LEED guidelines, we improved on our original design intent and, therefore, want to be able to share this beneficial experience with our customers and visitors."

The new facility will accommodate 40 visitors at a time and will be open to the public by mid-year. There are two main educational spaces in this new facility: a mock-up room and a Technology Classroom. The mock-up room has a ceiling that can be raised or lowered to duplicate the look of an actual installation, while the Technology Classroom area is designed to showcase product introductions and allow for side-by-side comparisons of light performance in different applications.

The focus in that area will be on the aesthetics and rendered look of the luminaire, along with installed light output and energy consumption. The Technology Classroom includes other demonstration areas, too, such as: colour booths, where the fundamentals of light source technology are addressed; a general overhead lighting area of about 1000 sf for addressing the basic lighting protocols in commercial lighting design (with over 20 different lighting techniques possible); and a wall lighting interactions area, where a variety of point and linear wall-washing and grazing executions are demonstrated.

"This training and education centre, which we have been discussing for years, is a very important milestone for our company," said O'Hargan. "By having the Lighting Institute in our manufacturing plant, we can show our guests how we manufacture DCO lighting products."

Commissioning and Green Building Solutions (CxGBS), an Atlanta, Ga.-based consulting firm, provided design and construction phase commissioning and LEED consulting for the institute. It employs a proprietary approach toward integrating sustainability while ensuring that the quality-oriented process is being delivered to conform to the owner's expectations for the facility.

Here are some of the facility's sustainable highlights:

- 40% reduction of water use within the building;
- 35% reduction of lighting power, in addition to proper use of daylight/motion sensors;
- 90% of equipment is Energy Star rated;
- 50% of materials used in the project were manufactured within 500 miles; and
- low VOC (volatile organic compound) adhesives, paints and carpets were used.

"On top of the regular training programs, the DCO Lighting Institute will host office, retail, sustainability and educational facilities programs focusing on the application of lighting and intended to educate owners and facility managers on how these improvements can impact their operational and capital budgets," said Nick Bleeker, business development director for DCO and project leader of the design and construction of the Lighting Institute. 

## Toronto condo adopts LED as primary lighting source

A premiere Toronto waterfront condominium, the Palace Pier, recently laid claim to being the first residential building in North America to employ LEDs for interior lighting on all 44 floors. The \$2 million in renovations are to the interior corridors of the 28-year old building.

"This is the largest residential interior lighting conversion to LED in Canada and North America," claimed Jim Lord, president of the Palace Pier Condominium Board. "The board and residents were committed to finding a green solution for the new lighting, and LEDs proved to be the answer."

The lighting project employs close to 1300 LED-based MR16 lamps in the hallways on all 44 residential floors. The previous lighting used 35 watts of

electricity per lamp, while the new LEDs require only four.

Toronto design firm, Heather Ann Scott Signature Design, was retained for the project. She explained that a lot of time was devoted to researching LED technology and its suitability for the application at hand, as well as identifying a supplier whose product would meet performance criteria. The task fell to Canadian firm CRS Electronics.

"We were very pleased to be selected to provide the LED product solution for this project," said Scott Rieseboch, president of Welland, Ont.-based CRS. The CRS LED MR16 has a lumen maintenance rating of 70% at 40,000 hours and is able to operate continuously for five years. They use 87% less energy than the previous halogen lights, and should help reduce electricity



consumption by 349,226 kWh per year.

"We facilitate and undertake a number of LED pilots and projects every year, but the Palace Pier is special because it demonstrates how urban residential energy conservation can work on a large scale," said Chantal Brundage, program manager of greenTbiz, a Toronto program that assisted on the project; it provides energy conservation and efficiency assistance to businesses and commercial property owners. 



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# why LED lighting is not in the home...yet!

Photos courtesy DDP

By Tony Toniolo

incandescent bulb needed to be transmitted through a coloured filter. Light outside of the frequency of the coloured lens was wasted.

- They're directional, so almost all of the light generated is emitted toward the lens. In contrast, light from an incandescent bulb needed to be reflected toward the lens, resulting in loss of efficiency.

Commercial and residential lighting applications stand to gain similar, if not more, energy savings by converting to LEDs. However, most applications are not as straightforward as stuffing a PC board with a bunch of directional red, amber or green LEDs. LED light fixtures and retrofit packages have to be designed to distribute the directional light generated by the LED over wide areas. Moreover, white LED technology—while continuously improving—does not yet have the optical colour and brightness to which consumers have become accustomed with incandescent lights.

## Why LEDs are not in the home

Unlike incandescent bulbs, high-power LEDs cannot be simply plugged into a wall socket. Several companies are working to overcome the technological and economic challenges by developing LED light fixtures and retrofit LED lighting products using high-power LEDs. They have to contend with several challenging hurdles, including thermal management, complex drive circuitry, optics and packaging.

There are also educational barriers to overcome in the development of commercial LED illumination products. Getting users to adopt new types of fixtures, understand the illumination characteristics of LEDs, choose the appropriate viewing angle/intensity for a given application and understand the limitations of LED colour temperatures are pivotal for developing the market for LED technology in commercial and residential lighting.

### Thermal challenges

Traditional luminaires have consisted of a light bulb and lamp socket that enable consumers to continually replace burned out bulbs. Whether it's an incandescent, CFL or fluorescent replacement bulb, it will simply screw or drop into an industry-standard socket and the luminaire will be operational again. A few LED lighting companies have developed high-flux LED bulbs that retrofit into existing sockets, but this approach is less than ideal.

For example, a traditional light bulb socket provides a

very poor thermal path for cooling an LED light source. Incandescent light bulbs are basically heaters that produce visible light, and the socket into which they are screwed is designed to protect the lamp base and wiring from that heat. With high-power LEDs, most of the wattage consumed is converted to heat and; if it cannot be dissipated through the lamp socket, the heat will dramatically shorten the LED's life.

### Complex drive circuitry

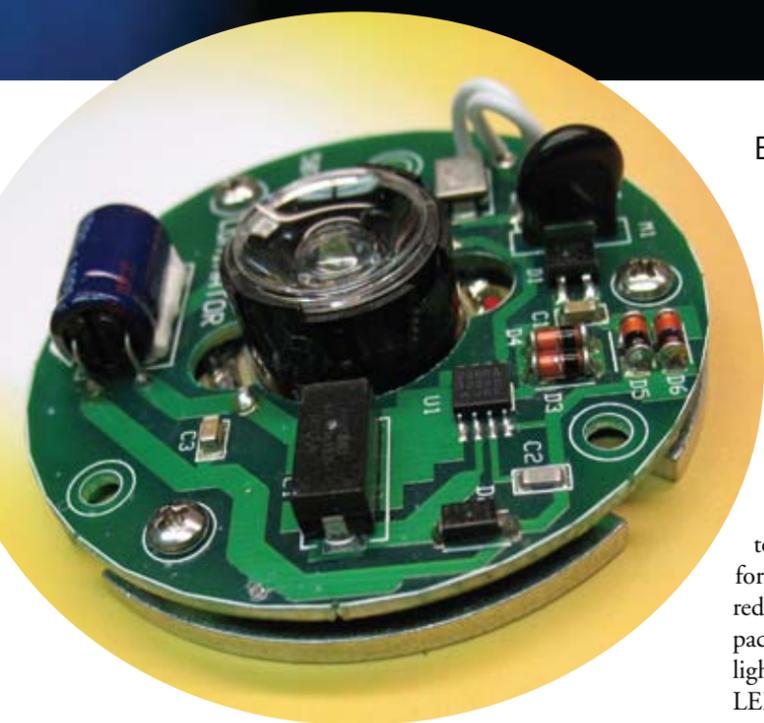
To protect the LED from degradation factors such as heat and voltage spikes, the drive circuitry design is critical. Ideally, LED circuit designs should be tailored to the specifics of the application because mechanical and economic constraints make it difficult to design a catch-all circuit. Most LED indication or lighting designs operate from a high-voltage AC power source. Since LEDs are DC-driven, employing a specific AC to DC power supply to achieve a DC source voltage is often the most cost-efficient and reliable LED lighting solution.

To ensure efficient LED operation, DC-to-DC LED driver circuitry may also be required in conjunction with the primary power supply. In addition to providing the necessary power and protection from current fluctuations, LED drive circuitry also generates heat, which adds to the thermal management challenge. And, generally, the greater the volume of light required, the more LEDs are needed, leading to more complex circuitry, packaging challenges, higher heat flux, etc.

### Optics: illumination angle

From an illumination efficacy standpoint (i.e. lumens per watt), LEDs are extremely energy efficient. Upwards of 95% of the light can be directed at the target area of illumination, whereas a typical incandescent bulb—which may require reflectors, louvers, and/or diffusers to compensate for unnecessary light—may be only 60% effective. Fluorescent bulbs are more energy-efficient than incandescents, but the ballast may consume up to 20% of the electrical energy going into the fixture.

Retrofitting LED technology in traditional luminaires is tricky because most fixtures are designed to overcome the limitations of traditional spherical light output. Reflectors, cones, masks, shades and diffusers help bend, redirect or shield the light emitted from incandescent, fluorescent and halogen sources, but create unnecessary physical barriers for implementing LED technology.



Conventional LEDs (light emitting diodes) have been used for indication and display applications for several decades. The inherent benefits of LED technology are well-known and documented, and include low maintenance and power savings, as well as performance features that are taken for granted by electronics-savvy consumers, such as durability, reliability, longer life span, and consistent colour and brightness levels.

These benefits, combined with society's growing environmental concerns and subsequent demand for green, energy-efficient products, continue to drive the development of LEDs for challenging new industries and markets, such as general illumination for commercial and residential buildings. With the escalating demand for solid-state lighting, LED manufacturers are motivated to develop high-lumen LEDs, while LED lighting companies are working hard to integrate the latest technology into retrofit packages and luminaires.

However, new perspectives may be necessary for people to adopt LED technology as an illumination source in new installations, or incorporate LED technology in existing light fixtures.

## The case for LEDs

LEDs are arguably the most energy-efficient light source available. Case in point, they have created upwards of 80% energy savings in the traffic signal industry. In this application, LEDs have two natural advantages:

- They're monochromatic, so almost all of the light generated is used. In contrast, the white light generated by an

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The VALVETRAB-SQ (VAL-SQ) series offers noise-filtering, multiphase surge protection devices in a compact package. These devices can be installed adjacent to an electrical panel or directly on the protected electronic device. The series has high-energy suppression circuits with surge current ratings up to 200 kA per phase. For additional safety, each surge suppression mode is individually fused.

This product series is an economical solution for protecting electronic equipment in industrial, medical, commercial, and residential applications. It consists of three groups – VAL-SQ CC (control cabinet), VAL-SQ SP (sub panel), and VAL-SQ SE (service entrance). It offers the highest level of protection and safety and is compliant with UL 1449 2nd Edition 2007.

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INSPIRING INNOVATIONS

#### Optics: light colour

Over the years, fluorescent bulb manufacturers faced the challenge of getting consumers to accept the white colour produced by fluorescent technology. Because of the limitations of phosphor technology, the fluorescent industry introduced subjective terms such as 'cool white' or 'warm white' to draw comparisons to incandescent white. Not surprising, white LED manufacturers face the same challenges, since white LED technology is based on phosphor energy.

You've probably come across the Colour Rendering Index (CRI) while reading lighting product descriptions. CRI is used to quantitatively measure a light source's ability to render colours accurately. Natural sunlight is assigned a CRI of 100, so the higher the CRI a luminaire has, the more natural colours will appear under its light. However, the Colour Rendering Index may not be the best metric for comparing light sources.

Originally developed in 1964, this index is based on colour models with broad spectral dis-

tributions. White LEDs are narrow-band sources, so colour temperature (measured in degrees Kelvin) may be a more suitable tool for comparison, because it is less subjective. Presently, you can choose from several white emitters in the 3200K to 5500K range.

Due to the tremendous demand for incandescent white tones, LED manufacturers have made great efforts in matching the warm white glow of an incandescent bulb with high-quality LEDs—regardless of how the colour is measured.

#### Education

Users have come to understand the brightness of incandescent/fluorescent light bulbs in terms of watts, but this is really just a measurement of the electrical power used by the lamp during its operation. Consumers know from experience how much light a 40W, 60W or 100W light bulb will produce. The same cannot be said for LED assemblies, as LED lamps are generally designed to meet the specific targeted illumination requirements of a given application.



For example, it is possible to compare an LED equivalent to a 50W MR16 bulb, as this type of lamp is used as a directional light source. However, a typical 60W incandescent bulb produces a spherical light pattern. An LED lamp that could provide equivalent light in all directions would be tricky to design in the same mechanical envelope. With present technology, multiple LED emitters and/or secondary optics would be required to achieve a 360° illumination pattern.

But the bigger issue is that the light intensity benchmark for an LED lamp is not the watt. Traditional LEDs used for simple status indication and displays come in small epoxy packages, and their light output is measured in candelas because this is a measurement of direct-view luminous intensity. With the recent development of high-power LEDs for illumination purposes, the lux or lumen (one lux is equal to one lumen per square metre) is a more suitable unit of measurement for comparing LED light output to traditional sources because we are more concerned about the volume of light rather than the directional intensity.

These terms are certainly known in the LED and lighting industry, but not by the general commercial and residential consumer. And it begs the question: is the consumer willing to learn new terminology to better understand his lighting needs?

#### Getting back to the home

When designed properly, high-quality monochromatic LEDs can provide 70% of their original lumen output at 100,000 hours. White LEDs degrade faster because of the degradation rate of the phosphor but, when properly thermally managed, can provide upwards of 50,000 hours of operation. In addition, experienced LED lighting designers understand how electrical or thermal deficiencies in the overall solid-state light design can cause catastrophic failure or accelerated degradation, and develop robust designs accordingly.

Market demand will continue to drive understanding and, ultimately, standardization of LED form factors for commercial and residential lighting. Adopting application-specific solid-state designs will enable LED designers to provide customers with green benefits while redefining maintenance standards, which will be measured in years rather than hours. It's only a matter of time. **EB**

Tony Toniolo is the president of DDP, and has been with the company for more than 15 years, starting in 1989 as the director of sales and marketing. He received an MBA from Pepperdine University and has a B.S. in Business Administration.



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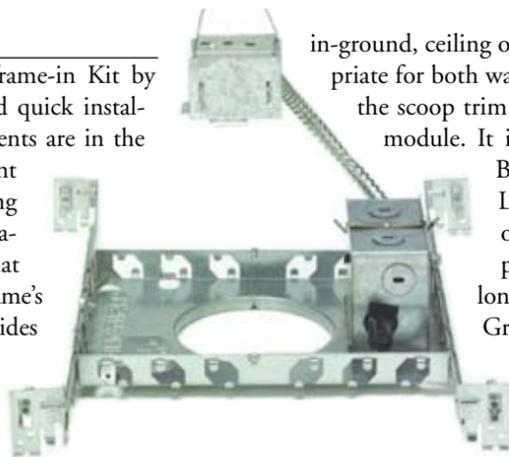
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**Non-IC frame-in kit**

Lytecaster's new V-Frame non-IC frame-in Kit by Lightolier is made for flexibility and quick installation. The product's key enhancements are in the improved design, which has alignment notches that assist in proper positioning and facilitate continuous row installation, as well as pre-attached screws that lock mounting bars in place. The frame's junction box is accessible from both sides while the socket cup is compatible with flex housing.

**Lightolier**  
www.canlyte.com



in-ground, ceiling or wall applications. The flat trim is appropriate for both walk-over and drive-over applications, while the scoop trim is used to direct the light from the LED module. It is available in four finishes—Aluminum, Black, White or Bronze—and a choice of LED colours (White, Blue, Green, Amber or Red). Key features are the unit's low power consumption of 0.54W per fixture, long life (60,000 hours White, Blue and Green; 100,000 hours Amber and Red), and 12V Class 2 power supply.

**Magic Lite Ltd.**  
www.magiclite.com

**Composite LED Bollard**

Chloride introduces the PathMaster composite LED bollard: an outdoor architectural fixture utilizing three light engines of long-life, low-maintenance white LEDs that can be applied from one to all four sides of the bollard (which is affixed by an anchor base, lag bolts or direct burial). Fabricated from glass fiber-reinforced



polymers, all exposed hardware is stainless steel and the engines are constructed of die-cast aluminum. Standard finishes include Black, Bronze and White. The PathMaster composite LED bollard is ETL listed to UL 1598 and 1838 standards.

**Chloride**  
www.chloridesys.com

**Electronic ballast dimming option**

GE has added a new dimming capability to its NuVation electronic ballast lighting system that enables a reduction in energy consumption through the use of fewer fixtures in new construction applications or lower wattage lamps in retrofits. Both the original and new dimming systems are engineered to operate in 15 different combinations of high bay, low bay, open or closed prismatic glass, acrylic and high-efficiency aluminum reflector applications. End users of the original and new dimming ballast can employ lamps ranging from 250W to 400W using the system's wattage selector switch. The NuVation system is available for a variety of disconnect and surface-mount series luminaires.

**GE Consumer & Industrial**  
www.geconsumerandindustrial.com



**Mini disc light with scoop-style trim**

Magic Lite's LED MiniDisc light now comes with a scoop-style trim. Constructed of cast aluminum, this fixture is suitable indoors and outdoors for

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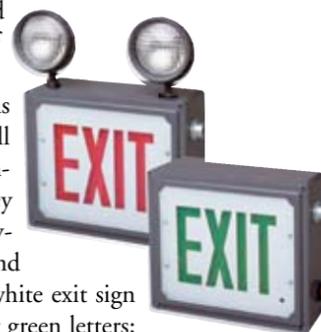
www.eatoncanada.ca

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**LED exit signs for hazardous locations**

Highlites has introduced the 650/660 Series of LED exit signs designed for operation in hazardous locations. Features for all models include: corrosion-resistant, gasketed grey polyester housing; polycarbonate front cover and stainless-steel hardware; white exit sign face with choice of red or green letters; high output, direct-view LED lamps; and universal 120-277V field-selectable input voltage. Emergency models provide automatic switching and charging circuits, 90 minutes of emergency lighting (to 87.5% of nominal battery voltage), maintenance-free battery and low-voltage disconnect to protect the battery against deep-discharge damage.

**Highlites**  
www.highliteslighting.com



**Super bright LED bollards**



Kim extends its Gem performance bollard line to include super bright white LED technology in 30W, 45W or 60W modules. Of die-cast construction and targeted for use in highlighting entries or walkways, the line's key features include: a moulded tempered glass refractor to spread light evenly in the beam pattern and minimize shadows from the luminaire's support structure; sealed optics (top and bottom) to eliminate the intrusion of dirt and

insects; and a stepped design of the lower body to reduce surface brightness. The powdercoated Gem bollard is available with either a concrete or aluminum shaft. Four captive, stainless steel fasteners are concealed from view, but provide easy access.

**Kim Lighting**  
www.kimlighting.com

**LED spotlight bulbs**

Ledtronics launched its latest generation of PAR30-style LED spotlight bulbs made up of five 3W LEDs and standard 25mm Edison screw-in bases that are capable of producing 480 to 544 lumens (depending on the bulb model). Available in a 40° light-emitting viewing angle, running on 80VAC to 260VAC, the PAR30-style lamp replaces a 50W to 75W PAR30 incandescent bulb, but has a maximum power draw of only 15.8W. The spotlight line offers high shock/vibration resistance, long life (up to 50,000 continuous hours) and colour temperatures of 3000K Warm White and 5000K Pure White.

**Ledtronics Inc.**  
[www.ledtronics.com](http://www.ledtronics.com)

**Expanded fluorescent systems line**

Zumtobel expanded its Light Fields fluorescent systems line with two new additions—the 1x1 recessed and the 2x2 surface-mounted—as well as a new plaster frame kit (PF) option for the company's mainstay 2x2 and 1x4 recessed cluster fixtures. With the line's micro-pyramidal optic providing glare control, a shallow housing of clear anodized aluminum construction, and a PF for a flangeless appearance, Light Fields fits lay-in, slot-grid or concealed ceilings. Below-ceiling access to the ballast affords easy maintenance, while a variety of lamp options and dimming controls bring enhanced flexibility.

**Zumtobel Lighting Inc.**  
[www.zumtobel.us](http://www.zumtobel.us)

**Pole-/surface-mount outdoor area light**

Fashioned in 19th Century period designs by Beacon, the new Ischia brand is a pole- and surface-mounted outdoor area and site lighting line. Luminaire fitters, domes, finials, lens holder rings, lamparms and brackets are of ASTM 356.2 virgin ingot aluminum. Its ceramic MH, HPS (high-pressure sodium) or plug-in (PL) CFLs promise energy efficiency with long life. The brand's optics are mounted to the flip-out hinged metal cap atop the globe for tool-less access. Fasteners are of stainless steel and all Beacon mounting poles (available in cast aluminum or steel) and surface brackets are pre-treated for corrosion resistance, and have a thermoset polyester powdercoat finish applied over a sandblasted surface.

**Beacon Products LLC**  
[www.beaconproducts.com](http://www.beaconproducts.com)

**Vertical/horizontal LED nightlights**

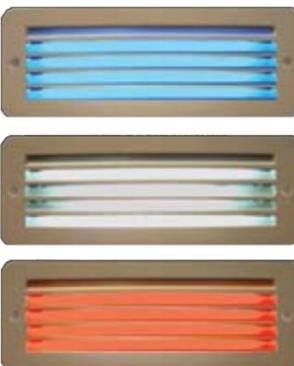
Vista's latest LED nightlights have light-directing integral louvers for either vertical or horizontal interior installations. Treated with an EPA-registered slow-release antimicrobial that inhibits bacterial colonization on interior and exterior painted surfaces, the nightlight can be used in hospital patient rooms, seniors' residences and nursing homes. Construction is of die-cast aluminum alloy or 18-ga cold-rolled steel back boxes that recess into walls or steps, along with a closed-cell, weatherproof gasket secured to the back

box. The louver face is die-cast aluminum alloy and lenses are available in tempered glass or high-density, UV-stabilized, impact-resistant polycarbonate. All exposed metal components are finished with a baked, textured powder coating in black or white colours.

**Vista Lighting**  
[www.vistalighting.com](http://www.vistalighting.com)

**Miniature recessed linear slot fluorescent system**

Amerlux expanded its linear fluorescent line with GRUV, a recessed linear slot lighting system for smaller-scale lighting applications. Available for use in gypsum board and slot/T-bar ceilings, the luminaires come in varying run lengths and lamp configurations. Fixtures can be continuously row-mounted using a drawer latching system



to join units. GRUV has a 3-in. aperture with 1.5-in. deep extruded aluminum splay and mitred corners (also available in a larger aperture for use in 6-in. grid applications). The system utilizes T5 or T5HO fluorescents, staggered up to 6 in. to reduce socket shadow in a single- or two-light profile.

**Amerlux Lighting Solutions**  
[www.amerlux.com](http://www.amerlux.com)

**LED dock light**

TCP's new LED dock light has a centre beam candle power of 7000 and is IP65 rated against dust and water. Available in a 15W version that, says the company, provides light levels equivalent to a 300W incandescent light bulb, the unit has a 14° beam spread and lasts up to 50,000 hours. It features a safety yellow epoxy powdercoat for easy recognition and a high impact acrylic lens for standard locations, and a borosilicate lens for hazardous locations. The dock light attaches directly to current dock light arms for easy retrofit.

**TCP Inc.**  
[www.tcpi.com](http://www.tcpi.com)



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**In-grade luminaires**

The new Paradox line of in-grade luminaires by Hydrel is designed to be your lighting solution when minimal luminaire depth and aperture size are needed. Paradox, the company says, will set the standard for sealed in-grade illumination (with such aesthetic features as architecturally styled 7-in. low-profile aperture, a minimal luminaire size and presence featuring an 8-in. housing depth) and performance, through the use of 12W LED to 70W MH sources, a sealing technology that meets IP68 standards and UL wet location requirements, precision optics for minimal glare, and reduced surface temperature through the use of Hydrel's patent-pending cool lens model.

**Hydrel Lighting**  
www.hydrel.com

**Toroidal transformer cassettes**

Q-Tran introduces its Q-Set series of modular toroidal transformer cassettes available in nine models ranging from 2.5 in. to 5 in. wide, and made to power low-voltage lighting for pool/spa,



landscape and indoor applications. The smaller Q-Set1 offers one secondary circuit breaker (15A, 20A or 25A), which provides 180W, 240W or 300W in maximum lamp load. Q-Set2 offers two secondary amps for maximum wattages of 360, 480 or 600, while Q-Set3 incorporates three secondary amps, providing 540W, 720W or 900W. Also launched is Q-Vault, a self-contained housing for Q-Sets, which can be installed in-ground and is designed to contain a single Q-Set2 or Q-Set3 cassette, or one or two Q-Set1 cassettes together.

**Q-Tran Inc.**  
www.q-tran.com

**Hazardous location photocell**

Thomas Research unveils a new HLPC (hazardous location photocell) for use with lighting fixtures in hazardous locations. Designed for fixtures meeting NEMA Class 1, Division 2, Groups A, B, C, D hazardous-location lighting and sealed enclosure requirements, the HLPC's lens is contained inside a durable



Ultem (thermoplastic resin) one-piece assembly. The assembly is, in turn, encapsulated with an epoxy case that can withstand ambient temperatures up to 65°C. There are two models: one for 120V and one for 208V through 277V. Each unit is supplied with a stainless steel washer and knurled locknut, a Neoprene gasket with adhesive backing and three high-temperature wirenuts.

**Thomas Research Products LLC**  
www.thomasresearchproducts.com

**Mini induction lamp**



Morlite's new mini induction lamp series features low-profile surface-mounted luminaires with sturdy architectural housings made of 18-ga cold-rolled steel with continuous-weld seam in 1x1-ft, 1x2-ft, 2x2-ft and 2x4-ft sizes for ready mounting. Its single 100W or 150W magnetic induction lamp can withstand high humidity or water-splash applications. The lamp's compartment door is steel with a continuous hinge, while its lenses are clear prismatic acrylic with the smooth-side exposed for easy cleaning. Options include stainless steel hinges and housings, or painted aluminum housings, and clear tempered glass or prismatic polycarbonate lenses.

**Morlite Lighting**  
www.morlitesystems.com

**Pendant, ceiling and wall sconces**



Baldinger's new Cortina trio of pendant, ceiling and wall sconces are of contemporary design, and all have diffusers with clear, hand-cast resin frosted lenses, as well as metal finishes available in a choice of polished or satin chrome, polished or

satin nickel, or matte black powdercoat paint. Illumination is provided by a range of incandescent or CFLs providing softly diffused ambient/accent lighting. Meant to work individually or in series, Cortina is suitable for high-end residential, commercial and institutional settings.

**Baldinger Architectural Lighting**  
www.baldinger.com

**Direct/indirect suspended luminaire**

A•light has created Arcature, the first in a series of direct/indirect linear lighting fixtures constructed from 60% recycled aluminum extrusions with milled billet aluminum ends. The fixtures are low-profile suspended luminaires less than 2-in. high, 6-in. across and available in eight hairline-seam (linkable) 3-ft to 12-ft standard lengths. The luminaire creates an RP1-04-compliant direct downward brightness level, and indirect upward light. Fixtures suspend from ceilings via single or dual 1/16-in. stainless-steel aircraft cable, terminating into square or rectangular canopies, or by rigid stems. Lamping comprises single or dual T5 or T5HO, producing energy-efficient linear fluorescent light.

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## lighting products

# lighting showcase

### New models join M3 Series



Ardee has expanded its ModuleX M3 Series with six new models of halogen and MH (metal halide) modular, architectural recessed ceiling downlights, with 3-in. apertures providing up to 81% light output efficiency that can be used singly, in rows or in designed groupings. Rough-in housings are constructed of stamped steel or aluminum. The M3 Series uses energy-conserving, high-colour rendition 20W MH lamps, as well as conventional MR16 and Bi-Pin white halogen light sources. Optics encompass: fixed and adjustable deep-regress cones and baffles; 17° and 40° beam pattern reflectors; pinhole, oval-slot and gimbal downlighting; wall-washer, 'kicker' wall-washer lenses, cross-blade louvers, metal disks and cowl-shielding elements.

**Ardee Lighting**  
www.ardeelight.com

### Reliably charged emergency lighting



Chloride has extended its emergency lighting family with the Rhyno Series, which is available in 6V, 12V and 24V (25W to 100W) versions and comes with a wall-mount bracket. A 120/277V dual-voltage input with surge protection and self-diagnostic capabilities allow Rhyno to serve as an emergency lighting unit with a reliable charging system, says the company. Protected against liquid, moisture and dust entry—and UL listed for cold, high or extreme ambient conditions—the housing is constructed of impact-resistant Lexan with corrosion-resistant hardware. Its two lamp heads are internally mounted on the bottom, and the lamps are held in an adjustable moulded swivel assembly.

**Chloride**  
www.chloridesys.com



### High-output metal halide lamp

EYE Multi-Metal Ignitek is the only metal halide (MH) lamp, says Standard, offering pulse-start performance on existing MH systems. Ignitek's maintained lumen performance results in longer usable lamp life, says the company, meaning you will reduce MH maintenance costs by extending the relamp cycle. The lamp operates on existing MH systems, and doesn't require the installation of any special ballast or ignitor because of the patented FEC ignitor contained within.

**Standard Products**  
www.standardpro.com



### Columbia Lighting unveils new corporate logo

More than a hundred years after Columbia Lighting began in 1897, the CreateChange campaign culminates in the company's rebranding, which includes a full redesign of the company's logo. The change will be incorporated throughout 2008 into binders, literature, booth graphics and advertisements. A member of the Hubbell

Lighting family, Columbia's products are marketed through electrical distributors to the electrical contractor, and are installed in a variety of buildings, such as schools, hospitals, office buildings and libraries.

### NEMA publishes paper on self-ballasted CFL failure modes

The National Electrical Manufacturers Association's (NEMA's) Lighting Systems Division has published "Failure Modes for Self-Ballasted Compact Fluorescent Lamps—A NEMA Update", a white paper addressing concerns that self-ballasted compact fluorescent lamps (sbCFLs) may present a possible safety hazard when they reach their end of useful life.

NEMA estimates that more than 180 million sbCFLs were sold in the United States alone in 2006, many of them to residential consumers. And while the majority of CFLs pose no safety concerns, third-party safety agencies such as Underwriters Laboratories (UL), Canadian Standards Association (CSA) and Electrical Safety Authority (ESA) have reported complaints from consumers regarding failure modes of sbCFLs.

Lamp Section chair, Pamela Horner, says the white paper addresses these concerns and explains, in simple terms: why sbCFLs have different failure modes from normal incandescent lamps; how existing product standards meet safety requirements; and what industry, standards development organizations and third-party safety agencies have done (and are doing) to minimize any potential safety risk from SBCFLs.

The white paper offers the following recommendations to consumers:

- Continue to use sbCFLs as you normally would.
- Only purchase sbCFLs that have either a UL or CSA mark visible on the lamp to ensure it meets existing adopted safety requirements.
- Follow all manufacturer instructions and cautions that are either on the product or supplied with the associated packaging (including where not to use the sbCFL).
- Save packaging and instructions for future reference.
- Understand that some behaviour and failure modes will be different from what you have experienced with traditional incandescent lamps.
- Replace an sbCFL at the first sign of any odor or smoke, or any erratic behaviour, such as flashing, flickering or audible noises (which may indicate an electrical component failure).
- Return any sbCFL that you feel represents an objectionable failure mode to the manufacturer or retailer for possible further analysis.

Ultimately, greater familiarity with the product should ensure a contented consumer, says NEMA's Lighting Division. "Remember that in the early days of incandescent lighting, consumers also had to become accustomed to the different characteristics presented by a new source of illumination in contrast to candles, oil lamps and gas mantels," Horner explains.

## Questioning your Dryer Exhaust?



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# THE CASE

## of the baffling data centre breakers

Meticulous investigation and adherence to industry standards help technicians solve a data centre's woes

By Craig Archer

Recently, Northwest Circuit Breakers Inc. was contacted to investigate a persistent problem with numerous breakers in a local data centre. Here's how it was described to us: the breakers were either not charging after close or were being pulled open during charging. The 15 to 20 breakers were 3200A utility mains and generator mains with automatic transfer schemes. These breakers had been installed two years earlier and had never been opened prior to our inspection.

Our first involvement onsite was to troubleshoot and identify the mechanism problem experienced. While onsite, the breakers were both serviced and lubricated, and operated numerous times. Some appeared to be working properly while others continued to exhibit the same problems. Due to the critical nature of the facility, the technician could only perform minor disassembly to investigate. After several attempts to correct the problems, we determined that one of the breakers experiencing the problem should be brought back to the shop for a thorough inspection by technicians familiar with the latest test methods and test equipment.

The mechanic we assigned to the task was instructed to document all deficiencies found during disassembly, and while many items were found to be potential contributors to the problem, no single cause was positively identified.

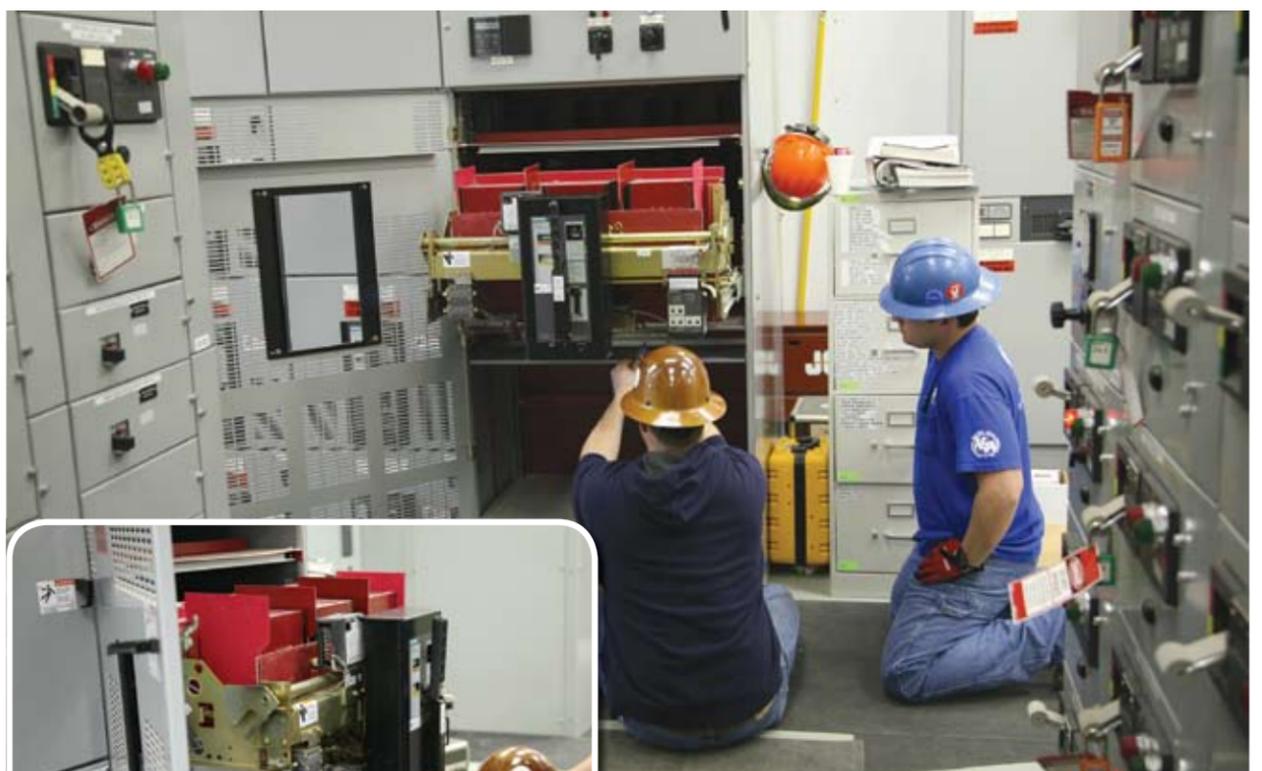
Our experienced technicians disassembled and evaluated the breaker and compared the findings against industry standards and PEARL's reconditioning standard 1221, Low-Voltage Insulated Case Circuit Breakers With Solid State Trip Unit. This standard defines the process of returning electrical equipment to safe and reliable operating condition based on the original manufacturer's design at the time of manufacture.

Standard 1221 suggests test instruments for insulation, current, contact resistance and power supply. It also lists 17 different inspection tasks for these insulated case breakers, beginning with the case and continuing through stabs/disconnects, phase separators, arc chutes, the various contacts, current-carrying components, trip devices, the harness, flux shifter and current sensors. Finally, the standard suggests inspection routines and tests for the control wiring, operating mechanism, racking and draw out mechanisms.

It became apparent, however, that there had been some assembly problems during the original manufacturing process. For example, our mechanic discovered loose or missing screws, loose closing spring stop plates, mechanism stop bracket screws worn from rubbing on the mechanism, and misadjusted limit switches.

After correcting these items and gaining a thorough understanding of the motion and range of movement of the mechanism, the mechanic was instructed to reassemble the breaker for operational testing. During testing, unfortunately, the breaker exhibited the same problematic symptoms it displayed while in service.

The next step was to disassemble the breaker down to the contact structures to identify whether there were potential



Technicians repair a bell alarm circuit on a low-voltage power circuit breaker on de-energized switchgear.

causes preventing the full range of mechanism motion. After inspecting the contacts, screws were found in the contact structures from the contact stop plates. There were no indications that the contacts were preventing the full range of motion. It was noted, however, that the contacts appeared to be arced and pitted more severely than one would expect from the light duty these breakers had seen.

With the mechanism removed, the movement and reaction the mechanism had on the contacts were studied. It was noted that the mechanism, being an over-centre device, would have the potential to cause the mechanism to not completely latch if it did not travel far enough. We also concluded that, were the springs faulty and lacking sufficient energy to overcome the contact pressure, the mechanism would not latch completely.

Armed with these observations and conclusions, contact springs on each phase were removed to eliminate the possibility of the closing springs being weak. The breaker was reassembled for more testing and found no change in symptoms. So, we added a spacer to both closing springs to increase the closing spring force and the breaker was reassembled to perform more testing. This procedure also had no effect.

At this point, we explored the possibility of the mechanism needing to be spaced away from the insulated barrier that separates it from the contacts, thereby allowing it to complete its travel. The breaker was operated, and we discovered that, indeed, the mechanism was not travelling far enough to latch, or was only latching on one side but not both. (When the mechanism does not latch and a recharge is attempted, the charging motor allows the springs to pull the contacts open during recharge, which results in premature arcing damage on the contact surfaces.)

### Getting closer to the truth

The next step, then, was to install a small shim between the mechanism and the barrier in an attempt to increase the distance that the linkage could travel to complete the closing stroke. Two shims were installed under the lower mounting feet of the mechanism. After reassembly, electrical operational testing began—and the breaker worked as intended. It closed completely, and the mechanism was recharged without the contacts being pulled open.

After removing the shims, the breaker began to exhibit the symptoms of the original problem, so our testing proved a theory... that the space between the contact structure insulating barrier and the mechanism was insufficient to allow the mechanism to operate throughout the entire stroke needed to latch the mechanism in the closed position.

After manufacturing permanent shims, cleaning the contacts, cleaning and lubricating the mechanism, reassembling the breaker and a minimum of 50 charge, close and trip operations were performed without failure or symptoms of the original problem, the conclusion was reached that the repair methods implemented were successful.

Thanks to years of hard-won technical experience and guidance from industry standards, a relatively new set of breakers did not have to be junked and replaced, which would have cost both the owner and the environment. Instead, we successfully reconditioned and implemented proven repair methods to existing breakers to ensure reliable operation. Case closed! 

Craig Archer is with Northwest Circuit Breakers Inc., a member company of the Professional Electrical Apparatus Recyclers League (PEARL), an organization of companies supplying surplus and remanufactured electrical equipment and apparatus to commercial and industrial electrical markets. PEARL also publishes standards for reconditioning and testing a variety of electrical equipment and apparatus. Visit them online at [www.pearl1.org](http://www.pearl1.org).



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# Flat rate pricing: moving from model to marketing

By Jeff Meyers

Imagine the following scenario: you're a business traveller looking to book a flight from Boston to Los Angeles. You go online to buy the ticket and see the following price variables: time of jet waiting on the ground; time of jet in the air; time to unload baggage; and the pilot's general mood that day. In this scenario, you'd better pray for a good tailwind and a happy pilot!

Thank goodness that's not how the airlines and most other service industry leaders price their services. The acceptable norm is evolving into the flat rate model in which a set price is charged for a pre-defined job. In the airline example above, you should know exactly how much you'll pay when you buy the ticket, regardless of how long the flight takes and whether the pilot's in a good mood or bad.

The same holds true for the electrical trade: flat rate pricing is a means by which our service professionals enter a home, identify the job to be performed and discuss it at length with the customer. Price is defined beforehand and approved by the customer. From our experience, flat rate pricing is an invaluable tool, as it provides a winning scenario for the customer, the service professional and the owner.

## Servicing the customer

Walking into a customer's home with an attractive, professionally produced flat rate pricing guide sends several clear signals. First, it shows that no matter how long a job may take, the electrician is committed to finishing it at one price. Second, it shows a higher level of experience with a host of electrical issues, separating you from your competitors. Essentially, you're telling the customer, "We have *so much experience* in doing this kind of work, that we're comfortable pricing it beforehand".

It also proves to the customer that the electrician didn't elevate the price arbitrarily based on the fancy car in the driveway, or 50-in. plasma TV in the den. Lastly, flat rate pricing empowers the customer, allowing them to accept or reject the job before anything is started. It also gives them time to mentally digest the bill beforehand, rather than feeling like someone dropped a bomb on them when the work is done.

Let's face it: be it little old Mrs. Jones in Unit 201 or a large multinational corporation, consumers like knowing the cost of things before they buy—whenever and wherever possible. Flat rate pricing allows for that.

## Empowering the service professional

Perhaps the greatest advantage to flat rate pricing for service professionals is that it allows more freedom to cross-sell other products and services. This is particularly important when your workforce is compensated on an incentive-based pay structure.

Flat rate pricing gives them more time to get to know the customer and the home environment, thereby allowing for extra time to suggest add-on jobs (i.e. "Mrs. Jones, have you considered adding a dimmer switch to your new ceiling fan light?"). It also allows your workforce to stop racing the clock to get to the next job (and, conversely, keeps the customer's mind off the now defunct "by-the-hour" job apprehension).

Lastly, flat rate pricing helps recruit and retain top-notch professionals. The service industry marketplace will continue to become more competitive; being able to offer the earnings potential and benefits available via flat rate pricing serves as a powerful incentive to attract and retain qualified talent.

## Benefits to you, the owner

The advantages of flat rate pricing detailed above for the customer and service professional benefit you, too, though indirectly. However, a quick look at the direct impact to your bottom line and operations lends greater validity to the idea.

Given the fluid economy, prices regularly go up; it is generally easier to do this when you have a flat rate pricing system in place, rather than having to muddle around in hourly rate change equations.

Second, flat rate pricing helps level the playing field for all your service professionals. Instead of asking a new employee to struggle under the hourly system versus a seasoned service professional who turns out more jobs faster, flat rate pricing encourages learning and excellence for all employees.

And, as mentioned above, flat rate pricing usually leaves a very good impression with customers. They are, therefore, more likely to call you when they need servicing—not your competitor.

## Flat rate pricing as marketing

The entire process of switching from hourly to flat rate can be lengthy and rigorous, and raising prices requires an even more thorough look before implementation. But after you've gone through this whole process, the next evolution comes in the area of marketing and advertising.

You've spent considerable time, money and effort on developing your flat rate system and educating your staff on how it works. Now is the time to fully realize the value, and capitalize on the benefits, of your flat rate scheme. As we've seen, flat rate pricing works for the employee and business owner. When it comes to marketing, however, we need to let customers and potential customers know what a great option it is for them.

One place to start is your flat rate pricing guide itself. Make sure it is an attractive, professionally produced product. Yes, there is expense involved in this. However, the alternative of showing Mrs. Jones a dog-eared, black-and-white, copy-of-a-copy may end up costing you more than you saved by taking the cheap route! The flat rate pricing guide, used as a marketing tool, deserves your time and effort to make it look as good as possible.

Work to advertise flat rate pricing in all other elements of your marketing and advertising. Mention it in your Yellow Page ads, brochures, website and commercials. Proudly proclaim your company's commitment to flat rate pricing and how it benefits the customer. At this stage, the old marketing adage of WIIFM ("What's in it for me?") applies. Try to put yourself in the customers' shoes and ask, "Why should flat rate pricing matter to me? How will it positively impact my wallet and the quality of work done in my home?"

## Making it work for you

The evolution of flat rate pricing is not complete. However, we have reached a stage where most see it as the best pricing and marketing method available to electrical contractors and business owners. From customers to service professionals to owners—and now as an emerging marketing tool—flat rate pricing bears careful observation as it continues to grow and adapt to the market. **EB**

Jeff Meyers started in the industry as an electrical engineer, then owned his own independent electrical business before owning a Mr. Electric franchise. He was appointed to regional manager for Mr. Electric and later joined corporate headquarters as vice-president of operations in 2003. He then served as COO, managing the franchise support staff and serving as an advisor for the brand's national and international franchise owners. Last year he was named president of Mr. Electric Corp.



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# Security niche can be lucrative for electrical contractors

## But it helps to get the right partner

By Henry Oddie and David Bishop

One of the most significant trends in electrical contracting today is the expansion into the lucrative access control/security business.

Access control/security is booming, as an increasing number of businesses become more aware of protecting their companies and employees with either new systems or upgrades to existing ones. Someone has to perform this service, and electrical contractors are the perfect candidates. On bids for buildings, security often falls under the umbrella of electrical work, so it's the electrical contractor's responsibility to either have the capability in-house or subcontract the work.

Sievert Electric (Forest Park, Ill.) is a 95-year-old, traditional electrical contractor that has aggressively increased low-voltage services to its clients over the last 10 years. In fact, as the Internet evolved and Cat 5 wiring came on the scene, we created a low-voltage division. Launched in 2000, Sievert's Low-Voltage Division services include telephony, CATV, sound/communications, fire protection and—more recently—security. It was a natural progression.

Another reason the move toward access control/security was such a natural progression for Sievert was the fact that long-time customers trusted our electrical work. This trust is important in selling access control and security because, for the customer, so much is at stake. Based on the initial success of the new niche, Sievert expects the newly formed access control/security niche it has created to account for about 25% to 30% of sales in the next 10 years.



John Birdwell (on the right), regional sales manager for Matrix Systems, has helped Sievert Electric get traditional electrical contracting work at Matrix's client, Northwest Community Hospital (Arlington Heights, Ill.), through their access control/security partnership. Posing with John is Henry Oddie, project manager for Sievert Electric's Low-Voltage Division.

### Partnering helps you get started

However, entering such a niche doesn't just magically happen. While it's relatively inexpensive to get started in terms of inventory, marketing and other general business necessities, the security niche requires training, managers with expertise and access to state-of-the-art equipment and support.

That's why Sievert signed a partnership agreement with

an access control provider, Matrix Systems (Dayton, Ohio) last year. The partnership included training for five Sievert employees (ourselves, plus a technical services expert and two veteran electricians from the conventional electrical contracting side). The supplier also provides the full scope of its access control equipment, sales/marketing, engineering, installation assistance and customer service/support.



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Partnering with a security manufacturer can generate a successful and profitable relationship. Sievert can now increase the comprehensiveness of its services to include access control and security. The more services a contractor offers a client, the more beneficial the relationship for them both. Plus, Sievert is adding existing Matrix customers, not only as security clients, but also as traditional electrical installation/sales clients. A good example is MacNeal Hospital (Berwyn, Ill.), which is a long-time Matrix customer; it's now depending on Sievert, not only for access control/security work, but for general electrical contracting installation and sales.

The partnership benefits the access control/security provider, too. Sievert is busy marketing its new access control/security services to its existing customer base—many whom may have never used the solutions offered by Matrix, and likely wouldn't have contacted them for access control/security work previously. It's a win-win.

#### Qualifications for getting started

The security niche isn't a perfect match for every electrical contractor. Probably the most important prerequisite is a large commercial customer base. Mom-and-pop clients with just two or three doors to secure, or just a few employees requiring access IDs, aren't worth pursuing. The ideal clients are companies requiring access control for dozens of doors and employees. The type of security services Sievert offers is particularly helpful for companies with multiple locations, such as banks, schools, hospitals and other facilities that need to be connected via Ethernet or LAN (local area network).

Of course, servicing huge companies can be challenging, which is why partnering with a security provider can prove extremely valuable. With all the resources and support a large access control/security provider can offer, we can easily bid, install and service almost any size of operation.

It's also helpful to already have a 24/7 service operation in place, since the security business mandates 24/7 service. We already had 24/7 service on the electrical side of the business, so it was easy to offer that service to our security customers.

While it's easy for electricians to make the transition over to access control/security installation, an electrical contractor should consider hiring outside the company for the division's management. Even though vendors can train employees, there's no substitute for experience in the security business.

Once the division has grown and most of the existing client base has been tapped, an electrical contractor might consider hiring a sales force to call on companies that aren't existing clients.

#### Your access control partner

Partnering with an access control manufacturer has been invaluable for Sievert. Like any new business venture, it's always helpful to have resources and many years of experience from which you can draw. Our partnership cost nothing except a few paid days of employee education. The training itself was provided at no cost. It's almost like getting a franchise, but not paying for all the training, resources and support a franchisor charges to join the organization.

Choosing the right partner is a difficult decision, but turnkey access control companies offering everything from equipment, accessories, sales, engineering, code writing, installation, service and support is usually the best choice. There are hundreds of different access control suppliers, but not all are turnkey. Some are simply equipment manufacturers that don't have the organization to help bring a project from bid to final start-up and aftermarket support. Some companies are integrators, which are actually your competitors because they're also system installers.

What's really invaluable in a partnership agreement is the initial sales presentation and support provided by the partner. Most electrical contractors don't have decades of experience in security, so the support from an experienced access control provider lends instant credibility and experience. The access control provider can sell the job, and the electrical contractor can price the project, install the entire infrastructure then perform final hook-ups and testing to provide the customer with a turnkey operation.

#### Beating the competition

While there are ample opportunities in access control/security for electrical contractors, don't be fooled into thinking there isn't any competition. Sound/communication companies have been installing access control/security for decades, plus there are a host of pure security specialty companies that make for stiff competition. However, that's just another reason an electrical contractor should partner with an established manufacturer to gain a competitive edge.

In an age when customers expect more from contractors, access control/security is the inevitable next step an electrical contractor can take to both retain his established clientele and secure new business. **EB**

Henry Oddie is the former president of sound/communications contractor, Don Henry Communications, which was acquired by Sievert Electric in 2000. Oddie has 51 years in the communications business and is currently project manager for Sievert's Low-Voltage Division. David Bishop is the operations manager for Sievert's Low-Voltage Division. Prior to that, he was a building engineer in the banking industry for 35 years. Both Bishop and Oddie handle sales, bids, project management, cost analysis and aftermarket support for Sievert Electric's access control and security customers.

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# Children's hospital designed for speedy recoveries and power reliability



The bright, playful façade of Alberta Children's Hospital in Calgary looks like a random stack of coloured building blocks—and that's how the kids who had a hand in its design wanted it to look. This colourful exterior represents the goal of the new 133-bed, 750,000-sf hospital: to respond to *children's* needs. From the state-of-the-art medical facilities that aid patients' recoveries to the standby power system that ensures their safety, the hospital's vision is to reduce stress and promote healing in ways that are uniquely tailored to the children it serves.

## With kids as customers, quality is the bottom line

During the hospital's early design stages, which opened in September 2006, architects asked young patients what they thought a hospital for kids should look like. From these early concepts, the hospital was designed to be all about the children who go there for treatment. Focusing on family-centred care, the hospital includes sleeping facilities for parents in each patient room, a pet visitation room and healing gardens. However, most patients are treated on an outpatient basis, visiting the hospital's diagnosis, assessment and treatment clinics. This clinic-based program has been used as a worldwide model for outpatient care.

Building a hospital specifically for children drove and impacted every part of the design. "Everyone on the design and construction team agreed that intangible factors—not just price—were important, because it is a children's hospital," says Gerry Stebnicki, electrical design team leader with Stebnicki + Partners in Calgary. "This made the whole approach unique."

Stebnicki + Partners' sent a request for proposal (RFP) to generator manufacturers stating its essential performance requirements rather than a complete design. In fact, all major components of the hospital were chosen that way, Stebnicki explains. Once the manufacturer was chosen, he says, they participated in the budget control and design decisions, "working in concert with the rest of the group to make it happen".

## Redundancy equals reliability

One example of the planning team's quality-driven focus is the high reliability designed into the standby power system. The team created N+1 redundancy at all levels. "Although we initially recommended two 2MW generators to serve the hospital's 3.5MW total load," says Stebnicki, "hospital officials wanted to be able to run at full load even if one generator was down—so there are three generators."

## Separate power building offers benefits and challenges

The three generators—Cummins model DQKC—are housed in a building 1312 feet away from the main building.

This minimizes noise and vibration in the hospital, allows ground-level access to the generators in an emergency, and simplifies the design of the generator cooling system.

Because of the distance between the power building and the hospital, Stebnicki chose 4160V supply lines to the hospital rather than the Canadian standard of 600V. "Increasing the voltage allowed us to deliver the same amount of power with smaller conductors," he says. "We saved so much on the conductor costs that the overall standby system ultimately cost less." The 4160V lines run underground then through a series of duct banks to the main building's penthouse. From there, power is stepped down to 347/600 volts.

There were two overriding reasons behind the selection of the digital master control (DMC): complete integration with the generators and its ability to meet interoperability requirements. There are two touchscreen control panels for the generators and transfer system, one in the generator building and another in the penthouse, and they're linked by optical fiber.

"The system can be controlled from either point—and changing anything on either screen updates the other screen in real-time," explains Steve Falk of Trotter & Morton, the project's electrical construction manager. "It is also possible to control the system through a PC from anywhere, but the design team chose not to implement that capability, partly for security reasons and partly because qualified personnel are in the hospital at all times."

According to Dave Drinkwater, the hospital's maintenance and engineering manager, Calgary's municipal power company, Enmax, is a highly reliable source of power. Outages are rare; in fact, there have been none since the hospital opened. "In the rare event that Enmax needed to shed loads, we would be considered a high priority," says Drinkwater.

## System exceeds standards

The Canadian Standards Association's (CSA's) Z32-04 standard, Electrical Safety and Essential Electrical Systems in Health Care Facilities, requires that generators be online within 12 seconds of utility outage. The digital master control (Cummins' PowerCommand) handles this nicely, says Stebnicki.

"The DMC has extensive capabilities. It enables operators to monitor all major loads in the building and provides history on the profiles of all those loads, which is a very effective planning tool," he says. "When the system detects a loss of normal voltage, the UPS takes over and can, theoretically, supply power for all critical needs for hours. But the UPS doesn't have to supply power for that long; that isn't necessary, because as soon as there's a power outage, the system also sends a start signal to the generators."

Once the generators are up to speed—which takes about

10 seconds—the system again transfers power smoothly to the generators. Then the system senses when the utility comes back online, and again makes a smooth, synchronous switch back to utility power. Fuel capacity for the generators is 50,000 litres; depending on loading and the season, the generators could power the entire hospital for about 44 hours.

In a simpler system with one standby generator, the move from one power source to another would be accomplished through a transfer switch but, says Stebnicki, "since the hospital is much more complex—three generators, UPS and feeds from two utility substations—there actually are no transfer switches". He goes on to explain that switching is done through the main breakers; the DMC software accomplishes seamless, synchronous switching.

The new hospital also exceeds other requirements of Z32-04. For example, the standard lists critical loads that must be connected to the emergency power system. For an acute-care facility such as the Alberta Children's Hospital, that list includes operating rooms, intensive care unit (ICU), trauma care and emergency facilities, stairway lights and power outlets around every patient. The list also includes ventilation fans—in both the operating and patient rooms—that determine airflow direction and, by extension, help control the possible spread of infection.

However, since just two of the three 2MW standby generators are needed to handle the hospital's entire load, it is unlikely that the hierarchical system will be called upon. Drinkwater's staff tests the generators and associated equipment weekly using actual hospital loads rather than a load bank.



## Interstitial floors for efficient maintenance

Another design element in Alberta Children's Hospital that contributes to overall reliability is its interstitial floors; every other floor is solely devoted to mechanical, electrical, data-com and plumbing equipment. Sealed, permanent conduits pass through each interstitial floor into the healthcare areas below. This contrasts greatly with the previous paradigm in which equipment was jammed into the space above a suspended ceiling.

In Alberta Children's Hospital, the interstitial floors are the same height as the healthcare floors—14 feet—which provides more than enough space in which to work (and a floor on which to work, to boot), so maintenance is faster and more efficient. More importantly, interstitial floors allow technicians to work on the building's systems without interrupting or contaminating the vital healthcare activities occurring below them.

With reliability and redundancy as their watch words, everyone on the Alberta Children's Hospital design team has responded to problems with innovative solutions. But, then again, innovative solutions were required, since the health—and often the lives—of children hang in the balance every day. **EB**



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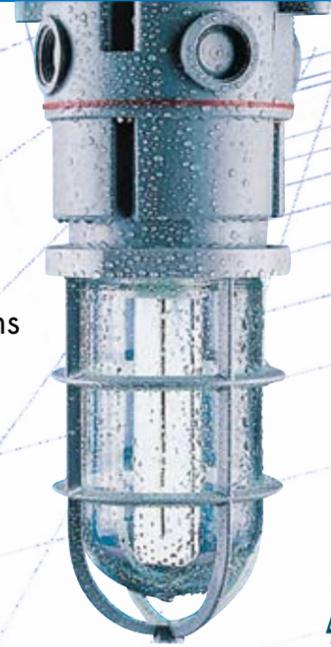
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Eaton unveiled its new Cutler-Hammer metered temporary power panel with ground fault. The panel is available in four designs and was specifically designed for electrical contractors. Units are single-phase, three-wire and come with a four-jaw meter socket and commercial-grade receptacle protected by ground fault breakers. The metered temporary power panel is available with 100A or 200A main breaker and two different receptacle combinations.

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cost effective. EZTouchPLC uses EZI/O modules for I/O; sold separately, the modules come in a variety of options, such as analogue, high-speed counter, relay and AC/DC combo. Some of EZTouchPLC's key features include: 3D graphical objects (i.e. pushbuttons, numeric entry, etc.); nine different languages for text; built-in symbol factory with over 4000 symbols; 64k PLC program memory; fast scan time; an extra RS422/485 comm port, and more.

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Cooper Bussmann's new compact circuit protector (CCP) has a 200kA short-circuit current rating using just 1/3 of the space of equivalent rated circuit breakers, says Bussmann, and 2/3 the space required by a traditional fusible switch. The CCP retains a full-voltage rating of 600VAC, is horsepower-rated for protecting motor circuits and UL98 disconnect-rated for the protection of branch



circuits with Class CC fuses. The product is finger-safe to IP20, and has lockout/tagout capability for enhanced safe workplace practices. Its Open circuit indication is provided both locally and remotely for fast troubleshooting and reduced downtime. Panel-mounted using a DIN rail mount, the CCP can be installed without using a single tool.

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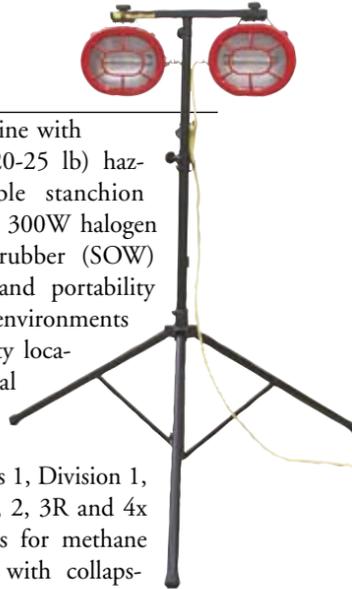
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GE's transient voltage surge suppressors (TVSSs) feature thermally protected metal oxide varistor (TPMOV) technology that provides an immediate and clean disconnect from abnormal, power frequency over-voltage conditions. Available in three configurations (wall-mount construction, box extension for attaching directly to the top/bottom of branch panels, or as an integrated construction within GE panelboards and switchboards), the integrated design works to reduce installation errors. Also offered: optional UL 1283 noise filtering; attenuation at -50db minimum at 100kHz; and monitoring and operation with green status indicator lights, red service light, audible alarm with test/disable feature and optional LCD surge counter.

**GE Consumer & Industrial**  
[www.ge.com](http://www.ge.com)

**Portable hazardous location worklight**



Woodhead has a new shine with its lightweight (about 20-25 lb) hazardous location portable stanchion worklight, featuring two 300W halogen lamps and two 50-ft rubber (SOW) cordsets for flexibility and portability in potentially explosive environments such as natural gas utility locations and petrochemical plants. The worklight's critical hazardous location ratings include: Class 1, Division 1, Group C&D; NEMA 1, 2, 3R and 4x enclosures; and complies for methane atmospheres. Equipped with collapsible tripod with three-axis adjustable light heads, 360° directional range and a telescoping height (64 in. to 78 in.)—as well as a shock absorbent ABS base support (5-in. diameter when opened)—the worklight has the flexibility to accommodate wide-area, dangerous worksites.

**Woodhead Industries**  
[www.woodhead.com](http://www.woodhead.com)

**UPS with parallel capability**

APC has introduced parallel capability into its Smart-UPS VT three-phase power protection line. Offering this functionality to small data centres, retail stores, wiring closets and applications with dense power requirements allows end users to expand their power protection system by connecting up to four Smart-UPS VT units in a parallel configuration in any combination of capacity and redundancy. The Smart-UPS VT family—currently available in 10-40kVA in 400/230V—offers centralized uninterruptible power protection while its cool-running, three-stage inverter technology provides high efficiency—even when operating at less than 30% load.



**APC/Schneider Electric**  
[www.apc-mge.com](http://www.apc-mge.com)

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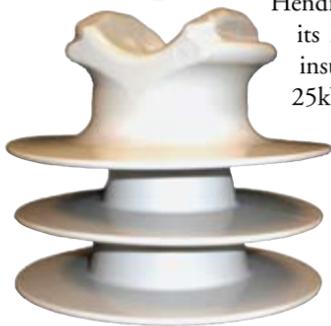


**Family of softstarters**

Covering the gamut of standard and high-feature motor starting applications, the new Siemens Sirius 3RW family of softstarters range from 22.5-mm wide to the most powerful in the 3RW family at 750hp, and can afford as much as 70% space savings. The softstarters offer smooth operation in tandem with features that include programming via built-in operator display and keypad, programmable ramp up/down profiles, selectable current limiting, closed-loop torque control, integrated motor overload protection and integrated state and fault monitoring. Due to the integrated bypass contact system, there's no need for a bypass contactor.

**Siemens**  
[www.automation.siemens.com](http://www.automation.siemens.com)

**Wear-/tear-resistant insulators**



Hendrix Wire & Cable launches its line of HPI polyethylene insulators available in 15kV, 25kV and 35kV. Suitable for both bare wire and covered conductors, these insulators are an alternative solution to porcelain versions. Impervious to impact damage and breakage, the company says its HPI polyethylene insulators not only offer longer leakage distance and higher impulse strength, they can also withstand ultraviolet rays and offer greater track resistance. The insulators can accept any conductor or tie and may be used interchangeably with porcelain insulators.

**Hendrix Wire & Cable**  
[www.hendrix-wc.com](http://www.hendrix-wc.com)

**Genset twin pack**



Generac Power Systems released its new Gemini Twin Pack genset with a rating of 1000kW, and using two 500kW gensets operating within a single, sound attenuated enclosure. The Gemini

platform is powered by a pair of 16L Volvo 6-cylinder inline Tier II diesel engines, each powering a 500kW alternator at 1800 rpm. The Gemini Twin Pack's high output and compact footprint (176 sf), the company says, give it one of the highest power densities (kW/sf) available for a backup system. The generators have built-in redundancy and can operate independently as well as in parallel.

**Generac Power Systems**  
[www.generac.com](http://www.generac.com)

**UPS with SNMP**

Staco's FirstLine three-phase UPS (uninterruptible power supply) now includes SNMP communications capabilities. Available for 10kVA, 15kVA and 20kVA applications, the functionality allows users to network this UPS with their manufacturing and management systems using Web browser-based visual readings. FirstLine is online and double-conversion (the connected load is protected from sags, swells, noise and voltage imbalances without going to battery operation), with a standard internal battery run-time of up to 30 minutes (optional batteries give virtually



unlimited run time). Transformerless power technology provides blackout protection and power conditioning, while front-end harmonic correction eliminates the need for additional filtering.  
**Staco Energy Products Co.**  
[www.staco-news.com](http://www.staco-news.com)

**Surge protection**



Raycap's surge protection devices offer continuous protection from over-voltage and other transient voltage activity, even under harsh conditions, which helps extend the operating life of automation and control equipment. Dubbed Strikeorb, the device modules are available in a variety of application-specific voltages and packaging configurations. Strikeorb modules consist of a single large distribution-grade metal oxide varistor (MOV) disc in a hermetic aluminum housing that provides uniform distribution of the surge current over the total area of the MOV protection element, resulting in a high energy-handling capability com-

Control equipment. Dressed in a variety of application-specific voltages and packaging configurations. Strikeorb modules consist of a single large distribution-grade metal oxide varistor (MOV) disc in a hermetic aluminum housing that provides uniform distribution of the surge current over the total area of the MOV protection element, resulting in a high energy-handling capability com-

binated with ultra-low let-through voltage to the automation and control equipment.  
**Raycap Inc.**  
[www.raycapinc.com](http://www.raycapinc.com)

**Stacked motor bearings**

Ride introduces a load-equalizing thrust bearing that can be stacked to accommodate virtually any axial load in diametrically limited spaces. Featuring thrust elements with spring-mounted pads running against runners that can be stacked repeatedly, these bearing are suitable for up-/down-thrust load applications. They are self-aligning, equalize the load (regardless of stack size), and suitable for highly abrasive service in oil, process fluids or contaminated lubricants. Available in sizes from 1 in. to 60 in. o.d., the bearings can be equipped with pads made from ceramic (for mud-lubricated directional drilling motors), polymer, bronze and hardened steel.



**Ride Technologies**  
[www.ridetechologies.com](http://www.ridetechologies.com)

**Hubbell  
Metal Raceway.**

**More than  
you've come  
to expect.**

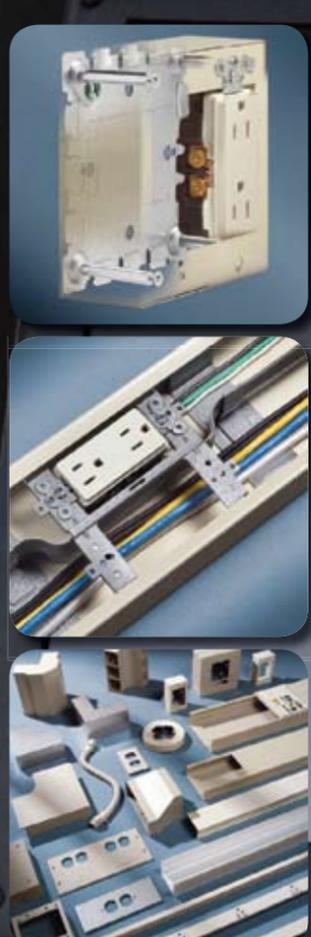
**The all new Hubbell Metal Raceway** gives you a choice of steel, aluminum, single or multi-channel – plus a whole lot more in the way of innovation, capacity, reliability and customer support.

**More Innovation.** The innovative Hubbell Handi-Screw makes box installation easier. Boxes feature rounded corners and one-seam construction for a cleaner look.

**More Capacity.** Hubbell's 4000 series Patent Pending 70/30 By-Pass Divider allows for up to 20 percent more data cable in a multi-channel raceway. The 750 series single-channel raceway holds up to five category 5e or three category 6 data cables.

**More Flexibility.** CSA Classified transition fittings connect with competitive systems and an extensive line of plates accommodate a broad range of datacom and power connectors.

**More Customer Support.** You can depend on Hubbell sales associates to be experienced, trained and knowledgeable, supported with tools like the new Raceway System catalogue.





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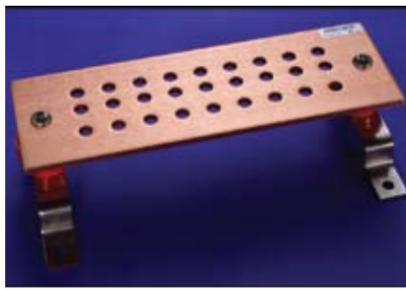
**Larger brushless DC motors and gearmotors**



Bodine has expanded its IntegraMotor product line to include larger brushless DC motors and gearmotors that integrate motor and control elements into one enclosure and operate from a regulated 24VDC power supply. Available with either analogue or digital (PWM or 'pulse width modulation') interface options, the model features an onboard PWM control that accepts inputs from an external motion controller or PLC. These units can also replace traditional brush-type DC motors in applications that operate continuously, thus eliminating costly downtime for brush maintenance. The line offers an option for cleanrooms and food manufacturing facilities where contamination with carbon dust from brush-type DC motors is unacceptable.

**Bodine Electric Co.**  
[www.bodine-electric.com](http://www.bodine-electric.com)

**Tamper-resistant ground bars**



Harger Lightning & Grounding has introduced a new tamper-resistant hardware feature for its line of ground bars. The ground bars are manufactured from electrolytic tough-pitch 110 alloy copper and

include low-profile, tamper-resistant stainless steel hardware to reduce incidents of theft.

**Harger Lightning**  
[www.harger.com](http://www.harger.com)

**New family of gensets**

Cummins launched a new family of gensets rated 30kVA to 38kVA at 50Hz and 27kW to 35kW at 60Hz targeting the small business and mobile telecom sector. The family's key benefits include digital control as standard, an intuitive operator interface panel, integrated control functionality, overcurrent protection and the Cummins Excitation Boost System (EBS), which



provides 1hp per kW motor starting capability and short-circuit fault clearing ability for uninterrupted power supply. Sound attenuated enclosures afford quiet operation at 75 dB(A) at one metre.

**Cummins Power Generation Inc.**  
[www.cumminspower.com](http://www.cumminspower.com)

**One-step firestop solution**

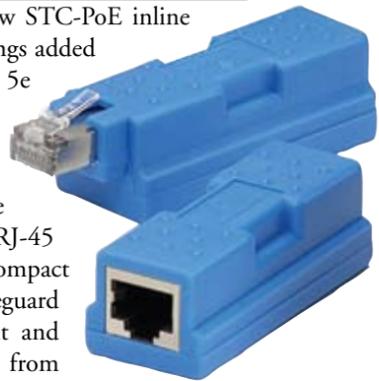
Hilti's new CP 653 Speed Sleeve offers a lightweight, durable one-step cable management firestop solution—one that strongly limits smoke migration. The sleeve features 'spin-on' flanges for speedy installation, and is simple and intuitive to open and close for easy penetration and re-penetration. The device's smoke seal fabric has been tested to 250 Open/Close cycles, and its constrictive smoke seal limits smoke migration whether empty or 100% visually filled.



**Hilti Inc.**  
[www.ca.hilti.com](http://www.ca.hilti.com)

**In-line surge suppressor**

Sola/Hevi-Duty's new STC-PoE inline surge suppressor brings added protection to Cat 5e PoE and Cat 6 cabling systems. Featuring either two female-to-female or male-to-female RJ-45 connections, these compact suppressors help safeguard expensive equipment and critical data transfer from internally generated transients and noise in applications up to 60VDC at 300mA, while affording maximum transmission speeds of 1000BaseT, and a peak surge energy of 300 watts.



**Sola/Hevi-Duty**  
[www.solaheviduty.com](http://www.solaheviduty.com)

**High-efficiency gas genset**



The new high-efficiency, natural gas-fuelled G3520E genset from Caterpillar is designed for extended-duty distributed generation and combined heat and power (CHP) applications. Offering high power density and tight NO<sub>x</sub> control, the set is driven by an electronically controlled, lean-burn gaseous-fuelled reciprocating engine. It provides flexibility to operate on pipeline natural gas with a range of methane numbers and, the company says, delivers ISO mechanical efficiency of up to 43.5% without water pumps. Standard on the G3520E is a gas engine control module, which automatically regulates ignition, engine governing and air/fuel ratio. Additional functionality includes an emergency stop fuel-purge cycle, programmable protective relaying functions and an optional 250mg/NM3 NO<sub>x</sub> emissions setting, and 54°C SCAC temperature rating.

**Caterpillar Inc.**  
[www.cat-electricpower.com](http://www.cat-electricpower.com)



**Luminaire Disconnect...**

**...with LUMI-NUTS®**

From the inventor of the pushwire connector comes the new 873 Series LUMI-NUTS® to meet and exceed the new NEC and CEC requirements for safe servicing/wiring of non-residential luminaires with ballasts.

**LUMI-NUTS® Exclusive Features**

- 2 connections per pole for daisy chaining of power to additional ballasts - reduces wiring time, components and errors
- Max. 600V/6A rating supports daisy chain applications - no de-rating
- Molded in color coding and inkjet marking for easy wiring - no labels
- 35+ years experience in pushwire technology with billions installed

Additional safety features include built-in locking latch, touch proof design, keying for protection against mis-mating and a UL 94V-0 flame rated housing.

For more information on the new LUMI-NUTS® contact WAGO at 1-800-DIN Rail (346-7245) or [info.us@wago.com](mailto:info.us@wago.com)  
[www.wago.us/lumi-nuts.htm](http://www.wago.us/lumi-nuts.htm)



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for 1/2" to 4"  
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# TV BOX™ RECESSED POWER & LOW VOLTAGE ELECTRICAL BOXES for LCD/PLASMA TVs

Arlington's recessed, 13" wide TV BOX™ and new indoor IN BOX™ for new or old work, allow LCD and plasma TVs to mount flush against the wall.

Non-metallic TV BOX mounts between 16" o.c. studs for a secure horizontal or vertical installation.

**In BOTH recessed boxes...**  
Plugs stay inside the box, don't extend past the wall.

You can install two duplex receptacles, or two low voltage devices in the two-gang box. Or use the supplied box separator to install one low voltage device and one duplex receptacle. TV Box also offers two additional built-in mounts for low voltage, data/media connections (i.e. speakers, satellite TV, surround sound).

**NEW!** 2-gang Indoor IN BOX™

Textured, paintable trim plate covers edges of cut drywall.

Same great features as the TV Box!

TVB613 includes recessed TV Box with trim plate, low voltage separator, NM cable connector, installation screws

Option Cover for TV Box TVB613C

Separator Two-gang TV Box

Trim plate

Patented. Patents pending

**A** CSA with grounding lug only

Arlington 800/233-4717 • www.arlnew.com

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USE IT JUST LIKE A PIPE HANGER!

**NOW AVAILABLE 2-1/2" to 4"**

**QUICKLATCH™ ...**

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- Fast, easy installation – press pipe firmly into QuickLatch to lock it in place. That's it!
- For 1/2" to 4" rigid, EMT, IMC, PVC

**SAVES ABOUT 25 SECONDS PER INSTALLATION.**

That's 14¢ per at \$20/hr labor!

**NEW SIZES**

Size	Cat. No.
2-1/2"	NM2060
3"	NM2070
3-1/2"	NM2080
4"	NM2090

**A** **Patented.**

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2" TL20 2.5" TL25 5" TL50

Flexible and non-metallic, The LOOP holds a 2" to 5" diameter bundle of CAT5 or fiber optic cable without sagging, bending or damaging the cable!

The 2.5" TL25 holds the same amount of cable as a J-hook at 1/2 the COST!

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Arlington 800/233-4717 • www.aifittings.com

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## FIXTURE BOX

for SUSPENDED CEILING

**NEW!**

Arlington's new all-metal fixture box is the one-piece assembly, that ships ready to install on a 24" suspended ceiling grid. There's no assembly required!

**It's tested and rated** to support exit lights, security cameras – and other light fixtures up to 25 lbs.

**No more guesswork.** Installers who previously attached a metal box to a bracket in the field, then added a chain or wire for support, now have an assembly that's fully tested to hold up to 25 lbs!

FS420SCL is UL/CSA Listed as a complete unit: box, bracket and drop wire.

**Convenient**  
Box not perfectly positioned? Loosen the appropriate screws, slide the box along the bracket, and retighten the screws.

- Costs less than field-assembled components (box, bracket, wire)
- Usable for Environmental Air Handling spaces

**A**

Option: If required by local code, bracket ends screw on to ceiling grid.

One-piece assembly - Ready to install. Assembly is tested and Listed to support fixtures up to 25 lbs.

Patents pending ©2007 Arlington Industries, Inc.

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



**Multimedia installation guide**

Ideal has published its new Multi-Media Installation Guide to give contractors one-step access to the best practices on installing the two basic communications cables for video and data networking/telephone applications: coax and UTP/STP twisted-pair—each requiring specialized equipment and a different skill set for proper installation. This reference tool provides step-by-step instructions on properly cutting, stripping, terminating and testing coax and twisted-pair cables. In addition, the 16-page colour guide educates contractors on the latest terminology, and offers tips on pulling cable and techniques for splicing telephone wires using jelly bean connectors.

For a free copy of this installation guide, visit [Ideal Industries online at www.idealindustries.com](http://www.idealindustries.com).



**Software pairs servo drives and motors**

Lenze-AC Tech has launched MotionMatch sizing software for its servo drives and motors. According to the company, combining MotionMatch motor sizing software and MotionView drive configuration software makes this a powerful yet simple solution to motion control management, taking the guesswork out of pairing a servo drive with a motor. Using MotionMatch, just enter the application requirements and the program will return the compatible servo drive-motor combinations.

For more information, visit [Lenze-AC Tech at www.actech.com](http://www.actech.com).



**LED exit sign literature**

Dual-Lite released a brochure on its Liteforms LX Series LED exit signs that boasts a new look and updated product information and features. The LX Series thermoplastic exit signs provide illumination levels exceeding those required by current UL standards, says Dual-Lite, with brighter, more uniform illumination. The brochure includes energy/maintenance costs comparison, warranty information, component details, application uses, features and ordering information.

To get a copy, call Dual-Lite at (864) 678-1225 or visit [www.dual-lite.com](http://www.dual-lite.com).



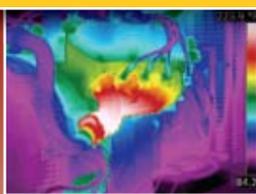
**Monorail and fixture kit catalogue**

To help lighting distributors sell monorail fixtures quickly and easily, W.A.C. introduced a fixture kit catalogue featuring a variety of easy-to-assemble, value-oriented low-voltage monorail and fixture kits, including monopoint fixtures, adjustable pendants and wall sconces. The new 24-page catalogue covers eight styles of monorail lighting solutions. Each kit includes a 250W surface-mount electronic transformer meeting UL 2108.

For more information, e-mail W.A.C. Lighting at [info@wacighting.com](mailto:info@wacighting.com) or visit [www.wacighting.com](http://www.wacighting.com).

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Forget struggling with bulky, hard-to-use infrared images. Invest in the new FLIR T400 infrared imaging camera and make your job easy.

This camera uses the latest technologies including optics that tilt at the flick of a wrist, an LCD that also serves as a touch screen, 4-hour rechargeable battery, and software that makes reporting and documentation a snap.

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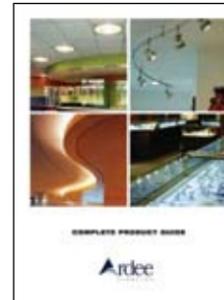
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- ▶ MT. Tremblant - May 21 - 23



**Interior lighting fixture product guide**

Ardee Lighting, a manufacturer of designer interior lighting fixtures, has published its "Complete Product Guide". The full-colour, 100-page illustrated catalogue covers the range of functional and decorative lighting fixtures available, which are suitable in a variety of commercial, retail, hospitality and upscale residential applications. Users can find information on Ardee's low-voltage strip systems, LEDs, linear fluorescents, recessed downlights and line-voltage track systems.

Copies of the product guide are available by calling Ardee at (704) 482-2811 or visiting [www.ardeelighting.com](http://www.ardeelighting.com).



**Architectural lighting full-line product binder**

Baldinger Architectural Lighting announced the availability of its full-line product binder for 2008. The binder covers Baldinger's growing line of contemporary and classically inspired architectural and decorative lighting fixtures. Four of the tabbed sections contain full-colour product specs, product and application photographs, and complete technical data detailing ceiling, wall, table and floor fixtures. A fifth tabbed section contains each of the current, specific architectural collections from a group of architects.

Copies of the new Baldinger 2008 full-line product binder are available by calling (718) 204-5700 or visiting [www.baldinger.com](http://www.baldinger.com).



**Grounding busbars line card**

Harger Lighting & Grounding introduced a new line card as a quick reference guide for its grounding busbars. The busbars are UL listed and meet the requirements for electrical grounding, as well as BICSI and ANSI-J-STD-607-A. Options include insulator bracket/tower mount/compression lug kits, Ultraweld exothermically welded pigtail conductors and plexiglass covers. Custom designed bars, says the company, are its specialty—a service provided at no extra charge.

For more information, visit [www.harger.com](http://www.harger.com) or call (847) 548-8700.



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GE Consumer & Industrial Lighting

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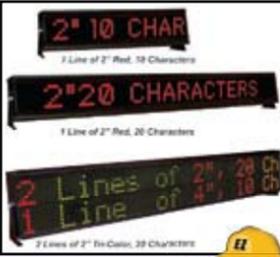
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Surge Protective Devices from 40,000 Amps to 200,000 Amps

Phoenix Contact's new VAL-SQ surge protective devices (SPD) offer safe and reliable surge protection from 40,000 amps to 200,000 amps. The NEMA-style product family includes approximately 50 part numbers in three different mountable designs. The CC and SP series are compact SPDs designed for the control cabinet and service panel, respectively, while the SE series is a panel-style SPD designed for the service entrance. The CC series gives an economical method of protecting electronic equipment in light commercial, light industrial and residential environments. It delivers 40,000 amps of surge current rating, and its compact design is ideal for installation in a control cabinet or directly to the equipment. The SP series is a multi-phase SPD and noise filter that protects sensitive equipment, even in the worst environmental conditions. It can be installed adjacent to sub-panels or directly to sensitive equipment. It provides 80,000 or 120,000 amps of surge current rating per phase.

**PHOENIX CONTACT LTD.**  
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[www.phoenixcontact.ca](http://www.phoenixcontact.ca)



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Save up to \$183.60 per fixture\*

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# Arc flash hazard protection

This risk of arc flash is always present when working on energized equipment, but what is it? Simply defined, arc flash is a dangerous condition associated with the release of energy caused by an electric arc. Arcing faults can release perilous levels of radiant heat energy while blasting shrapnel and molten metal over a wide area. In addition, the vaporization of metal and heating of air caused by the flash can produce dangerous blast pressure waves.

Most of the good information we have for dealing with arc flash hazards comes from NFPA 70E, Standard for Electrical Safety in the Workplace, and Canada's soon-to-be-published equivalent, CSA Z462. Industry is addressing the issue by performing arc flash hazard analyses of their electrical facilities based on NFPA 70E (or IEEE 1854). The arc flash hazard analysis calculates a worker's exposure to arc flash energy, and is conducted for the purpose of injury prevention and determining safe work practices (which includes the appropriate level of PPE [personal protective equipment] to be worn when working on energized equipment).

Four main variables determine the severity of an arc flash incident:

- System voltage
- Available bolted fault short-circuit current
- Clearing time of protective devices
- Distance from the point of incident energy release and arc flash boundary

Most small plants with radial feeders have only one normal mode of operation, making the determination of the available short-circuit current fairly straightforward. Other, larger facilities with looped feeders, multiple sources of supply or generators operating in parallel face a more difficult challenge. Each of these conditions change the available short-circuit current which, in turn, changes the clear-

## ARC FLASH ANALYSIS LINGO

• **Arc flash boundary.** This is the approach limit at a distance from exposed live parts within which a person could receive a second degree burn were an arc flash were to occur. A person must wear appropriate PPE when entering the flash protection boundary. A person with potential exposure to an electric arc should not wear clothing made of acetate, nylon, polyester or polypropylene. The arc flash boundary and associated PPE are based on the incident energy available to the person's chest or head. The degree of injury depends on the percentage of the person's skin that is burned and the critical nature of the burn. That is why the focus is on the chest and head, and not the hands or arms.

• **Threshold incident energy.** This is the amount of energy impressed on a surface a specific distance away from the source during an arc event. The incident energy is measured in Joules/calories per centimeter squared (J/cm<sup>2</sup> or cal/cm<sup>2</sup>) and defines the required flame-retardant PPE. Keep in mind that, for most operations, the appropriate working distance from the source is anywhere from 18 in. to 24 in. This changes with higher voltage levels where the working distance takes into account the hot stick operation.

ing time of protective devices—with a significant impact on arc flash hazards and the required level of PPE.

A decrease in short-circuit current (due to removal of generation or open-tie breakers) can result in longer trip times on inverse time current curves. This can result in increasing the incident energies and raising the arc flash hazard. Assessments should be made for each operating mode by determining the arcing fault current for each bus in the system.

An arc hazard analysis should include a calculation based on the available fault current, the duration of the arc (cycles) and the distance from the arc to the employee. The arcing current depends on the available bolted fault short-circuit current where the work is to be performed, the system voltage and the gap between conductors and system configuration.

A *protective device coordination study* is key to providing accurate arc flash calculations. Accurate protective device clearing times are essential for providing correct incident

energy calculations and the resulting arc fault boundaries.

The best way to reduce your risk and exposure to arc flash hazards is to avoid working on exposed energized electrical equipment altogether. However, this is not always possible, which is why an integrated safety plan needs to be implemented where workers are trained on safety procedures, know what PPE to wear and follow the arc flash labelling process.

Kris Paszkowiak, P.Eng., has taken his many years of experience—most of those with Ontario Hydro and the Electrical Safety Authority—and launched CodeSafety Associates, a new consulting firm serving the needs of the electrical industry. He holds a Master Electrician licence and has served numerous organizations over the years, including the Canadian Advisory Council on Electrical Safety, Committee on CEC Part I and UL Electrical Council. Contact CodeSafety Associates at (905) 599-2702 or e-mail kris.paszkwiaak@codesafety.ca.

Questions and answers compiled by the Electrical Safety Authority



## 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 May'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

Where primary windings of current and voltage instrument transformers are connected to circuits of 300V or more to ground, or where the transformers are on switchboards irrespective of the voltage of the circuits, the secondary circuits of the transformer shall be grounded.

a) True b) False

---

## Question 2

250 MCM copper conductors installed in a vertical raceway shall be supported at intervals not exceeding \_\_\_ metres.

a) 12 m c) 24 m  
 b) 18 m d) 30 m

---

## Question 3

The vital and delayed vital branches in a healthcare facility shall be connected to the emergency power supply by means of one or more \_\_\_ transfer switches.

a) Manual  
 b) Automatic  
 c) Automatic or manual

## Answers to Code Conundrum

Electrical Business March 2008

**Q-1:** When applied to x-ray or computerized tomography equipment, long-time rating means a rating that is applicable for an operating period of \_\_\_ seconds/minutes or more.

**c) 5 minutes.** Rule 52-002.

**Q-2:** Rules for the installation of electrical equipment and wiring in Class I Division I hazardous locations can be found in \_\_\_ of the electrical code.

**d) Appendix J.** Rule 18-000 states: (3) For additions, modifications, renovations to, or operation and maintenance of existing facilities employing the Division system of classification for Class I locations, the continued use of the Division system of classification shall be permitted. (4) Where the Division system of classification is used for Class I locations, as permitted by Subrule (3), the Rules for Class I locations found in Annex J18 of Appendix J shall apply.

**Q-3:** Where primary windings of current and voltage instrument transformers are connected to circuits of 300V or more to ground, or where the transformers are on switchboards irrespective of the voltage of the circuits, the secondary circuits of the transformer shall be grounded.

**a) True.** Rule 10-116.

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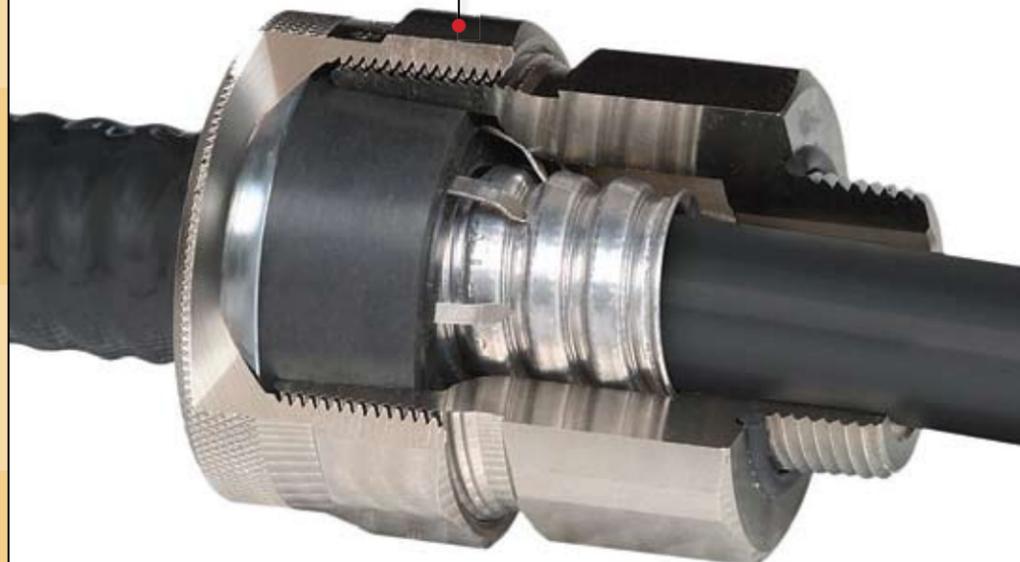
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