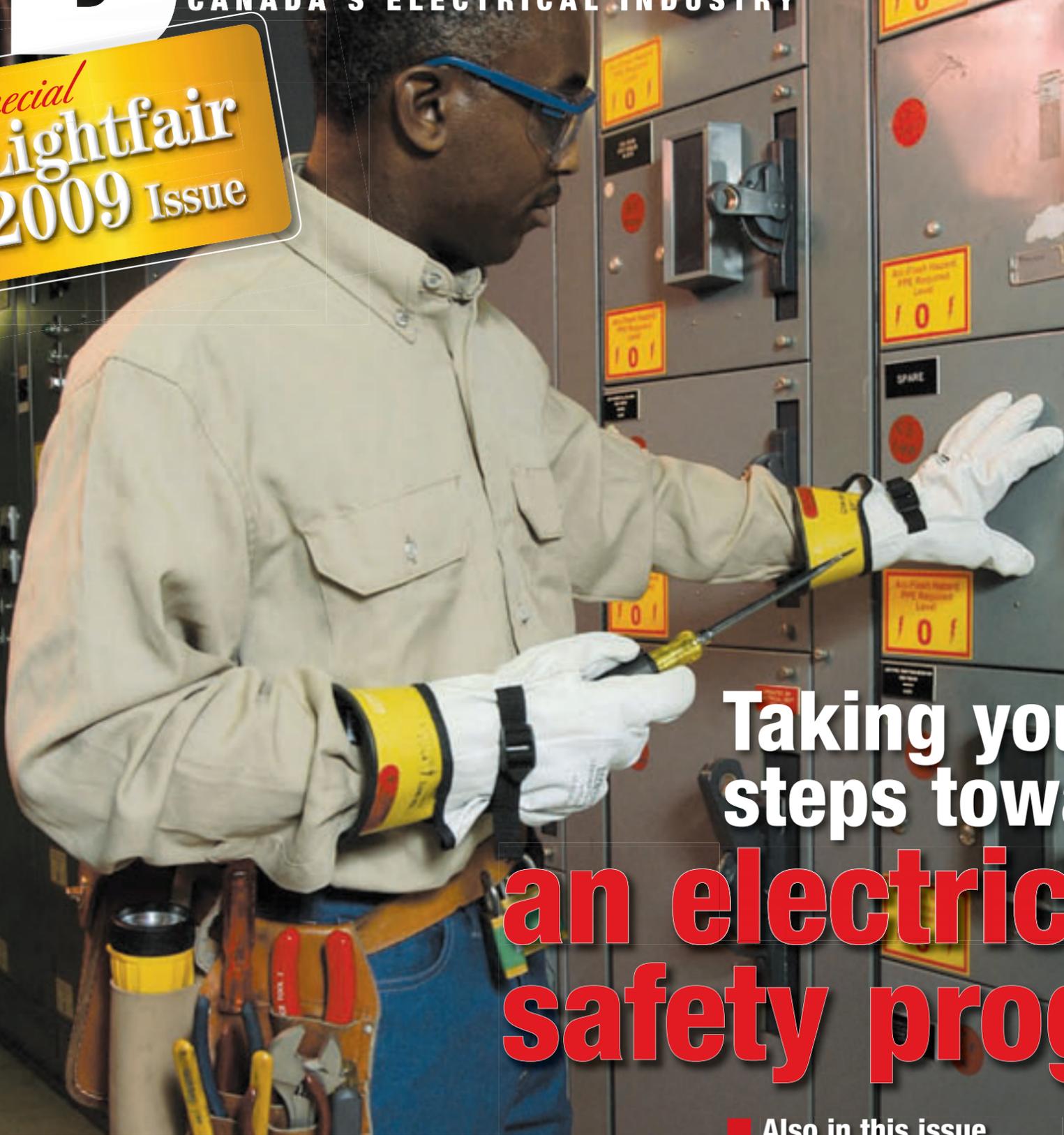


Electrical Business

THE AUTHORITATIVE VOICE OF
CANADA'S ELECTRICAL INDUSTRY

**MAKE
YOUR
MARK**
on page 5!

Special
**Lightfair
2009 Issue**



Taking your first steps toward an electrical safety program

■ Also in this issue...

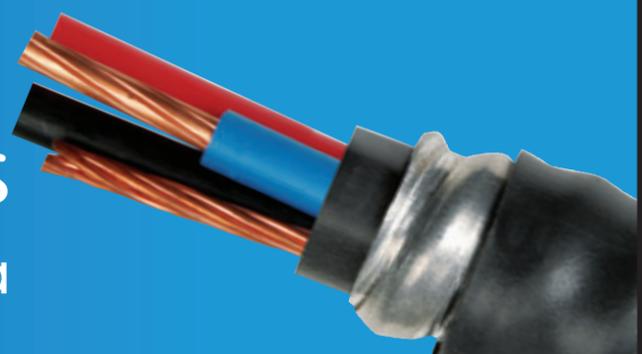
- GPS fleet vehicle tracking provides solid ROI (Page 8)
- Load-shedding ballasts enable demand-response retrofits (Page 16)
- LED site/area luminaires are not measuring up (Page 18)

PM # 40063602

FIREX® II
TECK CABLE
LEAD FREE and RoHS



nexans
www.nexans.ca





Linear Fluorescent Electronic Ballasts

The only full range of 347 V ballasts available in the Canadian market

Extend lamp life and limit energy consumption



- Normal and low ballast factor
- Better control and design
- Ability to drive more lamps with a single ballast
- Reduce lamp flicker



Lighting the Way
for a Greener Tomorrow

Think about the future... choose energy efficient lighting today!

For more information on energy saving products please visit us at
www.standardpro.com

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.

Editor

Anthony Capkun - acapkun@clbmedia.ca

Publisher

John MacPherson - jmacpherson@clbmedia.ca

Account Manager

Scott Hoy - shoy@clbmedia.ca

EB Editorial Advisory Board

Tom Crist, Kerry Heid, Ron Bergeron, Stephen Tatrallyay, Dan Mott, John Vickery, Ian Dempsey and Pierre Dowd

Art Director

Svetlana Avrutin - savrutin@clbmedia.ca

Production Manager

Robert Russell - rrussell@clbmedia.ca

Editorial Intern

John Gilson - jgilson@clbmedia.ca

Creative Director

Einar Rice - erice@clbmedia.ca

Manager, Production

Lisa Drummond - ldrummond@clbmedia.ca

Subscriber Customer Service Representative

Kristen Schulz-Lacey - kschulz-lacey@clbmedia.ca

CLB MEDIA Inc.

240 Edward Street, Aurora, ON L4G 3S9
Tel: 905-727-0077 Fax: 905-727-0017

President

Stuart Morrison

Vice President, Media, Publishing

Niel Hiscox

Vice President, Finance/Corporate Development

Kent Milford

Vice President, IT and Operations

David Overall

Director, Industrial Group

Frank Shoniker

Director, Professional Group

Karen Lorimer

Director, Manufacturing Group

Nigel Bishop

Director, Editorial and Production

Jackie Roth

Director, Facility Management and Logistics

Steve Dale

Director, Human Resources

Denise Desrosiers

Director, Product & Business Development

Todd Phillips

Director, IT

Phillip Damianidis

Circulation

Nancy Gaston - ngaston@clbmedia.ca

Urszula Grzyb - ugrzyb@clbmedia.ca

SUBSCRIPTION RATES:

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

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

United States Second Class Postage Paid at Lewiston, NY

(USPS-741-470) US POSTMASTER: send address changes to

ELECTRICAL BUSINESS, P.O. Box 8145, Lewiston, NY 14092

The contents of Electrical Business are copyright by ©2009 CLB Media Inc. and may not be reproduced in whole or part without written consent. CLB Media Inc. disclaims any warranty as to the accuracy, completeness or currency of the contents of this publication and disclaims all liability in respect of the results of any action taken or not taken in reliance upon information in this publication. REPRINTS: Contact The Reprint Outsource at (877) 394-7350.

Send address changes to:

ELECTRICAL BUSINESS

240 Edward Street, Aurora, ON L4G 3S9

Return Postage Guaranteed

Canada Post - Canadian Publications Mail Sales Products

Agreement 40063602 ISSN 0013-4244

Printed in Canada



Get yourself ready for the rebound

We'll see a reduction of 10% to 15% in construction manhours this year compared to 2007 and 2008, said Adam Cywinski, a market research analyst with the Ontario Construction Secretariat (OCS). However, that's not really dire news, he maintains, because 2007 and 2008 were banner years for the construction industry.

Cywinski spoke at a recent breakfast meeting of the Supply & Distribution Council (S&D), delivering an economic forecast for construction in the Province of Ontario. (And while these predictions apply mainly to Ontario, the results can be easily extended to suggest likely outcomes for the rest of Canada).

Good or bad, the industry usually lags the economy by about 18 months; when it comes to a recession, construction is typically the last in, and the last out. The fourth quarter this year is expected to be tough, as contractors finish off current projects and look to see where the next jobs will come from.

The answer may lie in infrastructure and affordable housing, as these are top priorities for Ontario's current government. Unfortunately, says Cywinski, we haven't yet seen stimulus money flow into the market. Still, economists remain positive there will be a recovery, and that there will be opportunities in construction. Institutional is looking good, for example, as there is a backlog of projects, including those that are "shovel-ready".

The Ontario Construction Secretariat recently completed a survey of 1000 contractors, and the consensus among them is a market rebound in 2010; when you think about it, that's really not that far off. Some other positive news to come out of that survey is 75% of contractors rated their overall financial health as either strong or very strong, which means they should have the resources to not only weather some rough

patches, but to perhaps reinvest in the business in preparation for the rebound.

Now is a good time to evaluate the systems and tools you have in place for carrying out your business. Maybe you can get around to that preventive maintenance you've been putting off. Inspect your tools: repair what needs repairing and replace that which is beyond repair. Spend some time with your distributor, and check out local trade shows and conferences to learn about the latest products and solutions on the market that could help you be more productive, or work more safely.

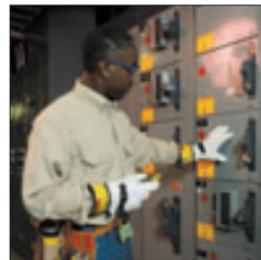
There's also a lot of talk of green energy projects and initiatives. *What's that all about?* Well, start attending conferences and keep reading this magazine for more information about these kinds of opportunities.

Among the most important things you could be doing right now—when work is slowing—is working on your electrical safety program and getting your guys to "buy in". CSA Z462, the new standard for electrical safety in the workplace, is quickly becoming the must-know/must-follow document for anyone involved with electricity. You'll be held accountable for any electrical mishap, so make sure you implement and enforce an electrical safety program to keep yourself and your business on the right side of the law.

None of these things happen overnight, and they all require continuous attention, but now is a great time to take your first steps toward building a business that's ready to take off when the economy rebounds. **EB**

Anthony Capkun

CONTENTS



On the cover and page 25

Taking your first steps toward an electrical safety program

Establishing an effective electrical safety program is the foundation for the prevention of injuries associated with electrical hazards, and many current electrical incidents can be prevented via the implementation of CSA Z462, "Electrical Safety in the Workplace". The new standard provides stakeholders with a "how-to-do-it" guideline for meeting the requirements of due diligence. (Photo courtesy DuPont)

FEATURES

11 A photovoltaic system connected to the grid is only as good as its wiring

The prospect of achieving energy self-sufficiency and the ability to control soaring energy costs have boosted the popularity of photovoltaic systems—especially when excess energy can be exported into the grid. However, when the system is incorrectly wired to the meter, the initial excitement expected for the next electric bill quickly turns to dismay.

14 Lightfair celebrates 20 years!

This May, the world's largest annual architectural and commercial lighting trade show and conference—Lightfair—celebrates 20 years of inspiration and innovation. This May, it promises to offer its most comprehensive conference programming and most robust trade show floor ever seen.



16 Load-shedding ballasts enable demand-response retrofits

Building owners can reduce costs by shaving their demand peaks using a strategy called load shedding, either on a schedule or in response to price signals. Lighting provides good opportunities for load shedding because it usually occurs when daylight is available, and is available for year-round demand reduction.

18 Why today's LED site and area luminaires are not measuring up

The promise of LEDs is almost certain; unfortunately, the general performance of LED site luminaires on the market today is not quite up to par. This paper illustrates how prematurely introduced LED site and area luminaires do not perform as marketed when tested under current standards and, consequently, may be detrimental to users, commerce and the environment.



23 Installing and testing fiber optic links: performance pays

Optical fiber provides high bandwidth over longer distances, making it the media of choice for campus networks and backbone cabling to support growing organizations. This is why the proper installation and testing of fiber optic links is necessary to ensure the cabling performs to expectations.

DEPARTMENTS

- 4 Industry News
- 7 Personalities
- 8 Vehicles and Accessories
GPS fleet vehicle tracking provides solid ROI
- 10 Mind Your Safety
Catch the Z462 train... or be crushed by it
- 12 From the Legal Desk
Supreme Court of Canada reviews extent of builder's risk policy
- 22 Calendar
- 27 Regional Focus
- 29 Products
- 32 Multimedia Resources
- 34 Code File
Multimeter user error, the code and fused leads
- 34 The Code Conundrum



page 8





Québec 2009
NETcomm

NETcomm Québec 2009 Conference, Call for Papers

Following the success of the Maritimes Conference held in Halifax last September—and a Prairies conference this month in Saskatoon that promises to be even better—NETcomm is presenting its Québec 2009 Conference June 10-11 in Montreal at the Delta Centre-Ville (Official Conference Hotel).

The Québec 2009 Conference is the second in a series of regional conferences NETcomm is conducting across Canada this year. The conference format combines a trade show-like forum with a series of educational seminars and technical workshops related to all aspects of communications networks and connectivity solutions.

Attendees consist of contractors, installers, integrators, designers, engineers, communications specialists, etc., who work in public administration, transportation, telecom, security, electrical and cabling installation, network design and

installation, and purchasing and operations management.

NETcomm has issued a Call for Papers (which can be in either official language), seeking presentations on subjects touching upon one or more of the following:

- Voice/Data/Video
- Security
- Industrial Automation
- Environmental Systems
- Backbone and Cable/Rack Management
- Test & Measurement
- Regulations & Standards

To enquire about facilitating an educational seminar, please contact: Anthony Capkun at acapkun@clbmedia.ca or (905) 713-4391.

For more information, and to learn about Exhibiting and Sponsorship Opportunities, visit www.netcommshow.ca.

NEW
Scotch® 2234
Heavy Duty Cable Jacket Repair Tape



- Durable & remains flexible
- On-site, quick, universal cable repair
- Highly resistant to abrasion, water, UV, oil & chemicals
- Moisture-resistant, self-healing & flame retardant
- Will not corrode copper or aluminum
- No heat or flame required

Applications include:

Quick jacket repair of industrial cables, especially flexible portable power cables; heavy equipment draglines (cranes, diggers, crushers, scrap magnets); transportation (railyards, shipyards, subways, airlines); generators and temporary power installs; wind farms and cell towers.

One **TOUGH** Tape

For heavy duty mining applications try 3M's new MSHA-approved Scotch® 31 Cable Jacket Repair Tape & Splice Kits.

© 3M Canada, 2008. All rights reserved.



Siemens expands solar capability with Archimede acquisition

Siemens Energy is acquiring a 28% stake in the Italian solar company Archimede Solar Energy S.p.A., thereby expanding its abilities in solar thermal power plants. Archimede is the sole producer of solar receivers operating with molten salt as the heat transfer fluid, says Siemens, adding that it is a leader in steam turbine-generators for solar thermal power plants. By combining these two technologies, Siemens wants to enhance the efficiency of these plants and further reduce the production costs for solar power.

“By acquiring a stake in Archimede Solar Energy, Siemens is underlining its intention to become the leading provider of solutions for solar thermal power plants,” said René Umlauf, CEO of the Siemens Renewable Energy Division. “In the upcoming years, the market for solar thermal power plants will grow at a rapid pace and the interest of our traditional customers in the energy sector in this promising future-oriented technology will increase significantly.”

According to Siemens estimates, the market for solar thermal power plants will experience double-digit growth per year to reach a volume of over 10 billion EUR by 2015.

“We chose Siemens Energy as our partner to enable us to better match the tremendous growth we are expecting in the solar thermal power sector worldwide,” said Gianluigi Angelantoni, president of Archimede, a subsidiary of the industrial group Angelantoni Industrie S.p.A.

Solar thermal power plants work on the same principle as conventional steam power plants, only the heat for steam generation is not produced by burning fossil fuels but with the aid of solar energy. To this end, parabolic mirrors bundle the incident solar radiation and reflect it onto receiver tubes, through which a heat transfer fluid flows. The salt used by ASE is heated to temperatures up to 550°C; then it flows through a heat exchanger, where steam is produced to drive a steam turbine-generator.

Band-N-Go handling KSS, names PVE sales agent

Band-N-Go is now handling KSS Wiring Accessories in Canada. KSS is a manufacturer of cable ties and related wiring accessories serving more than 20,000 accounts in over 100 countries. KSS' products complement the Hayata stainless steel banding and cable ties carried by Band-N-Go. The company has also announced that PVE Associates will be its sales agent in Southwestern Ontario. PVE is located in Mississauga, and can be reached at (905) 890-3161.

Universal Lighting invites you to 'Traverse the Universe'

Lighting professionals can enter for a chance to win a vacation from Universal Lighting Technologies. The 'Traverse the Universe' promotional giveaway is now underway, with three grand prizes up for grabs: a trip to Maui, an Alaskan cruise, and a stay in Aruba.

Each vacation is worth up to \$4500 US. In addition to these grand prizes, anyone who purchases more than \$100 in qualifying products from Universal will walk away with an instant gift (while supplies last).

Universal says it launched the campaign to support its partners in the distribution channel and strengthen their sales efforts. The high-profile giveaway is also designed to promote the company's line of high-efficiency lighting ballasts, including the ULTim8 family of T8 ballasts.

The three grand prize winners will be drawn at random. To enter the drawing for the Maui vacation, lighting professionals must submit their entries by May 28. The deadlines are July 30 for the Alaskan cruise and September 28 for the trip to Aruba. Each winner will receive up to \$4000 in the form of a travel voucher to plan a dream vacation through a Carlson Wagonlit travel coordinator, plus \$500 in spending money in the form of an American Express cheque.

In addition to the grand prizes, you can enter for a chance to win a \$100 Visa gift card through the online Energy Jolt Trivia Challenge: simply answer a ballast trivia question, and you will be entered into a monthly drawing for the prize. Sales staff at participating distributor locations can also earn gift cards and other prizes based on sales of qualifying Universal Lighting products. Visit www.unvlt.com for more information.



IED/Sylvania Double-Up & Win Bahamas conclusion

Last month, the IED Rewards/Sylvania "Double Up & Win" promotion came to a close in the Bahamas. Every customer that purchased Sylvania products from an IED Rewards distributor from September 1 to November 30, 2008, was a winner, earning double IED Rewards points plus instant-win scratch cards. Customers also earned poker hands at the IED/Sylvania online poker table to play for the Bahamas grand prize.

Over 40,000 hands were played at the online poker table, and the top eight players won a trip to the Bahamas—accompanied by their favourite IED distributor branch person. In February, everyone arrived in Nassau for a three-night, all-inclusive vacation at the Atlantis Resort and Casino.

Congratulations to the following grand prize winners: Grant Cook, Grant Cook Electric (Owen Sound, Ont.); Jim Turner, Turner Electric (Hudson, Ont.); Bill Reid, Reid Electric (Madeira Park, B.C.); Mark Dziadek, Kelmar Ltd. (Sundre, Alta.); Al Gibb, AM Tech Electric Ltd. (Saskatoon, Sask.); Dennis Olson, Olson Electric (Sechelt, B.C.); Forrest King, Crown Electric (Spiritwood, Sask.); Gary Burgess, Currents West Electric (Prince George, B.C.).

Call for creation of a Canadian electric radiant heating association

Gerry Lemieux, author and applications specialist in the heating industry (as well as president of Britech Corp., a Canadian manufacturer and supplier of electric radiant heating systems), is calling for the creation of a Canadian association to promote electric radiant heating as a viable, economical, efficient and 'green' alternative.

"As an industry, we've let electric heating decline and allowed hydronics and forced-air systems to grow and dominate," said Lemieux, adding, "It's time for us to band together, as has the radiant Panel Association in the U.S.A. or the Canadian Institute of Plumbing and Heating, and combat our present situation."

Lemieux explains that electric radiant heating, floor warming, electric thermal storage—even electric solar-powered systems—are all viable systems that can contribute to a greener Canada. "An association of like-minded individuals and companies could band together to advertise, lobby governments and produce real data on the benefits with these technologies," he says.

Such an association, argues Lemieux, could "help police the market and eliminate dangerous products being sold in Canada, raise our profile, employ Canadians and contribute to cleaner air".

"I invite manufacturers, distributors, agents and contractors across the country to start a dialogue and lay the foundation for a truly Canadian method of 100% energy-efficient comfort and peace of mind," he says.

Contact Lemieux at glemieux@britech.ca or (416) 335-7790.

MAKE YOUR MARK

The mark of any professional installation is efficiency and organization. Make your mark with the new **EZCODE® EZL500** thermal label printer for medium volume print applications.

From its sure-grip, ergonomic design to the magnetic strap that frees up your hands, the new **EZCODE® EZL500** thermal label printer makes onsite labeling quick and trouble-free. With built-in smarts like oversized keys and spacing, a one-touch auto cutter, Help screen and Print Preview function, the **EZL500** label printer puts all the tools you need at your fingertips. And, with a large, backlit LCD screen, even low-light environments are no problem.

Make your mark with the smart label printer that makes identification easy. See and try the **EZL500** printer at your local participating electrical distributor and visit www.tnb-id.ca for complete product details.

SPECIAL INTRODUCTORY OFFER!

Buy an EZL500KIT and enter for a chance to WIN a 32" Flat Screen TV. 6 TVs will be awarded across Canada. Find out more at www.tnb-id.ca.

EZCODE®
PROFESSIONAL LABELING SYSTEM

www.tnb-canada.com

Thomas & Betts



Belzona opens Richmond Hill office

Belzona, a player in the design and manufacture of industrial protective coatings and polymer repair composites, opened its new office—Belzona Great Lakes Holdings Ltd.—in Richmond Hill, Ont., having acquired the distribution rights for the Province of Ontario.

Belzona operates through a global network of over 140 distributors present in 120 countries, providing a range of solutions to problems encountered in industries such as power generation and distribution.

Kimberly Svendsen, corporate development director for Belzona, explained: “Belzona’s corporate mission is to encourage strong and steady growth among each one of its distributorships within the network. A key component of our business plan is to build strong neighbours and to achieve proper territory coverage. This recent purchase brings Belzona one step closer to the accomplishment of this goal.”

Along with the commitment to enhance Belzona’s market potential and visibility within the region, Belzona will devote additional resources to creating a new training facility. This facility will serve to further the educational requirements of Belzona’s Canadian distributors, consultants, and contractors, as well as the North American distributors.

Cooper acquires Illumination Management Solutions

Cooper Industries has acquired Irvine, Calif.-based Illumination Management Solutions Inc. (IMS), a player in specialized optics and system design for LED (light-emitting diode) fixtures. Terms of the transaction were not disclosed.

“The acquisition of IMS demonstrates Cooper’s ongoing strategic commitment to become a market leader in energy-efficient solid-state lighting solutions,” said Cooper Industries chair and CEO Kirk S. Hachigian.

He added that LED technology is a key growth platform for Cooper, having previously acquired io Lighting and UK-based Clarity Lighting. Cooper also continues to make organic investments in this technology platform with the construction of its Cooper Lighting LED Innovation Centre in Peachtree City, Ga., which will act as a centralized resource for all global LED-based activities, and will leverage technology from Cooper Crouse-Hinds, Cooper Safety and Cooper Lighting.

“The acquisition of IMS and the talent it brings into our organization strongly complements our technology investments by adding enhanced capabilities in LED systems and optical design. As a result, Cooper will be able to bring more LED-based solutions to the market faster across our global portfolio, and it better positions the company to meet the expected global demand for more energy-efficient solutions and infrastructure investment, including the American Recovery and Reinvestment Act of 2009,” said Hachigian.

IMS designs and manufactures LED systems and fixtures for a variety of lighting applications and has developed LightBAR technology, which promises for extended design life and performance in roadway and infrastructure lighting, as well as safety applications in oil and gas, emergency lighting and other industrial applications.

Osram and Traxon/e:cue form LED joint venture

Osram and Traxon Technologies/e:cue lighting control have formed a joint venture that, they say, will accelerate the level and quality of innovation in LED-based lighting systems and their application.

“This linkage makes for an even more capable Traxon/e:cue, one that is better able to become the world’s leading LED lighting systems and solutions provider,” said Nicolai West, Traxon/e:cue’s CEO. “It allows us to strengthen our management team, product portfolio and capabilities around the globe while maintaining our distinct culture, focus on partners and customers as well as our drive for success through flexibility, simplicity and innovation.”

Traxon will maintain its independence and brand under the Osram umbrella as an Osram company.

“We are pleased and proud to have Traxon/e:cue join the Osram family and look forward to helping it extend its leadership in LED lighting systems,” said Martin Goetzler, Osram’s CEO.

In terms of process, office locations and customer contacts, all operational aspects of Traxon/e:cue remain in place.

Philips acquires Australian lighting controls company Dynalite

PHILIPS Royal Philips Electronics has acquired Dynalite, a Sydney-based maker of lighting controls, and has integrated it into the Lighting Electronics business within the Philips Lighting sector.

“The acquisition of Dynalite enables us to further strengthen our offering of integral energy management solutions to major corporations, property developers and hotel groups,” said Rudy Provoost, chief executive of Philips’ Lighting sector. “Having a prominent lighting controls business will help us to further capitalize on the growing demand for energy-saving solutions.”

Dynalite was founded in 1989 and offers solutions for energy management and building automation, architectural lighting control, home automation and residential applications.

IEC Standards+ deals with short-circuit currents in three-phase AC systems

IEC 60909-3 on short-circuit currents in three-phase AC systems is now available as a new IEC Standards+. It includes the new third edition of this international standard with an annexed Redline version that shows all changes from the previous edition.

Developed by IEC Technical Committee 73, the third edition specifies procedures for calculating the prospective short-circuit currents with an unbalanced short circuit in high-voltage three-phase AC systems operating at nominal frequency 50Hz or 60Hz.

The ability to withstand maximum short-circuit currents, including their thermal and mechanical effects, concerns all electrical apparatus and equipment. Thus, short circuit calculations are essential for the electrical manufacturing industry, industrial power plants and power utilities to ensure the safe design of components and systems to prevent damage to equipment and interruptions of public electric supply systems. The safety of involved personnel and third parties is also at stake.

Spikeshield® Surge Protective Devices

Do you really want to trust a low cost SPD to protect your expensive equipment?

HUBBELL®
...your best Line of Defence



www.hubbellonline.com





John Petrak, manager of the EYE Test & Measurement Lab, tests an HID lamp in the photometric sphere to measure the intensity and colour of the lamp's light.

EYE Lighting Test Lab gets ISO 17025

EYE Lighting International, a manufacturer of lamps and lighting products, has been awarded ISO 17025 accreditation that recognizes the technical capability of its Test & Measurement Laboratory. Only 23 accreditations of this standard have been awarded worldwide in the Energy Efficient Lighting Products category.

"We are active participants in the compliance of ISO standards and are proud to be recipients of these coveted standards," said Keith T.S. Ward, president and COO of EYE Lighting. "These accreditations and certifications will drive decisions that affect the environment and how we serve our customers at world-class levels."

NEMA Publishes ANSI C12.19 and C12.22

The National Electrical Manufacturers Association (NEMA) has published ANSI C12.19, "Utility Industry End Device Data Tables", which presents common structures for encoding data in communication between end devices (meters, home appliances, ANSI C12.22 nodes) and utility enterprise collection and control systems using binary codes and XML content. The tables support gas, water, and electric sensors and related appliances.

The material addresses AMI and Smart Grid requirements from, among others, the Smart Metering Initiative of the Ontario Ministry of Energy, and Measurement Canada.

NEMA has also published ANSI C12.22, "Protocol Specification for Interfacing to Data Communication Networks", which describes the process of transporting C12.19 table data over a variety of networks. This standard aims to advance interoperability among communications modules and meters.

Multiple vendors offer communication technologies that work in conjunction with C12.22, allowing utilities to choose options that make the most sense for their budget, objectives and service territory. Open standards like C12.22 help utilities evolve their systems over time by enabling new technology to interoperate with existing infrastructure. **EB**



Shahid Jamil

Shahid Jamil of the **IOL Esso Strathcona Refinery** has been selected as the recipient of the 2009 Electrical Safety Excellence Award by the **IEEE Petroleum & Chemical Industry Committee (PCIC)**. This award is presented for "outstanding dedication and contributions made to advance and accelerate the dispersion of information and knowledge impacting electrical safety through activities within and outside the [PCIC]". He will receive the award at PCIC's conference in September. Congratulations!



Allan Gibbins

Hubbell Canada LP announced that, after 16 years with Hubbell, **Allan Gibbins**—president of Hubbell Canada—has retired from the company. Gibbins started with the company in 1992 as the vice-president and general manager in the Lighting Division, then transitioned to the president role in 1994. During his tenure as president of the Canadian business, he was involved in numerous initiatives, including the acquisitions of **AB Chance Canada, Temco** and **Adam**, the expansion of the Pickering facility, and the implementation of succession planning. He was also involved in the community and dedicated to the industry, serving on the board of the Canadian Standards Association and Electro-Federation Canada (EFC).



Kevin Mallory

Kevin Mallory is the new vice-president and general manager of Hubbell Canada, assuming responsibility for the Hubbell Canada business units in Pickering, Ont., and Montreal, Que. Mallory joined the Hubbell Canada Product Marketing group in 1992 and was promoted to director marketing and sales **Hubbell Wiring Products** in 1997, a position he successfully held until his move to Hubbell Wiring Systems in Milford, Conn., as director, business development. In his new role, Kevin is charged with building on the success Hubbell has enjoyed in the Canadian market with new initiatives and strategies geared toward accelerated growth and continued leadership.

The company also announced the retirement of **Bill Agnew**, director of marketing and sales **Hubbell Lighting Canada**. Agnew led the Hubbell Lighting group for over 12 years and was an integral part of the Hubbell Canada senior management team. He was the driver behind assimilating and delivering the depth and diversity of all the Hubbell Lighting brands to the Canadian market.

Debbie Drozda was appointed to the position of director, marketing and sales **Hubbell Lighting Canada**. She has served Hubbell Canada as the director of operations for the last eight years. She was instrumental in advancing lean initiatives geared toward improving service throughout the warehousing, value-add services and manufacturing operations in both Pickering

and Montreal. Her new mandate will be to develop programs and initiatives that will accelerate Hubbell Lighting Canada growth in 2009 and beyond.

The current Hubbell Lighting Canada regional sales management team, national accounts and marketing management personnel will report directly to Drozda, who reports to Kevin Mallory.

Chess Electric—manufacturer agent for **GE Multilin, Meltric** and **Ericson**—announced the appointment of **Zab Noorzad** as technical representative. Noorzad's many years of sales and distribution experience, says the company, will be an asset in further developing its distribution channels for GE Multilin, Meltric and Ericson. Noorzad is responsible for the distribution of these products for the Greater Toronto Area, travelling from Mississauga and Brampton in the west to Markham and Scarborough in the east, and all points south of Highway 9. Visit Chess Electric at www.chesscontrols.com.



As of March 1, **Optics Lighting Agency Inc.** is responsible for promoting the **Leviton** lighting controls and energy management lines in Alberta.

Optics is an independent manufacturer rep of architectural, commercial, industrial and residential lighting fixtures. Visit Optics online at www.opticslighting.com.

Hammond Power Solutions (HPS)—a North American manufacturer of dry-type electrical transformers—has presented **McKenna Agencies** with its 2008 Canadian Rep of the Year award for outstanding performance in 2008. Located in Calgary and Edmonton, Alberta, McKenna is an independent manufacturers rep charged with the marketing and promotion of products throughout Alberta and the Northwest Territories.

Accuenergy Canada Inc. has named **Optimum Energy Products Ltd.** its 2008 Distributor of the Year—a notable achievement, considering it was Optimum's first year carrying the Accuenergy line of three-phase power and energy meters for commercial and industrial customers. **EB**

Having trouble finding the right people?

Look no further...
Make **EBMag.com** your HR Partner!

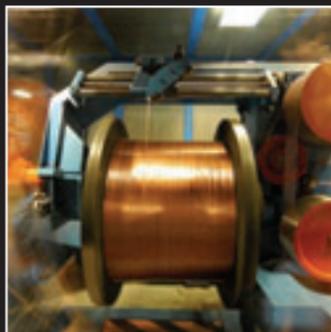
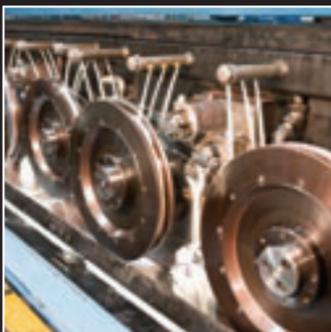
IT'S FREE AND SIMPLE. Simply send us the following information and we'll upload it to EB Careers Online:

- Company name and logo
- Job title and description
- Geographic location of job
- Contact information
- Expiration date (if any)

E-mail acapkun@clbmedia.ca with all the details to get started. Help us help you! Send us your career opportunities today.

Northern Cables Inc.

The armoured cable specialists



Canadian manufacturer specializing in AC90, ACWU90, TECK90, MCTHHN, ACTHH, HCF

P.O. Box 1564, 50 California Avenue, Brockville, Ontario K6V 6E6
Phone: 613-345-1594 • Fax: 613-345-3147 • Toll Free: 1-888-524-5050
www.northerncables.com



GPS fleet vehicle tracking provides solid ROI



GPS (global positioning system) vehicle tracking can give small businesses the control needed to effectively manage offsite vehicle fleets. Monitoring location and speed of vehicles provides an easy way to gauge undesirable driver behaviour and increases security.

But fleet owners around the world have begun to recognize there are benefits with GPS vehicle tracking that directly affect their bottom line. In fact, it provides them with an opportunity to earn a significant return on investment (ROI).

The fact is, if your company is not using a GPS tracking system to monitor its fleet, then you're actually losing substantial cash flow every hour that your fleet is offsite. GPS vehicle tracking can help businesses with fleet vehicles survive and thrive in the competitive marketplace by providing ROI in five ways: increasing billable hours; decreasing overtime hours; reducing fleet costs; saving on communication costs; and improving maintenance schedules.

● Increasing billable hours

When employees know their vehicles are being tracked, they stop wasting time and complete their assigned jobs more efficiently. By increasing the productivity of your employees, you will be able to increase billable hours, complete more jobs and improve customer satisfaction.

A recent study by Aberdeen Group found that organizations with small fleets experienced a 23% increase in the total number of service calls completed per day, per technician, once GPS vehicle tracking was installed in its fleets.

With GPS installed, drivers will get to each jobsite quickly (which makes customers happy) and complete more jobs per day (which makes you happy). You can even use the information gathered by GPS as a concrete measure of performance to reward exceptional employees.

Bob Bellini, CEO of Varsity Plumbing and Heating in Flushing, N.Y., sought a tangible way to gain better management control of the company's vehicles, increase operational efficiency and more accurately track billable hours. Installing GPS vehicle tracking in his fleet provided the perfect solution.

"After installing GPS, we saw an immediate ROI," says Bellini. "Through improved productivity and operational efficiencies, we are projecting to add more than \$300,000 to our bottom line in our first year."

● Decreasing overtime hours

Overtime pay can be a huge burden on a small- or medium-sized company. While employees should absolutely be paid for all the hours they work, employers need to be absolutely sure that timesheets reflect actual hours worked.

GPS vehicle tracking gives fleet owners the ability to automatically track all the hours an employee spends in their vehicle and know exactly how long an employee spends at each jobsite.

With this data, you will know exactly how long an employee has worked on any given day, thereby eliminating any mistakes made on manual timesheets. And by increasing employee productivity, your business will find that employees will complete more jobs in less time, further reducing overtime hours.

● Reducing fuel costs

The unpredictability of fuels costs can wreak havoc on a company's bottom line. But even when prices are low, fuel still commands a huge part of a business' budget.

GPS vehicle tracking provides you with a powerful tool that will pinpoint driver habits that waste fuel, such as: speeding, excessive idle times, unauthorized journeys and indirect routing to jobsites.

In addition, the best GPS fleet solutions instantly allow you to deploy vehicles closest to a particular jobsite. This helps reduce vehicle mileage, as well as reduce fuel consumption. Less money spent on fuel means more money available to keep your business running.

Lynda Silvestro, owner of Hoyt Livery in New Canaan, Conn., wanted a way to monitor her vehicles, reduce gas mileage and eliminate costly personal use of company vehicles. Investing in a GPS fleet tracking system provided immediate results.

"On fuel savings alone, we are on course to make an annual savings of \$73,000 per year from implementing GPS," says Silvestro.

● Saving on communication costs

Without a GPS solution, the only way to get the location of a fleet vehicle is to make a phone call or send a text message. Repeat calls and messages to multiple drivers can quickly add up to a large communications bill.

With GPS tracking, fleet owners know the location of every vehicle and can determine which vehicles are closest to any jobsite for quick deployment. Instead of wasting time and money on needless calls, you'll be completing more jobs while reducing your bills.

● Improving maintenance schedules

Properly maintaining fleet vehicles is important for ensuring each one stays on the road and enjoys an extended life. A vehicle in for major repairs costs you money in repair work and lost productivity.

Regular maintenance also has a direct impact on fuel consumption. According to the U.S. Department of Energy, a well-tuned vehicle can improve miles per gallon by an average of 4%, and immediately fixing a serious mechanical problem can improve miles per gallon by as much as 40%.

The best GPS fleet tracking solutions provide service alerts that can tell you when a vehicle is due for routine maintenance, and ensure that your vehicles are kept running in top, fuel-efficient form.

By proactively avoiding mechanical troubles and running vehicles at peak efficiency, your business will keep more money in the bank. **EB**

This article contributed by FleetMatics, www.fleetmatics.com.

Now from Hammond Manufacturing

ENCLOSURE COST SAVINGS

Virtually every standard industrial enclosure needs to be modified by your staff for final use - holes, cutouts, painting, and more. Hammond Manufacturing can affordably provide ready to use enclosures to your specifications, saving you this additional labour time and cost.





Your Colours



Your Holes & Cutouts



Your Mounting Requirements



Your Dimensional Needs

Modification services:

- Durable Powdercoat Paint Colours - Hammond standards, RAL and custom colour matching
- Laser/CNC Holes & Cutouts - conduit openings, pushbutton holes, equipment cutouts, etc.
- Mounting options - various studs, strut, tapped holes, etc.
- Dimensional changes
- Accessory assembly - windows, handles, lighting, climate control, etc.

Contact your Hammond Distributor or visit us online at www.hammondmfg.com for all your enclosure needs.



**HAMMOND
MANUFACTURING™**

Quality Canadian Products

Hammond Manufacturing Co. Ltd
394 Edinburgh Road North
Guelph, Ontario N1H 1E5

Tel: (519) 822-2960 or (905) 456-3770
Fax: (519) 822-0715
sales@hammfg.com
www.hammondmfg.com



40000kW



40kW

Business begins with power. Power begins with your Cat® Dealer.

Your Cat® Dealer understands what matters most to customers: getting the right size power sized right, installed in a timely manner and backed with reliable service. The right size power. Installed efficiently. Supported expertly. Now you're in business. With Caterpillar.

If you are interested in spec sheets and technical info, visit www.catelectricpowerinfo.com/46c.

To interact with other power generation professionals in our online community, register at www.catelectricpowerinfo.com/connect.

CATERPILLAR®
TODAY'S WORK. TOMORROW'S WORLD.™



By Dave Smith

Catch the Z462 train... or be crushed by it

When a train is coming and you find yourself on the tracks, you can either let yourself get run over or jump aboard. CSA Z462, “Electrical Safety in the Workplace”, is a very big ‘train’, and some of our clients have been flattened by it, while others are “all aboard”.

The on-board clients are now running into difficulties of implementation as the Z462 ‘rubber hits the road’. For example, most clients are using a two-class clothing system: Cat 2 daily wear and Cat 4 flash suits for specialty work. Cat 4 suits, however, are tremendously hot and bulky, with dark visors. Put on clumsy rubber and leather gloves and you have many excellent, dedicated electricians asking the obvious: Couldn’t this initiate an accident?

Imagine an electrician in an indoor substation with high-bay

lighting wearing a Cat 4 suit and reaching into a 13.8 cubicle to turn off a control breaker. What was once a simple task with bare hands and safety glasses turns into an electrician struggling to see which of the breakers his gloved hands are touching; with his hood visor fogging up so he’s unable to see due to the lack of light; and visual distortion and faulty resolution from the transparent glues used in the manufacturing process.

Add to this a dirty or poorly cleaned visor with scratches impairing optical clarity and worsening glare. Looking closer, the electrician discovers that colour-coded wires look different in this environment. Given an extended amount of time, and you get oxygen deficiency, mental and physical fatigue, heat exhaustion and, potentially, heat stroke.

To avoid this situation, planning and forethought are essential before buying your PPE (personal protective equipment), and initial purchase cost should account for only a small part of the decision. For instance, Cat 2 coveralls with an 8.2-cal rating are a far more expensive purchase than Cat 2 coveralls with a 12.6-cal rating, even though they have a lower initial cost. Why?

An electrician working with an exposure to 8.3-cal equipment up to 12.6-cal would need to don Cat 4 clothing, whereas an electrician in 12.6-cal coveralls would just put on his gloves, faceshield, etc., and complete the task. This is a huge saving in time and annoyance.

All arc flash software categorizes any exposure above 40 calories as Extreme Danger, No Energized Work. We have clients with Cat 4 suits that are 50-cal suits whereas other clients have purchased 42-cal suits that are lighter.

This difference translates into huge differences in heat. Many clients, in an attempt to save perhaps \$250, purchased flash suit hoods without built-in fans; 12 months, and many complaints later, they are buying the second hood with the fans.

If you’re ever in a hood with no fan, you’ll very quickly find the air feels stale, you are covered profusely with sweat running into your eyes, you cannot concentrate on the task and you have a significantly increased risk of initiating an accident. Even with the fan, any exertion over a period will raise core body temperature. One client had workers at height in a hot area with Cat 4 suits on and, by the time the job was finished, they had the fellows working 10 minutes and resting 50 to bring down their body temperatures—even with cold packs inside the suits.

Heat exhaustion becomes heat stroke and deadly at 40.5°C. There are many facilities with ambient temperatures above this range so every effort to reduce or dissipate trapped PPE heat is essential.

Every week I get asked, “Couldn’t this PPE initiate an accident?”, and my response combines many points. Yes, perhaps it could, so you need to make sure you are not relying on PPE alone. PPE is the final defence, so look at your engineering, purchasing and administrative controls; implement arc flash mitigation strategies in advance; find out-of-the-box solutions to deenergize equipment yet keep the loads energized, or delay the work until a shutdown and do it deenergized; perform a thorough Job Hazard Analysis, find multiple control barriers for every task step with a hazard (Poor light? Get temporary lighting!); write a Job Plan/SOP and follow it, and watch your safe work practices.

Remember that all these procedures and precautions are not optional; Z462 is now the standard in Canada for electrical safety and it mandates PPE. Arc flash accidents do not happen often, but when they do, unprotected workers get hurt—badly. Once you’re in a burn unit, you are in serious risk of getting an infection that could end your life.

Even if you survive, your life—as you knew it and enjoyed it—is over.

Implementing Z462 has hidden complexities, but our equipment is aging, our busses are getting bigger, maintenance is being extended and reduced, the old goats are retiring and taking their collective wisdom and experience with them, and leaving these tasks to the next generation.

Since getting flattened is not an option, you only have once choice: catch the Z462!

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

Dave Smith is president of Canada Training Group and has been providing consulting services to industry since 1980. You’ll find stories like this one at www.canada-training-group.ca; feel free to use this information to support your own safety program.

Are you looking to hire?

We work with Non-Union and Open Shop Unions and any closed union that provides authorization to work directly with employers



Youth Apprenticeship STANDARDS COUNCIL

10 KODIAK CRESCENT, UNIT 100
TORONTO, ONTARIO M3J 3G5
416-636-8218 • www.youthac.ca

BENEFITS TO EMPLOYER MEMBERS

- source for full-time or temporary qualified workers
- access to screened, well-trained individuals
- access to screening services for licensed individuals
- FREE safety training packages

ADDITIONAL BENEFITS TO EMPLOYER MEMBERS

- Access to all other safety training programs at a discounted rate, which include: (scissor lift, lock out & tag, confined space hazard awareness, propane in construction, scaffold training, traffic control)
- first aid training/safety program management for your company
- Safety Training to meet Ministry of Labour Requirements
- Electrical & Plumbing Pre-Exam course

Please call 416-636-8218 or email employer@youthac.ca for membership pricing. For training enquiries, contact our approved training facility below



Pre-Apprenticeship Training Institute

10 KODIAK CRESCENT, UNIT 100
TORONTO, ONTARIO M3J 3G5
416-638-4111 • www.pat institute.ca

YOUR NEW EMPLOYEE WILL COME WITH:

- Hands on practical experience in “real world” conditions
- Industry tools
- Safety equipment and training (WHMIS, Fall Protection, Lockout & Tag Safety, Confined Space Hazard Awareness, Aerial Platform, Traffic Control, Propane in Construction and Scaffold Training)
- Training tailored to your company’s specialization

ASK US HOW WE CAN UPGRADE YOUR CURRENT WORKFORCE

WE SUPPLY WELL TRAINED, SCREENED INDIVIDUALS FOR THE FOLLOWING TRADES:

- Construction & Maintenance Electrician
- Refrigeration & Air Conditioning Mechanic
- Plumbing
- Appliance Service Technician
- Network Cabling Specialist
- Corporate Training
- Hydronics
- ODP
- TSSA Approved Training & Examination Facility for G3, G2, DA Certification
- Air Conditioning Electrical Standards training

Electrical Pre-exam Course, Course Start date: April 27th, 2009

For more information, please contact our Employer Relations Department at info@patinstitute.ca or call 416-638-4111.

Youth Apprenticeship Standards Council Approved Training Facility

Going "green" without seeing red

A photovoltaic system connected to the grid is only as good as its wiring

By Gerritt Lee, P.Eng.

FIGURE 1

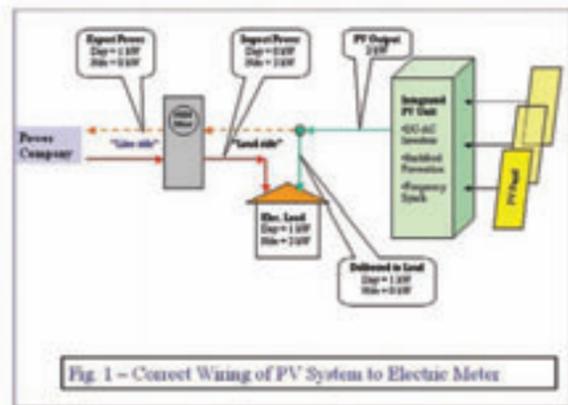
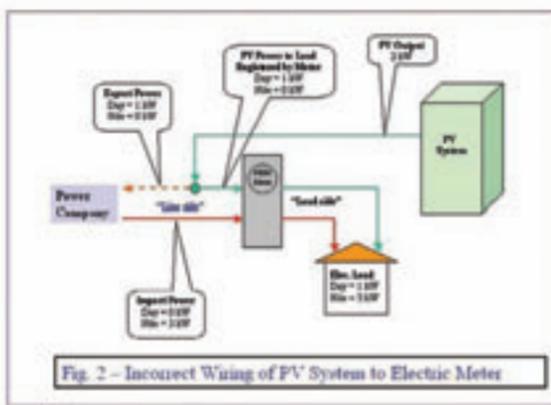


FIGURE 2



The prospect of achieving energy self-sufficiency and the ability to control soaring energy costs have boosted the popularity of photovoltaic (PV) systems, which convert the sun's radiant energy into electricity. Using sunlight for fuel—a source that is abundant, free and carbon-neutral—PV systems offer residential and industrial customers alike a practical way to generate their own electricity and, naturally, lower their electric bill. To help subsidize cost and promote this green technology, federal and local tax credits are available.

In addition, the power company offers added savings in the form of credits for any excess energy that your PV system exports back into the grid when usage is light. To qualify for the credit, the customer must sign an agreement with the power company, which will replace the customer's standard electric meter with a net energy meter (NEM) that records energy flow in both directions. Accumulated credits are usually good for one year and are applied toward your electric bill.

However, if your PV system is incorrectly wired to the meter, the initial excitement and relief you expect to see on your electric bill will quickly turn to dismay. You must learn to prevent this 'green' technology from making you see red.

Getting it right

Residential and industrial PV systems have contrasting energy load profiles; the former is typically a net energy exporter during the day when usage is light and a net importer at night when the sun is not shining. By contrast, industrial users consume most of their PV generation during the day while importing less at night when the business is closed. Residential systems range in size from 1 kW to 5 kW, with the capacity of industrial systems going as high as 100 kW or more.

Figure 1 illustrates the correct wiring of the PV system to the electric meter; the system is shown wired to the load side—the side connecting to the customer's equipment and also serves as the demarcation point between the utility and customer. The line side is where the utility terminates the service drop.

Consider a typical residential profile where the occupants are away during most of the day, at work or school, resulting in a light electrical load. When the family returns home in the evening, the load naturally increases. For the sake of this illustration, let's assume that our PV system generates 2 kW of power and that the household load is constant. As shown, the daytime load is 1 kW, which is easily satisfied by the PV system. This leaves a balance of 1 kW of power that is exported to the grid for credit. At night, the family's increased load is now 3 kW. However, since PV systems do not generate power when the sun is not shining, the full 3 kW of power must be imported from the utility.

The upper half of Table 1 summarizes the details and the net impact on the family's electric bill per each hour of energy usage. From this simple example, you can see how our family's nighttime energy usage is offset by the daytime export credits, resulting in a net energy usage of 2 kWh. Compare this to an energy consumption of 4 kWh without any PV system at all.

Figure 2 illustrates what happens when the PV system is incorrectly wired to the meter (the line side). In fact, the utility forbids

anyone from making line-side taps because of the potential for theft of unmetered power. To prevent this, the power company places utility seals on its meters and other equipment, such as junction boxes that are physically ahead of the meter.

What are the consequences of incorrect wiring? The load profile has not changed, yet it is apparent that the power generated by the PV system must first flow through the meter before it can enter the load. The meter will detect this power flow but because it does not know that it came from the PV system, it assumes that it is utility power and will bill for it as such. Further, any and all export credits will be lost because exported power goes directly back into the grid without flowing through the meter. The net result is the same as if there was no PV system at all. As before, the lower half of Table 1 summarizes the results:

TABLE 1
Per-hour energy usage (kWh) comparison for correct versus incorrect wiring of PV system to net energy meter

CORRECT WIRING

	Daytime kWh Usage	Night Time kWh Usage	Net kWh Usage	kWh Usage w/o PV System
Total required	1	3	4	4
Provided by PV	1	0	1	0
Import from utility	0	3	3	4
Export to utility	1	0	1	0
Registered by meter	-1	3	2	4

INCORRECT WIRING

	Daytime kWh Usage	Night Time kWh Usage	Net kWh Usage	kWh Usage w/o PV System
Total required	1	3	4	4
Provided by PV	1	0	1	0
Import from utility	0	3	3	4
Export to utility	1	0	1	0
Registered by meter	+1	3	4	4

Normally, this situation would be the exception because the utility guards against unauthorized entry through its sealing provisions. However, there may be times when contractors who are not sufficiently familiar with standard utility codes and regulations inadvertently enter sealed utility spaces. For this reason, it is always advisable to consult the local power company before beginning any PV installation work. If you have recently installed a PV system but see no relief on your electric bill, this may be the reason.

The PV bandwagon is becoming more crowded each day as the benefits to the pocketbook and environment are obvious. Your investment in this green technology should reward you with many years of service and likewise your return on investment should have you seeing the same colour as well. **EB**

T&B new product alert



StarTeck® Teck Cable Fittings Stainless steel fittings now available up to 2-inch hub size

The StarTeck® (ST) series range of fittings for teck and ACWU cable has recently been expanded to include stainless steel fittings in 1-1/4 to 2-inch hub sizes.

Designed for end-users by end-users, StarTeck teck cable fittings accommodate a broad range of cables, minimizing the possibility of mismatched cables and fittings in the field.

Available in aluminum, steel, stainless steel and PVC-coated aluminum and steel, StarTeck fittings are ideally suited for use in demanding environments.

For complete product details, consult the "What's New" section of our web site.

www.tnb-canada.com

Thomas & Betts

T&B monthly tips



Did you know...

... that Thomas & Betts makes shipments of 3 or 5 working days on our most frequently ordered aluminum and steel cable tray products?

3 days Aluminum cable tray and fittings

- Ladder tray – any width, any rung spacing
- Choice of two profiles and three sderal heights
- Available in two lengths
- Complete range of fittings for the above

Channel Tray

- 4-inch aluminum ventilated channel

5 days

Steel cable tray and fittings (HDG)

- Ladder tray – choice of 4 widths
- 12-inch rung spacing, 3m lengths
- Wide choice of fittings

Contact Cable Tray Customer Service at 1-888-664-5666 for complete details.

www.tnb-canada.com

Thomas & Betts



By Stephen Tatrallyay, LLB

Supreme Court of Canada reviews extent of builder's risk policy

In a decision handed down on November 21, 2008, The Supreme Court of Canada (SCC)¹ had to deal with a problem arising from an exclusion in a builder's risk policy: excluding liability for "faulty or improper design".

The problem arose as a result of the failure of a tunnel boring machine (TBM) that, at the time of the contract in the early 1990s, was the largest in the world. As such, it required technological skill in its design that was beyond the standard applicable to an ordinary, similar machine. The TBM failed in November 1993 almost immediately upon being put into operation, so the Canadian National Railway (CNR)—the

TBM's purchaser—applied to its insurer for compensation.

Basing its position on the above exclusion, the insurer refused coverage, and everyone went merrily off to court. The trial judge allowed CNR's claim, finding that the failure had been unforeseeable, and that the mere fact of failure did not satisfy the test of "faulty or improper design". Ontario's Court of Appeal disagreed by a 2:1 margin, stating that any risk must be foreseen and accounted for, and that anything less constituted improper or faulty design.

The SCC overruled the Court of Appeal's decision by the narrowest of margins (4:3), adopting an expert's claim that

Builders and contractors of whatever size should therefore carefully review their draft insurance policies when negotiating them, and think about the exclusionary language contained within.

where, as here, the designers were working on the cutting-edge of new technology; although a risk might have existed, it did not necessarily follow that there was faulty or defective design in failing to properly identify it, allow for it or find a solution for it.

The words "faulty" and "improper" and, particularly, "improper" required the insurers to establish that the design fell below a realistic standard, which the Court equated to the state of the art at the time the product had been created. A standard of perfection in relation to all foreseeable risks was too high and not required by the words chosen by the parties. CNR therefore succeeded against the insurers, who had had the burden of proving that the policy language applied and adduced no other evidence tending to demonstrate that there was negligence involved in the design.

It should be noted that there was a very powerful dissent written by Justice Rothstein, who adopted an Australian case called Queensland Government Railways v Manufacturers Mutual Assurance Ltd.² to express his opinion that the standard required a design that had taken "all foreseeable risks" into account, no matter how unlikely or remote.

This opens a different can of worms, including the definition of the word "foreseeable", which Justice Rothstein did not attempt to resolve. The reason for mentioning the dissent is that this type of question will certainly be before the court again and, with the change of one judge's vote, could very well go the other way.

The case is of interest to all involved in the construction industry, because most builder's risk insurance policies contain the same or similar language. Builders and contractors of whatever size should therefore carefully review their draft insurance policies when negotiating them, and think about the exclusionary language contained within. 

Note

1. Canadian National Railway et al. v. Royal and Sun Insurance Company of Canada et al [2008] SCC 66.
2. [1969] 1 Lloyd's Rep 214.

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



Never have to ask yourself: business or pleasure?

Keep your business and personal expenses separate with the RBC® Business Avion card.



Receive 15,000 bonus RBC Rewards® points*.

Get the card that helps keep your business and personal expenses organized, so you can spend less time sorting and more time growing your business.

- Helps separate business and personal spending.
- Builds credit in the name of your business.
- Receive 2,500 bonus RBC Rewards points for every year of renewal.

Call 1-800 ROYAL 2-0 or visit rbc.com/businessvisa today.



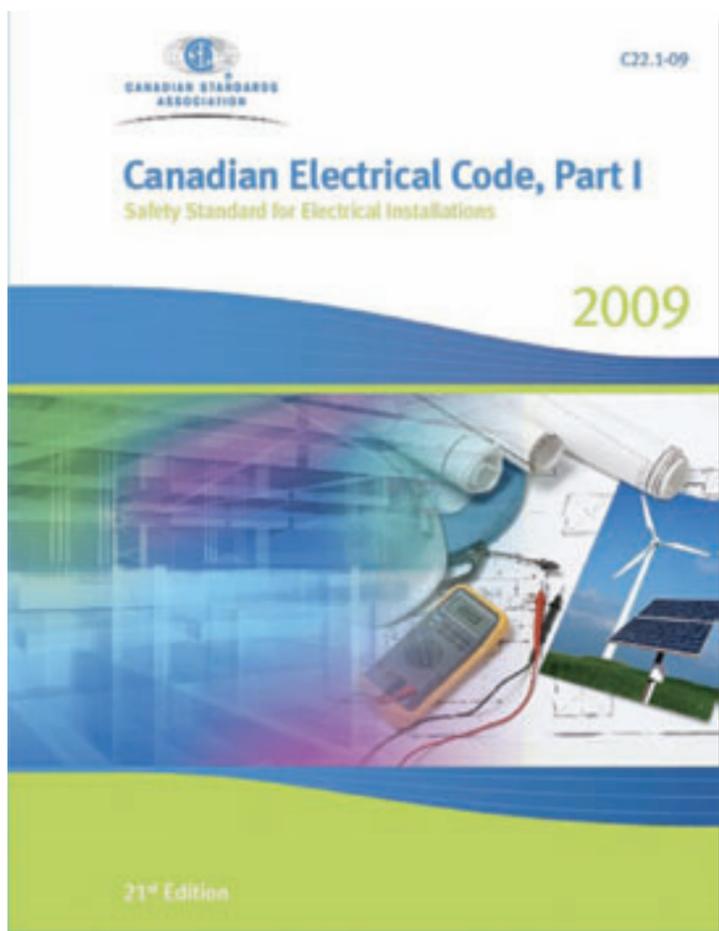
WHAT DO YOU WANT TO CREATE?

© Registered trademarks of Royal Bank of Canada. RBC and Royal Bank are registered trademarks of Royal Bank of Canada. * Registered trademarks of Visa International Service Association. Used under license. † In order to receive the 15,000 bonus RBC Rewards points offer, your application must be received and approved by us within the offer eligibility dates of March 1, 2009 – October 31, 2009. Supplementary cards, as well as existing RBC Royal Bank Visa Platinum Business Avion cardholders as of the offer eligibility dates, are not eligible for this offer. Upon enrollment, 15,000 bonus points will appear on your first Visa statement. This offer may not be used in conjunction with or combined with any other offer. Avion Air Travel Rewards redemptions from the Avion Air Travel Redemption Schedule are for economy class seats only and start at 15,000 points for a short-haul flight. For general redemption terms, conditions and restrictions, visit the RBC Rewards Avion Terms and Conditions section at www.rbc Rewards.com



CANADIAN STANDARDS
ASSOCIATION

CSA... keeping you current with Electrical Safety Standards



2009 Canadian Electrical Code

NOW AVAILABLE

Since 1927, CSA's Canadian Electrical Code Part I has provided the signature standards for addressing shock and fire hazards of electrical installations in Canada.

The 21st version of the Canadian Electrical Code was developed through the most extensive review ever, incorporating 108 revisions and 14 new interpretations. By meeting these standards, you will help ensure the safety of those who rely on your expertise.

STAY CURRENT! ORDER YOURS TODAY!

VISIT
cecode.csa.ca

CSA is... Standards & So Much More!

CSA offers practical handbooks, guides, self assessment checklists, electronic tools, smart standards – plus convenient access to a wealth of standards-related training resources, including “CE Code Essentials” training. Many of our products can be customized to your unique requirements.

Purchase the
2009 CE Code at select
Mark's Work Wearhouse
stores *(Limited time only)*



Photo © Jon Ortner/NYC & Co., Inc.

Setting the stage for Broadway

THE 20th ANNUAL LIGHTFAIR INTERNATIONAL TRADE SHOW AND CONFERENCE

By John Gilson

The 'City That Never Sleeps' is about to earn its moniker this May with the arrival of the biggest light show on Earth. From Monday May 3 to Thursday May 7, New York City will play host to the 20th annual Lightfair International (LFI) Trade Show and Conference—regarded as the lighting industry's most comprehensive architectural and commercial conference.

"North America's premier lighting event," says Lightfair, will showcase the best the industry has to offer and provide participants with exceptional learning opportunities. But above all else, Lightfair is a one-of-a-kind networking avenue for lighting enthusiasts and professionals to mingle and chat with like-minded folks. The five-day event is scheduled to take place at NYC's Jacob K. Javits Conference Center.

Courses for everyone

The Lightfair Daylighting Institute and Lightfair Institute are offering participants 75 CEU/LU-accredited programs to choose from. Programs will be divided into courses (both one- and two-day), workshops and seminars. They are designed to be fun and friendly, interactive and hands-on, and will be as diverse as they are numerous. Topics range from lighting and design fundamentals, the newest software and hardware applications, and photometry, to name but a few.

Attendees will have an opportunity to tour the new headquarters of the New York Times; a great opportunity to check out the iconic newspaper's command centre's newest design feature: a state-of-the-art daylighting control system. Speaking of media, another interesting course the conference offers is an editors' round table, where participants with writing skills can seek advice on how to get their articles published in major architectural lighting design magazines. From 'designed darkness' and sustainability to the effects of lighting on natural sleep cycles, Lightfair has something to satisfy everyone's palette.

Event lecturers and spokespersons are in a league of their own. They are the brightest lights—no pun intended—on the international lighting scene, and include professors, engineers, designers, manufacturers and entrepreneurs. Programs will delve into every nook and cranny in the lighting industry. For example, such programs include stage- and film-lighting courses for those among you aspiring to be Broadway's next big hit.

Discount student pricing!

Courses are available for all knowledge levels. Whether you're a beginner, intermediate or advanced, there is something for you. For beginners, Lightfair recommends you check out the New Attendee Orientation to get yourself acquainted with others and familiar with the conference's layout. There will also be plenty of 'newbie' courses from which to choose, including:



Photo © NYC & Co., Inc.



Photo © Jeff Greenberg/NYC & Co., Inc.

- **Daylighting Fundamentals:** a two-day dynamic course offering training in the expanding field of daylighting design.
- **Basic Lighting:** a fundamentals-heavy interactive lecture interspersed with hands-on activities.
- **Computer-aided Lighting Analysis:** teaches newcomers about the visualization and calculation capabilities of AGI32.

Advanced-level participants can finesse their skills by enrolling in one of the Masters courses, which open Wednesday May 6. Lightfair is also introducing new student discounts by as much as 50%.

Another event to check out is the LFI Educational Forum; according to Lightfair, it is "the only comprehensive forum on lighting education in existence". Participants seeking to expand their career horizons will have a great opportunity at this forum, which has a round-table format giving them the best chances to glimpse the breadth of the lighting education available.

Roll out the red carpet!

The LFI Innovation Awards will take place on May 5—a must-see for anyone interested in seeing the most creative lighting designs and concepts hitting the market. "Awards will be presented to those manufacturers whose product entries exemplify the best in innovative design and thinking," says Lightfair. A

panel of judges, composed of the industry's top experts, will choose this year's award nominees, who will be vying for the coveted award of Most Innovative Product of the Year.

If that isn't enough glitz and glamour, the very next day the International Association of Lighting Designers (IALD) will host the 26th annual International Lighting Design Awards. This premier gala event will recognize aesthetic and technical excellence in lighting design.

The marquee feature of the week, however, is the Exhibit Hall, which opens on Wednesday May 5. This three-day opportunity gives manufacturers an opportunity to showcase their products. Serving more as an exciting networking device than anything else, the Exhibit Hall will be divided into product categories. At the last event, Lightfair experienced an unprecedented 19% increases in attendance and is expecting over 21,000 attendees this year. The event will feature over 500 domestic and international product entries.

The Exhibit Hall will cover more than 165,000 sf of space, and will include three pavilions: the Daylighting Pavilion, which will give attendees a unique opportunity to delve deeper into one of the more innovative aspects of lighting; the European Light and Design Pavilion, a popular showcase of the best in European manufacturers; and the Design Pavilion, a popular stop for more fashion-minded individuals.

Keynote speakers

Innovation and sustainability are two of the dominant themes of the five-day show. Lightfair's choice of speakers this year for the Keynote Luncheon—actor-turned-environmentalist, Ed Begley Jr., and artist James Turrell—is a perfect reflection on these themes. Begley Jr., a 37-year eco-crusader who was recently inducted into the Environmental Hall of Fame, will appear on Monday to offer his best advice to attendees on how to adapt to greater sustainability and efficiency. His message? Start with the little things... you don't *run* up Mt. Everest!

Best known for his work-in-progress, Roden Crater, light and spatial artist James Turrell will present an overview of his work and tell of his greatest sources of inspiration.

Your #1 information source!

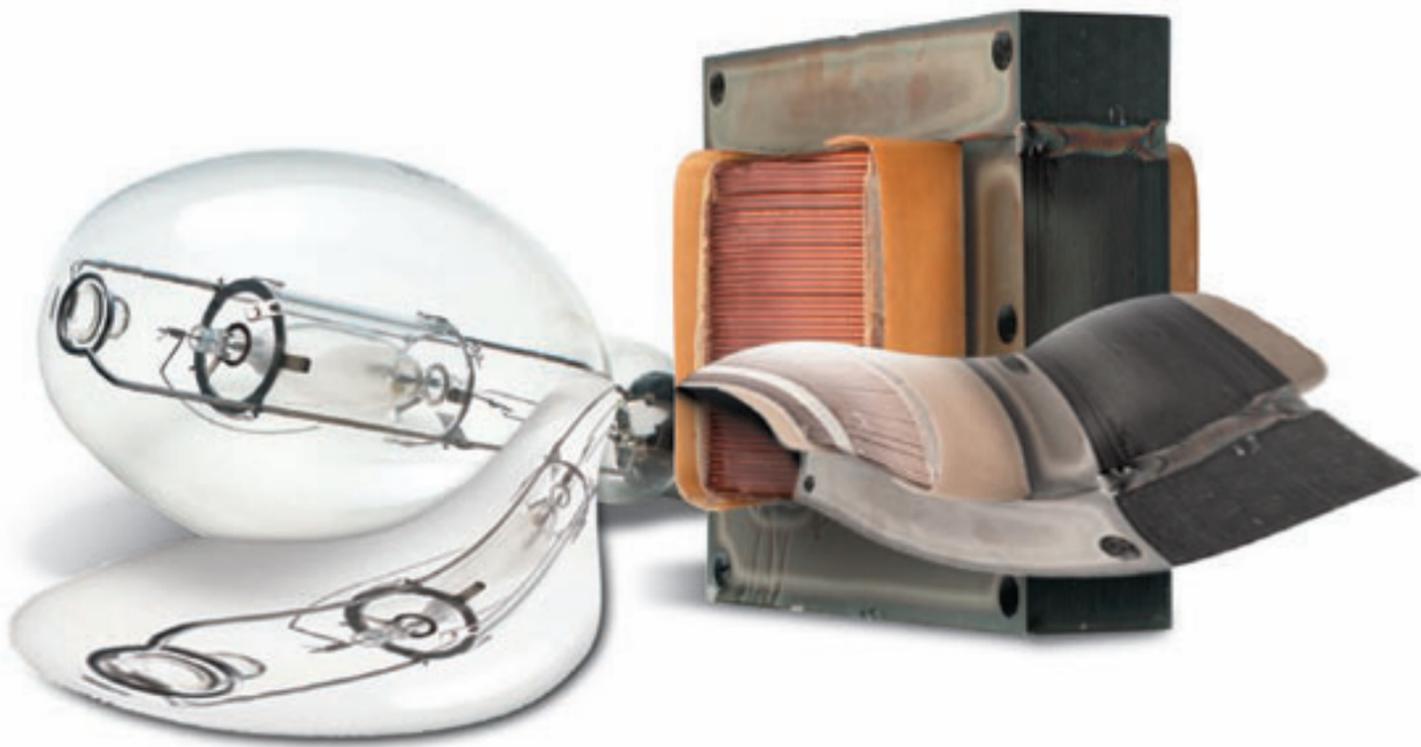
So there you have it: five days of fun and exploration, all within 100 miles of the Canadian border. Like it has in the past, the Lightfair Trade Show and Convention promises to be an exciting affair; however, we understand that not everyone has the free time or money to attend.

That's where Electrical Business comes in: we'll be your Lightfair "man on the ground", covering what you want to know! Stay tuned to the pages EBMag and visit EBMag.com for updates and highlights from Lightfair. **EB**



VENTURE LIGHTING®

You Can't Trust Every Brand by Its Cover



When It's Metal Halide, Make Sure It's Venture

Ballastronix inc.®
by  **VENTURE™**



Accept no imitations. As the world leader in pulse start technology, Venture produces high quality lamps and ballasts that are more efficient than others. Don't settle for less than best, demand *Venture Lighting* products!

*Venture Lighting® products are available from electrical and lighting distributors across Canada
Contact your local sales agent. Visit our website to find an agent near you.*

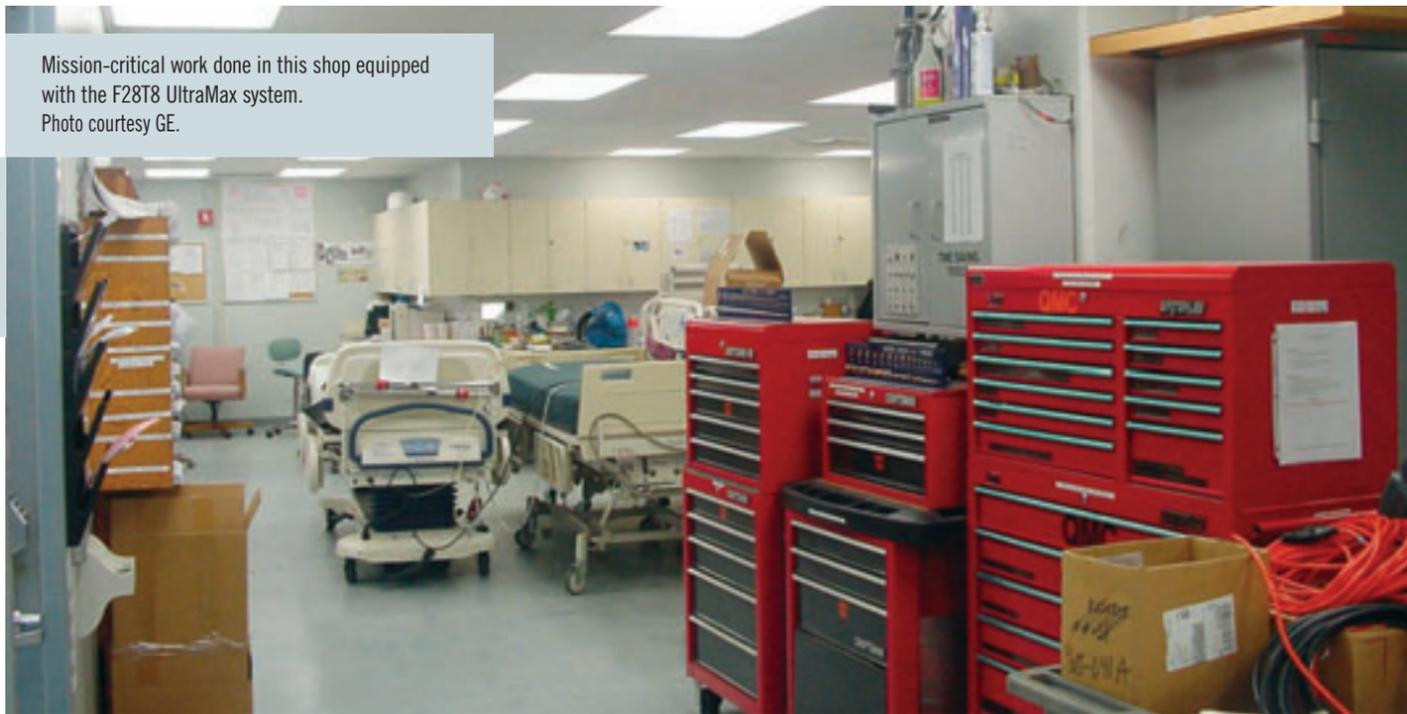
VentureLighting.com/Canada



VENTURE®
LIGHTING

Mission-critical work done in this shop equipped with the F28T8 UltraMax system. Photo courtesy GE.

The UltraStart program-start ballast matches instant-start, high-efficiency energy savings and performance benefits while protecting lamp life in frequently switched applications (five or more switches per day). Photo courtesy GE.



Load-shedding ballasts enable demand-response retrofits

By Craig DiLouie



Quicktronic Powersense ballasts from Osram Sylvania operate linear fluorescent T5 lamps over a wide dimming range and provide versatility in controls selection. The ballasts feature compatibility with low-voltage controls, powerline dimmers and any line voltage from 120V to 277V. Photo courtesy Osram Sylvania.



An expanded family of Philips Advance ROVR digital addressable, controllable fluorescent ballasts includes a one-lamp model for T5 applications as well as one-/two-lamp models to support T8 applications. Photo courtesy Philips.



Universal Lighting Technologies' DemandFLEX ballast family and DCL (demand control lighting) controls promise to provide a cost-effective lighting system. DCL controls allow for local control with energy management systems and external control via the Internet with networked managed systems, as well as integration with utility demand-response programs. Because there are no ballast control wires, the ballasts are suitable for both retrofit and new construction applications. Photo courtesy Universal Lighting Technologies.

Demand is the sum of all electric power required to run a building's equipment currently in operation. As equipment is turned On and Off, demand rises and falls. Peak demand is the highest level of demand recorded by a demand meter during a given period. This is the most expensive power the utility has to produce, as the utility must build sufficient capacity to satisfy these short periods or buy the power needed from other sources at market rates. Many utilities pass these costs on to their customers as a demand (kW) charge added to charges for energy consumption (kWh).

Utilities would rather have their customers reduce their demand peaks instead of their entire load profiles, so many utilities, independent system operators (ISOs) and other power providers offer incentives to curtail non-critical loads either at scheduled times or on request during a grid emergency. These demand-response programs give utilities an alternative to building more power plants or buying expensive power from supplemental sources.

Even without tapping into such a program, building owners can reduce costs by shaving their peaks using a strategy called load shedding, either on a schedule or in response to price signals.

Lighting provides good opportunities for load shedding because it usually occurs when daylight is available, and is available for year-round demand reduction. Assuming a building's hours of operation do not change, owners have two options for reducing peak demand with lighting.

First, they can shut off non-critical lighting loads either manually (through master switches accessible to the facility operator) or automatically (through a scheduling system such as an intelligent relay panel); and either by space or using some type of bi-level switching scheme. Second, they modify their lighting to be step-switching or dimmable with a central point of control.

Because people need light to work, dimming is preferable to On/Off switching in areas lacking daylight. Generally, dimming is also preferable to step-level switching (or On/Off switching with daylight available) in occupied spaces in which the occupants perform stationary or critical tasks, such as offices, where changes in light output should be unnoticeable to a high degree. In addition, dimming is more suitable when light fixtures are in the normal field of view and/or lamps are visible to occupants.

Load-shedding ballasts were installed at the Spence School in New York City in a demonstration project funded by NYSERDA (New York State Energy Research and Development Authority). The ballasts were linked to a building management system, allowing the school to reduce lighting energy consumption by 30% when desired. At the click of a button on a laptop or mobile phone, Spence School can now temporarily reduce demand by 261 kW during emergency grid events.

"The success of this project shows the huge potential of our new demand-response platform," says Stephen Lynch, president of ACE Energy Co. Inc. "This technology will not only reduce Spence School's energy cost, but will also make the world a greener, more energy-smart place."

How low can you go with dimming? Investigation by the Lighting Research Center (LRC) revealed that a 40% reduction in light levels during (and limited to) a load-shedding event will not affect lamp life and is acceptable to most building occupants. LRC found that they could dim the lighting by as much as 40% for brief periods without upsetting 70% of the building's occupants or hindering their productivity. While 30% dissatisfaction sounds high, LRC also found that 90% of the occupants accepted the reduction in light levels when they were told that it was being done to reduce peak demand.

For dimming to occur, we need a dimmable ballast. Manufacturers offer various solutions that can realize this strategy, generally classified as low-voltage (respond to signal travelling along low-voltage wiring) or line-voltage (respond to signal travelling along the power line). Low-voltage solutions enable integration with other control strategies such as daylighting control and scheduling. Line-voltage solutions are well-suited for retrofit because no low-voltage wiring needs be installed—just a signal transmitter.

Low-voltage solutions, both analogue and digital, include:

- Sylvania's Quicktronic Powersense T8 and T5 ballasts (continuous dimming);
- GE's UltraStart (continuous dimming) and UltraMax load-shedding instant start ballasts (bi-level or 0-10V dimming ballast, 1.18 to 0.71 ballast factor, a 40% reduction in both power and light output);
- Advance's Mark 7 and ROVR ballasts (continuous dimming); and,
- Universal's SuperDim, DaliPro and AddressPro (continuous dimming) and Ballstar ballasts (step-switching and dimming).

Line-voltage solutions include:

- Universal's DemandFlex ballasts and Demand Control Lighting (DCL) control system (enabling individual circuit control so that the load on some circuits can be reduced further than on other circuits, or turned Off);
- Advance's Mark 10 ballasts (continuous dimming);
- GE's UltraMax bi-level switching or 0-10V load-shed instant-start ballasts (step-switching from 1.18 to 0.71 BF); and,
- Sylvania's PowerSHED ballast (step-dimming with a one-third reduction in power, operates with a control signal transmitter, located at the control panel, capable of serving hundreds of ballasts).

Some of these solutions can work as stand-alone load-shedding options or integrated into a larger control solution that includes load shedding/demand response, as well as other strategies, such as scheduling, daylight or personal dimming, and occupancy sensing. 

A regular contributor to Electrical Business, Craig DiLouie is principal of ZING Communications Inc. and education director for the Lighting Controls Association (www.aboutlightingcontrols.org). Visit www.zinginc.com. (This paper was originally published in Lighting Management & Maintenance Magazine.)

HOW DOES YOUR CURRENT ELECTRICAL SUPPLIER **MEASURE UP?**



It's easy to turn your purchases into cool stuff.

Leisure, entertainment and office rewards are all within your reach with IED Rewards. There's a powerful lineup of products to choose from – tools for the workshop, the latest gadgets and electronics for the home and unique items that are a collector's dream.

The program is simple. We reward our customers for purchasing participating suppliers' products from an IED Distributor. You earn one point for every dollar spent⁽¹⁾ at any IED Distributors⁽²⁾ across Canada. Your points are updated monthly and you can begin receiving rewards for as little as 1500 points⁽³⁾. What could be easier?

To enroll, log on to www.iedrewards.ca, click on register and then follow the prompts. Sign up with the IED Rewards Program today. You'll be amazed at what your purchases can become.

(1) Points earned on purchases from participating IED Distributors and participating suppliers only. (2) Rules on website apply. (3) Points can be converted to charitable donations to ensure compliance with individual corporate policies.

TURN ON TO REWARDS.

www.iedrewards.ca



IED LIMITED PARTNERSHIP II • WWW.IED.CA

CANADA'S LEADING ELECTRICAL SUPPLY NETWORK

Visit www.ied.ca for the IED distributor nearest you.

- Beaulieu & Lamoureux • CDE • Del's Distributors • Deschênes & Fils • Diversified Ventures • Dixon Electric • Dubo Électrique
- Eddy Group • Ecol Electric • Electrimat Ltée • Espo Electric • Grey-Bruce Electric • House of Electrical • J.D. Paré
- J.W. Bird • Marchand Electrical • McLoughlan Supplies • P. Wolf Lighting • Les Distributeurs Papineau • Paul Wolf/Kester • E.G. Penner
- Powrmatic • Province Electric • Robertson Electric • Thornes/Source Atlantic • Tradelco Inc. • Western Equipment

I-BEAM™ Cable Tray System from Cope®



Cope® I-BEAM™ —
“I” beam side rail configuration
The Ultimate Solution



I-BEAM™ Cable Tray System

- Quality, Strength, and Durability
- Installs quickly and securely
- Aluminum tray designed for industrial applications
- Long span capabilities
- Automated welded manufacturing process
- Complete line of tray and accessories available in our Edmonton facility
- Interfaces with many existing I-BEAM tray configurations
- Meets and exceeds CSA E Class standards

Call us at (866) 632-0180 or visit Cope at
www.alliedeg.com/cope

Columbia-MBF™ ELECTRICAL GROUP

- Columbia-MBF™
- Eastern Wire + Conduit™
- Power-Strut® Framing Systems
- Cope® Cable Tray

© 2009 Cope, Columbia-MBF, Eastern Wire + Conduit,
Power-strut & Tyco International

I-BEAM, Cope, Columbia-MBF, Eastern Wire + Conduit, Power-Strut, Cope, and Tyco are trademarks or registered trademarks of Tyco International and/or its affiliates in Canada, the United States and in other countries.

All other brand names, product names, or trademarks belong to their respective owners.



Why today's

LED site and area luminaires are not measuring up



The promise of LEDs is almost certain. As developers continue to research and design new manufacturing processes, phosphor compounds and colour calibration techniques, the efficacy and viability of LEDs will likely, in time, make them the source of preference for indoor and outdoor lighting.

Unfortunately, the general performance of LED site luminaires on the market today is not quite up to par; the bottom line is that they are neither properly designed nor adequate for large area outdoor, roadway or site lighting use. This paper illustrates how prematurely introduced LED site and area luminaires are not performing as marketed when tested under current IES (Illuminating Engineering Society) standards and, consequently, may be detrimental to users, commerce and the environment.

The efficiency trap

Efficiency is an accepted general measurement of a luminaire's eco-friendly performance. LED area luminaire manufacturers are also touting this metric. The reality, however, is that the total efficiency of a luminaire is less relevant with lighting outdoor tasks, primarily due to the absence of inter-reflections between walls, floor and ceiling. Rather, the true efficiency of an outdoor luminaire should be expressed as its ability to deliver lumens in its intended direction, limit spill light and, ultimately, create a comfortable, glare-free nighttime environment. Cutoff for Dark-Sky sensitive areas is also a consideration for communities increasingly seeking to limit uplight and reduce “sky glow”.

Keeping all this in mind, this paper evaluates one existing LED site luminaire on the market (hereafter referred to as “Fixture X”) against several accepted standards of outdoor site lighting—not simply efficiency.

Many LED manufacturers tout the benefits of LED technology by referencing the bare lamp efficacy of the LED (often claimed to be as high as 90 lumens per watt). This neglects luminaire optical losses. For example, the 77.7W Fixture X uses 60, 1.15W LEDs and produces 4468

lumens. The result is a luminaire efficacy of only 58 lumens per watt.

Regardless, proper evaluation of outdoor luminaire performance should instead be made of the light that is arriving at the task. Too much light immediately beneath the luminaire might initially suggest good performance, albeit with poor uniformity. Better efficiency may also be implied with excessive light behind the pole, but it is ultimately undesirable, expensive and wasted.

Distribution comparison

The light from Fixture X does not exit adequately for large area site or roadway lighting. Its distribution is very similar to a typical fluorescent luminaire. Compare the photometry of Fixture X with a standard 70W pulse-start metal halide (MH) system (Figure 1). Notice the footcandle (fc) traces within the 2 x 3 grid. Essentially, the 2 x 3 grid helps to define the intended direction of the main flux, and the corner of the 2 x 3 grid is about 60° from direct forward throw. Examining the .2-fc curve (Figure 2) allows a specifier to approximate a .5-fc reading when augmented with a properly spaced adjacent fixture (a .5-fc value is typical for pedestrian walkway lighting). When a minimum 1.0-fc value is required (roadways and high traffic zones), Fixture X would need to have greater lumen output, a lower mounting height, and be spaced much closer together to be compliant.

The two isocandela charts in Figure 3 represent the maximum beams exiting the comparison luminaires. The direct light below the fixture in both cases appears to be adequate, and these are obvious attempts at aiming light forward in front of the fixture. However, Fixture X indicates the main beam is 54° up from nadir, which equates to 1.38 mounting heights away from the optical centre of the luminaire. Therefore, the next pole would need to be 3.5 mounting heights away to obtain 1.0-fc minimum between poles (assuming a 15-ft pole). To obtain a .5-fc minimum between poles, a 4.5 mounting height distance would be required.

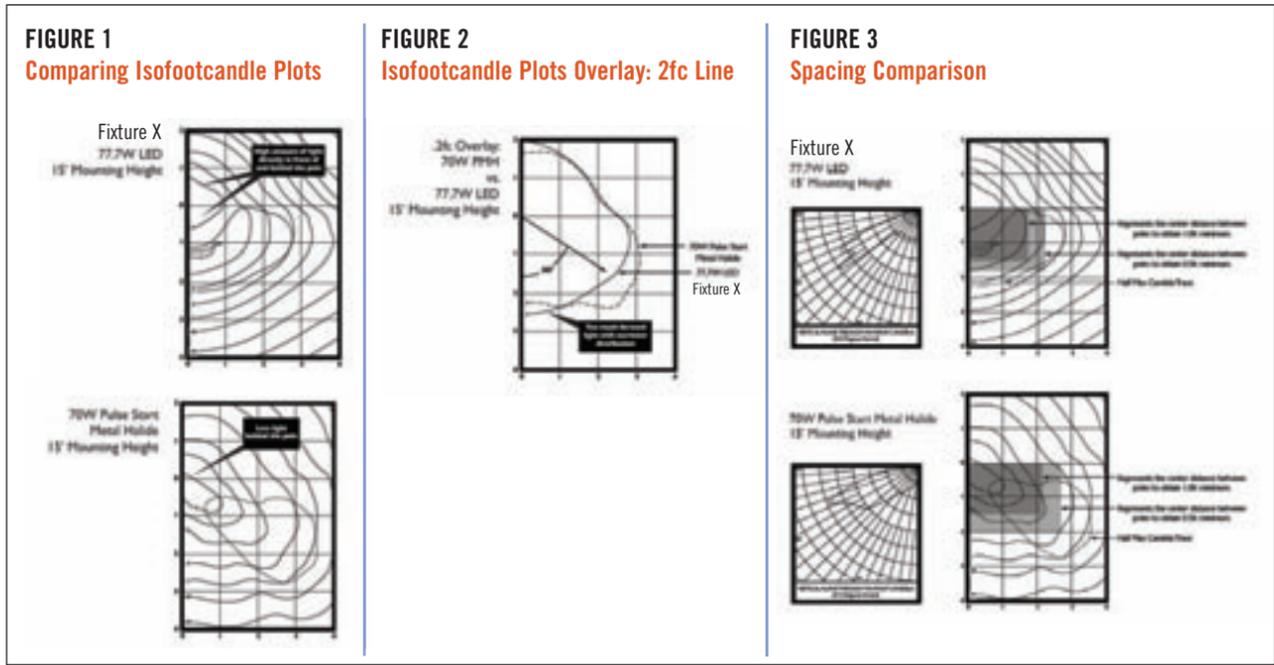


Simplicity is a lamp that sacrifices...nothing! Finally a perfect, simple retrofit lamp...with no strings attached.



Introducing Energy Advantage 49WT5 HO lamps...another industry first from Philips. Offering you a simple way to maximize energy savings by just changing a lamp. The new Philips Energy Advantage 49WT5 HO lamp saves you 5 watts instantly vs. a standard 54W lamp... without any sacrifice to light quality or lumen levels. An energy saving, long life, simple retrofit that operates on existing T5 HO Programmed Start ballasts... reduces your energy costs, and lowers maintenance and disposal costs. Featuring ALTO low mercury technology. Reduce your impact on the environment without sacrificing performance. Savings without sacrifice. www.philips.com

PHILIPS
sense and simplicity



Comparatively, the 70W pulse-start MH fixture allows for greater spacing and outperforms Fixture X as its broad and even distribution has further reach with less spill light. The pulse-start's main beam is at 67.5° up from nadir, which equates to 2.41 mounting heights away from the optical centre of the luminaire, which is one full mounting height further away from direct nadir.

With a 15-ft pole, the light is hitting the ground 15-ft further away, and the pedestrians within the terrain will be illuminated comfortably. In addition, the next pole would only need to be a 4.25 mounting height distance apart to get 1.0-fc minimum between poles. A 0.5-fc minimum between poles would only require a 5.25 mounting height distance apart.

Comfort and safety matter

When LED site luminaires are viewed from angles above 70°, extremely glary and bright diodes become distracting to focal vision and appear to flicker in peripheral vision. Alternatively, HID lamps are typically more deeply recessed into the luminaire where the arc tube is properly shielded by the edge of the lens frame, preventing annoying glare and discomfort.

Also, too much light directly beneath a luminaire gives the impression of pools of light across the site. When the direct light below the fixture is six to 10 times brighter than the light between the poles (as Fixture X indicates), users begin to fear the darker spots, change behaviour and avoid approach. The perception from a short distance away can be uneasy and discomforting.

The light between the poles should adequately and uniformly illuminate the target area to provide comfort to outside viewers as well as the users themselves. Currently available LED site lighting luminaires, however, do not yet meet these important criteria with their uncontrolled, directional, exposed beam LED clusters.

Imagine a typical pedestrian or driver as they approach an illuminated zone. The user's reaction to glare (brightness), small target observation (children), colour recognition (road lines and signs) and other factors are essential to determining true performance and fixture comfort and, more importantly, its safety to citizens and the environment.

Some specifiers desire even sharper cutoff and lower aiming characteristics for pedestrian and high-traffic areas because they feel that higher beams are even more conspicuous and unsafe. The real fact today is that uncontrolled, directional LEDs are inherently very obtrusive at any angle.

Correcting beam spread and controlling optical output is essential for reducing discomforting glare and obtrusiveness; unfortunately, no fixture manufacturer has yet introduced a proper LED site lighting product that achieves this. Until these solutions are tested, refined and introduced—and for the reasons stated above—we do not recommend LED fixtures for large area site lighting or roadway applications. **EB**

This article is based on the paper, "Why today's LED site and area luminaires are not measuring up", by Kim Lighting, a division of Hubbell Lighting Inc.



MARKET CHOICE

The contractor's choice for HID & Emergency Lighting!



Stanpro Lighting Systems proudly introduces its new line of HID & Emergency Lighting



To view the full line, contact your local dealer or call Stanpro at 866.280.2332 for a dealer near you.



Now the Market Has a Choice
www.stanpromarketchoice.com

EMT BUSHINGS

THE BEST CABLE PROTECTION

- Fast & easy press-on installation
- Holds tight as cables are pulled
- Protects cable from abrasion
- Can be substituted for costly fittings when used just for wire

for 1/2" to 4"
EMT • Rigid • PVC



Listed for
Air Handling
Spaces

© 2009 Arlington Industries, Inc.

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

HALF POWER.



HALF LOW VOLTAGE.

IN
ONE
EASY TO
INSTALL
RECESSED
ELECTRICAL
BOX.



Arlington's recessed two-gang TV BOX™ for old work allows you to mount LCD and plasma TVs, and other system components flush against the wall.



This two-gang box is a combo box with half 110V for power and half low voltage for Class 2 wiring of satellite or cable TV, speakers, surround-sound, etc.

Mounting "wings" tighten against the wall board to hold the box firmly in place. There's no wobble. *Plugs stay inside – don't protrude past the wall!*

Secure installation. Good looks. A great finish.

Fast, easy installation of power & low voltage devices! Mounting "wings" hold box firmly in place.



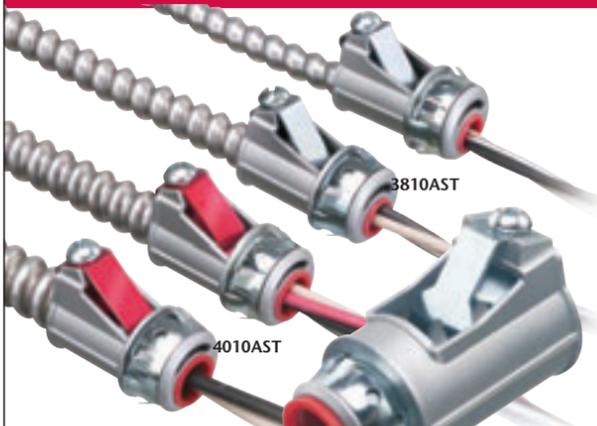
Patent pending



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

SNAP²IT FITTINGS

WIDEST CABLE RANGES!
EASIEST CABLE INSERTION



NEW!
5010AST

5010AST

CABLE TYPE	CABLE RANGE
MC/HCF Cable Steel & Aluminum	10/3 to 4/2 .590 to .920 in diameter
AC/HCF Cable Steel & Aluminum	
Flexible Metal Conduit Steel & Aluminum (Regular & Reduced Wall)	1/2" Flex

Arlington's 3810AST, 4010AST, 5010AST and duplex Snap²It® fittings offer the widest TOTAL cable ranges for MC cable; 1/4" to 4/2".

NEW... Largest size, 5010AST replaces our 45AST, and 50AST but costs the same!

- Easier cable insertion
- Widest variety of cables
For AC, MC, HCF, MC continuous corrugated aluminum cable, and Southwire's MC^{AP}™ and HCF MC^{AP} cables.
- Super-secure installation
Angled clip locks onto cable. No pullout!
- Easy removal
Just loosen the screw on top.

SAVE **17** seconds
per connector!

Fully assembled, ready to use!
Easy SNAP-IN installation.
NO TOOLS! Patents pending



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

for OUTDOOR FIXTURES & DEVICES

GARD-N-POST™

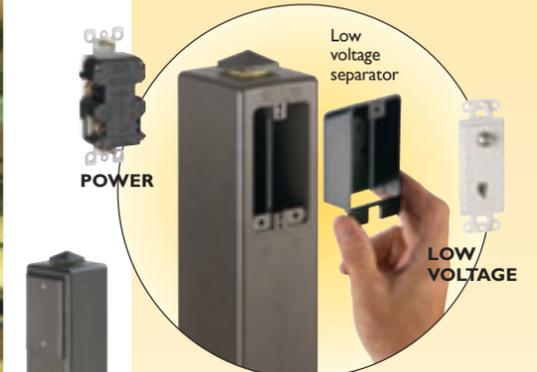
ENCLOSURES & SUPPORTS



GP19

Patented.
Other patents pending.

Arlington's Gard-N-Post™ enclosures and supports offer the attractive, safe, and easy way to install a light fixture and/or one or two devices outdoors!



More convenient than ever!
GP19, GP26, GP37 our most popular sizes, come with a separator so you can install power and low voltage outlets outside – in the same post.

- Non-metallic, heavy-duty UV rated plastic
- Damage resistant
- No chipping or loss of color
- GARD-N-POST – in a variety of styles from 9" to 73" tall



GPL19 19.5" low profile support for outdoor fixtures

GPD9 9" post or deck mount
GPP60B fixture

GP26 26" support for outdoor fixtures

GPD19 19.5" enclosure w/ built-in cover
15" support for 3-wire fixtures GPLN15 19.5" GPLN also available

GPBK 35" Bollard Kit

GP37 37" Support

GPX18 18" Extender



Four non-chipping colors!



Arlington

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

© 2009 Arlington Industries, Inc.

Patented/Other patents pending

2009 Canadian Electrical Code Essentials
Canadian Standards Association (CSA)
April 20, Yellowknife, N.T.
April 23, Red Deer, Alta.
May 4, Dorval, Que.
May 7, Moncton, N.B.
 Visit learningcentre.csa.ca
 and click Electrical

Electrical Safety and Reliability Conference
Professional Electrical Apparatus Recyclers League (PEARL)
April 18-20
 Atlanta, Ga.
 Visit www.pearl1.org

Health & Safety Canada
Industrial Accident and Prevention Association (IAPA)
April 20-22
 Toronto, Ont.
 Visit www.iapa.ca

Training Workshop
Energy Efficiency Contractors' Network (EECN)
(Members include Electrical Contractors Association of Ontario [ECAO] and Ontario Electrical League [OEL])
April 30, Kingston, Ont.
May 12, Toronto, Ont.
 Visit www.eecn.ca

Electrical Industry Conference
Ontario Electrical League (OEL)
April 15-18
 Kingston, Ont.
 Visit www.oel.org

"Innovation in Automation Tour" (IIAT)
Mobile Tradeshow by Wago



Week of April 19, Quebec
Week of April 26, Quebec
Week of May 3, Ontario
Week of May 10, Ontario
Week of May 17, Winnipeg, Man.
Week of May 24, Calgary, Alta.
 Visit www.wago.us/innovationtour.htm

NETcomm Prairies 2009
NETcomm Prairies 2009 Conference
April 21-22
 Saskatoon, Sask.
 Visit www.netcommshow.ca

Successful Selling in a Tough Economy Workshop
Partners in Distribution Excellence (PIDE)
April 21, Vancouver, B.C.
April 22, Calgary, Alta.
April 23, Winnipeg, Man.
April 28, Toronto, Ont.
May 5, Halifax, N.S.
 Visit EBMag.com and click Calendar

Lightfair
May 5-7
 New York, N.Y.
 Visit www.lightfair.com

Spring Management Conference
SMMA - The Motor & Motion Association
May 6-8
 San Diego, Calif.
 Visit www.smma.org

Annual Conference
Supply & Distribution Council (S&D), Electro-Federation Canada (EFC)
May 27-30
 St. John's, Nfld.
 Visit www.electrofed.com

Annual General Meeting
Independent Electrical Distributors (IED)
June 8-10
 Quebec City, Que.
 Visit www.ied.ca

NETcomm Québec 2009
NETcomm Québec 2009 Conference
June 10-11
 Montreal, Que.
 Visit www.netcommshow.ca

Convention and Exposition: "Gateway to Innovation"
Electrical Apparatus Service Association (EASA)
June 14-16
 St. Louis, Mo.
 Visit www.easa.com

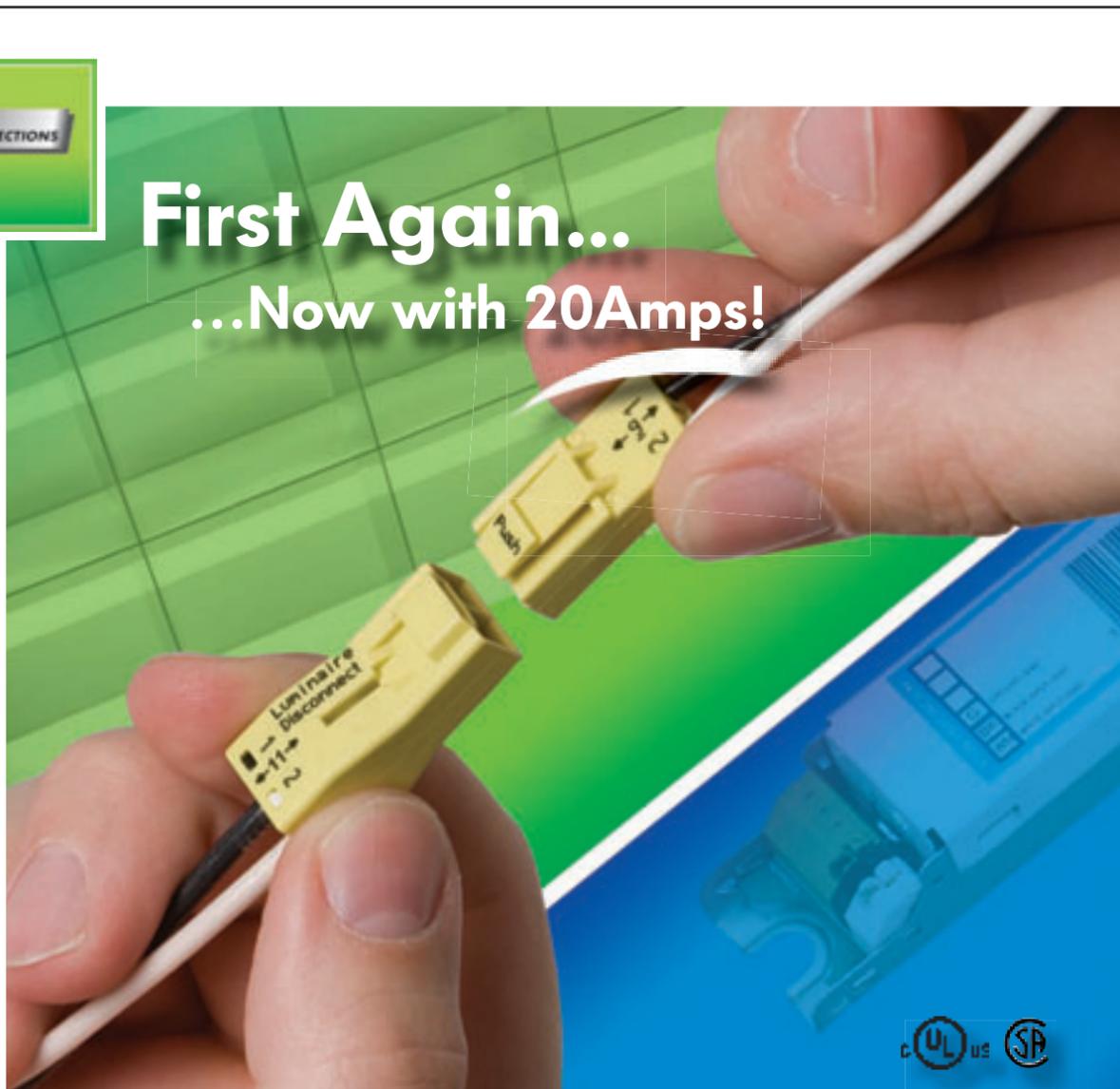
Mid-Canada Electrical Showcase
Manitoba Electrical League
June 17-18
 Winnipeg, Man.
 Visit www.meleague.net

Annual Conference
Electrical Contractors Association of Ontario (ECAO)
June 24-27
 Halifax, N.S.
 Visit www.ecao.org

NETcomm Atlantic 2009
NETcomm Atlantic 2009 Conference
September 2009
 Halifax, N.S.
 Visit www.netcommshow.ca

WorldSkills Calgary 2009
September 1-7
 (Actual competition September 2-5)
 Calgary, Alta.
 Visit www.worldskills2009.com

Anixter and Bogen School of Sound
April 16
 Mississauga, Ont.
 E-mail maria.commisso@anixter.com
 to register



From the beginning of the NEC/CEC luminaire disconnect requirement, WAGO's LUMI-NUTS® series has been a product of industry firsts...

- First with 2 connections per pole for daisy chaining of power
- First with 6A line and load side rating
- First with molded-in color coding and inkjet marking for easy wiring – no labels
- First to develop PUSH WIRE® technology (35+ years experience)
- **And now, first with a 20A line side capacity for full utilization of daisy chain feature**

When selecting a luminaire disconnect, WAGO gives you more reasons to think...

...LUMI-NUTS® first.

For a free sample or brochure, contact WAGO at 1-800-346-7245, info.us@wago.com, or www.wago.us/lumi-nuts.htm



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



The primary cause of fiber failures is dirty connections. Using the proper cleaning materials during installation will help ensure a successful job. End-face inspection, using either a hand-held optical or video microscope (shown here), should be done both during and after termination to check for contaminated or improperly polished connector end-faces.



A visual fault locator (VFL) is a fast, easy-to-use tool for identifying individual cables in a bundle and for spotting breaks or tight bends in mid-run.



A fully blown Tier 1 certification tool can test fiber links in two directions over multiple wavelengths. Bi-directional testing means length can be measured, and loss budgets are calculated automatically.



An optical time domain reflectometer (OTDR) can perform Tier 2 certification of fiber links, and detect performance problems with existing ones.

Installing and testing fiber optic links: performance pays

By Ron Groulx

Network owners are increasingly relying on fiber optics for reliable, day-to-day network performance. Optical fiber provides high bandwidth over longer distances, making it the media of choice for campus networks and backbone cabling to support growing organizations. Fiber has also begun surpassing copper in the data centre due to its ability to deliver higher bandwidth while reducing space and cooling costs. Fiber optic cabling is no longer something that would be “nice to have” down the road: it’s a requirement for running the business.

The proper installation and testing of fiber optic links is necessary for ensuring the fiber optic cabling performs to expectations. Network owners often turn to professional installers to ensure they will get good performance. To adequately serve their customers and make the most of this opportunity, installers need to know some basics that can go a long way toward building a more reliable LAN (local area network) and campus network.

Successful installation begins with proper tools

Proper infrastructure installation is imperative for ensuring a high-performing network both initially and over time. Using the right tools from the start will increase the chances of a successful installation. These include tools for installation and termination, cleaning tools and consumables, and test equipment. Best practices include the use of cleaning and inspection tools during termination, certification tools after installation, and verification tools for ongoing maintenance.

Visual tests

Using a hand-held microscope and a visual fault locator can help you identify and avoid the most common causes of fiber problems during installation, including:

Receive \$750 worth of Free Brady Thermal Labels!



Buy a Brady IP™ 300 Printer and Brady 360™ Comprehensive Customer Care Basic 3 year program and receive

\$750 in FREE Brady Thermal Labels!

Choose from Brady's many varieties including labels, sleeves, tags and markers to name a few.



For more information on these products call 1-800-263-6179 or visit www.bradycanada.com/buyippromo

BRADY
WHEN PERFORMANCE MATTERS MOST™

TERMS & CONDITIONS: The printer customer care program and materials has to be on the same order, and PO must reference THT-BUYIP-PROMO. Has to drop ship from Brady. Only stock materials apply. Printer and Customer Care Pricing off the Brady published MSRP pricing. Cannot be used with any other promotion. Promotion ends June 30, 2009.

AEB049

FLUKE®

You can see clearly now
your pain is gone.

With the precise image quality in
Fluke patent-pending IR Fusion®
technology

Thermal Imagers

Quickly identify a possible problem
and eliminate downtime pain.

800-36-FLUKE

www.flukecanada.ca/point



- Reverse polarity
- Mislabelling
- Broken connectors
- Dirty end-faces
- Damaged end faces
- Poor polishing

The first test in the installation process is the inspection of end-faces; because contaminated or improperly polished connector end-faces are the leading cause of link failures, end-face inspection should be done both during and after termination using a hand-held optical or video microscope. Typical multi-mode microscopes are 250X magnification, whereas single-mode fiber has a very small core, requiring a 400X magnification tool to properly inspect the connector end-face.

Ensuring polarity from transmitter (TX) to receiver (RX) is also essential. Testing for polarity is easiest using a visual fault locator (VFL). A VFL has a bright red laser beam that can travel down the fiber, lighting up the opposite end of the fiber being tested. VFLs can also identify simple problems like broken fibers and bends that are too tight.

A basic tool kit for fiber installers should contain proper cleaning supplies, an inspection microscope, a visual fault locator and an optical loss test set (OLTS). Data from the test set should be downloadable to software for generating test reports.

Verifying and certifying fiber link performance

Optical fiber links must be tested to verify that loss is within the range of the loss budget. A simple power meter and source could be used to check the loss of fibers during installation. Checking links to make sure that the loss is within the range of the required loss budget is the heart of fiber certification.

Complete certification testing is more important than ever with faster applications such as 10-Gigabit Ethernet that tolerate less attenuation. And, when fiber cabling is not tested and certified, there are no guarantees it will work properly. The customer may be able to run some applications, but not be able to quickly upgrade later. Or, there may be intermittent failures that will be time consuming and expensive to resolve. It is important to choose certification tools that have the capability to provide complete and comprehensive results management and report generation capability. The records of the cable plant provide important documentation that may be needed later for planning and maintenance purposes.

Two levels of certification

Basic or Tier 1 testing is required by industry standards for most fiber optic cabling links, which includes tests and documentation for loss, length and polarity. Loss is measured with an optical loss test set (OLTS). Ideally, this test should be performed in both directions to ensure proper polarity. Polarity can also be verified with the OLTS, or a visible light source (VFL). Length can be measured optically or via sheath markings. Once the first tier of certification testing is complete and documented, a second tier—or extended testing—should be conducted using an optical time domain reflectometer (OTDR).

An OTDR can detect problems and map the performance of fiber links. OTDRs do not replace the need for loss measurements but complement them with more detail. An OTDR trace can show segment lengths, connector loss and location, and unexpected fiber losses. It ensures that the cabling is without degrading events such as bends, faulty connections and splices. Common problems that an OTDR identifies are dirty or broken connectors and poor cable management that is causing bending losses. Problems like these can be fixed without much effort, but only when the installer can find them. An OTDR can easily locate these types of problems.

Once fiber optic cabling is successfully installed and certified, it is important for an installer to provide comprehensive test reports that are easy for network owners to understand. This gives them confidence in their cabling, provides valuable records and proof that the work that they received was what they paid for.

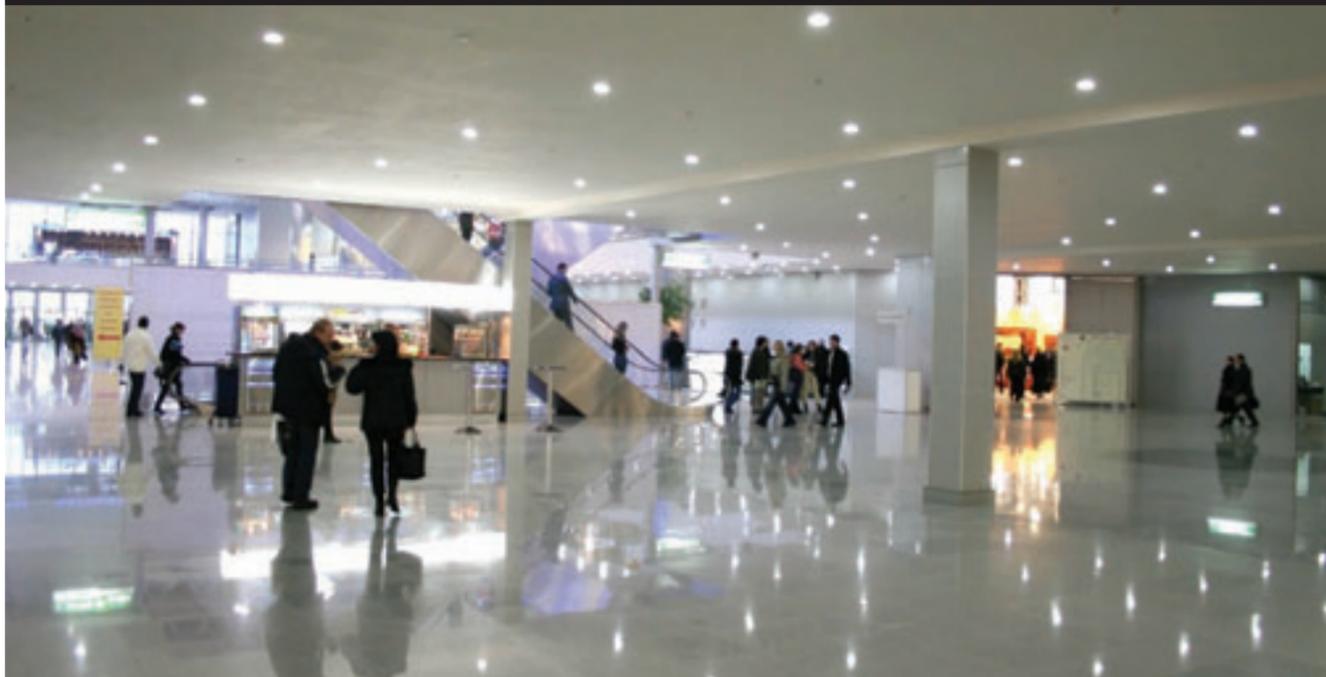
The bottom line: testing fiber links pays

A professional installer will benefit from using proper end-face cleaning kits, performing visual inspections using hand-held microscopes, and visual fault locators during time of installation. After certifying link performance with a Tier 1 OLTS, a Tier 2 OTDR test can be performed to provide a complete cabling certification. This will ensure the installation performs as intended; the test reports generated show that it has been tested and meets industry standards.

Fiber optic cabling can be a successful, profitable addition to an installer's services. But, as with most services, it pays to do the job once, correctly. And that is where testing plays an essential role. It is easier and far less expensive to test during installation than to respond to a customer complaint and perform an unbilled service call. ^{EB}

Ron Groulx is product specialist for Fluke Networks Canada. Having worked in the industry for almost 10 years and a graduate in Computer Science, he is knowledgeable in all aspects of networking, from cabling infrastructure to network monitoring and troubleshooting. He can be reached at ron.groulx@fluke.com.

BALLASTS ARE OUR BUSINESS.



ULTRASAVE offers a wide range of ballasts for electronic and magnetic fluorescent, as well as HID applications.

Visit us at Lightfair 2009, and see the latest additions to our lines.

Booth #2475



T5HO 347-480V

2 and 4-lamp models for 54 watt T5HO applications with 90°C case temperature rating, ideal for high temperature ambient environments.



T5HO/T8 DIMMING

Energy-efficient design providing 100% to 1% full-range continuous dimming for T8 and T5HO linear fluorescent lamps.



LED DRIVERS

Constant current LED drivers and drivers for 12V/24V LED systems, ideal for indoor and outdoor applications.



ELECTRONIC HID

Complete range of 347V models, side/bottom mount versions, and optional dedicated 120V output for self-heating thermal protectors.

ULTRASAVE

www.ultrasave.ca

ULTRASAVE LIGHTING LTD. | T 905.940.0888 | F 905.940.0338 | Toll-Free Number 1 866.733.9217
RESIDENTIAL COMMERCIAL RETAIL INSTITUTIONAL

Taking your first steps toward an electrical safety program

By John B. Salmon

Every year, far too many electrical workers are permanently disabled, severely injured or electrocuted. The Ontario Occupational Health & Safety Act (OHSA) clearly states under the General Duty Clause that an employer has an obligation to take every precaution reasonable under the circumstances for the protection of a worker and, by extension, to control hazards in the workplace.

As such, the employer is required to develop and implement an electrical safety program (ESP) that addresses employee exposure to each specific workplace electrical hazard. Workers, meantime, are responsible for following all of the ESP's requirements.

Establishing an effective ESP is the foundation for the prevention of injuries associated with electrical hazards. Policies, safe work procedures/permits, hazard analysis, risk assessments/reduction, training, personal protective equipment (PPE) and other specific written program documents will protect workers and help prevent property damage.

Regulations for working with electricity have been in place since the 1990s in Ontario, though we didn't have a Canadian standard providing us with best practices and performance guidelines. With an increase in electrical incidents, injuries and fatalities, regulators realized that—to safely work with electricity—a more comprehensive and focused approach was required.

In the U.S., the NFPA developed a standard entitled 70E, Standard for Electrical Safety in the Workplace, but many Ontario organizations were unaware of its existence. CSA used NFPA 70E as a seed document for harmonization and the development of an equivalent Canadian standard, CSA Z462, "Electrical Safety in the Workplace". This document provides the tools for stakeholders to evaluate their existing ESP for compliance with provincial regulations and best practices.

Many current electrical incidents can be prevented via the implementation of policies, procedures, safe work practices and other electrical safety principals contained in CSA Z462. The release of this new standard is a step in the right direction, providing stakeholders with a "how-to-do-it" guideline for meeting the requirements of due diligence, and helps enforcement officers apply the regulations.

The myth and reality of arc flash/blast

The CSA Z462 standard is often *incorrectly* referred to as "the arc flash standard". While arc flash/blast can cause catastrophic injuries and is rightfully feared by workers, it is not the main cause of electrical injury.

I like to use the following analogy when providing electrical safety training: an arc flash is like a plane crash—relatively infrequent, but cataclysmic when it happens; live contacts are like automobile accidents—they happen all

the time, always involve some kind of damage (sometimes inconspicuous) and are, at times, lethal.

Live contact shock is, in fact, the leading cause of electrical injury—often because workers lack a healthy respect for the potential deadliness of electricity. Many of them flout voltage, particularly 120; some even think getting shocked is part of the job!

This is why CSA Z462 *is not just about* arc flash/blast, PPE, equipment and tools. The main technical thrust of the standard provides methodologies for: safe limits of approach; protection from live contact resulting in electrical shock or electrocution; and arc flash/blast, which can result in burns and impact injuries.

Arc flashes produce temperatures in the order of 35,000°C and emit blast pressures equivalent to a large jetliner at full throttle. Other factors, such as impact injuries caused by falling and shrapnel projected toward a worker, can cause collateral injuries. Some other collateral hazards are copper vapours and other hot gases that can lead to immediate serious lung injuries and/or other long-term health issues (i.e. vision and hearing loss). The effects are akin to a grenade being detonated in your face. The overall hazardous effect of these incidents is often referred to as "toxic energy".

Protection from contact with energized fixed electrical equipment and moveable conductors is achieved by following the limits of approach boundaries and spaces (which are incremental safety distances) as follows:

- Limited Approach
- Restricted Approach, and
- Prohibited Approach

These approach distances are based on the voltage present, not arc flash/blast distances, which are variable and based on available fault currents and explosive forces, called 'incident energy'. Complicated calculations—typically performed by competent persons using specialized software—are required for determining the incident energy.

The arc flash distances are based on the potential thermal incident energy, which is measured in calories per centimetre squared (cal/cm^2). Warning and communication labels indicating the information above are placed on panels, switchboards, MCCs, disconnects, etc. These labels form the basis for communicating the safety requirements and PPE ratings to 'qualified' electrical workers who must understand, obey and enforce the requirements of these labels implicitly.

FLUKE®

Earth Ground Test(ers)

(When you don't want to feel it move)

The 1623 and 1625 testers measure earth ground loop resistances using only clamps – this stakeless testing doesn't require use of earth ground stakes or disconnection of ground rods.

800-36-FLUKE
www.flukecanada.ca/earth

Qualified persons

Electrical workers perform two distinct live work methods: working directly on energized electrical equipment and conductors; and live testing and troubleshooting. These two tasks require different approaches with respect to hazard analysis, risk assessment and authorized work permits.

Working directly on energized fixed electrical equipment and moveable conductors requires a safe live work permit signed by the officers of the corporation, such as the CEO or similar person of authority. There must be a compelling reason *to not have* a planned outage, and the risk of deenergizing must be greater than the risk of planned outage.

When the installation (i.e. fixed equipment or conductors) is operating at a nominal voltage of 300 or more, a suitably equipped, competent person who is able to recognize the hazards and perform rescue operations—including artificial respiration—shall be available and able to see the worker who is performing the live work. This competent person is, however, not required to be present for live testing and troubleshooting.

To be considered ‘qualified’ to work directly on energized electrical equipment and conductors—and perform live troubleshooting safely—an electrical worker’s training must go well beyond simple awareness lessons. He must be trained

and knowledgeable in the construction and operation of the equipment or a specific task. He must also be trained to recognize and avoid the electrical hazards that may be present with respect to that equipment or task.

This important role requires skill, knowledge and leadership, as the qualified worker is also responsible for controlling the actions of non-qualified workers and ensuring they work safely. (Upon training completion, I ask my students to complete a 100-question exam to reinforce the learning objectives. Most participants feel a real sense of accomplishment when they pass this test.)

Qualified persons must also be familiar with the following:

- Special precautionary techniques based on the tasks being undertaken.
- Personal protective equipment and clothing (PPE and PPC).
- Insulating and shielding materials.
- Grounding equipment.
- Insulated mats, tools and test equipment.
- Skills and techniques for distinguishing exposed energized parts from other parts of electrical equipment.
- Skills and techniques for determining the nominal voltage of exposed energized parts.
- Safe approach distances and the corresponding voltages to which he will be exposed.

- The decision-making process for determining the degree and extent of the hazard, the job planning required to avoid the hazard, and the PPE necessary to perform the task safely.
- The duties of a supervisor.
- Lockout/tagout (LOTO) and test-before-touch procedures.
- Ensuring permits are completed and instructions followed.
- Enforcing company policy, safe work procedures and discipline.

It’s important to note that a person may be considered qualified with respect to certain equipment and methods, but still be considered unqualified for other equipment and methods.

Meter safety and use

Meter safety is an important aspect of electrical safety. At the start of training, I ask participants to bring their test meters with them to determine the safety category and compliance with IEC 61010-1 (Safety requirements for electrical equipment for measurement, control and laboratory use - Part 1: General requirements). I ‘impound’ non-category-rated meters under what I call the ‘meter amnesty program’. This always invokes an interesting discussion and is quite an effective approach for determining the suitability of these instruments for the tasks to be carried out.

IEC 61010-1 specifies categories of over-voltage based on the distance from the power source and the natural dampening of transient energy that occurs in an electrical distribution system. Higher-safety category meters are required when working closer to the power source, as they offer more protection. The digital meter impulse rating for transient high-voltage spikes and ‘creepage’ distance (along surfaces) and ‘clearance’ distance on Category III and IV meters helps reduce the potential for meter failure (which can lead to a two-stage arc flash).

I recommend digital meters be rated minimum Category III (1000 volt) for the distribution level, and Category IV (600 volt) for the supply level, main services and outdoors. (Many new digital meters have a dual rating meeting these criteria.)

Personal protective equipment/clothing

PPE for the hands consists of leather and voltage-rated rubber gloves. The gloves are rated in incremental voltages starting at:

- Class 00: up to 500 vAC
- Class 0: up to 1000 vAC
- Class 1: up to 7000 vAC
- Class 2: up to 17,000 vAC
- Class 3: Up to 27,000 vAC

Leather and voltage-rated rubber gloves are required at all times when working on voltages of 50 and above. (I recommend requiring gloves at 30 volts to be in line with the Canadian Electrical Code [CEC]). A great starting point for stakeholders is to purchase leather and voltage-rated rubber gloves for all their workers who perform any live work and/or troubleshooting. Other recommended purchases include fused leads for some test meters (which reduce the possibility of arc flash caused by meter failure/user error) and extended leads to keep workers’ hands that much farther from live surfaces.

Protective clothing must be 100% natural fiber, such as cotton, and FR (fire-resistant) rated. It is also rated by the arc thermal performance value (ATPV) in cal/cm². This rating must be marked on the clothing by the manufacturer. Special washing techniques are required for the clothing; for example, no bleach or fabric softener can be used. Clothing must be properly maintained and cannot be used as PPE when soiled or dirty. Some clothing is chemically treated; other clothing is manufactured from an FR-rated fabric.

PPC is rated as follows:

- Category 0: ATPV is NA, no cal/cm² rating—just natural fiber
- Category 1: ATPV 5 to 7 cal/cm²
- Category 2: ATPV 8 to 24 cal/cm²
- Category 3: ATPV 25 to 39 cal/cm²
- Category 4: ATPV 40 cal/cm²
- Category 4+: “No Category Found” danger category. Must never work live.

GOT WIRE? Get Arrow®

T72™

T59™

T25™

ARROW® wire & cable tackers make installing a large variety of cables so fast and easy, you can do it with one hand. They shoot a range of fasteners for 3/16" diameter wire to large insulated cable fasteners for 12/2, 14/2, and other cables up to 19/32" (15mm) wide.

These rugged tools are easy to handle and built to last. Just one of the reasons why Arrow cable tackers are the preferred fastening tool of professional wire and cable installers in every field.

Arrow tools & staples are color coded, so not only are they easy to use, but also easy to buy.

Available where fine tools are sold.

Visit us at
arrowfastener.com
for more information on these
and other great Arrow tools.

Arrow Fastener Company, Inc.

USA Tel: 201.843.6900
Canada Tel: 514.321.3983
UK Tel: 44.208.686.9180

www.arrowfastener.com

© 2009 Arrow Fastener Company, Inc. Arrow® is a Registered Trademark of Arrow Fastener Co, Inc.

AD-0105 REV 309





REGIONAL FOCUS

LOTO and test-before-touch verification techniques are required. This may be a new concept for many electrical workers. To test for power, workers need to open panels and wear the appropriate PPE/PPC to meet the requirements of their electrical safety program. Past practices, such as bare-hand work on deenergized live surfaces, are not recommended—a back-feed could occur causing a voltage rise before the overcurrent device trips and, without protective PPE, the worker could be injured.

Getting the word out

Many stakeholders are aware they need to act and improve their electrical safety performance, but are struggling with the correct approach for ensuring their workforce is adequately trained and properly protected.

As with any new standard (CSA or otherwise), the message needs to be communicated effectively. In the fall of 2008, CSA seminar planners assembled a team of experts to participate in Z462 roll-out conferences across Canada to communicate the requirements of the new standard. (I participated as one of the speakers, delivering a practical message from a contractor's perspective entitled, "A Proactive versus Reactive Approach to Electrical Safety".)

In Ontario, the Ministry of Labour (MOL) and Electrical Safety Authority (ESA) are proactively working with stakeholders to introduce them to the new requirements that are to be incorporated in their electrical safety programs.

Recently, MOL completed a safety blitz in a variety of workplaces. "The Ontario Government and our workplace partners are working together to eliminate all workplace injuries," said Peter Fonseca, the labour minister. "Part of our strategy for achieving this goal is to conduct stepped-up enforcement to prevent electrical hazards at workplaces."

The road to achieving an effective electrical safety program may seem long, but by getting started and taking one step at a time, your organization will be there before you know it! ^{EB}

John B. Salmon is a Master Electrician and the president and CEO of A. R. Milne Electric Ltd., a Waterloo, Ont.-based specialized electrical controls and integration/installation contractor. The company is also a complete arc flash and electrical safety provider. Visit them online at armilne@armilne.com.

Amendments to Saskatchewan's construction labour legislation

The Government of Saskatchewan has introduced amendments to the Construction Industry Labour Relations Act (CIRLA) that, it says, will expand freedom of choice for workers and employers and help sustain the province's growing economy. The amendments to CIRLA will:

- allow a trade union to organize a company on a multi-trade, or 'all employee' basis, as well as on a craft, or single-trade basis;
- enable any trade union to certify an employer;
- allow employers to choose the REO (representative employers' organization) that will represent them;
- allow an employer operation outside an REO to negotiate a collective agreement for the duration of a specific project;
- give the Saskatchewan Labour Relations Board the authority to investigate complaints that a union has abandoned its bargaining rights;
- give the board the right to revoke a union's certification on the basis of an abandonment claim; and,
- change the definition of "construction industry" to remove the reference to "maintaining" a building or structure.

"This legislation will lead to increased construction activity by giving employers and workers the freedom to establish their own collective bargaining arrangements," says Rob Norris, employment and labour minister.

The government said the restrictive nature of the previous legislation prevented some unions and companies from participating in Saskatchewan's construction industry.

B.C. looks at electric car grid; good news for electrical contractors

BC Hydro is developing guidelines for the infrastructure required for charging electric vehicles at homes, businesses and on public streets to ensure the province is prepared for the commercialization of plug-in electric vehicles.

Major auto manufacturers have announced plans to introduce electric models in the coming year, and early forecasts suggest anywhere from 10% to 60% of new vehicles purchased by 2025 will be electric vehicles.

"As British Columbia moves towards reducing greenhouse gas emissions by one-third by 2020, electric vehicles will be a part of the solution," said Blair Lekstrom, minister of energy, mines and petroleum resources. "Clean electric vehicles will help us to reduce our dependence on imported fuel while utilizing local renewable energy resources to power our transportation."

The potential of electric cars to reduce provincial greenhouse gas emissions is significant because transportation accounts for

38% of provincial emissions.

After a competitive call for proposals, BC Hydro has contracted Electric Transportation Engineering Corp. (eTec)—a subsidiary of ECOtality—to detail the necessary actions for deploying electric vehicle charging infrastructure.

"This will allow BC Hydro to anticipate the potential introduction of clean electric vehicles throughout B.C.," said Bob Elton, BC Hydro president and CEO. "By proactively determining the appropriate guidelines for electric vehicles charging infrastructure, BC Hydro is streamlining the process for consumer adoption of clean electric vehicles."

This could mean a world of new opportunities for electrical contractors; they will be needed to refit home circuit panels with additional higher-amperage lines, and install and wire plug-in outlets at parking lots, malls and other venues.

The guidelines developed by eTec will result in an industry blueprint for implementing infrastructure and installing the appropriate equipment for electric vehicles. BC Hydro anticipates the report on the guidelines to be completed by the end of April.

The project is part of the Plug-In Vehicle Program led by the Ministry of Energy, Mines and Petroleum Resources that will test vehicles that rely primarily on electricity rather than fossil fuels as an energy source. The program includes BC Hydro, the B.C. Transmission Corporation, the City of Vancouver and others.

Growing interest for international energy corridor

New Brunswick will work with the State of Maine to explore development of the Northeast Energy Corridor, which will support the development of diverse energy sources in the two jurisdictions.

"Through these challenging economic times, New Brunswick remains focused on a vision of economic self-sufficiency," said Premier Shawn Graham.

He added that the proposed energy corridor will help accelerate the development and deployment of clean, renewable and greenhouse gas-free electricity generation resources. The government believes this will help attract direct investment to the region and support New Brunswick's self-sufficiency goals.

Targeted Initiative for Older Workers extended for three years

The Targeted Initiative for Older Workers (TIOW) is going to be extended for three years in Newfoundland & Labrador. The TIOW is a cost-shared initiative for unemployed workers aged 55-64.

"At this time of rapid economic change, it is especially important to have the means in place to help our highly experienced workers

Electrical Business is also
DIGITAL!

Visit www.EBMag.com and click

DIGITAL EDITION

to start your experience!



Please call

John MacPherson @ (905) 713-4335
or **Scott Hoy @ (905) 726-4664**
for Digital Edition sponsorship opportunities!

canada training group April - June Calendar

Arc Flash & High Voltage Safety		
May 20-21	Regina, SK	OR09184E
Jun 4-5	Calgary, AB	OR09165E
Jun 8-9	Edmonton, AB	OR09139E
High Voltage Maintenance		
Jun 10-12	Edmonton, AB	OR09140E
Arc Flash & Low Voltage Safety		
Apr 28	Halifax, NS	OR09162E
May 11	St John's, NL	OR09116E
May 25	Richmond, BC	OR09121E
Jun 22	Toronto, ON	OR09132E
Arc Flash & Low Voltage Safety: Train the Trainer with Dave Smith		
May 27-28	Toronto, ON	OR09166E
Jun 8-9	Edmonton, AB	OR09164E
How To Analytically Troubleshoot Complex Electrical Systems		
Jun 22-26	Nisku, AB	OR09136E
PLC Programming, Maintenance & Troubleshooting		
Apr 21-24	Nisku, AB	OR09131E
Jun 8-11	Toronto, ON	OR09135E

Call today for your free Arc Flash Hazard Study Quotation
1-800-661-1663
For full schedule information visit
www.canada-training-group.ca/eb

FLUKE®

Precision
Power Quality
(when perfect power is your thing)

Power analyzing, logging, recording and troubleshooting tools that help you reduce downtime, avoid product damage and save energy while keeping your world up and running.

800-36-FLUKE
www.flukecanada.ca/pq



**REGIONAL
FOCUS**

who have been displaced by closures or layoffs,” said Susan Sullivan, the province’s minister of human resources, labour and employment. “The TIOW program will play a major role in helping these workers transition toward new employment opportunities that will allow them to continue contributing to their communities, the economy and their own financial well-being.”

The province has put more than \$800,000 into the program, while the federal government has recently committed more than \$4.6 million. TIOW projects provide employment assistance activities, such as job counselling, resume writing and interviewing techniques.

Alberta seeks nuclear counselling

With the release of the Nuclear Power Expert Panel, the provincial government will be asking Albertans through public consultations to share their views on nuclear power generation in the province within the context of the province’s electricity system.

“The views of Albertans will be important in developing a provincial approach on the issue of nuclear power generation,” said Mel Knight, energy minister. “The Alberta Government has been clear that the province will not take a position until we hear from Albertans.”

Manitoba removes barriers to labour mobility

Manitoba is removing barriers to labour mobility as part of a strengthened chapter under the national Agreement on Internal Trade (AIT). Under the chapter, a person certified as qualified to practise an occupation in any Canadian jurisdiction will be recognized and able to practise their occupation in any other Canadian jurisdiction (unless a province requires a specific exception from this rule to ensure achievement of a legitimate objective, such as protecting health and safety).

Each province will continue to be responsible for maintaining and monitoring the requirements that are in place through provincial legislation for regulated occupations. 



High-Lites Pluralux emergency lighting

High-Lites Pluralux is an indoor/outdoor architectural-grade emergency lighting unit. The product features high-output Xenon lamps for bright egress lighting, an oval architectural design, and rugged die-cast aluminum housing. Its polycarbonate fresnel lens provides even light distribution and is outdoor, ETL wet-application listed. The unit is available with an optional cold-location package (-14°C to 50°C). NiCad batteries are standard.

HIGH-LITES
www.highliteslighting.com

Philips LuxSense lighting control



Philips’ LuxSense lighting control automatically achieves a comfortable level of illumination throughout the day, says the company, helping drive energy savings by maximizing the incorporation of natural light levels. Designed to control up to 20 fixtures, the unit’s daylight sensor provides potential savings of up to 32% without sacrificing visual comfort. LuxSense can be incorporated directly into a fixture or, alternatively, clipped to a high-efficiency T5 using the included clip. Users need only adjust the device’s rotating diaphragm to set the desired light level (beyond the 45 footcandle preset). LuxSense supports sustainable design as measured by LEED performance standards.

PHILIPS
www.philips.com

A•light Accolade 6 linear fluorescent downlight

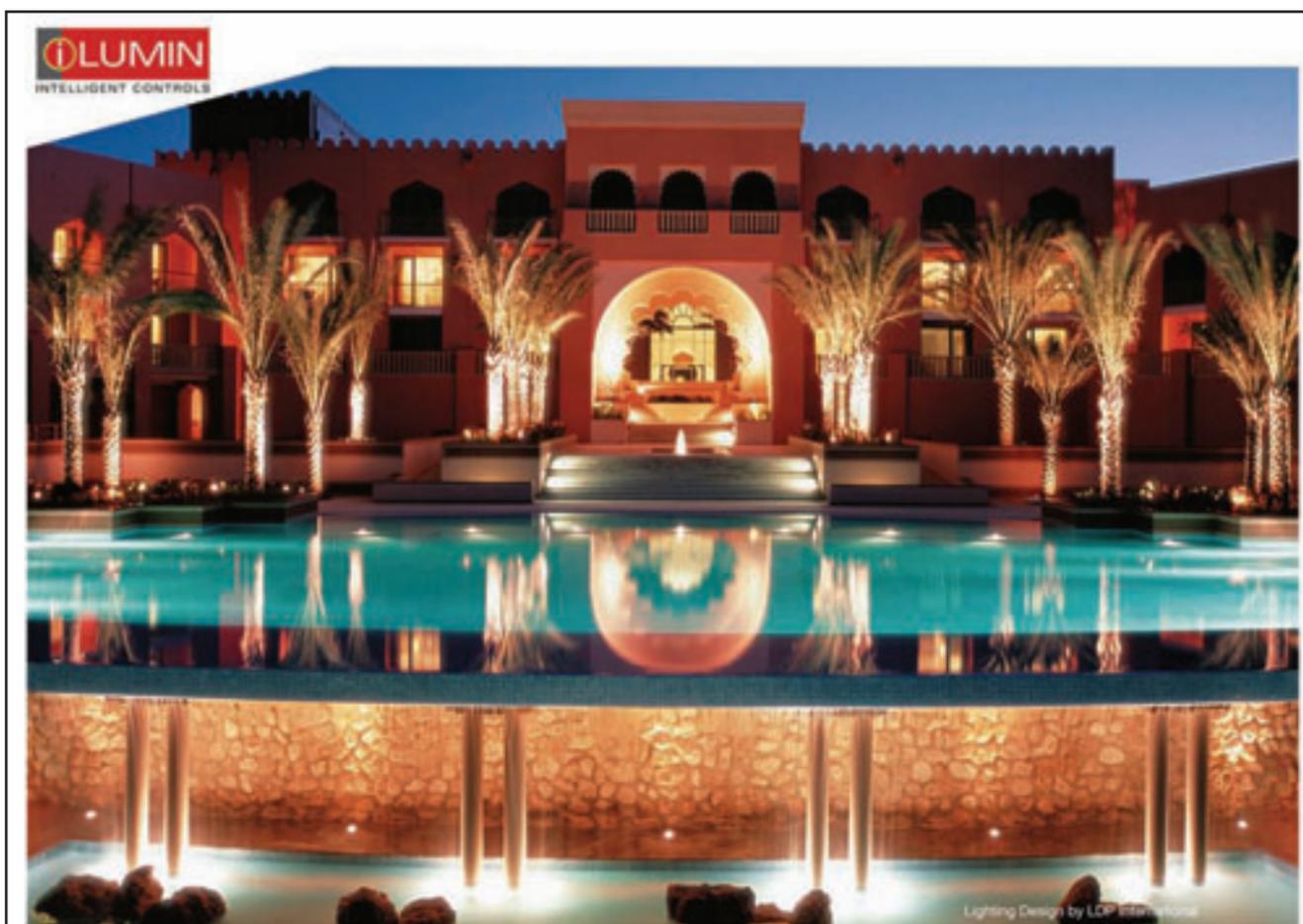


The Accolade 6 linear fluorescent downlight from A•light is a fully recessed, low-glare ceiling luminaire. Made to fit 6-in. wide utility channels for USG Logix or other acoustical ceiling systems—to standard or slot 9/16-in. or 15/16-in. T-Bar ceilings—the product is available in nominal 4-ft, 5-ft, 8-ft, 10-ft or 12-ft lengths. It is designed as flush-mounted ceiling rectangles that can be placed in aligned rows vertically or horizontally in ceiling channel slots. The luminaire is 3.5-in. high by 3.5-in. wide, with a 3-in. aperture. The high-transmission lamp obfuscating lens offers 93% light transmission with a lens that looks like crystalline silk, says A•light, and lamps that are invisible. Fixture housings are constructed from 60% recycled aluminum extrusions, with precision-milled billet aluminum ends.

A•LIGHT
www.alights.com

Cooper Lighting Lumark Avid high-bays

Cooper’s Lumark Avid series of high-bay luminaires is available in four scaled sizes, offering one consistent look throughout an application. Avid can be pendant-mounted or suspended by stainless steel cables (pendant-mounting features an internal locking screw for added security). The stainless



CLS-4TSB-RL-B



CLV-44Z-RL-IR-V



TSC30B-NA (Touchscreen)

Cooper Controls brings European Design, Global Market Expertise, and World Class Service to Canada.

iLumin Lighting Controls, better products and better processes united under one world-class company and available worldwide.

Stop by www.coopercontrol.com to learn more about iLumin and find out why iLumin Architectural Lighting Controls is the best choice for your next project.

Cooper Controls • 5925 McLaughlin Rd • Mississauga, ON L5R 1B8
P: 905.507.4000 F: 905.568.7049



www.coopercontrol.com



steel suspension mounting has two suspension cables with quick adjustment for fast, on-the-spot levelling. Integrated into the mounting is an easy-access compartment to wire incoming supply leads. The line's range of lamping options include 20-400W metal halide, single- and multi-lamp CFL, quartz halogen and incandescent. Standard colours include White, Grey, Black, Graphite Metallic, and Dark Platinum.

COOPER LIGHTING
www.cooperindustries.com

Appleton fixtures help meet new U.S. federal regulations



Appleton is offering its complete line of commercial and industrial floodlights—including Areamaster—with more energy-efficient high-pressure sodium (HPS) lamps and pulse-start metal halide (MH) ballasts to accommodate U.S. guidelines banning new installations of mercury vapour lamps and probe-start 150-500W MH lighting ballasts. Designed for outdoor shopping malls, hotels, parking lots, industrial process lighting and sports arenas, Areamaster fixtures afford easy installation with a choice of either pole or yoke mounting. They also feature a one-piece, pressure-clad housing machined from copper-free aluminum, finished with bronze polyester for enhanced corrosion resistance.

APPLETON
www.appletonelec.com

Bodine Arctic 175 and 400 backup ballasts



At ambient temperatures ranging from - 40°F to over 131°F, Bodine's Arctic backup ballasts (175 and 400) help prevent lamp extinction and the subsequent need for restrike in metal halide (MH) lighting systems. MHs can be vulnerable to minor line disturbances; Arctic units sense these disturbances and, in response, catch and maintain the lamp arc for up to 2 minutes, which is generally enough time for the disturbance to pass or for a generator to take over the task of providing power. The backup ballasts allow MHs to serve as emergency lighting, and are ideal for damp location installations, such as parking garages.

BODINE
www.bodine.com

Brady B-508 tag materials for extreme environments



Brady has developed identification solutions specifically designed for applications in harsh and demanding conditions. The lightweight B-508 tag is a thermal transfer printable wire bundle and cable identification tag made of tear-, solvent- and heat-resistant material that helps ensure permanent identification. Team the tag with Brady's PermaSleeve heat shrinkable sleeves—available in 3:1 and 2:1 shrink ratios—and

electricians have a solution for most of their label wiring needs. PermaSleeve wire markers offer a snug fit, and resist fading and smudging.

BRADY CANADA
www.bradycanda.com

Arlington Scoop reversible entrance plates



Arlington's Scoop series of reversible entrance plates and hoods help protect cable while providing more installation versatility. Using them facing in or out, the line is easy to install and is constructed of non-rusting, paintable plastic. The Scoop's single-gang (CE1) or two-gang (CE2) styles are made for cable entrance and exit in the same

wall. The entrance hood is designed specifically for use with decorator plates.

ARLINGTON INDUSTRIES
www.aifittings.com



YOU CAN LEGALLY DECLINE TO ANSWER QUESTIONS FROM A MINISTRY OF LABOUR INSPECTOR ON A JOBSITE:

- TRUE
- FALSE
- SOMETIMES

IF YOU WERE AN OEL MEMBER, YOU'D KNOW.

Helping you understand the risks that can affect you and your business is just one of the many ways that the OEL helps its member contractors.

If you don't know the answer above, a small investment in an OEL membership might pay off large down the road.

Through educational training and communications on Health & Safety, code updates, construction law changes or best contractor business practices, the OEL is dedicated to helping its members succeed by staying informed.

For more information visit us at www.oel.org or call us at 905-238-1382.

SPECIAL OFFER
 Join before June 30/09 and pay 2008 member rate.



ONTARIO ELECTRICAL LEAGUE

180 Attwell Dr., Suite 300, Etobicoke, ON M9W 6A9 T: 905-238-1382

Greenlee UT4 cable puller



Greenlee's UT4 is a medium-force cable puller that's designed to pull jobs up to 4000 lb yet requires the use of just a 15-amp circuit. The nose of the UT4 can be turned for up, down and side pulls. It has two pulling speeds: a high speed of 26 ft/min for loads up to 2000 lb and 13

ft/min for heavier loads. The puller has 8-in. wheels for ease of movement around a jobsite. Safety features include a circuit breaker that protects the motor and puller from overload situations, while the right-angle sheave permits the operator to stand to the side of the puller—away from danger should the rope or cable connection break.

GREENLEE

www.greenlee.com

Homepath eXapath residential conduit system

Homepath's patent-pending eXapath conduit system was created as an alternative to running excess wiring in new home construction. The system allows home builders and owners to design and build homes with broadband expansion in mind. The conduit integrates seamlessly within the wall framing, permitting the addition of media outlets anywhere along a preinstalled vertical channel. This way, a contractor can start with only the basic cables that a homeowner plans to use, adding cabling later when there's a need. Installing eXapath conduit systems provides a viable path for upgrades of media rooms, home theatre cable and more. *Be sure to visit EBMag.com's new, growing online Video Library for a demonstration of this product.*



HOMEPATH PRODUCTS

www.homepathproducts.com

New Dura-Blok for Strut/Pipe Hangers

Cooper B-Line has unveiled new Dura-Blok components for its strut and pipe hanger systems to help safely support piping, ducting and other systems. The Dura-Blok channel is through-bolted in all sizes for added strength and security. Made of



100% recycled rubber, Dura-Blok qualifies for LEED credits and works to dampen vibration. The block has reflective strips on both sides allowing for easier product visibility, and is secure enough that it will not float or blow away. Applications include support for pipe, duct, conduit and cable tray.

COOPER B-LINE

www.cooperbline.com

Leviton single-pole receptacles cover

Leviton's single-pole receptacles cover is constructed of cast aluminum; its self-closing lid prevents incidental contact with an energized conductor and offers enhanced protection for the enclosed device. The Type 3R-rated lid contains a foam gasket that seals out contaminants, debris, falling rain, dirt, snow and sleet when the cover is not in use. The cover accommodates 90° 17 and 19 Series male and female panel-mount receptacles, and 22 and 23 Series female panel-mount receptacles of cam-type designs. It is available in five colours for quick phase identification, and can be mounted in four rotational locations.



LEVITON

www.leviton.com

Ideal Sir Nickless armoured cable cutter



Ideal's Sir Nickless rotary cable cutter helps minimize the occurrence of nicked conductors while cutting BX, MC, AC, Greenfield and other types of aluminum or steel armoured cable up to 3/8-in. diameter. Unlike rotary cutters with straight cutting trays, Sir Nickless has a curved tray that forces wires to lie tight against the bottom wall of the cable, explains Ideal, and safely away from the top-positioned cutting blade. The tool comes with an all-metal frame and performance blade.

The tool comes with an all-metal frame and performance blade.

IDEAL INDUSTRIES

www.idealindustries.com

Knaack PowerCrew in-box 15A power supply



Knaack offers its PowerCrew in-box power supply as a solution for in-box power to any style of jobsite box. Designed to allow contractors to be more productive by charging batteries and running tools, radios or phones from their boxes, the PowerCrew has four GFCI-protected electrical outlets providing 15 amps of power for operating tools and equipment, or charging batteries. A standard three prong/straight blade extension cord

CELEBRATING 15 YEARS OF QUALITY SERVICE

BRITECH

HEATING CABLES & CONTROLS

Tough Heating Cables for Tough Jobs Since 1927

"Construction Site Tough"

Call today and start making money

- Radiant Heating
- Floor Warming
- Snow Melting
- Pipe Tracing

www.britech.ca 877-335-7790 info@britech.ca

(which plugs into the outside of the box) is the power source. Other safety features include an internal relay that provides open neutral protection and a red LED indicating when the power is On.

KNAACK
www.knaack.com

Milwaukee M12 1/4-in. hex impact driver



The M12 1/4-in. hex impact driver from Milwaukee delivers 850 in.-lb of torque. It features a variable-speed trigger and weighs less than 2.3 lb. The quick bit-loading 1/4-in. hex chuck enables bit insertion and release to be done with one hand. A 12V Li-ion battery and 0-3000 ipm provide a long run time and more impacts per minute for optimum performance.

MILWAUKEE
www.milwaukeetool.com

Ridgid R3030 one-handed recip saw



Ridgid's R3030 reciprocating saw weighs just 4 lb, and is designed and balanced with one-handed operation in mind. The round rail shoe surrounding the blade gives a sturdy base to make clean, perpendicular cuts without marring most surfaces. Its variable-speed, two-finger trigger provides speed control along with 0-3500 (no load speed) strokes per minutes. The tool-free blade change feature makes changing blades quick and easy. The kit includes the R3030 recip saw, three blades, operator's manual and a heavy-duty bag.

RIDGID
www.ridgid.com

Bosch PS20 Pocket Driver

Bosch's PS20 pocket driver is the latest addition to the company's compact product family. Upgrades include 100 in.-lb of torque and a 500-rpm operating speed. To make the PS20 more productive on the job, the unit supports the insert bits that almost every user has in his toolbox. The tool also features an enhanced ergonomic grip, a robust metal '10+1' clutch ring, bright LED work light and locking 1/4-in. universal bit holder—all in a package that weighs less than 2 lb. The driver comes with two 12V Max Lithion batteries, a 30-minute quick charger and a canvas carrying bag.



BOSCH
www.boschusa.com

Hilti TE 80 combihammer

Sporting a 1700W motor, the Hilti TE 80 combihammer features active torque control (ATC), active vibration reduction (AVR) and a theft protection system (TPS), making it a suitable tool for both drilling and heavy chiselling. With speeds of 360 rpm, the TE 80 can hammerdrill in the 3/4-in. to 6-in. diameter range in concrete, masonry and natural stone. It drills through-holes up to 6 in. in diameter in concrete and masonry, and is used for



high-torque chiselling work and drilling in wood and steel. For operator protection, the tool has a cut-out system that rapidly disengages the drive system should the bit get stuck.

HILTI
www.ca.hilti.com

Klein Hi-Viz 54701WC tool box wheel caddy

Klein's Hi-Viz tool box wheel caddy (No. 54701WC) provides users with easy access to tools on the jobsite. Compatible only with the Hi-Viz sit/stand three-tier tool box (No. 54701), the wheel caddy locks into position and can be maneuvered by a telescoping handle equipped with comfortable foam grips. Designed to also be used as a handy step stool and seat, the tool box has a capacity of 4095 ci. The caddy's top tray has storage compartments for small tools and parts; a tote tray for larger tools and accessories; and a large tub for power tools.



KLEIN TOOLS
www.kleintools.com

Greenlee 1903 cable stripping tool

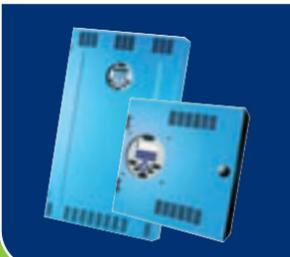
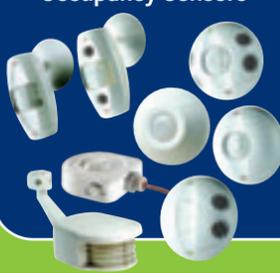


Triple action stripping, as well as rotary, longitudinal and spiral cutting abilities, are just some of the latest advancements in Greenlee's 1903 cable stripping tool. Other new features include a hook on the end of the cable guide that is used to grab the jacket to start pulling it from the cable. Interchangeable small and large cable guides allow the 1903 to strip cable over the full range—from 0.18 in. to 1.57 in. diameter (8 AWG to 1250 kcmil). A pocket at the base of the tool stores replacement blades. Lightweight and compact, the 1903 fits neatly into pockets or tool pouches.

GREENLEE
www.greenlee.com

Energy Management Solutions

LEVITON®

Fluorescent Lampholder	Electronic Timers Silent, Reliable	vizia+ & vizia rf+	Box Mount Occupancy Sensors
			
D3200 Series	D8000 <small>DuPont™ Corian®</small>	D4200 Series	a2000
			
Z-MAX	MiniZ Ladderless Commissioning™ Daylight Harvesting System	Wall & Ceiling Mount Occupancy Sensors	Dimmers & Fan Controls
			

With the most comprehensive line of Energy Management Products to help you save energy, LEVITON brings it all together to assist you in building a complete Integrated Energy Management Lighting Control System.

Only LEVITON takes you from start to finish with service, technical support and design assistance.

www.leviton.com



Fluke "Testing your test leads" application note

Fluke recommends you check your test leads before connecting to a circuit. Poorly made, worn or under-rated test leads can cause inaccurate readings and may pose a serious shock or electrocution hazard should you touch live wires that your digital multimeter has read as being deenergized. Information on why test leads are so important and how to check them for safety is available in the free application note, "Testing your test leads for electrical measurement safety".

Visit tinyurl.com/dbqlrs to go straight to Fluke's electrical application notes section.



Cooper Bussmann Selecting Protective Devices reference guide

Cooper Bussmann's SPD (Selecting Protective Devices) reference guide is now available online. This technology guide explains selective coordination, industrial control panel short-circuit current rating (SCCR) and marking requirements, and electrical safety considerations. A new section describes branch circuit and application-limited overcurrent protective devices, with notes on proper application.

The Cooper Bussmann SPD reference guide can be downloaded at www.cooperbussmann.com/spd.



Ideal Bul-z-Eye self-feeding wood boring bits brochure

Ideal has published a four-page colour brochure detailing its Bul-z-Eye self-feeding wood boring bits. These bits feature twin-edges that promise to power through treated or wet wood without binding or jamming. Bul-z-Eye bits feature a black oxide coating to prevent corrosion. Also, lead screws are replaceable using a hex wrench, extending the drilling life of the bit and optimizing cost-per-hole value. 12 bit diameters are available, ranging from 1 in. to 4 5/8 in., along with 5 1/2-in. and 18-in. extensions.

Check out www.idealindustries.com for more details.

Rittal Wallmount Reference Brochure



Rittal's 32-page Wallmount Reference brochure cross-references the company's 70 different wallmount enclosure sizes with its competitors' equivalent products. Included are part numbers, mounting panel and enclosure dimensions, as well as technical details on NEMA ratings and paint processes. Rittal's enclosures are available in cUL Type 12, 3R and 4/4X protection ratings.

To get your copy, visit www.rittal.ca/literature.



Meltric 2009 product catalogue

Meltric's 224-page 2009 product catalogue features its Decontactor Series switch-rated plugs, receptacles and connectors. The series allows technicians to change-out motors, welders and other electrical equipment with plug-n-play simplicity. They are an approved 'line-of-sight' disconnect and CSA approved for both branch and motor circuit disconnect switching up to 200A or 60 hp. Decontactors are also CSA rated to make and withstand short circuits up to 100 kA.

Visit www.meltric.com for more information.

NAED launches TEDGreenRoom.com



TEDGreenRoom.com was launched with the belief that electrical distributors need to be poised to serve any market that produces electricity. With increasing interest in energy reduction, distributors are being turned to for answers. They, in turn, can define their role in selling efficiency, taking on alternative power product lines and partnering with other providers. TEDGreenRoom.com provides

users with news, resources and a place to help shape the electrical distribution industry's future through blogs, interactive research and more.

Visit www.tedgreenroom.com.

Cooper Lighting Ametrix Product Selector Guide



Cooper's Ametrix Product Selector Guide presents the company's full line of architectural asymmetric lighting products. The eight-page brochure features Ametrix's three housing styles (Roundel, c-Scroll and Vault), the line's special design features, and its multiple energy-efficient lamping options and mounting styles. The family of indirect luminaires is designed for use in interior/exterior applications, and features various mounting styles.

Visit www.cooperlighting.com or e-mail talktous@cooperindustries.com to receive a copy of the guide.



Fluke SmartView 2.0 thermal imager software with 3-D

Fluke's SmartView 2.0 software for its thermal imagers is among the first in the industry, says the company, to offer 3-D imaging capabilities. The software is a modular suite of tools for viewing, annotating, editing and analyzing infrared images, and creating illustrated customized reports. SmartView 2.0 users can download images captured with any Fluke thermal imager equipped with IR Fusion—technology that facilitates real-time pixel-for-pixel merging of IR and visible light images on a single display, thereby simplifying the identification and diagnosis of problems.

Go to www.flukecanada.ca for more on Fluke's thermal imaging products.

High-Lites Announces New Products Catalogue



High-Lites new 92-page, full-colour product catalogue details the company's three major lines. Its emergency lighting line offers commercial, designer and industrial units made of high-impact plastic or steel, and most come with choices of self-diagnostics and finishes. As well, there is a selection of exit sign models constructed of plastic, steel or aluminum with incandescent, fluorescent or LED lamps. High-Lites' DC, fast transfer and IPS inverter power systems provide support for all lighting and power load requirements, including generator back-up.

Learn more about High-Lites (a Philips group brand) and its new catalogue at www.highliteslighting.com.

Lam Lighting Profile ADA brochure



Lam has published a full-colour, 12-page brochure, "Profile ADA", showcasing the range of Lam's indirect and direct/indirect energy-efficient linear lighting products, and their applications for architectural lighting installations. The brochure details the company's range of wall-mounted models that eliminate glare and shadows, and comply with the Americans with Disabilities Act (ADA). Specifications, lamping photometrics and how-to-order information is provided.

Visit www.lamlighting.com to order the Profile ADA brochure.

NEW! Best-in-Class Thermal Imagers

FLIR i-Series



The competition can't compare... FLIR i-Series with Scalable Fusion

Built for in-house predictive maintenance, electrical, and HVACR professionals, the affordable FLIR i-Series quickly isolates faulty connections, analyze motors and bearings, or find building envelope leaks. Get compelling results before a failure occurs!

"When I evaluated the FLIR i60 thermal imager versus the competition, feature-for-feature, the i60 came out ahead. The i60 gets the job done fast—and with incredible detail."



FLIR i60

FLIR i40 • 14,400 IR pixels • 0.6 MP Visual

FLIR i50 • 19,600 IR pixels • 2.3 MP Visual

FLIR i60 • 32,400 IR pixels • 2.3 MP Visual



1-800-613-0507 x24 / x25
or email IRCanada@flir.com for more info

www.goinfrared.com/canada/cameras/all_cameras.asp

FREE INFRARED WEBINARS! Visit flir.ca for the full schedule of FREE online seminars:

- 12 Things to Know Before Buying an Infrared Camera
- Thermography in Utility Applications
- Fugitive Emissions & Thermal Imaging

*Questioning your
Dryer Exhaust?*



Aeroflo has the answers!

DVK Dryer Vent Kits help boost dryer exhaust to overcome long and complex duct runs that are found in many of today's homes. DVK kits provide powerful, yet quiet exhaust, reduce drying times and save energy costs.

Aeroflo offers a superior line of ventilation products and air purification systems, providing*better AIRFLOW by DESIGN!*™

Tel: 905-890-6192
Toll: 800-779-4021
Web: www.aeroflo.com



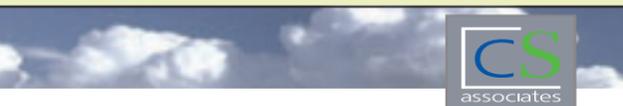
Electrical Design/Simulation Software Etc.

The Constructor- Ladder Logic Design & Simulation
Res Wire Pro - for Professional Residential Wiring.
Bentley promise - Electrical Control System Design.
Dolphin Volts - Automate the electrical design process.

Tutorial Software- ControLogix Trainer, PLC Trainer
HMI-covers RSVIEW 32 works, MC Motor Control
Trainer, TSTroubleshooting Trainer,
VFD Variable Frequency Drives.

Waltech Associates

Tel: 905-466-7417 Fax: 905-315-8492
e-mail: info@waltechassociates.com
www.waltechassociates.com



**THE BENCHMARK IN ELECTRICAL
SAFETY INFORMATION**

Services:

- Electrical Industry Consulting
- Training Development
- Electrical Safety Assessments
- Benchmarking
- Feasibility Studies

Contact
Kris Paszkowiak, P.ENG.
Phone: (905) 599-2702
eMail: kris.paszkowiak@gmail.com



training assessments consulting

**LOADBANKS
for RENT**

600V,480V & 208V Genset load testing
and UPS load testing equipment.
Metering, Cables and tech support available.
Shipped anywhere.
Call 1-800-385-4421 for rates.

WE BUY AND SELL GENERATORS



POWER SYSTEMS
Electric Power Generating Equipment Inc.
www.raylewpower.com

GE Consumer & Industrial
Electrical Distribution

The NEW GE BuyLog Lite

Canadian Edition

The new **BuyLog Lite** is a one-stop quick resource for product specifications, ordering information and accessories for the following products:

- Load Centers
- Meter Centers
- Panelboards
- Safety Switches
- IEC Nema Loose Control
- Lighting Contactors
- Connector Kits & Replacement Breakers

Access the **GE BuyLog Lite** at www.ge-ed.ca.

For more information, call 1-877-259-0941, ext. 2912
or e-mail us at marketingcdn@ge.com.



WANTED

**Molded Case Circuit Breakers. New & Used, All Brands.
Motor Control & MCC. Buckets in A&B, S.D. & W.H. & C.H.**

Please call, email or fax Ralph Falvo with your list.

FALVO ELECTRICAL SUPPLY LTD.

5838-87A St., Edmonton, Alberta
1-800-661-8892
780-466-8078 Fax 780-468-1181
email: rjf@falvo.com

GE Consumer & Industrial
Lighting

347V UltraMax® High-Efficiency Electronic Ballasts
Ultra Performance. Maximum Efficiency.

Transform the power of light into performance, savings
and environmental benefits with new 347V UltraMax®
high-efficiency, instant start T8 electronic ballasts from GE.

- More than 40% energy savings
- Fully parallel independent lamp operation
- Anti-striation control
- Small, low-profile and lightweight housing
- -22°F/-30°C minimum starting temperature
- RoHS compliant
- Ultra Cool™ operation

For complete details, call 1-877-259-0941, ext. 2912
or e-mail us at marketingcdn@ge.com.

www.gelighting.com



a product of
ecomagination

**Electrical
Business**
THE AUTHORITATIVE VOICE OF
CANADA'S ELECTRICAL INDUSTRY

Visit Electrical Business online at
www.EBMag.com
for online exclusives, digital editions
and up-to-the-minute news stories



Serving you since 1948

**The Power Factor Correction Capacitor
and Harmonic Filter experts**

www.powersurvey.com



Automatic medium voltage capacitor bank combined with switchgear



Automatic low voltage harmonic filter bank



Low & medium voltage capacitors units



Fixed harmonic filter

Now available close to you; with over 150 sales offices and business partners coast to coast :

- Fixed capacitor bank and harmonic filter; from 120v up to 35 kV
- Automatic capacitor banks & harmonic filters from 120v up to 35 kV
- Network harmonic simulation to meet IEEE 519
- On site harmonic analysis
- Also manufacturer of custom medium voltage switchgear up to 35 kV

Recent customers that reduced their power bills and harmonics with Power Survey Equipment.

- NASA
- JFK Airport
- Nortel
- Lafarge Cement
- West Fraser Mills
- US Air Force
- Quebecor Printing
- Canadian Forest Products
- Several Ski Centers

Please contact your Power Survey sales office near you

NFLD: (709) 753-6685	Ontario: (514) 333-8392	Alberta: (800) 263-2684
NS & PEI: (902) 450-5155	Manitoba: (204) 694-0000	BC: (604) 882-8488
NB: (506) 862-1515	Saskatoon, SK: (306) 244-7272	USA: (514) 333-8392
Quebec: (514) 333-8392	Regina, SK: (306) 771-2500	



Multimeter user error, the code and fused leads



Image courtesy Electrical Safety Authority

Electrical workers continue to be critically injured when using multimeters for the purpose of troubleshooting or testing energized electrical equipment. Accident investigation evidence categorizes the main and most frequent cause of these accidents as *user error*. We need to focus on this area of concern because the wrong setting on the multimeter scale—or selecting the wrong socket or incorrect multimeter CAT rating—can lead to a dramatic failure with tragic results. These simple *user errors* can, very quickly, become unforgiving.

There are a couple of Canadian Electrical Code (CEC) Rules that need to be kept in mind when working on energized electrical equipment. The first is 2-304 Disconnection. Basically, electrical equipment must be deenergized before any work can be performed. The best way to prevent electrical accidents is to disconnect the power and ensure there isn't feedback from other energized circuits prior to working on the equipment.

In addition, Rule 2-304 states that three- or four-way switches shall not be considered disconnecting means. Instead, adequate precautions, such as locks on circuit breakers or switches, warning notices, sentries or other equally effective steps shall be taken to prevent equipment from being electrically charged while work is being performed.

But Rule 2-304 is not mandatory in all situations; there are situations in which it is

permissible to work on energized equipment where the complete disconnection of power is *not practicable*.

Not practicable does not mean inconvenient: it means where the work is impossible, unrealistic or simply not viable due to the nature of the equipment, or where there is a need to troubleshoot the energized circuit to identify a problem that may be affecting the equipment's operation. These exceptions require special training, work methods and protection.

So the second CEC Rule to explore is 2-306, which pertains to shock and arc flash protection. Rule 2-306 states that electrical equipment, such as switchboards, panelboards, industrial control panels, meter socket enclosures and motor control centres (MCCs) that are installed in other-than-dwelling units—and are likely to require examination, adjustment, servicing or maintenance while energized—shall be field-marked to warn persons of potential electric shock and arc flash hazards. Further, the marking shall be so located that it's clearly visible to anyone before they do anything.

In addition to the marking, there are other steps that will help manage the risk of electrical shock and arc flash.

Managing the risk of shock and arc flash

The majority of multimeters in use today employ unfused leads. Some multimeters use internal fuses, but they don't usually protect the user from faults while using the tool on the most frequently used volt-Ohm settings. Under fault conditions, the energy available at the terminals

can cause the meter to explode violently. Fast-acting inline fuses that are an integral part of the leads are one way of limiting potentially life-threatening energy from entering the meter and harming the operator.

Use a multimeter rated CAT III or higher with appropriately rated fused leads when troubleshooting energized systems or using the tool to verify the system is deenergized. Never use less than CAT III-rated multimeters on construction or industrial sites. Know the CAT rating's limitations.

Identify the system's maximum voltage ratings and any unusual electrical circumstances. Wear adequately rated personal protective equipment (PPE) as determined by a short-circuit, protective device coordination and arc flash hazard analysis based on CSA Z642. Ensure the multimeter and fused leads are both rated for the voltage involved. Check the probe fuse to ensure it is in place and rated for not less than 600 V.

Ensure the batteries are working. Weak batteries have been known to give inaccurate readings. Contamination caused by water, dirt or moisture from temperature changes could cause failure.

Ensure the fused leads are in good operating condition. Careful examination of the insulation, probe handles and connectors for signs of damage is an important process, because any compromise of the dielectric integrity can result in electrical shock or short circuit. Never switch the multimeter functions while the meter is energized. Ensure the test probes are removed from any source of energy when changing settings.

Ensure the meter leads are connected to the correct terminals, and that the meter is on the correct setting. Finally, apply the three-point test:

1. Test a circuit known to be live.
2. Measure the target circuit.
3. Re-test the live circuit to ensure all of the multimeter components are functioning, including the fuses.

Although fused leads aren't currently required by the CSA multimeter standard, or CEC/OHSA regulations, it is a good safety work practice to use them to prevent critical injuries or fatalities. For an electrical worker, the small cost of the fused leads can be the best insurance money can buy. **EB**

Kris Paszkowiak is principal of CodeSafety Associates, a 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 CE Code Part I and UL Electrical Council. E-mail CodeSafety Associates at kris.paszkwiaak@codesafety.ca.



Advertiser	Page
3M Canada	4
Aeroflo Inc.	33
Arlington Industries	21
Arrow Fasteners	26
Brady Canada	23
Britech	30
Canada Training Group	27
Caterpillar	9
CodeSafety Associates	33
Columbia-MBF Electrical Group	18
Cooper Lighting	28
CSA	13 & 34
Falvo Electrical Supply	33
FLIR Systems	32
Fluke Electronics	23, 25 & 27
General Electric	33 & 36
Hammond Mfg.	8
Hubbell Wiring	6
I.E.D.	17
Leviton	31
Nexans Canada	1
Northern Cables	7
Ontario Electrical League	29
Philips Lighting	19
Power Survey	33
Pre-Apprenticeship Training Inst.	10
Raylaw Power Systems	33
Royal Bank of Canada	12
Standard Products	2
Stanpro Lighting Systems	20
Techspan Industries	35
Thomas & Betts Canada	1, 5 & 11
Ultrasave Lighting	24
Venture Lighting	15
WAGO Inc.	22
Waltech Associates	33

Questions and answers compiled by the Electrical Safety Authority Visit www.esasafe.com

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 down-right 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.
2 of 3 — You're pretty smart, but you still missed one.
1 of 3 — Your understanding of these questions is not up to code.
0 of 3 — Did you come up with your answers by playing Eenie, Meenie, Minie, Moe?

Question 1

All wiring installed in or under an aircraft hangar floor shall conform to the requirements for Class I, Zone 1 locations.

a) True
b) False

Question 2

The point of attachment of supply or consumer service conductors shall be not more than ___ above sidewalk or grade level.

a) 4.5m c) 12m
b) 9m d) 14m

Question 3

When calculating the minimum ampacity of the consumer's service and feeders for a recreational vehicle park, and receptacles of different ratings are installed on each lot, then the receptacle having the lowest ampere rating is permitted to be used as the basis for calculation.

a) True
b) False

Answers to Code Conundrum

Electrical Business March 2009

Q-1: Luminaires, lampholders and lighting track in dwelling units shall not be connected to a branch circuit protected by overcurrent devices rated or set at more than ___

a) 15 amps. Rule 30-104.

Q-2: Rink areas that are provided with positive mechanical ventilation capable of changing the air at least ___ times per hour shall be permitted to be regarded as dry locations.

c) 3 times per hour. Rule 22-206(3).

Q-3: TW75 conductors in raceway are permitted for the wiring of ceiling outlet boxes on which a luminaire is mounted.

b) False. Rule 30-408.

The 2009 Canadian Electrical Code is Now Available!

Incorporates 108 revisions and 14 NEW interpretations.

Buy yours at <http://cecode.csa.ca> OR **Mark's Work Wearhouse** Clothes That Work.



**The Quality Alternative
For Two Decades & Growing**

**Techspan®
20 Years
1989-2009**

**Three Reasons To Ask Your Distributor
For Techspan® Products...**

- ✓ **Superior Quality** – we guarantee it! 20 years of growth is impossible without first class products! CSA, UL, CE, milspec, ISO production plants.
- ✓ **Huge Selection** – we stock over 15,000 part numbers and ship them to your local distributor same day!
- ✓ **Best Value** – our low overheads and dedicated inside people give you the right product for the job at the right price!

Cut Costs – Not Quality!

Techspan Industries Inc.
3131 Pepper Mill Court
Mississauga, ON
L5L 4X6

1-800-363-1588

Call For The Name Of Your Local Distributor

www.techspan.biz



GE Consumer & Industrial
Lighting



Transforming the POWER of light™

347V.

Ultra performance.

Maximum efficiency.

Brought to you by GE.

GE UltraMax® high-efficiency electronic ballasts are now available for use in Canada.

Transform the power of light into performance and energy savings with the patented technology of UltraMax® high efficiency, instant start T8 electronic ballasts from GE.

Among the lowest input watts of any comparable ballast on the market today, UltraMax® ballasts operate at >90% efficiency and can result in energy savings of more than 40% when used in conjunction with T8 energy saving lamps in standard T12 system retrofits.

Easy to install, the ballasts are low profile, lightweight and an industry leading 1.3 inches in width across nearly all 1-4 lamp ballasts available in Low Watt (L), Normal Light (N) and High Light (H). The GE High Light (H) high ambient temperature rated ballasts are targeted towards the fast growing fluorescent high bay trend.

All Ultramax® high efficiency ballasts are RoHS compliant and CEE approved.

To find out more, call GE Lighting in Canada at **1-877-259-0941, ext. 2912** or e-mail us at marketingcdn@ge.com.



a product of
ecomagination™

