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# Electrical Business

THE AUTHORITATIVE VOICE OF  
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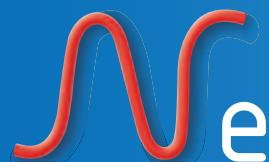
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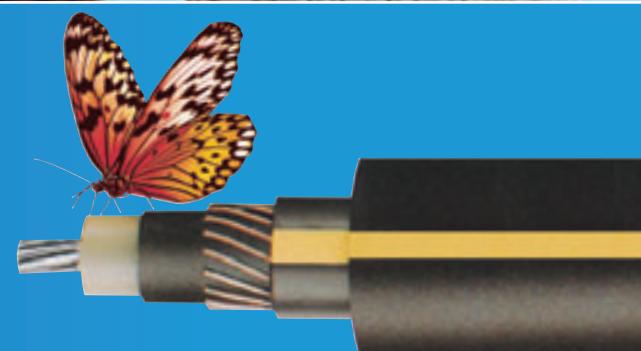


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ELECTRICAL BUSINESS is the magazine of the Canadian electrical industry. It reports on the news and publishes articles in a manner that is informative and constructive.

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## Yup, we're also Tweeting!

limits us to the number of words we can fit on a page.

So we go online to EBMag.com, which is a treasure trove of good information we either simply could not fit into the magazine, or it just made more sense to have it there. Online is where you'll find our Careers section, current and past editions of the magazine, photo galleries, videos and more.

Which begs the question: How do we get you to visit EBMag.com more frequently so you can take advantage of useful (and, most importantly, bona fide) information? Well, we have our free monthly newsletter, E-Line, which fills the information gap between editions of Electrical Business, but that doesn't seem quite enough in this age of information. When I learn of a product recall, I want to let you know right away. I don't want to wait... why should you?

Enter Twitter (we didn't pick the name). Twitter is an application that lets us put out very short, quick snippets of information as regularly and as often as we want: we're not constrained by production schedules of any kind. In the first few days, for example, we posted news of new time-sensitive job opportunities, and several product recall/safety notices.

I invite you to visit [twitter.com/EBMag](http://twitter.com/EBMag) to check out our "Tweets" (again, we didn't pick the name). We think you'll be glad you did. EB

*Anthony Capkun*



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Don't expect your contractor to do live electrical work.

WORKING LIVE CAN KILL. JUST DON'T ASK.

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Working live is illegal except for specific circumstances, and even then there must be special safety controls in place. Otherwise, workers could be killed and you could be charged. Don't ask people to risk their lives.

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### Just Don't Ask; launch of electrical safety campaign

The Electrical Safety Coalition of Ontario ([www.electricalsafetycoalition.com](http://www.electricalsafetycoalition.com)) recently launched an electrical safety campaign aimed at suppressing the demand for live work on energized electrical equipment. The campaign was unveiled by coalition partners:

- Electrical Contractors Association of Ontario ([www.ecao.org](http://www.ecao.org))
- Electrical Safety Authority ([www.esasafe.com](http://www.esasafe.com))
- Electrical & Utilities Safety Association ([www.eusa.on.ca](http://www.eusa.on.ca))
- Industrial Accident Prevention Association ([www.iapa.ca](http://www.iapa.ca))
- International Brotherhood of Electrical Workers ([www.ibew1st.org](http://www.ibew1st.org))

According to the coalition, working live is responsible for 50% of all occupational injuries and deaths due to contact with electrical equipment. This campaign was created to encourage clients not to ask their

electrician(s) to work live.

The coalition recognizes that those who work on high-voltage power and utility lines must work live, which is why they're more interested in reaching industrial, commercial and residential settings where electricians are asked to work live rather than undertake the service work with a planned shut-down or locking out/tagging out (LOTO), and without other protective procedures in place.

A key item of the campaign is the Authorization Form. Developed by coalition partners, it asks clients, general contractors or consulting engineers to acknowledge the serious implications of asking an electrician to work live, and reconsider the request. The form clearly outlines the responsibilities and liabilities that will be assumed by each party should an agreement to work live be made. The intent is to create awareness among those who would ask electricians to work live; to let them know the severity of the possible consequences, and get them thinking of other, safer alternatives.

Visit [www.electricalsafetycoalition.com](http://www.electricalsafetycoalition.com) to find additional information and collateral materials, including the Authorization Form.

### FCI to sell Burndy to Hubbell

FCI Group ([www.fciconnect.com](http://www.fciconnect.com)) has entered into an agreement to sell its electrical division—known by the brand name Burndy—to Hubbell Inc. ([www.hubbell.com](http://www.hubbell.com)).

FCI says that, as a result of the "excellent performance of its electrical division", it has received many unsolicited offers over the years for its acquisition. "Some of the recent offers were particularly attractive and deserved closer attention," reads the press release, adding, "Therefore, FCI top management decided to carefully study these proposals, which ended in the decision to divest the division."

"The electrical division had the least synergies with the other divisions of FCI in terms of products and customers and we think that the combination with Hubbell will enhance the value creation opportunities for the Burndy brand," said Pierre Vareille, chair and CEO of FCI Group. "Moreover, thanks to this divestiture, FCI's financial situation is more sound and stable than ever. [It] opens for FCI a wealth of opportunities for new developments, be it vis-à-vis our customers, our partners or other companies that may join our group."

The deal remains subject to approval, and is expected to be finalized during Q4 2009.

### Kidde RECALLS dual sensor smoke alarms

The Electrical Safety Authority ([www.esasafe.com](http://www.esasafe.com)) is notifying the public that Kidde Canada Inc. ([www.kiddecanada.com](http://www.kiddecanada.com)) has announced a voluntary recall of Kidde Model PI 2000CA dual sensor smoke alarms, of which there are approximately 10,000 in Canada.

An electrostatic discharge can damage the unit, causing it not to warn consumers of a fire. The firm has received two reported incidents of unit malfunctions involving electrostatic discharge during installation, though no injuries have been reported with respect to the alarms.

The alarms can be identified by two buttons—HUSH and PUSH AND HOLD TO TEST WEEKLY—which are located on the front/centre of the alarm. The model number and date code are on the back of the smoke alarm. Only date codes 01 January 2009 through 04 May 2009 are included in this recall.

Consumers should contact Kidde immediately to receive a free replacement smoke alarm. Visit the website, or call (877) 524-2086.

### Fluke SAFETY NOTICE and RECALL of 33x digital clamp meters

Fluke ([ca.fluke.com](http://ca.fluke.com)) is voluntarily recalling certain 333, 334, 335, 336 and 337 digital clamp meters that were manufactured between 29 January 2008 and 27 February 2009.

"We are undertaking this voluntary recall because we place tremendous importance on our customer's safety and the reputation of our products," says Fluke. "Please accept our apologies for any inconvenience caused by this action."

Fluke has discovered a potential short circuit connection on the circuit board. This may lead to inaccurate voltage readings including a low or no voltage reading on a circuit energized with a hazardous voltage. This finding could create a hazardous situation if the user were to contact live voltage based on an erroneous instrument reading. No injuries or damage has been reported.

The following models are affected:

- 337 (S/N 96310001 to 98890607)
- 336 (S/N 96360001 to 98900400)
- 335 (S/N 97160001 to 98860104)
- 334 (S/N 97180001 to 98870101)
- 333 (S/N 97170001 to 98880240)

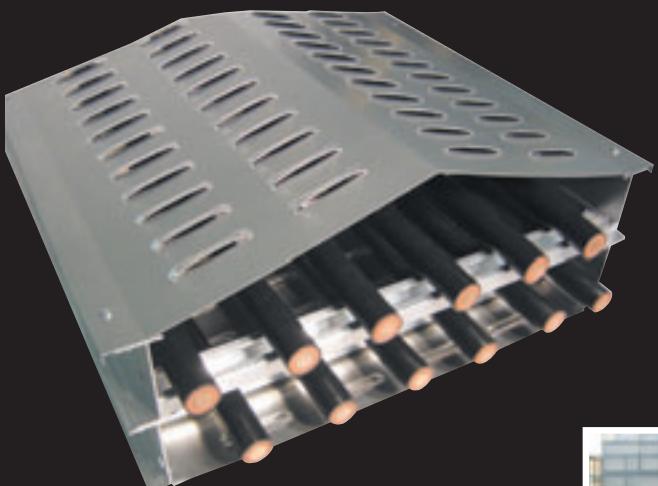
Note: Serial numbers with the suffix 'R' or the prefix 'S' are not included in this recall.

If you own one of these clamp meters, stop using it and send it back to Fluke for free replacement. If you are not the primary user of the Fluke 33x series clamp meter, pass this notice along to the appropriate people within your organization. For more information, call (800) 363-5853 Monday-Friday.

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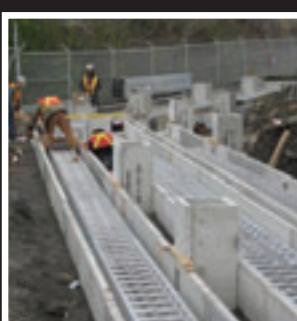
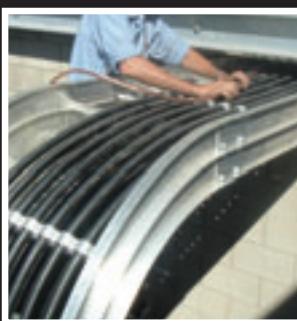
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**IED award winners 2009**

At the recent Independent Electrical Distributors (IED) Limited Partnership II annual general meeting in La Belle Province, various members and suppliers were recognized for their efforts and accomplishment across several categories. EBMag was there to take in the action. (For more photos from the awards ceremonies, visit our Photo Gallery at [EBMag.com](http://EBMag.com)).

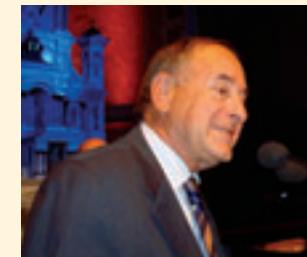
Congratulations to the following:

- ESPO Electric for supporting the greatest number of IED-approved suppliers.
- Diversified Ventures for showing the greatest increase in purchases.
- J.W. Bird & Co. for best utilizing the IED Marketing Activity Awards.
- Arlington Industries as Marketing Partner of the Year.
- Canlyte recognized Dubo Electrique as its Distributor of the Year.
- Cooper Connection presented its General Growth and Performance Award to EECOL Electric.
- Hubbell named Robertson Electric Wholesale its Distributor of the Year.

- Leviton recognized Electrimat Ltee for Greatest Sales Increase.
- Liteline Sail Away Contest winners were: Marchand Electric, McLoughlin Supplies Ltd. and EECOL-Saskatoon.
- J.D. Paré Electrique received an award from Ouellet Canada for Greatest Sales Increase.
- Panduit recognized EECOL Electric for Overall Support and Year-over-Year Growth.
- Royal Pipe Systems named J.W. Bird & Co. its Distributor Partner.
- Sylvania's Partner of the Year was Tradelco Inc.
- Thomas & Betts' Signature Service Champion Award went to McLoughlin Supplies Ltd.
- IED awarded its General Partners Award of Excellence to Wilf Dykstra (Del's Distributors).
- The Tom Torokvei Award of Excellence went to Raymond Beaulieu of Ouellet Canada.
- Finally, Ouellet Canada snatched the Supplier of the Year Award.



Photos by Anthony Capkun



^ McLoughlin Supplies Ltd.'s Ann McLaughlin (second from left) accepts Thomas & Betts' Signature Service Champion Award.

< Raymond Beaulieu of Ouellet Canada accepts the Tom Torokvei Award of Excellence.

### **Heating system thermostats RECALLED by OJ Electronics**

The U.S. Consumer Product Safety Commission, in cooperation with OJ Electronics ([www.ojelectronics.com](http://www.ojelectronics.com)), announced a voluntary recall of 208V and 240V thermostats. Consumers should stop using recalled products immediately unless otherwise instructed.

The recall involves thermostats that have a built-in GFCI and are designed for use in underfloor heating systems. Thermostats included in the recall are connected to 208V or 240V power supplies (120V units are not included in the recall). They were sold under the brand names: **Canisol**, **Danfoss**, **Elektra**, **Momento**, **OJ Microline**, **Raychem**, **Thermosoft**, **Warmly Yours** and **Warmup**. The brand name is located on the front of the thermostat.

The recalled thermostat's floor sensor, or its cable, can be damaged from cutting, drilling or nailing. This poses a risk of electric shock to consumers if the power supply is not disconnected. No incidents/injuries have been reported.

The recall involves about 30,000 units sold from January 2004 through December 2008.

Consumers are not to cut, drill or nail into the heated floor, and should contact the manufacturer to arrange for a free in-home repair. Visit OJ Electronics online or call (800) 380-6940.

### **Worker killed; SNC-Lavalin Power Ontario Inc. fined \$300K**

SNC-Lavalin Power Ontario Inc. was fined \$300,000 in July for a violation in 2007 under the Occupational Health and Safety Act (OHSA) in which a worker was killed.

In that incident, the company was building an electrical plant in Toronto, and had subcontracted another firm to provide carpentry, electrical and plumbing services. An apprentice electrician employed by the subcontractor was working with two journeyman electricians to install temporary lighting when the apprentice removed the inside cover panel of a live 600V transformer and contacted the taps within. The apprentice was electrocuted.

A Ministry of Labour investigation found that the electrical panel was not tagged or locked out. Inspectors also found that the company and subcontractor both had lockout policies in place and SNC-Lavalin had conducted an orientation for subcontractors. However, records did not show the electrical crew had been given detailed training or a copy of either company's policy. The SNC-Lavalin site-specific policy was also not fully implemented at the time of the incident.

SNC-Lavalin Power Ontario Inc. pleaded guilty to failing, as a constructor, to ensure that its subcontractor implemented a LOTO procedure to ensure workers were protected from shocks and burns. In addition to the fine, the court imposed a 25% victim fine surcharge, which is credited to a provincial government fund to assist victims of crime. 

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# Are you ready for work at heights?

## Fall protection and rescue planning

By John Fuke



I never thought it would happen to me.

**I**t's something you commonly hear from those who survive a life-threatening experience: I never thought it would happen to me. Despite the fact that thousands of falls from heights occur on jobsites every year, many are of the mindset they only happen to someone else, or at another company... *certainly not yours*.

Because it only takes a fraction of a second for something to go wrong, it is vital to create a safe environment for employees working at heights. Providing proper fall protection equipment is part of creating a safe environment. However, a fall protection and rescue plan should also be in place to provide the highest level of safety for your employees and your company. The combination of adequate fall protection equipment and a fall protection and rescue plan will increase the level of worker safety.

Although CSA does not require a fall protection and rescue plan, they do recommend it. CSA 1156 2.9.2 states: ... a rescue plan should be developed in advance of work that involves a fall hazard. A fall protection and rescue plan sets guidelines to protect employees working at heights of 6 feet or more. The plan identifies fall hazards on a jobsite, how they can be removed or minimized, and how to respond to a fall to reduce the risk of serious injury. Let's get into a discussion on the benefits of having a fall protection and rescue plan in place, and the core elements to include when building that plan.

### Benefits of developing a fall protection and rescue plan

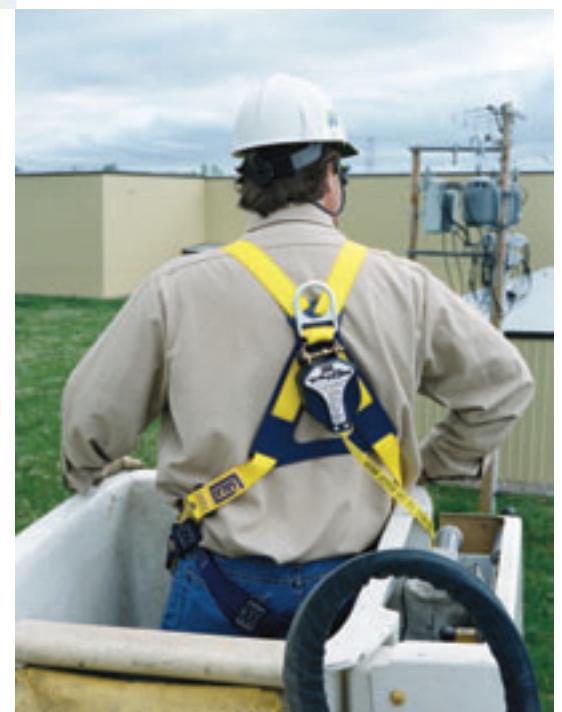
You gain three major benefits when you employ a fall protection and rescue plan:

- 1) increased worker safety
- 2) monetary savings
- 3) enhanced reputation

The safety of your workers should be your ultimate concern. A plan should be developed prior to beginning work on any project to provide adequate time to prepare; to evaluate the best way to prevent a fall from occurring, train workers on the ground before working at heights, and have the appropriate fall protection equipment available. When a fall protection plan is not in place, you may not know where all of the fall hazards are located nor how to control each one, which makes your employees ill-prepared for the job and puts them at risk.

The cost savings of having a fall protection and rescue plan are expressed in several ways. Being prepared saves money in the long run. Safety managers will know what fall protection equipment and skills are needed on a jobsite; as such, they are able to make educated and reasonable equipment decisions for a job well in advance, rather than having to quickly purchase products a few days prior to the start of a job (which may cost more) or delay work if the needed equipment is not available in time.

Insurance costs and injury compensation claims are costly; conversely, fewer injuries lead to fewer claims and lower costs. A fall protection and rescue plan trains workers in the proper use of their equipment, and



teaches them how to correctly respond in the event of a fall. Proper training increases productivity and reduces the amount of lost time from an incident, helping you complete the job on time, or earlier.

Employing a fall protection and rescue plan offers numerous advantages for a company's reputation. First, it illustrates to the employees and regulatory bodies that you are genuinely concerned about safety and providing the safest environment possible. Second, showing the importance of safety can help build positive attitudes toward the use of fall protection equipment and encourage workers to wear and use the equipment properly. Third, citations and injuries can damage a company's reputation, negatively impacting business development and employee recruitment and retention.

Although having a fall protection and rescue plan helps reduce the possibility for a fall to occur, it does not completely eliminate the chance of an incident. Should a fall occur, a company may receive a more favourable consequence from regulators and response from the public based on consistent efforts to comply with regulations and showing commitment to providing a high level of safety for its employees.

### Building a fall protection and rescue plan

Now that you are familiar with some of the benefits of having a fall protection and rescue plan, here are four core elements to include in the plan that will help you enjoy the benefits discussed above.

#### Identify areas of risk

Workers in the electrical industry face numerous hazards: arc flashes, climbing towers and poles, working from bucket trucks and aerial lifts, and more. One of the first steps in building a fall protection and rescue plan is to

perform a fall hazard survey. This involves identifying all potential fall hazards and their characteristics, including:

- location, type and a sketch
- frequency and duration of exposure
- height of potential fall
- fall protection and rescue equipment required
- environmental conditions
- method(s) to be used for control, such as active fall protection equipment (harness, connector, anchorage) or passive equipment (guardrails, permanent netting, barriers)

Due to the damaging effects of arc flash, extra care must be taken in the selection and use of fall protection equipment. Where arc flash is a concern and an active fall protection system required, for example, a full body harness made of 7000-lb nylon webbing with PVC-coated rings and leather insulators behind hardware should be worn. A textile self-retracting lifeline should be used as the connector between the harness and the anchor, as it will not conduct electricity like a metal cable.

#### Cost analysis

You need to consider the cost of the fall protection and rescue equipment (as well as its durability to keep work moving on schedule), and the potential cost of an accident should one occur. Choose equipment that allows workers to be safe onsite at all times. This equipment should be outfitted with the appropriate features that allow for a timely rescue in the event of a fall.

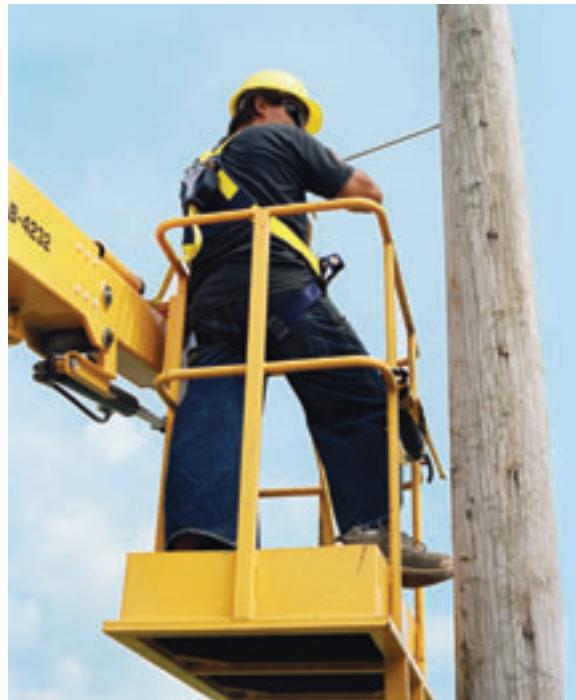
Cumbersome equipment can decrease productivity and hinder rescue efforts. By planning ahead, you will have the time to both decide upon and procure the required equipment, and train employees in its proper use prior to the work starting. This will provide a safer work environment, as well as keep costs down with higher productivity and fewer incidents.

#### Training

Proper training plays a vital role in fall prevention. Safety managers should continually train employees on the procedures in the plan to help prepare them for working safely at heights. The training should be a mixture of hands-on and classroom instruction that covers:

- regulations
- workers' responsibilities
- how to identify, eliminate and control hazards
- how to use written fall protection and rescue procedures
- how to select, use, inspect, store and maintain fall protection and rescue equipment.

It is important to provide refresher courses, especially as new equipment and procedures are introduced, or a new employee joins the team.



#### Incident reporting

Investigating a fall or near-miss (should one occur) can provide valuable information for strengthening your fall protection and rescue plan, and increasing worker safety. All parties involved in the incident should participate in the investigation. Information gathered should be recorded, kept on file and used to make changes to the plan (when necessary).

The investigation will help determine whether:

- the plan correctly identified the required fall protection and rescue equipment, as well as fall hazard control method;
- the proper training was provided; and
- the rescue was as efficient as possible.

Modifications to the plan should be made immediately and reinforced on the jobsite to help ensure a repeat incident does not occur in the future.

#### Making sure it never happens to you

So what's your mindset going to be the next time you send workers to complete a job at heights? Don't let "I never thought it would happen to me" be heard on your jobsite. Developing a fall protection and rescue plan will provide your employees with a safer work environment, and help protect you and your company.

John Fuke is the global manager for i-Safe Intelligent Safety System with Capital Safety (Toronto, Ont.). He has over 15 years of fall protection experience in the safety marketplace, including product development and standards design and implementation. Visit Capital Safety at [www.capitalsafety.com](http://www.capitalsafety.com).

## For your consideration: some fall safety violations and penalties

By Anthony Capkun

As you weigh the costs of proper fall protection and rescue planning, consider the price the companies below paid for improper fall protection and rescue planning.

**Moonfleet Poultry Inc.** was fined \$50,000 (plus a 25% victim fine surcharge) because of an incident in 2007 in which a worker fell about 13 feet from the top of a transport trailer, sustaining a complex fracture to the hip and pelvis. The investigation found the worker had not been provided with training or supervision on the use of fall prevention when working at heights.

**Durez Canada Co. Ltd.** was fined \$70,000 (plus a 25% victim fine surcharge), and a supervisor fined \$3000, because of an incident in 2006 in which a worker fell about 52 feet from a roof, landing on metal barrels and sustaining serious head, arm, leg and hand injuries. The investigation found that, in addition to other offences, proper fall protection measures and procedures were not carried out at the workplace. The investigation also found the supervisor had failed to ensure the worker used the protective devices, measures and procedures prescribed by law.

Still not convinced? How about just one more...

**Brook Restoration Ltd.** was fined \$150,000 (plus a 25% victim fine surcharge) because of an incident in 2007 in which a young worker employed by Ontario Roofing & General Contracting Services Ltd. (subcontractor) fell over 140 feet from a roof canopy to his death. The investigation found that the worker, although wearing a full body harness, was not connected to any anchor or fixed support at the time of the incident. In earlier proceedings, Ontario Roofing & General Contracting Services was fined \$115,000, and two supervisors fined \$20,000 and \$12,000, respectively (all subject to the 25% victim fine surcharge), for violating the fall protection requirement.

These accounts all come from Ontario's Ministry of Labour, and are just a few months old. How many more violations and fines could we find were we to expand the search to several years, or include judgements from across all of Canada? And the amounts of the fines merely scratch the surface: consider the cost of legal representation, damaged reputation and increased insurance premiums. Proper fall protection and rescue planning suddenly don't seem that expensive!

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Winners take part in a personal training session on arc flash mitigation, accompanied by Ajay Gupta and Shane Hall (account managers for GE Electrical Distribution products) and Maurice D'Mello, GE trainer.

To celebrate the launch of the **GE Tools** website ([www.getools.ca](http://www.getools.ca)), **GE Consumer & Industrial** offered consulting engineers the opportunity to win a grand prize of a two-day, all-expenses paid training session at GE's renowned **Nela Park Lighting and Electrical Institute** in Cleveland, Ohio. Congratulations to: **Albert Boulet**, AB Smart Solutions (Victoria, B.C.); **Paul Chu**, Cobalt Engineering (Vancouver, B.C.); **Lorence Fullerton**, Manuel Jordao & Assoc. Ltd. (Richmond Hill, Ont.); **Richard Seow**, ECE Group (Toronto,

Ont.); **Michael Shiu**, Stantec Consulting (Toronto, Ont.); **Frank Szeto**, Sandwell Engineering Inc. (Vancouver, B.C.); and **David Young**, Crossey Engineering Ltd. (Toronto, Ont.). As part of the same promotion, GE awarded 16 Blackberry Storms and 22 GE storm jackets.

**Gary DuBoff** has been named president of **Arrow Fastener Co.** (Saddle Brook, N.J.). Founded in 1929, Arrow is a leading manufacturer of manual and electronic staple and nail guns, glue guns, rivet tools and supplies for the building trade professional and DIY markets.

**FLIR Systems Ltd.** completed what it calls its most successful series of **InfraCanada/InfraQuebec** and infrared user group conferences in Oakville (Ont.), Montreal and Calgary in June. Besides dedicated education tracks, the events included several general interest topics, including inspection for buried utility. To learn more about future conferences, visit [www.infracanada.com](http://www.infracanada.com) or call (800) 613-0507 ext. 24 or 25.

**Magna Electric Corp.** ([www.magnaelectric.com](http://www.magnaelectric.com)) has opened a Toronto, Ont., office, which is headed by **Bob Weitendorf, PEng.**, the company's Ontario regional business development

and engineering manager. Weitendorf has 30+ years of experience in power, protection and automation, and has worked directly for, and as a consultant to, Siemens, Wardrop Engineering, Gryphon Engineering, Elecsar Engineering, Elsag Bailey Automation, Hydro One, Westinghouse and ABB. Magna Electric Corp. employs 200+ across offices located in Calgary, Regina, Saskatoon, Winnipeg and Toronto. It provides electrical engineering design and consulting services, electrical construction services, field services, shop services, and OEM and reconditioned equipment sales to the industrial and utility markets throughout North America.

**Eaton** ([www.eatonelectrical.ca](http://www.eatonelectrical.ca)) manufacturer of Cutler-Hammer brand electrical products, announced that **Finan Home Service** (London, Ont.) has become the inaugural member of **Eaton's Certified Contractor Network (ECCN)**. Finan specializes in residential service and renovation projects. ECCN is currently being rolled out in Ontario; it is designed to give its member contractors a competitive edge via product/business training, and strategic marketing tactics. **EB**

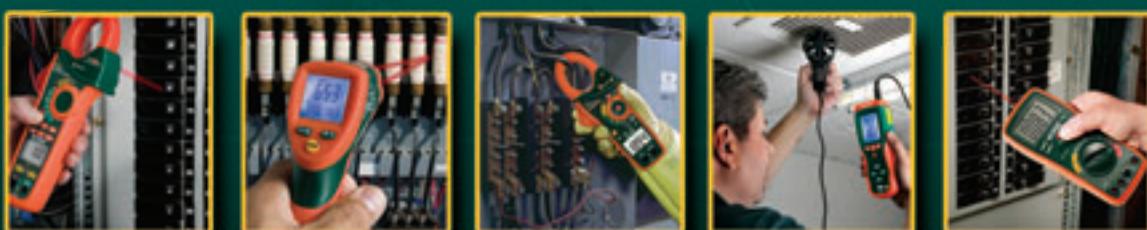


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### **NETcomm Atlantic 2009 offering GREAT DEAL to electrical contractors**

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PLUS: You don't want to miss Nova Scotia Power's special presentation on Powerline/Buried Cable Safety!

See also NETcomm's ad on page 14.

### **LETTERS**

#### **When in doubt, break out the analogue**

Regarding the story in your June/July issue of EB ("Electrical testing safety: is it a backfed or induced voltage?")... I first came across this problem about 15 years ago, around the time digital meters were becoming popular. In fact, I think this problem is inherent in digital multimeters (DMMs). When I first encountered it, I was quite surprised. I knew the 600V line was dead, but why was I still detecting 600V?

My solution? I broke out my trusty analogue meter, dusted it off and, *lo and behold!* no voltage detected. Obviously, this was an induced voltage. Since then I have never entirely trusted DMMs, and I always keep my analogue meter handy. I don't think it should be necessary for someone to have to pick and choose—or even carry—multiple meters.

The article also said you could use a dual impedance meter. Personally, I have never heard of this in a hand-held meter we use in the field, but I am sure it would add considerable cost to a regular meter to incorporate this feature.

An electrician employed by a contractor is usually only equipped with one good meter; today, that's almost always a DMM. If this electrician detects a voltage that should not be there, what does he do? This issue can turn out to be a very expensive operation for the contractor and, subsequently, to the customer, as the electrician spends time trying to determine what is going on and whether the circuit is safe to work on.

Meter manufacturers should recognize this problem and deal with it at their level. I find it hard to believe that the technology does not exist for them to eliminate this potentially dangerous attribute of DMMs.

*Larry Snow, Master Electrician*

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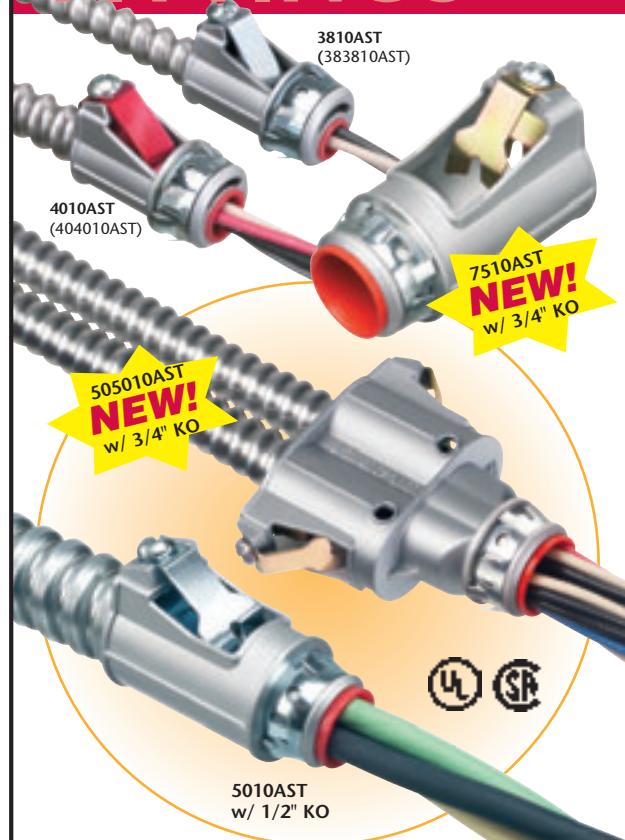
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# Putting the field first in IT

## Case Study: NorCan Electric drives value from one-time data-entry solution

By Marty Hilsenteger

**R**ecognizing the value that information technology (IT) can deliver, electrical contractors are making greater investments in technologies that will help increase the efficiency and capabilities of their organizations while improving the level of service they can offer to their customers. But the typical strategy behind rolling out new IT systems in the contracting business is fundamentally flawed.

What should come first when building your IT strategy: the field or the office? Given the evidence, the answer to-date for most electrical contractors has been the office. But why should this be the case? When the business of a contractor is conducted predominantly in the field, why is the IT infrastructure built from the back office outward?

Consider a typical rollout of a new enterprise software system.

Invariably, the IT plan starts with the creation of a new financial system in the back office, which is then eventually rolled out to the field. Often, the company's management in the field has little or no idea about the existence of the new system until it has already been implemented. Perhaps the reason for doing this is that it's simply easier to train the office staff during implementation, or maybe companies would rather ignore all the complex processes presented by the field in favour of forcing acceptance of a new way of doing things from the office outward.

Either way, the result is that these field processes are often left as manual steps to be completed in the same fashion in which they have always been. Field staff end up frustrated because the new system fails to address the administrative headaches they deal with daily. Company executives may be pleased with the final outputs generated from the new system, but they may well not realize that the whole process is far from optimized, and that their final data is still the product of a series of time-consuming and error-strewn manual processes.

For a new IT system to truly succeed, contractor firms must recognize that, starting in the field—where most of their significant inefficiencies reside—results in a far more productive end-point, with both happier field staff and an IT infrastructure that both supports and drives business.

### A case study: NorCan Electric

Alberta-based NorCan Electric—an electrical contractor heavily involved in the oil sector—has benefited from putting the field first when it comes to IT. With much of its work coming from capital projects in excess of \$20 million, NorCan faced a critical challenge managing such substantial projects.

Prior to looking at a technology solution, NorCan's time-and-billing process was a complex exercise. Company foremen would collect timesheets from field personnel, go back to the office and hand the timesheets to payroll staff, who would enter the information into a spreadsheet, summarize it, then enter it again into NorCan's payroll software. Whew!

With different NorCan customers having varying information-reporting requirements, this process was a lot of work—particularly for large projects. The level of complexity meant the management team had to work 12 to 14 hours a day to keep on top of things. Job costing was made difficult due to delays while payroll data was updated and analyzed, and the process was highly susceptible to human error as data was being written down, entered and then re-entered.

NorCan used spreadsheets heavily, but found them lacking in their ability to support the task at hand. "We squeezed as much as we could out of Excel," says Cameron Cassels, NorCan president. "We would touch data so many times... it was absolutely killing us."

Understandably, significant pressure was placed on NorCan staff, creating workplace stress that impacted performance and morale. Something had to change.

### Enter data once... in the field

Given the challenges it was facing, NorCan was all too ready to sign up when it came across a comprehensive data-capture platform for electrical contractors that enables real-time input of information in the field,

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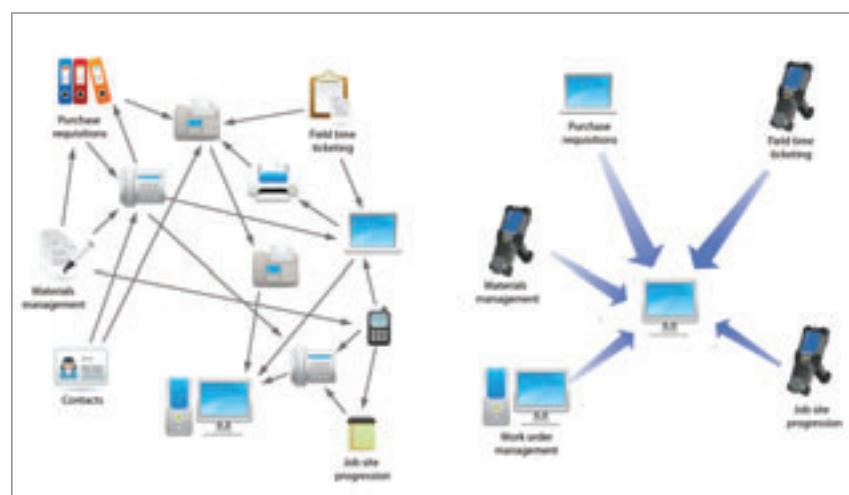
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allowing data to be entered just once across an entire organization. NorCan rolled out the solution in July 2008 and, before the end of August, the company was already seeing business benefits.

With the new system in place, NorCan foremen use a barcode scanner to clock employees in and out. At the end of the shift, the foremen simply synchronize the device with the server, and all data is accurately transmitted to the back office. In January 2009, a separate implementation was rolled out, allowing foremen to create purchase orders. This brings together all the information needed for invoices, which saves more time for office staff and improves job costing and forecasting, since purchase order information—as well as timesheet data—are now both available as soon as a shift ends. As a result of rolling out the new solution, one NorCan field supervisor was able to reduce his daily paper burden from a couple of hours to 10 to 15 minutes!

#### Back-office benefits

Back at the NorCan head office, administration staff now print daily and weekly timesheets, and bundle them with the invoices. The timesheets can also be exported to the company's accounting system. The most immediate benefit of adopting the new technology was it made life easier for office staff, since having all the timesheet data in the same place made it much easier for NorCan to meet customers' reporting requirements.

NorCan is now able to keep its clients informed on project data by generating up-to-date budget-status reports in just one day—an exercise that previously took up to 10 business days. Also, NorCan no longer needs to make heavy use of spreadsheets, allowing management to focus on building business and engaging with prospective clients, rather than crunching numbers.

"It took away a tremendous amount of frustration," Cassels says. "We can now react far more quickly when our clients request a current view of the cost of a project. Our general and administrative costs have been slashed and fewer office staff are required to support our workers in the field."

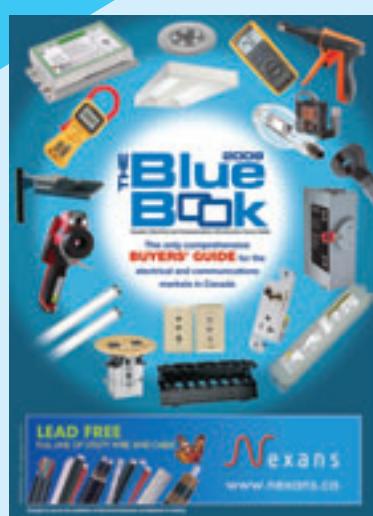
And now that the oil sands are facing a construction slump, NorCan is confident the adoption of these kinds of business-process improvements has left the company in an excellent position to weather a downturn, thanks to the leanness of its operations and its reputation for premium services.

"I won't have to lay off as I otherwise would, and we can take on a lot more work before people start to sweat in the office," Cassels concludes. "In a downturn, I don't have to layoff technology." **EB**

A graduate of the University of Calgary, Marty Hilsenteger is president and CEO of Singletouch Corp., which offers a data-capture platform for electrical contractors working in industrial construction. Among his numerous achievements, Hilsenteger co-founded Central Alberta-based Studon Electric and Controls, which currently employs several hundred employees, and is a player in the oil and gas electrical industrial space in Western Canada. He can be reached at (403) 510-6799 and mhilsenteger@singletouch.com.

## Get into the BlueBook 2010 Buyers' Guide

Before you take off for the summer, take a moment to either make sure we have all your current



information for The BlueBook 2010 edition, or to start a new listing. Listings in The BlueBook buyers' guide are **free**, so if you are a manufacturer, distributor, manufacturer rep, educator, association, etc., that's active in the Canadian electrical and low-voltage

markets, we want to hear from you.

Contact Judy at [jantoniadis@clbmedia.ca](mailto:jantoniadis@clbmedia.ca) to get started and visit [www.EBMag.com](http://www.EBMag.com).

## T&B new product alert



### Cobra™ One-Piece Cable and Pipe Clamp Now available in 1/4-inch size

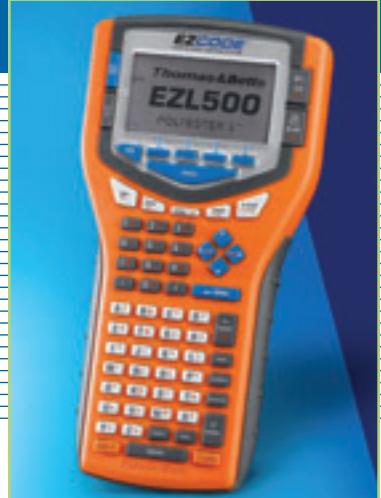
The **Cobra™** one-piece cable and pipe clamp is now available in a 1/4-inch size, designed specifically for use with small diameter cables such as those used in fire alarm and data applications.

Combining ease of installation and simple product selection, the **Cobra** Clamp attaches a full range of EMT, rigid conduit and cable to strut channels. For maximum flexibility, the **Cobra** Clamp allows cables or pipes to be removed easily without disturbing neighbouring pipes.

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

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## T&B new product alert



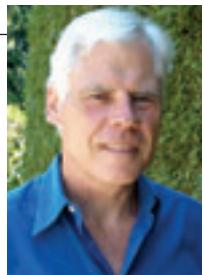
### EZCODE® EZL500 Thermal Label Printer More features for your money

From its sure-grip, ergonomic design to the magnetic strap that frees up your hands, the new **EZCODE EZL500** thermal label printer for medium-volume applications 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.

For complete product details, consult the "What's New" section of our web site or [www.tnb-id.ca](http://www.tnb-id.ca).

**Thomas&Betts**



# What is profit and how do you get more of it?

## Developing a profit-improvement strategy

### Part 2 of 3

**Table 1**

If your present margin is...

	20%	25%	30%	35%	40%	45%	50%	55%	60%
And you reduce price by	To produce the same exact profit, your sales volume must increase by								
2%	11%	9%	7%	6%	5%	5%	4%	4%	3%
4%	25%	19%	15%	13%	11%	10%	9%	8%	7%
6%	43%	32%	25%	21%	18%	15%	14%	12%	11%
8%	67%	47%	36%	30%	25%	22%	19%	17%	15%
10%	100%	67%	50%	40%	33%	29%	25%	22%	20%
12%	150%	92%	67%	52%	43%	36%	32%	28%	25%
14%	233%	127%	88%	67%	54%	45%	39%	34%	30%
16%	400%	178%	114%	84%	67%	55%	47%	41%	36%
18%	900%	257%	150%	106%	82%	67%	56%	49%	43%
20%	-	400%	200%	133%	100%	80%	67%	57%	50%
25%	-	-	500%	250%	167%	125%	100%	83%	71%
30%	-	-	-	600%	300%	200%	150%	120%	100%

**Table 2**

If your present margin is...

	20%	25%	30%	35%	40%	45%	50%	55%	60%
And you increase price by	To produce the same exact profit, your sales volume must be reduced by								
2%	9%	7%	6%	5%	5%	4%	4%	4%	3%
4%	17%	14%	12%	10%	9%	8%	7%	7%	6%
6%	23%	19%	17%	15%	13%	12%	11%	10%	9%
8%	29%	24%	21%	19%	17%	15%	14%	13%	12%
10%	33%	29%	25%	22%	20%	18%	17%	15%	14%
12%	38%	32%	29%	26%	23%	21%	19%	18%	17%
14%	41%	36%	32%	29%	26%	24%	22%	20%	19%
16%	44%	39%	35%	31%	29%	26%	24%	23%	21%
18%	47%	42%	38%	34%	31%	29%	26%	25%	23%
20%	50%	44%	40%	36%	33%	31%	29%	27%	25%
25%	56%	50%	45%	42%	38%	36%	33%	31%	29%
30%	60%	55%	50%	46%	43%	40%	38%	35%	33%

**Table 3**

The Components of Sales	Present Rate	Present Position	Possible Rate	Possible Position
Number of Customers		1,000		1,000
Less Customers Lost	10%	100	5%	50
		900		950
Add New Customers	10%	100	12%	120
Total Customers		1,000		1,070
Sales Frequency	10	10	11	11
Number of Transactions		10,000		11,770
Average Sale (\$)	\$25	\$25	\$27.50	\$27.50
Total Revenue		\$250,000		\$323,675

### Improving your gross margin

Your **gross margin** is the difference between the price of your product and what it costs you to buy or make it. Therefore, the only way to increase your gross margin is to sell at a higher price or buy/make at a lower price.

Without a doubt, the biggest single barrier preventing small business managers from making an acceptable profit is their refusal to charge a price that will enable them to achieve it. You are not in business to match the price set by your competitors; you are in business to service your customers.

Table 1 indicates the increase in sales required to compensate for a price discounting policy. If your gross margin is 30% and you reduce price by 10%, you need sales volume to increase by 50% to maintain your initial profit. Rarely has such a strategy worked in the past, and it's unlikely to work in the future.

On the other hand, Table 2 shows the amount by which your sales would have to decline following a price increase before your gross profit is reduced below its previous level. At a 30% margin and a 10% increase in price, you could sustain a 25% reduction in sales volume before your profit is reduced to the previous level... you would have to lose one out of every four customers.

If you regard price as the only factor influencing the buying decision of your customers, you will undoubtedly reject the proposition that a high-price strategy (and, by implication, high value) will work. You may accept that it is right for some businesses, but *surely not yours*.

There is no business that does not have the potential to command a premium price for its products or services if—and this is the crunch—it is able to market those products or services in such a way that the customer perceives added value.

When all of your sales strategies focus on price, then you will be beaten on price every time a competitor comes along with a lower one. In other words, when you focus your customers on price as a critical factor, it will become the only critical factor.

The only way to get out of the price trap is to both have and promote other features and benefits you can offer your customers, such as better quality, longer warranty, satisfaction guarantees, 24-hour accessibility, more convenient location, greater resale value, etc.

### Improving productivity

This is all about getting more sales per dollar of fixed costs. It can be achieved by either increasing sales at a faster rate than your fixed costs, or reducing your fixed costs without affecting your sales.

Let's start by looking at your fixed costs. Analyze all the elements of your overhead. Ask yourself things like: Do I need it? Can I get the same value cheaper some other way? Were I were to spend more on this element of overhead, would it generate additional gross profit that exceeds the additional cost?

Table 3 demonstrates the powerful effect of a relatively small improvement in the critical variables—customer attrition rate, new customer attraction rate, frequency of customer purchasing, and the average value of each sale—on total sales revenue.

Perhaps the best-kept secret in the business world is that it is very simple to improve the profitability of a business, but there's a catch: knowing what to do is the easy part, but being willing to do it is the stumbling block.

Do you have the courage to make changes?

There are no special tricks to making a business more profitable, but one overriding consideration must be accepted: If what you're doing now isn't working, then you must do something different!

Regardless of the state of the economy, some businesses consistently outperform others within their respective industries; and not just by small amounts, but by staggering amounts. In the 30+ surveys I have conducted of trade contractors throughout Canada over the past 20 years, I always find that at least 20% of them are making very serious money: more than 8% pretax profit on sales.

### Your plan of attack

You need a plan of attack. Specifically, you need to find out exactly what your existing and potential customers want... and it's not always the lowest price. This will form the basis of your marketing plan.

Then you need to organize your business so that you can delight your customers. This forms the basis of your operations plan. This will require giving attention to your team members and equipping them with the resources and skills they need to excel in what they do. You must systematize your business.

Finally, you need a management control plan in place to make sure everything is working the way you designed it to work. It will focus on what you must get right to succeed i.e. your Critical Success Factors.

Ron Coleman is a member of the Institute of Certified Management Consultants of British Columbia. A noted speaker, he has completed many interfirm financial comparisons of groups of construction companies in Canada and the United States. Ron's numerous published education programs include a 36-hour business management course specifically designed for ECABC. He is also author of the book, "Your Million Dollar System: How to Increase the Value of Your Construction Business by One Million Dollars in Three Years". Visit [www.ronaldcoleman.ca](http://www.ronaldcoleman.ca).



By Dave Smith

# The application of safety grounds

**Y**ou must be able to create an electrically safe work condition to work on high-current or high-voltage equipment. A critical step in that process is the application of safety grounds, and most of this equipment will have a ground bus or connection. When you ground the equipment you're working on, you create a significant safety advantage.

We have seen facilities where vehicle battery cables have been used as safety grounds; unfortunately, they would blow off instantly during a fault. Safety grounds must meet ASTM F855-04 Standard Specifications for Temporary Protective Grounds to Be Used on De-energized Electric Power Lines and Equipment.

When purchasing safety grounds, you can choose between a cluster or individual ground sets. Clusters have four cables tied to a crow's foot terminal block. The heel will have a cable connected to ground, and the three toes will each be going to your phases: A, B and C. If you use individual ground sets on a three phase system, you'll have three cables and six ends to manage, maintain and test. With a cluster, you have only four ends plus the four connections of your terminal block.

Safety grounds should be sent for testing on a regular basis, and be tested to F2249-03, "Standard Specification for In-Service Test Methods for Temporary Grounding Jumper Assemblies Used on De-Energized Electric Power Lines and Equipment". They are typically insulated to 600 volts; the reason being that the voltage dropped across them is far less than that, so insulation voltage is not a major consideration. What is a consideration, however, is the electrical resistance of the cable ends and ground clamps, and connections between them.

One machine that performs this test is a microohmmeter, often referred to as a dotor. A microohmmeter typically puts out 10 amps of current and provides a digital read-out in microohms.

Again, there are standards for both clamps and cables for determining how low the microohm resistance should be. The connection must be an extremely low resistance. For instance, a 10,000-amp fault going through  $1\Omega$  of resistance would allow a voltage drop of 10,000 volts from the equipment-to-ground at the moment something is accidentally energized. That would be lethal to the worker.

By ensuring the resistance of the grounding system is incredibly low, three objectives are accomplished:

- A high current is allowed to flow.
- The flow of this current will cause the protective devices to operate in their instantaneous regions.
- The voltage drop across the electrical worker will be negligible.

You need to perform a visual inspection prior to using the safety grounds. They should be stored in a clean, dry location where they're not subject to damage. On a wall in the substation is a common location, but within a custom storage box in a closet in a substation is a better place. In the bottom of a job box, or bouncing around in the back of a service truck, is a terrible place. Your electrical safety program should be audited to determine the safe work practices followed with regard to your safety grounds.



### Training Calendar

Arc Flash & High Voltage Safety		
Oct 19	Richmond, BC	OR09172E
Oct 22	Saskatoon, SK	OR09171E
Nov 3	Fort McMurray, AB	OR09169E
Nov 30 - Dec 1	Edmonton, AB	OR09159E
High Voltage Maintenance		
Dec 2-4	Edmonton, AB	OR09160E
Maintaining and Testing Low and Medium Voltage Circuit Breakers		
Nov 2-6	Fort McMurray, AB	OR09173E
Arc Flash & Low Voltage Safety		
Sep 9	Calgary, AB	OR09141E
Sep 10	Red Deer, AB	OR09142E
Sep 11	Edmonton, AB	OR09143E
How To Analytically Troubleshoot Complex Electrical Systems		
Nov 30	Winnipeg, MB	OR09158E

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Once you have inspected your grounds, the next step is determining where they should be placed. Prior to their placement, however, you must ensure the absence of voltage! It is critical when placing grounds to place them at exactly the same points where the voltage test was done. If the voltage test was taken at Point A, then the grounds should be applied to Point A.

There is a utility worker in a graveyard: several years ago he did his voltage test at one part of the bus but applied his grounds at another part of the bus without knowing there was an open breaker in between. It was deenergized where he tested for voltage, but completely energized in the location where he applied his ground. A miserable death.

It is usually easy to find a place to apply your grounds, but sometimes it is difficult; either way, always use a hot stick and wire brush your clamps and grounding spots. The first connection to be made must always be to ground itself, then to each of your phases—quickly and definitively. 'Tickling' is highly dangerous!

It is critical to remove grounds in reverse. Take off each phase and remove the ground connection last. One utility worker had A Phase removed when his cell phone rang; he lost track of his tasks during the conversation and accidentally lifted the ground. He was electrocuted from induction. Another miserable death.

There's a common misconception around the mantra: It isn't safe until it's grounded. Even something that's been grounded requires special attention. For example, one utility worker applied his grounds properly one day, then left them in place overnight. Earth resistance increased due to drying from continuous inductive current driving up the voltage drop. Although the worker received a shock the next day as he brushed past the ground set, he did not realize the danger he was in. He was electrocuted soon afterward when he made a solid contact. Yet another miserable death.

Grounding looks simple, but it is far from. When done right, it will save your life; when not done at all or done incorrectly, you may very well endure a miserable death.

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

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

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# Demolition hammer trials

## What to use when you need some serious muscle

By John Gilson

**W**hat is the meaning of life? Is there such a thing as good versus evil? Such questions have puzzled philosophers for ages. We at Electrical Business, however, are interested in far more serious matters, like: Who makes a good demolition hammer?

In a classic clash of the titans, EBMag pitted three of the industry's giants—Bosch, DeWALT and Milwaukee—against each other in a series of application tests, such as overhead, through-wall and ground work. The results of this battle should help you make an informed buying decision if you're in the market for one of these brutes.

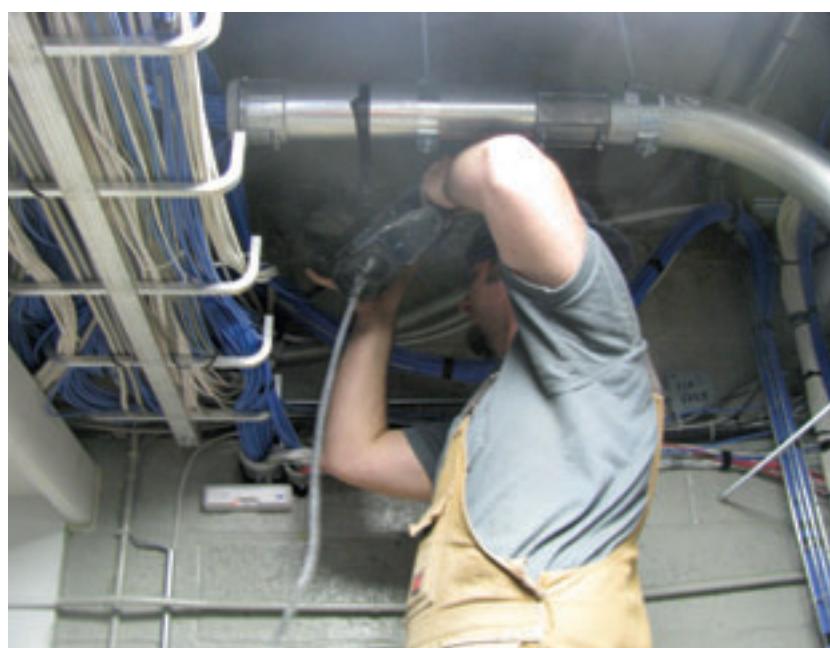
Let the search for enlightenment begin!

### The challengers

Bosch's 1131EVS SDS-max demolition hammer is the lightest of the three at just 12.5 lb. It comes with a 360° auxiliary handle, giving you a range of movement. It has a vibration-dampening handle, reducing vibration by up to 40%. The tool comes with Vario-Lock positioning, which rotates and locks the chisel into 12 different positions, and a Service Minder light, which indicates when preventive maintenance is required.

The DeWALT D25901K SDS-max demolition hammer features a variable impact dial with 19 settings. It has a one-step chisel rotation with 12 positions, allowing for quick and accurate chisel adjustment. A variable side handle allows for 360° rotation and 150° adjustment. DeWALT's Active Vibration Control (AVC) system reduces vibration; this, says the company, reduces user fatigue while increasing productivity.

The Milwaukee 5339-21 SDS-max demolition hammer features a robust, heavy-duty construction (it is the heaviest of the three). It boasts an inline design with three side-handle positions and D-handle; the side handle can attach to the rear,



minimizing bending. The hammer has a variable-speed dial and a user-friendly vibration isolation system; the company says this results in good vibration absorption/reduction, thereby reducing operator fatigue.

All hammers come with hard plastic carry cases, along with grease, cloth and multi-position side handle and chisel. The DeWALT and Milwaukee are substantially heavier than the Bosch—21.6 lb and 24.2 lb, respectively—and will take up a good amount of space in your vehicle.



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## Test results

For the purposes of fact-finding (and to really beat the tar out of these units), the demolition hammers were given to a general contractor's demolition crew doing a renovation job at a courthouse. After using them, the crew members were asked for their impressions on a variety of criteria, such as: comfort/vibration, heavy-duty ground work, overhead use and aesthetics. Here's what they had to say:

### Vibration

For a medium-sized tool, the crew said the DeWALT D25901K delivered very little vibration and was a clear favourite, adding the AVC system dramatically reduced the amount of vibration that normally comes up through the arms. The Milwaukee 5339-21 also had good shock absorption but, being the heaviest hammer, it also had the most vibration. In contrast, the Bosch 11318EVS—being the lightest and smallest—had the least vibration of the three.

### Ground work

In terms of heavy-duty ground work, the Milwaukee was a beast. The crew used it on the courtroom's floors to chip through 12-in. surfaces, doing so with ease. In fact, it was their first choice when it came to heavy-duty floor chipping, adding that the 5339-21 is an improvement from the company's previous demolition hammers. The DeWALT was also very good at ground chipping; the crew said it has a lot of punch and can be used in place of the Milwaukee when needed. Being the lightest tool, the Bosch isn't as efficient with serious groundwork; it will still get the job done, though you may have to work over your lunch break.

### Overhead use

Here is where the Bosch proved most effective. The crew found it versatile and easy to handle, preferring it not just for overhead use, but for most of the wall work, overhead work, and for anything where a ladder was required. The DeWALT can also be used while standing on a ladder (it's especially effective at knocking out thick wall surfaces), but its heavier weight makes it more difficult to manage. If you have Herculean strength,

however, then the Milwaukee can do a heck of a job pounding through walls... the small and feeble need not apply.

### Aesthetics

In terms of appearance (yes, looks do matter), the Milwaukee was the preferred choice. The crew thought the 5339-21's splashy red and silver colours—along with its hidden shock handle (in contrast to the DeWALT's exposed handle)—made it more aesthetically pleasing. Both beauty and beast.

## Demolition hammer competitor essentials

### DeWALT D25901K SDS-max demolition hammer

Weight	21.6 lb
Length	26.8 in.
Shipping weight	28.9 lb
Blow energy	18.5 ft/lb
Amperage	14 A
Loaded bpm	1020-2040 blows/minute

### Milwaukee 5339-21 SDS-max demolition hammer

Weight	24.2 lb
Length	27.5 in.
Shipping weight	45 lb
Blow energy	19.9 ft/lb
Amperage	14 A
No-load bpm	975-1950 blows/minute

### Bosch 11318EVS SDS-max demolition hammer

Weight	12.5 lb
Length	17.8 in.
Shipping weight	19 lb
Blow energy	8.8 ft/lb
Amperage	11 A
No-load bpm	1300-3300 blows/minute

### And the winner is...

For general-purpose use, the DeWALT D25901K was the preferred choice; it did an overall good job for ground, wall and overhead work, and boasts good shock absorption for its size. The other two competitors were the clear favourites for specific applications. The Milwaukee 5339-21 was the clear favourite for heavy-duty groundwork, and the Bosch 11318EVS gets an A+ for overhead/ladder use.

Like so many product trials, you are the ultimate judge. The question of whether a demo hammer meets muster all depends on how you plan on using the tool. Before you go out and spend anywhere from \$600 to \$900 (when you get a deal) on one of these demo hammers, we hope this product trial will have at least pointed you in the right direction. 

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# Gearing up in Charlottetown for WorldSkills

By John Gilson

Charlottetown, P.E.I., recently hosted the Canadian Skills Competition, organized by Skills/Compétences Canada (S/CC), which says the competition is the only national, Olympic-style, multi-trade and technology event of its kind for young students and apprentices in Canada.

"The Canadian Skills Competition is a unique event that helps showcase and raise awareness for the broad range of opportunities to be found in the trades, while demonstrating the depth of talent within the skills movement in Canada," says Shaun Thorson, S/CC's executive director. Skills/Compétences Canada (S/CC) is a national, not-for-profit organization that actively promotes careers in skilled trades and technologies to Canadian youth.

The event featured 40 different assigned projects. Competitors were evaluated by independent judges from the respective industry services, whose decisions were based on industry standards and established work practices, including quality of work, safety, cleanliness, skill level and creativity.

Among those in attendance on the Million-Acre Farm were 19 competitors from Team Canada, who will be representing Canada at WorldSkills 2009 in Calgary next month. (Be sure to check out EBmag.com's Video page to see the WorldSkills video.) Although they did not compete in any of these competitions, team members did take part in training projects as a means of enhancing their skills in preparation for the international event in September. 22-year-old journeyman electrician, Craig Spady, was among them.



## Standing in the red and white corner...

"I think the competitions are a really good showcase," says Spady, who will be Canada's lone electrical representative at WorldSkills 2009. "Busloads of high school students come to watch, and they get to see what the electrical profession is all about... it's really good promotion for our trade."

A native of Red Deer, Alta., Spady competed in his first Skills Competition in 2007 at the provincial level in his home province. He has come a long way in two years: attending Red Deer College as an electrician apprentice, he worked hard to achieve good grades and has a solid understanding of the course material. But, like many people his age, Spady wasn't always aware of the possibilities available in the electrical trade.

"I found out about the electrical trade when I was enrolled in RAP [Registered Apprenticeship Program] in high school," he explains. "I honestly didn't know too much about it at first. You can say I kind of stumbled upon the electrical field."

After finding his passion, Spady excelled, and he is thankful to WorldSkills and the countless people who have helped him on his journey.

"I think the reason I've made it this far is because of all the electrical journeymen who've helped me along the way," he admits. "Also, I would like to thank Q-2 Electrical Contractors Ltd., as well as Red Deer College, which has supported me for six years. It's great to have their support."

## Next stop: Calgary and the world

Spady is now ready to hit the international stage in an event that promises even more excitement for spectators and participants than the Canadian Skills Competition on The Island.

WorldSkills 2009—which runs September 1-7 in Calgary—will be the largest international competitive event in Calgary since it hosted the 1988 Olympic Winter Games, say event organizers. WorldSkills International boasts 51 member regions/countries from around the world, who are sending more than 900 young competitors representing various skills to Calgary's Stampede Park for the event.

"The event will put the broad spectrum of skills into perspective," says David Green, project manager for WorldSkills 2009 and (formerly) of Fluke—an event sponsor. "It's an opportunity for the new and old skills to be shown to the world... People will be able to see that there are real opportunities available to them in the skilled professions."

Green adds the competitions will include both team events and individual events; various electrical installation challenges await the electrical competitors. And if this isn't enough to satisfy your senses, visitors to WorldSkills will have an opportunity to check out the various booths and displays set up by event sponsors.

WorldSkills 2009 promises to be a visually stimulating affair, giving young people a fantastic opportunity to see some of the world's best young tradespeople, including Craig Spady, compete for international glory. Good luck, Craig!



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### Industry Golf Tournament

*Ontario Electrical League (OEL)*

**August 12**

Nobleton, ON

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



### PowerChain Management Seminar Series - Canadian Tour

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### Annual Federation Cup Charity Golf Tournament

*Electro-Federation Canada (EFC)*

**August 25**

Bond Head, Ont.

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



### WorldSkills Calgary 2009

**September 1-7**

(Actual competition September 2-5)

Calgary, Alta.

Visit [www.worldskills2009.com](http://www.worldskills2009.com)



### NETcomm Atlantic 2009

*NETcomm Atlantic 2009 Conference*

**September 15-16**

Halifax, N.S.

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



### NECA Show

*National Electrical Contractors Association (NECA)*

**September 12-15**

Seattle, Wash.

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



### 2009 Canadian Electrical Code Essentials CSA

**September 14, Mississauga, Ont.**

**September 16, Edmonton, Alta.**

**October 5, Niagara Falls, Ont.**

**October 6, London, Ont.**

**October 19, Calgary, Alta.**

**October 29, Winnipeg, Man.**

**November 3, Mississauga, Ont.**

**November 16, Halifax, N.S.**

**November 23, Vancouver, B.C.**

**November 26, Red Deer, Alta.**

**December 3, Sudbury, Ont.**

**December 7, Markham, Ont.**

Visit [learningcentre.csa.ca](http://learningcentre.csa.ca) and click Electrical

### Economic Forecast Day

*Electro-Federation Canada (EFC)*

**September 24**

Brampton, Ont.

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



### IIDEX/NeoCon Canada Exposition and Conference

*ARIDO (Association of Registered Interior Designers of Ontario)*

**September 24-25**

Toronto, Ont.

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



### Selling Energy Solutions: A Hands-on Workshop for How to Sell Green

*National Association of Electrical Distributors (NAED); Supported by Electro-Federation Canada's Supply & Distribution Council (EFC, S&D)*

**September 24-25**

*(Early Bird Deadline: August 24)*

Chicago, Ill.

Visit [www.EBMag.com](http://www.EBMag.com)'s Calendar for brochure

### CANEW 2009 Workshop and Trade Show

*Canadian Airports Electrical Association*

### September 28 - October 2

Winnipeg, Ont.

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

### Energy and Power Distribution Conference

*Square D Services from Schneider Electric*

**September 29 - October 1**

Houston, Texas

Visit [www.squared-services.com](http://www.squared-services.com)

### Ottawa Day

*Electro-Federation Canada (EFC)*

**October 7-8**

Ottawa, Ont.

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

### National Forum on Workplace Electrical Safety

*CSA*

**November 2, Halifax, N.S.**

**November 5, Ottawa, Ont.**

**November 16, Regina, Sask.**

**November 19, Calgary, Alta.**

Visit [learningcentre.csa.ca](http://learningcentre.csa.ca)

### Construct Canada Trade Show

**December 2-4**

Toronto, Ont.

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



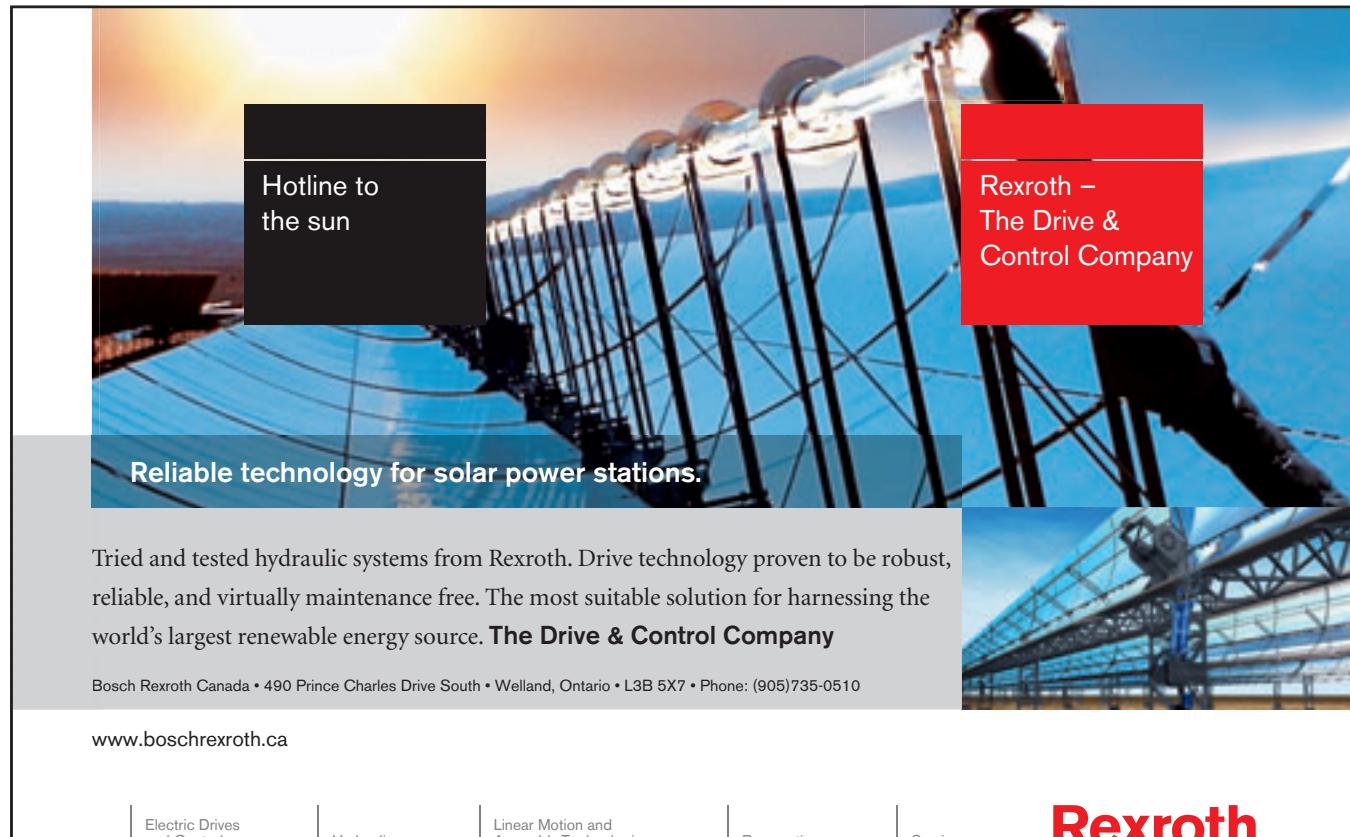
### Solar Conference 2009

*CanSIA (Canadian Solar Industries Association)*

**December 7-8**

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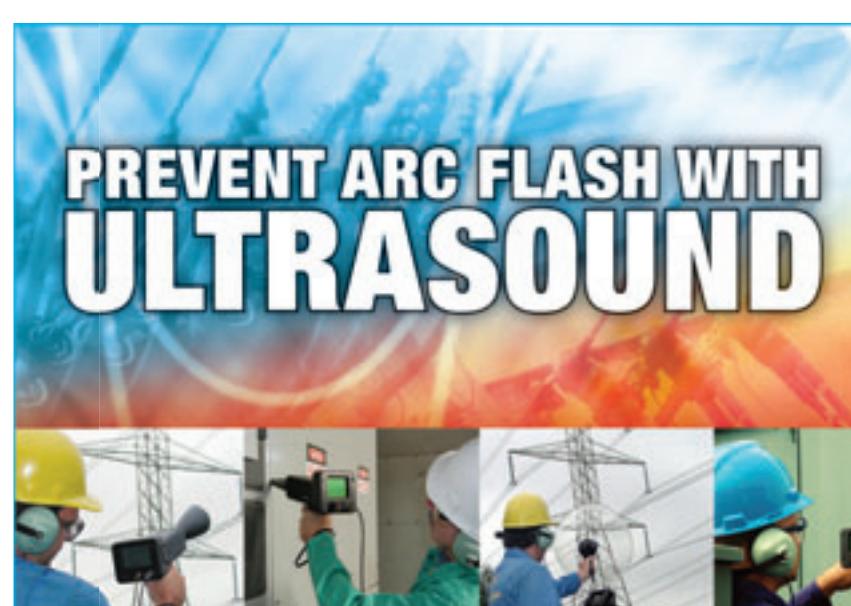
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## Saskatchewan education enhancements

The Saskatchewan Government announced \$2.2 million in student loan enhancements to make post-secondary education—including skills training—more affordable for students from low- and middle-income families. These changes will take effect August 1 in time for the 2009-10 loan year.

"Our government is committed to ensuring Saskatchewan people have access to the education, skills training and resources they need to build their careers and their futures," said Rob Norris, minister of advanced education, employment and labour. "These enhancements to student loans will support students from low- and middle-income families to do just that."

Enhancements include:

- Increasing the Saskatchewan Student Loan limit to \$140 per week of study;
- Increasing the Saskatchewan Student Bursary to maintain debt levels at \$210 per week of study; and,
- A new Saskatchewan Student Grant for Persons from Low-Income Families, which will provide \$58 per week of

study—or about \$250 per month—to low-income students enrolled in one-year programs below the undergraduate level. In addition, the Graduate Retention Program offers tuition rebates as high as \$20,000 over seven years to graduates of approved programs who live in—or move to—Saskatchewan. Approved programs must be equivalent to at least six months of full-time study at a designated institution which result in a certificate, diploma, undergraduate degree or which provide journeyperson certification.

## New legislation to address electrical infrastructure in Alberta

The Alberta Government says its proposed legislation—Bill 50, the Electric Statutes Amendment Act 2009—will ensure that critically needed upgrades to the province's electricity transmission system are built in a timely manner.

"It is time to upgrade our existing electricity transmission system," said Mel Knight, energy minister. "Through this legislation, the government will implement a plan to move ahead with these upgrades,

while continuing to ensure that Albertans' concerns are addressed when determining where these lines will be specifically located."

Due to inefficiencies with Alberta's transmission system, \$220-million worth of electricity was lost in the form of heat from transmission lines in 2008 alone, says the government. As a result, more electricity must be generated, resulting in additional costs to consumers and additional environmental impacts.

Bill 50 includes amendments to the Alberta Utilities Commission Act, the Electric Utilities Act and the Hydro and Electric Energy Act. Electric Utilities Act amendments include authorizing the need for the first group of critical transmission infrastructure projects and establishing a legislative approval process for future projects.

## Northwest Territories electricity review

The Government of the Northwest Territories has completed the public discussion phase of the NWT Electricity Review, which was initiated in December 2008. A three-member review team began work in March 2009, participating in nine public forums and discussing key electrical issues in the territory, such as: long-term vision for electricity; consumer costs; electrical generation; transmission and distribution; regulation; government subsidy programs; and usage levels.

Forums have been held in Inuvik, Fort Simpson, Norman Wells, Yellowknife, Hay River, Fort Smith, Fort Resolution and Behchoko.

"Public response has been strong and comprehensive," said Bob McLeod, chair of the Ministerial Energy Coordinating Committee (MECC). "Northerners are concerned about electricity and have made certain that their views are heard."

The Electricity Review Team's next step is to complete a report summarizing the forums' discussions. Upon completion of further analysis and research, the team will provide a final report to the MECC identifying policy options and recommended actions. The GNWT Response and Implementation Plan will be released by the MECC in the fall.

## Newfoundland invests in hydro infrastructure

The Rock is implementing measures to improve Newfoundland & Labrador Hydro, enabling it to make ongoing investments in infrastructure to ensure reliable service.

"These measures bring Hydro's return on equity and capital structure in line with that of Newfoundland Power and many other Canadian regulated utilities," said Kathy Dunderdale, minister of natural resources.

To accomplish these objectives, the Public Utilities Board (PUB) is being directed to permit Hydro to earn a return on equity equal to that of Newfoundland Power. The provincial government has also agreed to waive its annual debt-guarantee fee (valued at about \$13 million/year) until 2010, at which point the full effect of these measures will be implemented. A \$100-million equity injection into Hydro's capital structure allocated in Budget 2008 is also assisting in retiring debt.

## New Brunswick releases renewable energy projects guide

The New Brunswick Government released a new guide outlining the regulatory process and approvals required for renewable energy projects in the province.

"Our government is committed to developing renewable energy in the province, and that is why I am pleased to release the New Brunswick Developer's Guide to Renewable Energy," said Jack Keir, minister of energy. "We are also committed to being open and accessible to the public and potential investors. This document will act as an important resource tool for developers seeking to invest in New Brunswick, and in our communities."

The guide promises to help developers of renewable energy navigate the province's regulatory process efficiently and effectively; it provides guidelines and information on the various regulatory processes, and detailed information on the electricity sector. It will be reviewed and updated annually to reflect amendments made to regulations throughout the province. 

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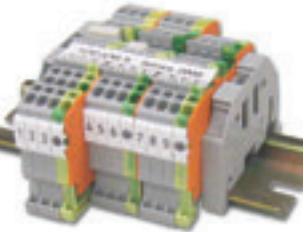
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**WAGO TopJobs 2000 series terminal blocks**

The TopJobs 2000 series provides maintenance-free, push-in terminations for solid or ferruled conductors, says Wago. Available in two-, three- and four-conductor feed-through and ground terminal blocks, TopJobs anchors

Wago's line of spring pressure DIN-rail mount terminal blocks, which spans from 24 AWG to 4/0. Wago says the 2000 series TopJobs line brings greater efficiency to control panels and other space-restricted areas requiring smaller conductors.

**WAGO**[www.wago.us](http://www.wago.us)**Arlington 23-ci steel One Box**

Arlington's One Box is designed for new construction or retrofits. It side-mounts to a joist for a secure, fan-rated installation. The One Box is UL rated for fans/fixtures up to 70 lb and CSA accepted for fans/fixtures up to 50 lb. Features of the new product include: an installed NM cable connector; two 1/2-in. and one 3/4-in. knockouts; and two sets of tapped holes for a fan or fixture installation (screws for fan included).

**ARLINGTON**[www.aifittings.com](http://www.aifittings.com)**Honeywell fire alarm power supplies**

Honeywell Power Products' HPF24S6C and HPF24S8C power supplies can operate as stand-alone units or connect to virtually any 12V or 24V fire alarm control panel. These supplies deliver 6 or 8 amps (depending on model) of power through four Class B or two Class A output circuits. Each HPF24S6 and HPF24S8 unit includes an LED door power indicator and low-battery cut-off function. Compatible with a variety of peripheral devices, both models provide fully regulated and filtered power required for built-in strobe synchronization. Each power supply also contains an integral battery charger capable of charging up to 18 Ah (amp-hour) batteries.

**HONEYWELL POWER PRODUCTS**[www.honeywellpower.com](http://www.honeywellpower.com)**Rittal PLS profile style busbars**

Rittal's PLS system of profile-style busbars are cut to length to suit various enclosure sizes, promising no copper waste from incorrect measurement. The per-cabinet packaging format

allows for precise project purchasing and cost control, says the company. Motor starters, isolators, MCBS, etc., can be mounted directly over the busbar supports; this solution offers a higher level of protection, says Rittal, with the busbars shrouded from the equipment mounting plate to ensure no flashover to earth.

**rittal**[www.rittal.ca](http://www.rittal.ca)**LEDtronics flame-tip LED chandelier bulbs**

LEDtronics says it will "ignite" the market with its latest LED chandelier bulbs. The DEC02-B11E25 series comes in a flame-tip-shaped, UV-protected plastic lens covering that allows the LEDs to shine in multiple directions while being protected from the environment. Consuming just 2.4 watts of power, this LED bulb can directly replace standard-base incandescents, providing a lifespan of up to 50,000 hours. The bulbs require no retrofitting kits and install like normal bulbs, allowing you to replace old and outdated incandescents simply. The chandelier bulb comes in Warm White (3000K) and Filament White (2200K) colours.

**LEDTRONICS**[www.ledtronics.com](http://www.ledtronics.com)**Standard HID Pulse-Start SAW and CAD high-bays**

Standard Products says its high intensity discharge (HID) pulse-start high-bay systems offer improved optics, less maintenance, and reduced costs over T5HO systems. The company offers several HID retrofit reflectors that, it says, are easy to install and provide additional benefits over regular aluminum-spun domes. SAW reflectors are silica glass-coated, polished aluminum reflectors that resist corrosion and minimize dust adhesion. Their design allows for increased light output over conventional reflectors, says Standard, and reduces glare. CAD reflectors, meantime, are prismatic reflectors that deliver, boasts the company, higher light levels than basic metal reflectors and produce 15% to 20% uplight. Standard suggests combining these reflectors with its Pulsetek lamps.

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### FCI NetSolo broadband fire alarm and 7100 Series

FCI created the NetSolo broadband network fire alarm system for both retrofit and large-scale applications. NetSolo features multiple audio evacuation functions and a survivable distributed communications network that continues to operate in the event major components are damaged or destroyed. In terms of cost efficiency, the system is capable of supporting up to 64 nodes of any combination, all operating over a single pair of conductors, says FCI. At the centre of NetSolo is the 7100 Series fire alarm control panel. It is available in either one or two CDL versions, supports up to 394 devices per panel, and features programmable notification appliance circuits for Canadian two-stage operations.

FCI

[www.fcinetsolo.ca](http://www.fcinetsolo.ca)

### Omron G9SX-SM standstill monitoring unit

The G9SX-SM stand-still monitoring unit from Omron can help machine operators reduce downtime and increase productivity, says the company. It monitors the back-EMF from the motors directly producing the motion in the hazardous area; by doing so, the G9SX-SM knows exactly when the movement has stopped, and will grant access immediately. The product's design is well-suited for use on machines with high or variable inertial loads when the stopping time can vary significantly.

OMRON

[www.ia.omron.com](http://www.ia.omron.com)



### Appleton PowerPlex panelboard

Appleton says its PowerPlex panelboard brings an innovative new design to Class 1 Zone 1 and Class 1 Division 2 environments. It transfers its flame-path protection from the enclosure to individual circuit breaker housings. The component-level protection allows it to deliver installation flexibility and reliability, as well as simpler maintenance, while eliminating the need for external conduit



or cable seals. Each circuit breaker housing connects to the panelboard through "increased safety" terminal connections. The terminations provide wiring access and are moulded into the housing.

APPLETON

[www.appletonlec.com](http://www.appletonlec.com)



### Cooper Bussmann Quik-Spec coordination panelboard

The Quik-Spec coordination panelboard, says Cooper Bussmann, makes fuse system selective coordination easy, from branch to source, adding that flexible configurations (up to 600vAC/200A/200kA SCCR) make the panelboard convenient and easy to specify. The product is available with a fused or non-fused main disconnect switch, or MLO configuration with a choice of 18, 30 and 42 branch positions, in NEMA 1 or 3R enclosures. The product also employs the IP20 finger-safe low-peak CUBEFuse in conjunction with an ampacity-rejecting compact circuit protector base (CCPB).

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### NEMAcast podcasts

The National Electrical Manufacturers Association (NEMA) has launched NEMAcast—a podcast that focuses on news, information and opportunities of interest to the electrical industry. NEMAcast has several channels focusing on different things, such as: smart grid; energy efficiency; and the electroindustry channel.

Anyone with internet access can listen online or via iTunes.

To learn more about NEMA's podcasts, visit [podcast.nema.org](http://podcast.nema.org).

### The electronic technician's Fluke 287 DMM application note



Fluke Corp. has published a series of application notes to help electricians and electronics professionals do advanced electrical testing with their Fluke digital multimeters (DMMs). The Fluke 287 multimeter has multiple features specifically designed for electronic technicians working in service applications, which are explained in a Fluke application note, "The electronic technician's Fluke 287 DMM", available on the Fluke website.

Visit [ca.fluke.com](http://ca.fluke.com) and click Application Notes Library (on the left). Then choose Digital Multimeters, then the application note.

### General Cable Carol electronics product spec sheets



General Cable has added the Carol Brand electronics product specification sheets to its website, saying they will provide customers with an affordable, yet reliable solution for today's tough economy. Carol Brand, says General Cable, is preferred 4-to-1 by contractors and is the product line to depend on. "To be able to firm up a customer's specification without having to place a call makes doing business today with General Cable even easier," said Jeff Later with General.

For more information, visit [www.generalcable.com](http://www.generalcable.com).



### SolaHD online power protection products module

SolaHD has launched an online power protection products learning module under the "What's New" section. It provides key points on today's power environment while guiding engineers through the full line of SolaHD power protection products. SolaHD says deploying its power supplies and conditioners, surge protection and active tracking filtering devices, and transformers will increase uptime and provide additional savings for end users in commercial and industrial settings.

For more information, go to [www.solahd.com](http://www.solahd.com).



### Kim LED collection brochure

Kim Lighting has published a brochure detailing its new LED collection of super-bright white landscape fixtures. The 24-page, full-colour brochure showcases products using a variety of LED configurations, from 5W to 18W clusters. Photographs of applications of each product and close-ups of the products illustrate every section of the brochure. There are five sections by product category, which include product and spec information, dimensions and photometrics.

To learn more, visit [www.kimlighting.com](http://www.kimlighting.com).



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# The 2009 CEC... more changes

My last article (EBMag May 2009) covered some amendments to the 2006 Canadian Electrical Code applicable to the new 2009 version, but there are more; let's take a look at some of them here.

Rule 10-812 "Grounding conductor size for alternating-current systems and service equipment" has become more explicit. We still use Table 17 to determine the minimum sizes of copper grounding conductors (ranging from 8 AWG to 2/0 AWG), but Rule 10-812(1) now states:

The size of the grounding conductor for a grounding electrode consisting of a continuous metallic public water system or other interconnected electrode system that may provide multiple metallic paths back to the source shall be selected from Table 17.

Okay so far. Surprisingly, Rule 10-812(2) now specifies that the size of the grounding conductor for other types of grounding electrodes shall not be smaller than 6 AWG. (Although not specified, other types of grounding electrodes are those which are not metallically interconnected.)

So what does all of this mean? Looking first at Rule 10-812(1), it implies—though does not expressly state—that the grounded circuit conductor (neutral) is connected to a continuous metallic public water system, both at the transformer supplying the subject electrical system and at the main service equipment.

Alternatively, at each location, the grounded circuit conductor may be connected to different grounding electrodes so long as the grounding electrodes are interconnected.

Rule 10-812(2) specifies that when grounding at the transformer and service equipment is made using different grounding electrodes (not interconnected except by the system neutral), the minimum grounding conductor size may be 6 AWG copper. In other words, no need to go to Table 17.

Appendix B explains the rationale for the change like this: when grounding electrodes are continuous or interconnected, they provide lower impedance return paths for ground fault currents. Thus, higher fault currents are possible and, therefore, the requirement for a larger grounding conductor—sized in accordance with Table 17. When the grounding electrodes are metallically discontinuous or not interconnected, the impedances of the return paths will be higher and, as such, a smaller grounding conductor size (minimum 6 AWG copper) can be justified due to the lower expected ground fault currents.

But what happens when the neutral inadvertently becomes disconnected? I suppose we'll find out.

Rule 18-114(2) "Motors and generators Class I, Zone 1" now requires that increased safety 'e' motors must be thermally protected. Appendix B explains:

... combining a variable-speed frequency drive with a motor may increase the operating temperature of the motor as the result of harmonics produced by the drive. This may cause the motor temperature to exceed the temperature code rating.

We all know what that means: should the surface temperature of a motor exceed the ignition temperature of the gas or vapour that exists in the motor's operating environment, a fire or explosion is likely to occur.

Rule 26-260 "Transformer continuous load" is a new rule. It states that conductor sizes and overcurrent protection for continuous loads (if you recall, the loads are on for 50% of the time or longer) must comply with Rules 8-104(4) and (5). You'll recollect that these rules provide minimum conductor sizes for continuous loads when using different cable connection arrangements.

Appendix B explains that the above requirements will ensure better coordination between transformer loads and primary overcurrent protection. The appendix also reminds us that Rule 26-256(3) allows us to exceed the 125% full load current overcurrent protection rule when necessary—up to the next higher standard fuse or circuit-breaker rating or setting.

Rule 36-308 "Connection to the station ground electrode" has been amended. Rule 36-308(6)(b) now indicates that the minimum size grounding conductor size for

substation transformers may be reduced in accordance with Section 10 (Rule 10-812 discussed earlier) so long as it can withstand the transformer's maximum secondary ground fault current. Rule 36-308(6)(a) remains unchanged with reference to minimum 2/0 AWG copper wire and Table 51.

The title of Section 46 has been amended to read "Emergency power supply, unit equipment, exit signs and life safety systems" to better describe the scope of that section.

Rule 46-206 "Overcurrent protection" has been amended. Rule 46-206(1) now reminds us that overcurrent protection for an emergency power supply must be matched with overcurrent protection for life safety systems and other equipment to provide selective operation in coordination with the operation of branch circuit overcurrent protection. EB

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

**Always consult the electrical inspection authority in your province/territory for more specific interpretations.**

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**Tackle The Code Conundrum... if you dare**

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

Non-metallic-sheathed cable of the NMWU type is permitted as a wiring method for shore power receptacles located on a dock in a marina.

a) True  
b) False

**Question 2**

Non-metallic sheathed cable shall be permitted to be installed between an emergency power supply and a life safety system in a building of combustible construction.

a) True  
b) False

**Question 3**

Where non-metallic conduit is used to enclose high-voltage sign cable, the bonding conductor shall be permitted to be installed inside the conduit with the high-voltage cable.

a) True  
b) False

**Answers ▼▼▼**  
**to Code Conundrum**  
Electrical Business June/July 2009

**Q-1:** Automobile heater receptacles provided in conformance with Rule 8-400 shall be protected with a ground fault circuit interrupter of the Class A type.

**b) False.** Rule 26-710(n).

**Q-2:** Flammable material shall not be stored or placed in dangerous proximity to electrical equipment.

**a) True.** Rule 2-316.

**Q-3:** A nominal size 16 conduit shall be permitted to contain \_\_\_ no. 12 AWG TW75 conductors.

**c) 6.** Rule 12-1014 and Table 6.

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