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- Data Cable Company
- Making Up For Lost Time
- One-and-a-Half Hiring Tips
- Electrical Wire Processing Expo Schedule
- Wire Wisdom Wire & Cable Ampacity Ratings
- 4th International Conference Advanced Automotive Cabling 2014



#### **Data Cable Company**

By Fred Noer

igh-quality products, on-time delivery, competitive pricing, superlative service - the four major factors to which every company in the wiring harness industry must apply an unceasing laser focus. Data Cable in Orangeville, Ontario, Canada, is no different than any other firm in paying attention to them for the utmost in customer satisfaction.

What differentiates Data Cable from other companies is that it adds a fifth factor – trust. That one word embodies what the company "sells" to its customers and how it empowers its staff members. Essentially, trust underpins everything everyone does at Data Cable Co.

"In a broad sense we are in the customer service business because we are extending our assembly services to our customers that own the product designs," said David Gillies, 54, development manager. "But customer service is nothing if there is not a trusting relationship. Maintaining trust is so important.

"When we try to get new customers, it's all about earning their trust," said Gillies, who joined Data Cable in 1988 and has held several managerial positions. "We do everything we can to make it happen on price, but it ultimately is a



Data Cable and its employees continue to draw new business building on trust

trusting relationship. Price wins some of the time, but in our case it comes down to winning on the value proposition. You have to have trust up and down the value stream."

Gillies also emphasized that trust has to be maintained for applying five principles that guide decision-making at the company. They consist of mutual respect of everyone, continuous improvement of processes and performance for customer satisfaction, environmental responsibility, ongoing staff knowledge and skills development and profitable growth by teamwork and accountability.

The principles reflect the beliefs and values on which Dick and Lita Fearon founded Data Cable in 1980 in Orangeville. They manufactured cables for computers and their connections to other computers, modems, printers and related devices.

Still the company owners, the Fearons, both in their 70s, do not operate it, only providing oversight and direction. The firm has grown into a

high-mix, low-volume manufacturer of wiring harnesses, cable assemblies, control panels, box builds and electromechanical assemblies.

According to Gillies, in the last 15 years approximately 15,000 different products were made, 2,000 of them in the past year. More than 8,700 work orders were processed in 2013, with an average quantity of 15 pieces.

Military, at 15 percent, is the largest market served by Data Cable, followed closely by test and measurement (14 percent) and medical (12 percent). Five percent is in the heating industry, and farm equipment is less than one percent. The balance is spread over such markets as printing, security, packaging, fluid handling, automation, industrial robotics, satellite communications and mobile computing.

In 2013 Data Cable had 93 active customers, with 95 percent of them located within a 150-mile radius of Orangeville.

\_Continued on page 54

## **Electrical Wire Processing Expo Announces Seminar Schedule**

the nation's largest dedicated wire processing event, the Electrical Wire Processing Technology Expo, will be held Wednes-



Donnie Hill, President & COO Precision Manufacturing Co.

day, May 14 and Thursday, May 15 at the Wisconsin Center in Milwaukee, Wisconsin. Free industry-specific seminars presented by business leaders are held both days of the show providing information on the latest technology, new products, new advancements and the future of the wire harness and electrical cable assembly industries.

#### WEDNESDAY MAY 14

8:30 am "How IPC/WHMA-A-620B Helps My Business Grow" - Donnie Hill, President & COO of Precision Manufacturing Co and Rick Bromm, VP Business Development of Altex Inc

10:30 am "Selection of Electrical Wire and Cable for Aerospace Applications" - Albert Emery, Materials Engineer, Lockheed Martin Corp

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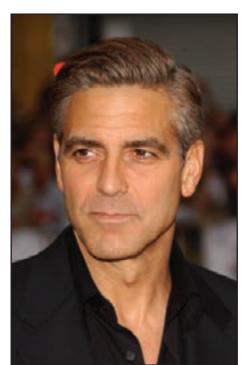
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For further information about JAG Wire please visit www.jagwirellc.com.

The winner for the March/April issue will be announced in the May/June issue of WHN. Two winners will be drawn at the Electrical Wire Processing Expo on Wednesday, May 14th.



Kevin Myers - seriously!?

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Loren Smith shares approaches that might lift your hiring batting average.

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"Time is Money". Lost production time is money lost, and money spent ineffectively is money lost.

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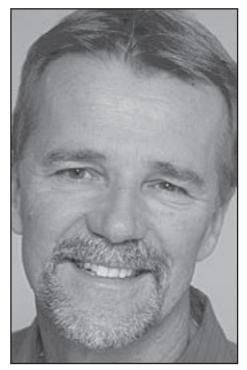
#### **Making Up for Lost Time**

By Paul Hogendoorn

the time between when your machine produces its first part on a shift, and when it could have or should have produced the first part of a shift, is time lost forever. There are many other instances where our processes regularly lose production time - before shift end, before and after breaks, extra set-up time or maintenance time, adjustment time, and time waiting for parts. All of this, from a pure production perspective, is lost time, and time that has to be made up or accounted for.

Scheduled set up and maintenance times are necessary for production, but when they take longer than expected, that too becomes lost time. Adjustment time, repair time, time waiting for parts, or just plain 'idle' time is all lost time, and it all adds up.

Sometimes we overcomplicate things related to productivity and profitability. We add systems, employ specialists, devise calculations, and spend a lot of time estimating and benchmarking, not to mention adding expensive software,



Paul Hogendoorn

IT infrastructure, and the people to deploy and manage those things. And in some cases, all of this expensive activity results in even more lost time. On one hand, the company leaders I meet with

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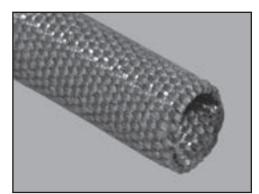
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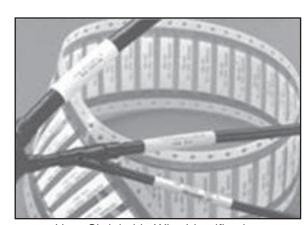
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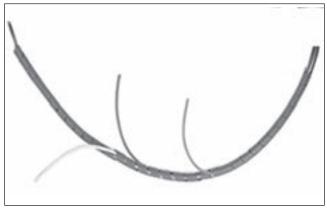
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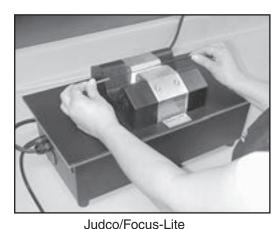


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#### **Making Up for Lost Time**

Continued from page 5 \_\_\_

regularly, understand and ascribe to the credo that "you have to spend money to make money", but on the other hand, they are quick to recite an even more common mantra, that "time is money". Lost production time is money lost, and money spent ineffectively is money lost too.

Regular readers of this column have often heard me recite one of my favourite mantras - that "you can't improve what you don't measure". This rings instantly true for most, but many still get stalled just by the mere thought of the time and expense involved of putting in a measurement system. When I encounter people stuck in the middle between "time is money" and "you have to spend money to make money" - I suggest taking a few baby steps; low hanging fruit in other words. Savings realized and profits improved from these initial efforts then get re-invested into the next step, and so on. At the same time, confidence to invest in more significant productivity improvement measurement

A good example of low hanging fruit is by measuring (and then improving) the time of the "first part produced" by a person, machine, or process, and the time of the "last part produced". I observed this first hand at a local man-

ufacturing facility, where a critical machine routinely produced its first part around 7:30 and it last part at around 4:40. The regular shift was from 7 AM to 5 PM. With normal breaks and typical production interruptions, the machine was running for an average of 6 hours and 10 minutes per day, producing just over 900 parts. We installed a simple productivity monitor on the machine for a week, and then shared this information with the operator. The very next week, the average machine running time increased to 6 hours and 45 minutes a day, and production increased to over 1100 parts. (I have checked back in recently, and now they routinely exceed 1300 parts per day!) The keys to success with a baby step like this are simple:

1) the measurement has to be automatic, and done in real-time without operator intervention, and

2) the resultant information has to be shared as a "tool" with the operator, and not used as a weapon.

Sustainable productivity gains can be very easily achieved, without spending too much time or money. Identifying "lost time" in an efficient and empirical way is the first step. After identifying all the different ways that time is lost, it becomes a matter of triage; finding the

\_\_\_Continued on page 7



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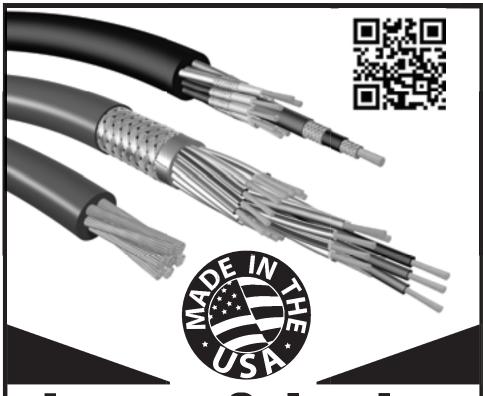


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#### **Making Up for Lost Time**

Continued from page 7

biggest causes of lost time, and the easiest ones to resolve. In many cases, they're the same.

Manufacturers can be a stubborn lot. With all of the various challenges facing industry today, there certainly is a level of "persistence" required, just to stay in business. But, persistence becomes stubbornness when we fail to make the efforts to improve, and improve we must. As business leaders - those primarily responsible for the companies' sustainability and future well-being - we need to intentionally, and continually, make time for productivity improve-

ment. It will improve the bottom line today, and help assure continued success tomorrow. In short, it's too critical a task to ignore.

It's time to make up for lost time.

Paul Hogendoorn has worked with leading manufacturers for over 30 years. He recently launched FreePoint Technologies, developing and delivering effective productivity measurement tools for manufacturing companies. For more information on this topic, check out www.getfreepoint.com. He can be reached at paulh@getfreepoint.com

Visit with Paul at the Electrical Wire Processing Technology Expo in Booth



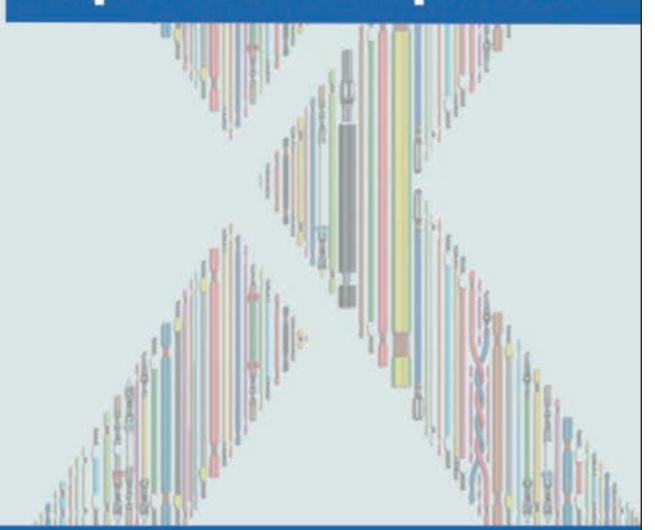
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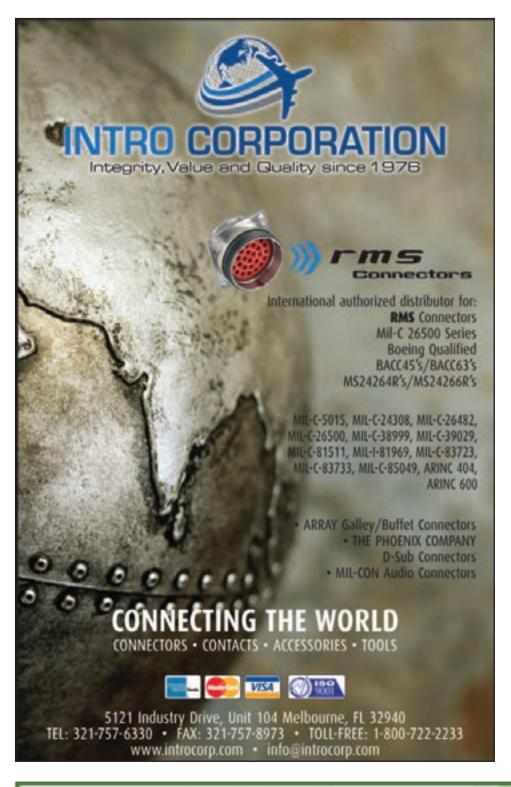
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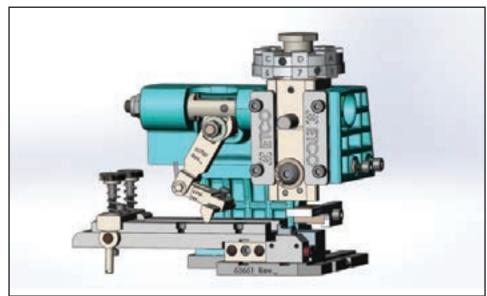




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#### **ETCO's EDGE-C Composite Applicator**



By John Stiness and Sam Francois, ETCO Inc

the 787 Dreamliner, many in the aerospace manufacturing industry questioned whether an airplane with 50% advanced composites could be beneficial from a cost/fuel perspective. In the field, the airplane has had growing pains, but the composite aspect of it has been a runaway success for Boeing, from a fuel efficiency perspective. This is so much the case that Boeing competitors are now playing catch up in this space.

When ETCO was developing its next generation EDGE applicator, the question was asked "heck they're making jets out of composites, why not a plastic body for an applicator"? Sure the applicator would be lighter, be more modular and be less expensive, but could it hold up in a demanding production environment? Through rigorous testing and development the answer is unequivocally yes.

ETCO engineers had been experimenting with composites for different wire termination solutions for years and wanted to incorporate their learnings into a product that could benefit its customers both in terms of cost and durability. As a result, ETCO started working on a composite applicator with the intention of eventually introducing the product for sale. Initial results showed promise versus metal applicators primarily in the area of weight, lubricity and durability.

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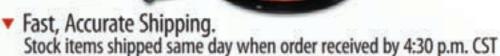
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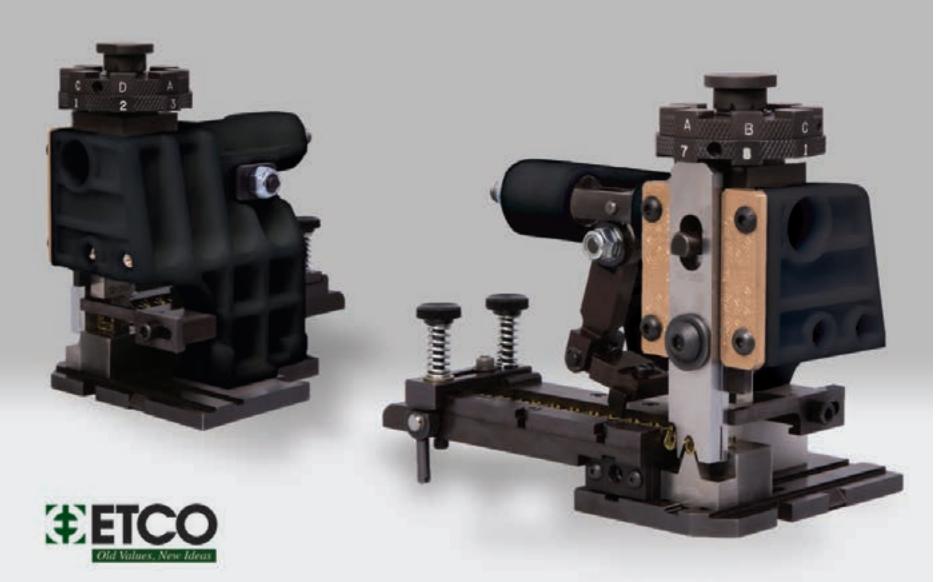
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#### **ETCO's EDGE-C Composite Applicator**

Continued from page 10 \_

Initially the engineers worked with a variety of plastics and composite materials, but settled on a proprietary mix of composites. They then applied for patents both for the material and design. The patent is currently in the pending stages; but while pending, development on the applicator continued until a final product was conceived. During testing, ETCO engineers insisted on strengthening the housing of the applicator so it could function at parity with metal applicators. The engineers introduced several design ideas including structural forms that minimized flex during the crimping process. Engineers also sought to address several issues brought up by sales representatives working with customers in the field. There was a bit of a learning curve in regards to custom metal applicators. This was the case evident with virtually all applicator manufacturers; ETCO was not immune to this

Through field research and heuristics, ETCO engineers looked to pull a

page out of computer software interface design and apply that to the composite applicator. The engineers worked on visibility of moving parts and minimizing spacing issues between the anvil and body. The composite material also made it easy to flush out potential issues specifically because it was less bulky and weighed less than comparable metal applicators. Because the applicator was less cumbersome, it was easy to work with real world molds to find potential design flaws.

The composite applicator is now complete and in the field. The response in terms of quality, costs and learning curve has been extremely positive. This at one time far-fetched idea has evolved into the next generation of applicators. In an industry that often only sees incremental innovations; composite attaching equipment is a major jump forward in the evolution of this technology.

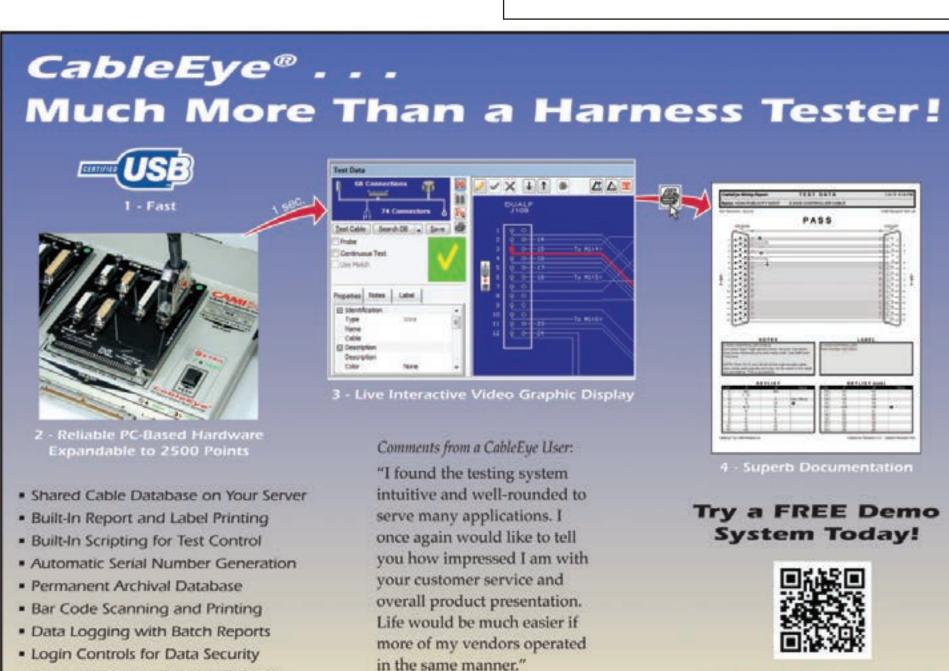
ETCO's EDGE-C Composite applicator will be on display at the Electrical Wire Processing Expo on May 14-15th and booth #1221.

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## Composite & Wire Machinery Celebrates 25th Anniversary



Jack Dennehy, President and Jenniffer Massarone, Office Manager of Composite Wire & Machinery.

ack Dennehy is pleased to announce that Composite & Wire Machinery, Inc is celebrating it's 25th anniversary.

Jack started Composite Wire & Machinery, Inc 25 years ago, after having spent 22 years with two leading manufacturers of braiding machinery. Jack's background now encompasses about 45 years of serving the machinery and equipment needs of the wire and cable industry.

Jack's granddaughter Jenniffer joined the company over 10 years ago and handles all the office management.

Composite & Wire Machinery

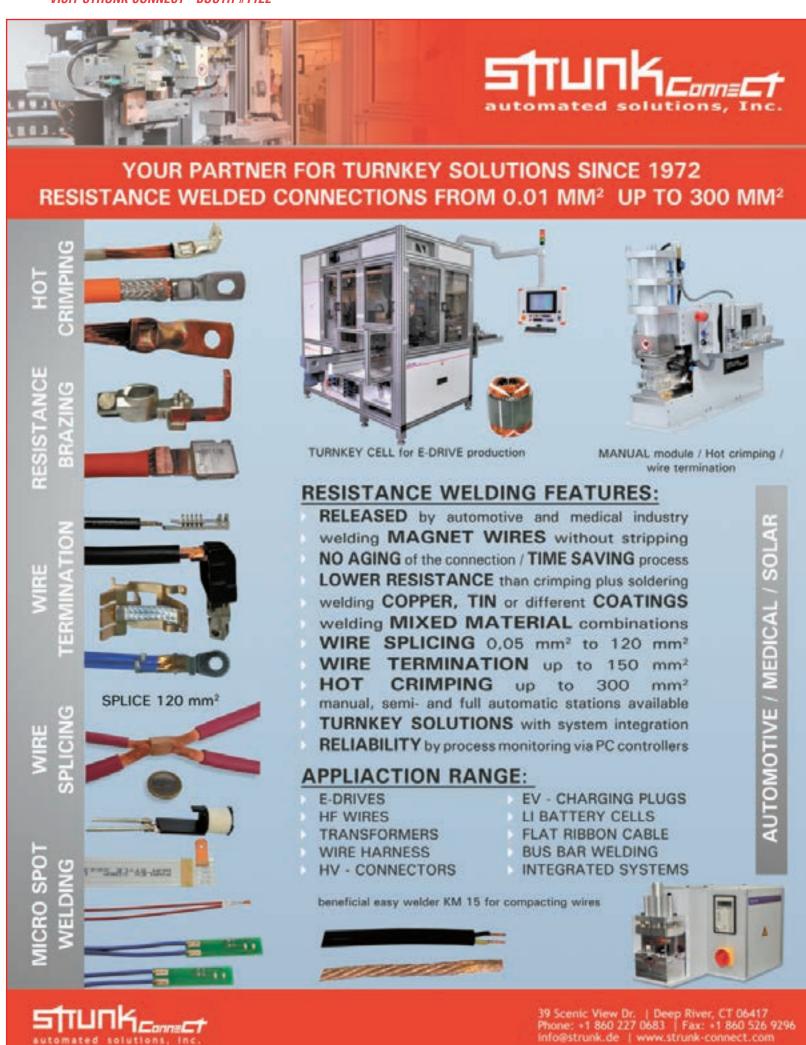
specializes in providing new and completely rebuilt braiding machines to several major markets, offering a complete range of machines for the overbraiding of wire harness bundles as well as braiders for composite construction (both horizontal and vertical positioning), medical braids and cable braiders for applying steel or copper wire to industrial cables.

Composite & Wire Machinery is also available for appraisals (one machine or an entire plant), liquidations and straight brokering on a commission basis.

Visit Composite & Wire Machinery at the Electrical Wire Expo in Booth #1819.

For further information contact Composite & Wire Machinery, 490 Old Baptist Rd, No. Kingstown, RI 02852, U.S.A. Phone (401) 884-4760 or Fax (401) 885-2499.

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#### **NEWS PLUGS** continued



#### Expanded Molex Ap for Tablet and Smartphone Users

Molex Incorporated has expanded access to its free Molex App designed for Apple and Android devices. Providing mobile users with information on over 90 different Molex product families, the Molex App allows tablet and now smartphone users to view product information, search products, view literature and view videos without being online. App users with access to an internet connection can link to the Molex website for detailed product and order information.

"We received very positive feedback from customers and distribution partners, who appreciate the Molex App functionalities for users on the move," states Brian Krause, vice president, global marketing and communications, Molex. "With the rise in popularity of mobile devices, we are pleased to bring that same easy access to Molex products via smartphones."

Featuring enhanced screens with convenient layouts, the Molex App provides a richer and more tactile user experience. The Molex App enables easy navigation to browse products and narrow a search down to a product family. Overviews range from power to signal to I/O products. Tablet and smartphone users can explore product options and compare key features, save favorites to review later and email data, images and links.

"As a global company we are

delighted to give customers all over the world anytime, anywhere access to Molex solutions right at their fingertips," adds Krause.

Molex has also developed a mobile friendly version of its website, with streamlined pages for faster, easier access. Visiting www.molex.com will automatically direct most smartphone users to the mobile site, which is designed to provide full functionality on a small screen. Or, users may visit m.molex.com for instant mobile

The Molex App is available for download onto iPad or Android tablets and smartphones.

Providing more than connectors, Molex delivers complete interconnect solutions for a number of markets including: data communications, telecommunications, consumer elec-

tronics, industrial, automotive, commercial vehicle, aerospace and defense, medical, and lighting. The Molex website is www.molex.com.

#### Cirris® Systems Provides "Plug in Anywhere" Test Setup with Smart-Lights™

Cirris Systems, a trailblazer in the cable and harness test equipment industry, makes test setup faster with their latest innovation: Smart-Lights. Smart-Lights are inexpensive devices that provide intelligence to fixtures mating cables, enabling "plug in anyfunctionality. Additionally, Smart-Lights utilize a bi-color LED, assisting users in guided assembly or identifying the location of errors.

By removing the process of mapping test points for each new test, as well as providing easy diagnostics, Smart-Lights make wire analysis faster and more efficient. This enables wire assembly shops to ship more products by spending less time on testing.

This year, Cirris celebrates its 30th anniversary as a leading manufacturer and supplier of cable and harness testers. Having a broad and diverse range of products, Cirris supplies their clients with high-quality test equipment of all sizes and capabilities: from small benchtop analyzers to large rack-mounted systems.

For more information visit www.cirris.com. See our live demonstration at the Milwaukee Electrical Wire Processing Technology Expo, May 14 & 15, booth #1727.



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#### **One-and-a-Half Hiring Tips**

Loren M. Smith, CEO **Blue Valley Capital** 

wo critical issues facing wire harness companies today relate to employees. One is the severe setback resulting from a hiring mistake at the management or professional level. The other is excessive turnover at the direct labor

level--these issues, in my experience transcend all others in their universality.

Most CEOs I talk with have no shortage of stories about these problems occurring at opposite ends of the staffing spectrum. So if these experiences are so commonplace, they must be a chronic problem we just have to live with, right? Not necessarily. Believing we can do better, I want to share two

approaches that might lift your hiring batting average. And what might surprise you about my "tipand-a-half" is just how basic these ideas are.

#### Tip #1 The Tryout

In baseball, spring training is a mighty helpful tool for making sound decisions. Barring injuries, most opening day players are still on the team at the end of the season. So have you ever staged "spring training" for a prospective employee?

To hire factory workers, bring in applicants who have passed your preliminary screening and put them on the job on a trial basis.

Agree to pay them a fixed amount for several days of work and assign them to a "supervisor" who is effective at orientation, training and evaluation. After the trial period and input from the supervisor and any others, either offer them full-time employment, or, if your supervisor does not see a good fit, briefly convey what they need to improve to enhance their employment prospects and wish them well in the future.

Obviously, this approach can occasionally entail logistical hurdles, but many can be overcome by not sticking to a set formula. The candidate is currently employed? Maybe he or she can take one or two vacation days, and then your appraisal will have to be based on less observation. Or maybe the candidate can come in several evenings to work a few hours on the night shift.

A similar approach to hiring management and professionals can be very effective. A promising candidate who is unemployed might be brought in for a 30-day trial, giving both the candidate and you a substantial comfort level about assessing the fit. A potential hire who is employed will be restricted in how much exposure he or she can get, but, as mentioned above, creative adjustments can often be made. Even a little exposure beyond the interview phase can be invaluable.

It should be noted that this approach can call upon you to be broadminded about applicants who are out of work because they are the candidates you can more fully



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Loren M. Smith, CEO Blue Valley Capital

appraise. We all know, however, that there are plenty of understandable reasons a talented person might be out of work.

The principle at play here is that recruiting outside talent, regardless of seemingly impressive credentials, is a high-stakes game. Anything we can do to minimize that risk works in our favor.

#### Tip #2 Trusting Your Intuition

I am calling this a half-tip because it is not a hiring practice; it is merely a hiring perspective: Listen to your gut. Because making a hiring mistake is such a downer, it is human nature to "play it safe," especially when filling a pivotal position. Yes, we need to be careful, but giving in to what looks right on paper when an inner voice is whispering, "Wait a minute," can lead to a disappointing choice.

Let's say you have met with Harry and Mary. For 20 years Harry has been doing precisely what is needed to fill your opening, and his references are fine. But something about Harry gives you pause. Maybe you don't feel a lot of chemistry with him, and he is someone you'll be collaborating with every day. Mary, on the other hand, has far less relevant experience and will need more mentoring, but you sense that she's a star in the making. Whom would you choose? And what if you are able to give Mary a 30-day trial?...

Our hiring decisions are crucial because missteps hamper overall productivity and our own. We had just devoted time to an important hiring process, and now we find ourselves immersed in one again. I hope these two suggestions, taking advantage of a trial period and paying attention to our intuition, will help ensure great choices.

Loren Smith can be reached at lms@blvcapital.com or www.bluevalley-capital.com



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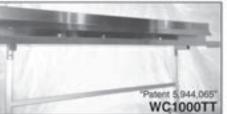
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#### **NEWS PLUGS** continued



#### Amphenol Industrial Products Group Participates in Buy America

Amphenol Industrial Products Group, a global leader in interconnect systems, is a participant in the United States Department of Transportation's Buy America provision for the rail and mass transit industries.



Amphenol Industrial Products Group participates in the "Buy America" program.

The Buy America program, which requires that transportation infrastructure projects use American-made products, provide government funds only to American companies that either use or produce steel, iron and manufactured goods generated solely in the United States.

Amphenol, who supplies interconnects for onboard electrical equipment including HVAC, propulsion, event recorders, brakes, lighting, door systems, communication devices, passenger information systems as well as monitoring and diagnostic equipment, qualifies for the

program.

Martin Booker, general manager, Amphenol Industrial Products Group said, "Today's modern railway systems demand cost-efficient, cutting edge technical solutions. Amphenol prides itself on the ability to provide interconnect solutions that meet the stringent requirements of the railway system, while supporting the Buy America initiative."

Locomotive and car manufacturers, MRO (maintenance/repair/overhaul) companies, equipment manufacturers as well as transit authorities worldwide all benefit from Amphenol's high-quality, proven connector products. "We are proud to have supplied, served and offered solutions to the rail market for over 50 years, both domestically and internationally," said Booker.

For more information, please visit http://www.amphenol-industrial.com

#### Pasternack Releases Expanded Lines of Medium and High Power RF Loads

Pasternack Enterprises, Inc., an industry leading manufacturer and global supplier of RF and microwave products, releases all new lines of medium and high power RF loads. These new RF loads (also referred to as RF terminations and dummy loads) are commonly used in military/aerospace, defense and test and measurement applications in order to protect radios and amplifiers under test from excess power in the system.

The new RF terminations from Pasternack come in 25 Watt, 50 Watt and 100

Continued on page 22

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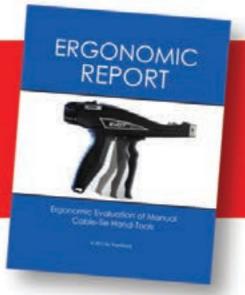
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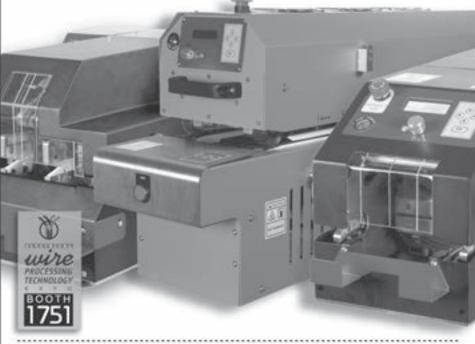
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#### **NEWS PLUGS** continued



Continued from page 20

Watt models and are offered with many connector configurations including male and female versions of SMA, N, TNC and 7/16 DIN. The 25 Watt and 50 Watt models operate to 18 GHz, with the exception of the 7/16 DIN version, which is rated to 8 GHz. All of the 100 Watt RF loads operate



Pasternack's new medium and high power RF loads are manufactured with black anodized aluminum cooling fins to 8 GHz. A total of 24 new RF loads are being introduced in this release.

Pasternack's new medium and high power RF loads are manufactured with black anodized aluminum cooling fins for convection cooling. These coaxial terminations require no additional heatsink to dissipate excessive heat during use. Operating temperatures range from -55 to +125 degrees C, making them an ideal solution for a wide range of environmental conditions in the lab and in the field. The rectangular body can also be hard mounted using 4 threaded mounting holes.

"There are many medium to high power coaxial termination options available, but very few to 18 GHz", says Gerry Camacho, Vice President of Technical Marketing at Pasternack. "This new offering of medium to high power RF loads provides our customers very broad selections covering wide performance capabilities, allowing them to choose the exact model for the desired application from one supplier."

The new medium and high power RF loads from Pasternack are in-stock and available now. You can view the entire line of these new products by visiting http://www.pasternack.com/pages/Featured\_Products/medium-and-high-power-rf-loads.htm directly.



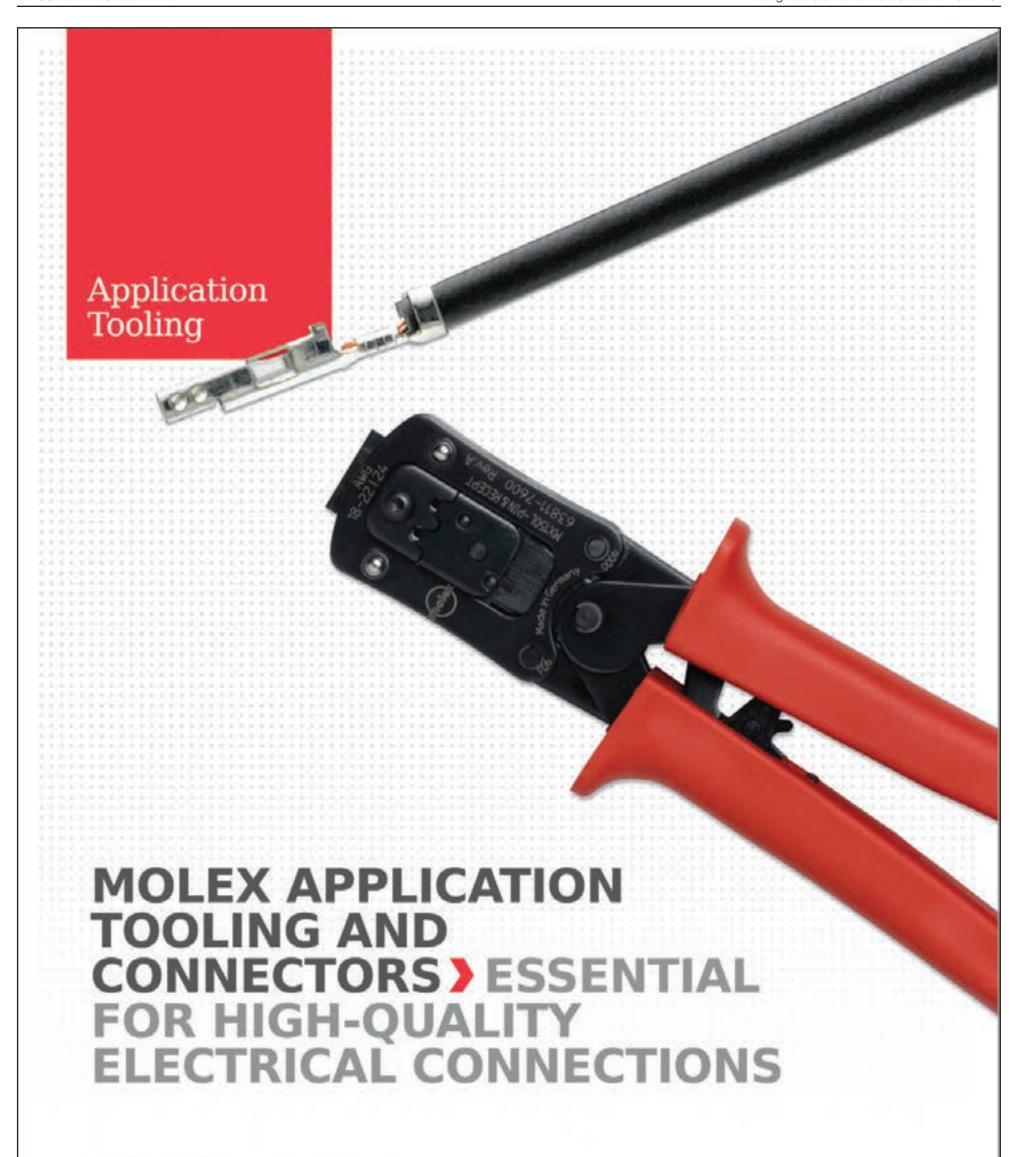
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### Sonobond Demonstrates Ultrasonic Machinery for Splicing Tin-Coated Wires

Sonobond's Exclusive Ultrasonic Machinery for Splicing Tin-Coated Wires will be demonstrated at the Electrical Wire Processing Expo, May 2014. Sonobonds patented Wedge-Reed system enables unique one-pulse welding without pre-cleaning.

"We produce the only ultrasonic system able to reliably weld most oxidized and tinned metals in one pulse without pre-cleaning," notes Sonobond Vice President Melissa Alleman. She adds, "We are also the only company with an ultrasonic splicer capable of welding stranded copper wire bundles of up to 100 square millimeters in a single pulse."

Sonobond will demonstrate its SpliceRite™ Wire Splicer and feature a video of its patented ultrasonic metal welding and splicing technology at the Electrical Wire Processing Expo, May 14-15, Booth #1644, Wisconsin Center, Milwaukee. It will also showcase samples of the variety of wire bundle splices that its equipment can accommodate.

Ultrasonic metal welding occurs when high-frequency vibrations are directed at components under a moder-

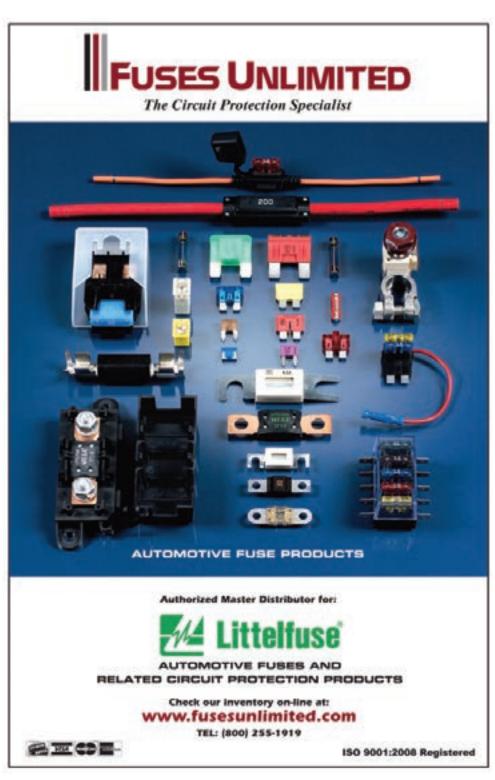
ately high clamping force. This creates a rapid build up of heat that produces a weld in just seconds and without significant melting of the base materials. The result is a solid-state metallurgical bond created without excessive heat, current or consumables.

Sonobond's innovative Wedge-Reed bonding system maximizes the effectiveness of ultrasonic metal welding by combining high vibratory force with low amplitude coupling. Utilizing shear mode vibration parallel to the welding surface and a line of force directly over the parts to be welded, the Wedge-Reed system ensures precise dependable welds without bending, stress or stalling. In addition to joining most oxidized and tinned metals without any cleaning process, this welding method also accommodates thin-to-thin or thinto-thick material welding, while still producing bonds with high conductivity.

Sonobond's SpliceRiteTM Wire Splicer - on display at Booth #1644, at the Expo - produces splices in wire bundles up to 60 square millimeters in size. In just one pulse, it can handle



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tinned or oxidized wire bundles up to 35 square millimeters.

Sonobond's Dual Head SpliceRite™ Ultrasonic Wire Splicer can accommodate lightly tinned or oxidized wires up to 60 square millimeters without precleaning. Also, it's the only ultrasonic splicer with upper and lower welding heads, allowing it to weld stranded copper wire bundles of up to 100 square millimeters in a single pulse.

Both the SpliceRite<sup>TM</sup> and the Dual

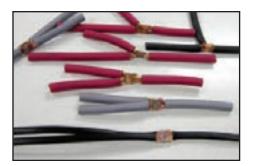


Sonobond's reliable, cost-effective and environmentally friendly SpliceRiteTM Wire Splicer welds tinned or oxidized wire bundles up to 35 square millimeters in just one pulse and without precleaning.

Head SpliceRite™ feature easily and economically replaceable tool steel Taper Lock Tips that can last up to 100,000 welds and that require no recalibration, along with a microprocessor that stores and recalls up to 250 jobs. Plus, Sonobond's equipment is easy to operate, requiring only minimal training.

"In addition to welding tinned or oxidized wires, our complete line of ultrasonic metal welders is being utilized in an increasingly wide variety of applications, including welding wire-to-wire and wire-to-terminals for electrical wire harnesses and bus bars and welding the terminals of lithium-ion batteries, foilwound capacitors, thin aluminum or copper foil and electrical contacts," says Alleman. Sonobond's metal welders are also involved in manufacturing fuses/circuit breakers, ignition modules, starter motors, photovoltaic panels, HVAC tubing and large metal parts for automotive assembly.

For companies weighing the advantages of ultrasonic metal welding and seeking to meet challenging customer specifications, Sonobond offers a free, no-obligation Ultrasonic Welding Viability Test. After discussing the details of their applications, companies submit their materials for sample welds, allowing Sonobond's technical staff to determine the proper equipment and any



A variety of heavy-duty cables for cars, trains, and industrial machinery can be accommodated by Sonobond's Dual Head SpliceRite™ Wire Splicer due to its upper and lower welding heads.

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See Sonobond at the Electrical Wire Processing Expo, Booth #1644.

If you're unable to attend the show, Sonobond at www.SonobondUltrasonics.com to view our video and complete line of ultrasonic welding products, request information or inquire about our free Ultrasonic Welding Viability Test.





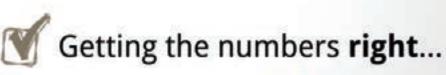
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#### **NEWS PLUGS** continued

## E

#### New Eco-Friendly Reel Line Offers Multiple Advantages

At the 2014 Electrical Wire Processing Expo, U.S.-based Evolution Products<sup>TM</sup>, will introduce the company's latest products and revisions on the Reduction Reel<sup>TM</sup>, a reusable breakdown reel designed to help wire and cable companies substantially improve their bottom line by eliminating the waste associated with wooden reels. The Reduction Reel is engineered to last at least 25 cycles, thus requiring fewer

purchases of traditional wooden reels. Other notable benefits include better utilization of warehouse space, reduction in shipping costs and ease of material handling.

While the Reduction Reel boasts multiple benefits for accounting and operations departments, it is even more exciting for sales teams. Sales reps can now offer their customers a solution to one of their most stressing issues, the disposal of old, bulky, wooden reels. OEM's and end users of reels continually complain about the hassles and costs associated with disposing of wooden reels. By creating a successful return program with the Reduction Reel, wire manufactures will add value to their customers, thus saving them money.

The Reduction Reel is a four-part reel, is easy to assemble (less than 25 seconds), and collapse for consolidated shipping and storage. The Reduction Reel has molded parts (core and hub) made from recyclable ABS plastic and is designed to fit any style flange, which could include wood, plywood, composite material, plastic and steel.

In summary, the Reduction Reel will solve many of the most stressing issues in warehouse management related to transporting, storing and disposing of wooden reels. And what makes this product even more exceptional is it will allow companies to reduce their overall carbon footprint and help to preserve the health of the planet they operate in.

Visit with Evolution Products at the Electrical Wire Processing Technology Expo in Booth #1453.

If you are unable to attend the Expo please contact Evolution Products, 412 Oak St. Denver, PA 17517. Phone (717) 515-8591.

Visit www.evolution-products.com.



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Partex Marking Systems will be showcasing a variety of individual character and custom marking products at the Electrical Wire Processing Expo in booth 1350.



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For further information contact Partex Marking Systems, Inc., 770 North Church, Suite A, Elmhurst, IL 60126. Phone (630) 516-0400. Email sales@partexmarker.com or visit www.partexmarker.com





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#### **BURNDY®** Announces New UM Die Sets

BURNDY®, a leading manufacturer and provider of connector solutions to the industrial, energy, construction, telecommunication, petrochemical, data center, and transportation industries, announces the introduction of the UM Die product line.

BURNDY® expands its die offering with the new UM die product line. The UM dies with a unique "M" style design straddles the brazed seam of the YAD series lug to maintain closure during the crimp cycle. This distinctive profile provides a consistent and long term reliable connection.



The UM dies are designed to crimp YAD/YAV lugs accepting copper cables sizes from 8 AWG to 4/0 AWG. These dies can be used with DLO/Flex cable. CNC machined from stainless steel, these dies are compatible with all BURNDY® tooling that accepts a "U" die envelope.



**BURNDY® UM Die Set** 

Tools that BURNDY® offers that will accept the "UM" dies are: Y35, Y39, Y750, and the new OEM840NCP OEM Press.

For further information contact BURNDY at 47 E. Industrial Park Drive, Manchester, New Hampshire,

03109. Call Customer Service at 1-800-346-4175, or visit website www.BURNDY.

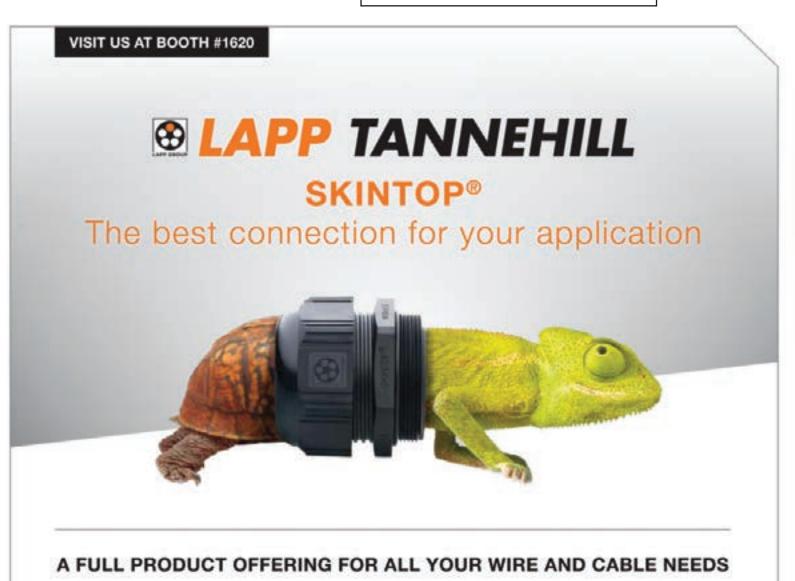
Since 2009, BURNDY LLC has been a key brand under the Electrical Systems Platform of Hubbell Incorporated. More information can be found at www.Hubbell.com

#### WAGO picoMAX® Pluggable Connection System

WAGO's picoMAX® is a complete pluggable connection system featuring a radically simplified contact design that reduces size, while increasing performance and connection integrity as compared to competitive pluggable products. The pluggable connection system accommodates conductors 24-12 AWG and carries ratings up to 15 A/600V. Configurations: 2-12 poles for wire-towire, wire-to-board, boardto-wire and panel feedthrough designs. Applications: industrial electronics such as panel meters, controllers, data loggers and consumer electronics, e.g., garage door openers.

WAGO pioneered spring pressure termination technology, fast becoming the superior termination method in the industry in terms of reliability and ease of use. Now, the all-new patented picoMAX® Pluggable Connection System brings this spring pressure termination technology to the next level in its evolution and design.

WAGO's picoMAX® utilizes a single, stainless steel, dual-purpose spring to encompass two core functions of a pluggable system: to clamp the conductor and connect to the mating pin. A



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## Mando Can Do.



When Armando Zacarias goes out on a Eubanks service call, unusual things happen.

"Once I helped round up a cow that got loose in a customer's plant.

"Another time, while driving to a customer's site, our rep's car caught fire. We eventually arrived there that night and finished the job in time for the morning shift," Mando reports.

Customers report something unusual too: Mando's "can-do" attitude.

George Price, vice president of J&M Products, for example, writes how Mando takes time to answer questions, explain machine operation and even gave "tips on stripping some shielded cable that others said could not be done."

"Can't be done" is not in Mando's vocabulary—either English or Spanish. On his own initiative, he solves problems, leads training classes, helps boost plant

efficiencies, and makes lasting friendships while doing it.

Mando exemplifies the Eubanks



business experience—highest-quality, U.S.A.built wire strippers and markers backed by dedicated people itching to solve your wire problems.

Call us today. We'll put this "can do" attitude to work for you till the cows come home.

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**NEWS PLUGS** continued

Continued from page 28 \_

simple, truncated contact bridge replaces the traditional socket contact, reducing the complexity of the connection and effectively eliminating a connection point. The innovative design has a shortened current path, minimizing contact resistance and increasing connection and signal

integrity in operating temperatures up to 125°C.

Unlike crimp-style connectors, picoMAX® contacts are self-contained - the sockets, pins and wire termination elements are built in to the connector - ready to accept stripped wire. picoMAX® eliminates the crimp process and the associated tooling investment. The pluggable connection system features integrated pushbuttons to be depressed in order to accept or release stranded conductors. It's CAGE CLAMP®S spring further speeds wiring by allowing for push-in connection of



PicoMAX® Crimp Connector

solid or ferruled conductors. Wiring is easy and obvious for worldwide installations without the need for special tools

picoMAX®'s revolutionary, yet simple, design increases vibration resistance up to 20g. The dual-pur-

pose spring provides dynamic contact force that automatically adjusts to environmental impacts like vibration, thermal cycling and corrosion - all of which can cause other connectors to prematurely fail. Fully shrouded by the male counterpart when plugged, the female connector automatically locks in place, preventing unintended disconnection and further aiding shock and vibration resistance.

For additional information, visit www.wago.us. Contact WAGO 1-800-DIN-RAIL info.us@wago.com.

#### CT 30S, 34, 34S, 36 and **60 Pneumatic Crimping** Machines

For years, the Schleuniger CT line of pneumatic crimping machines has proven to be an ideal solution for a large range of loose-piece crimping applications. Based on the great reputation of these machines, Schleuniger has launched the next generation replacement machines with the introduction of the new CT series. All of the new models feature a fresh new look along with increased power, flexibility, productivity and improved ergonomics.

The following list summarizes the replacement of each machine:

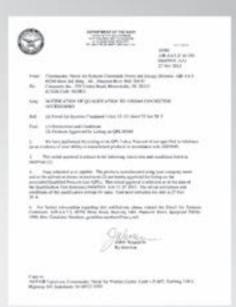
- CT 30S replaces the CT 28
- CT 34 replaces the CT 32
- CT 34S replaces the CT 32S
- CT 36 replaces the CT 35
- CT 60 replaces the CT 55



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The Department of the Navy has approved Compaero's Termination Bands for use on banding backshells and other connector accessories.



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#### CROSS REFERENCE TABLE

MIL-SPEC	COMP P/N	BAND STYLE	
M85049/128-1	S3175-2	Standard, Welded, Flat	
M85049/128-2	S3175-2C	Standard, Welded, Coiled	
M85049/128-3	600-052	Standard, Stamped, Flat	
M85049/128-4	600-052-1	Standard, Stamped, Coiled	
M85049/128-5	S3175-3	Mini, Welded, Flat	
M85049/128-6	S3175-3C	Mini, Welded, Coiled	
M85049/128-7	600-057	Mini, Stamped, Flat	
M85049/128-8	B)		



Compaero, Inc. www.compaero.com

379 Timber Road - Mooresville, NC 28115 - USA

sales@compaero.com

877-COMPAERO (266-7237)

The new CT series machines feature several improvements. Among these improvements are:

- More Powerful: The CT 34, 34S and 36 can supply up to 4 kN (0.4 tons) more crimping force, reaching a maximum force of 35 kN (3.9 tons). The CT 60 can supply up to 15 kN (1.7 tons) more crimping force, reaching a maximum force of 75kN (8.4 tons).
- More Ergonomic: All the machines have a 15 degree tilt that provides an optimal viewing angle of the crimping area.
- Increased Visibility: All machines except the CT 30S feature LED lights that enhance visibility of the crimping area.
- Faster Changeovers: All machines except the CT 30S use the New Quick Change die adapter system for faster changeovers and are compatible with the previous CT series female-fitting Schleuniger die sets by using the appropriate die adapter. Also, the new Quick Change system allows for fast changeover times by preparing for upcoming jobs by using additional (optional) die adapters.
- More Applications: The CT 30S uses the expanded catalog of new Schleuniger male-fitting die sets for insulated & non-insulated closed and open barrel terminals, ferrules and butt splices. The CT 30S is not compatible with previous CT series female-fitting Schleuniger die sets. All other machines can also use the new Schleuniger male-fitting die sets by using the proper die adapter.
- Backward Compatibility: For customers with existing CT crimping presses (except the CT 28), it is possible to use the new Schleuniger male-fitting die sets by purchasing the proper die adapter for each machine.
- Safer: All the machines, except the CT 60, come with either a spring or pneumatic pre-loaded crimping head, which helps to properly and safely position the terminal before crimping. As an added safety benefit, on both the CT 34S and the CT 36, the crimping portion of the cycle cannot be actuated if the crimp dies are opened more than 5.9 mm (0.23 in).

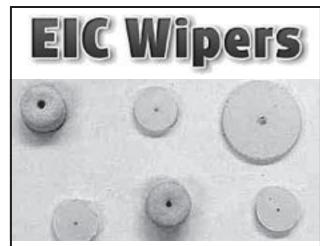


Schleuniger's CT 60 Pneumatic Crimping Machine

There is now an even larger availability of crimping dies, shapes and die adapters to meet your application needs. Additionally, the selling price of the CT 34, 34S and 36 include your choice of one type of die adapter. Other die adapters can be purchased as an option. Custom made die sets and die adapters are available upon request.

The CT series pneumatic crimping machines enjoy a proven reputation of reliability and durability combined with ease of use, making them the ideal solution for any production environment.

More information about these new products can be found at www.schleuniger-na.com. Should you have any questions, please e-mail sales@schleuniger.com or call (603) 668-8117.



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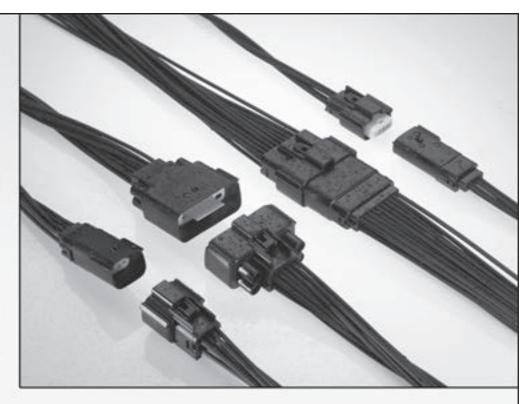
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Based on the 1.50mm ISO blade-type terminal system, the MX150™ Connector System consists of mat- and cable-sealed connectors, receptacles and terminals. Available in tin, gold or silver contact finishes, the MX150 system provides cost savings by eliminating the need to purchase, handle and crimp individual wire seals. The single silicone-based seal in the plug and receptacle has individual wire openings and a seal cap to protect, securely retain and provide strain relief. Integral terminal position assurance (TPA) and optional connector position assurance (CPA) components eliminate time-consuming and costly assembly operations. Many of these products employ ring-seal technology to meet IP6K7 and IP6K9K sealing requirements.

#### Applications:

- Automotive: Automotive Vehicles, Commercial Vehicles, Industrial Vehicles and Equipment, Recreational Vehicles
- Commercial Vehicle: Construction equipment, Marine equipment, Recreational vehicles









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#### **NEWS PLUGS** continued

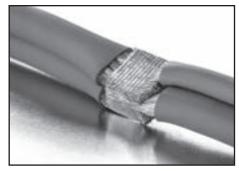


#### Telsonic Offers Robust Solution for Splicing Large Cables in Automotive Harnesses

Automakers with hybrid or electric vehicles now demand splicing of larger cables and the capability to splice greater total cross sectional areas. Telsonic is pleased to announce the introduction of its TelsoSplice TS6 for wire splices with total cross sections ranging from 2.5 mm<sup>2</sup> to 100mm<sup>2</sup>.

Utilizing Telsonic's state of the art technology in high power ultrasonics and most of the features of the well accepted TS3 for splices up to 45mm<sup>2</sup>; TS6 is now the ideal solution for processing larger splices in the harness.

TelsoSplice TS6 offers an economical solution with unique advantages for today's challenging applications.



95 mm<sup>2</sup> Splice

Some of the features include:

- Wide range of splices with the same tooling
- Suitable for copper and aluminum wires
  - Built-in QC monitoring
  - Intuitive software on touch screen
  - User friendly and easy to operate
  - Auto referencing
  - Quick tooling changeover
  - Reliable and safe process

Telsonic AG was founded in 1966 and has subsidiaries in Germany, England, South-East Europe, China and the USA, is part of a joint venture in India.

Ultrasonic technology is used for welding, cut-and-seal, cleaning, screening as well as chemical processes and packaging. Having introduced the Torsional Welding Power Wheel®, Telsonic has again achieved leadership in technology. The technology has spawned new solutions in many automotive engineering applications and has paved the way for numerous potential savings.

For further information contact TEL-SONIC Solutions, Inc., 10 Ossipee Road, Newton Upper Falls, MA 02464.

Phone (617) 244-0400. Email smogadam@telsonicmetal.com or visit www.telsonic.com.

Telsonic will be exhibiting at the Electrical Wire Processing Technology Expo, May 14-15 in Booth #1841.





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Wire Processing

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#### **NEWS PLUGS** continued



#### **Molex Launches Online** Polymicro Technologies™ **Capillary Configurator Tool**

Molex Incorporated introduces the Polymicro Technologies™ Capillary Configurator design program for selection of simple to complex capillary tubing products. The free online Capillary Configurator guides users in identifying and submitting

product specifications and application parameters which are reviewed by Polymicro's technical team. All submissions are promptly reviewed and the team provides a quote on the best available Polymicro capillary solutions.

"Molex's Polymicro TechnologiesTM subsidiary manufactures the highest quality fused silica and specialty quartz capillary tubing products in the industry," states Joe Macomber, product manager. "From gas chromatography to capillary elec-

Continued on page 38





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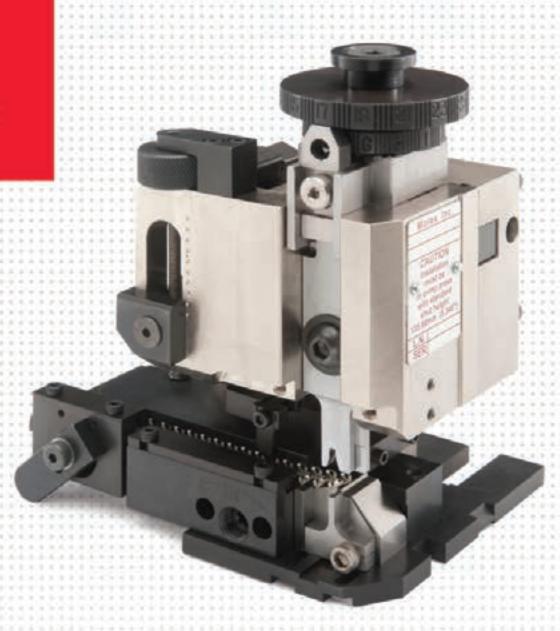


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High speed fully automatic crimping machine that efficiently cuts, strips and terminates a wide range of wire types and sizes.

- Wire cross sections from 26 12 AWG
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### Schleuniger



Innovators in Wire Processing

### MegaStrip 9650





High performance automatic cut and strip machine featuring intuitive programming and a wide range of processing options that make it a wise investment.

- Measures, cuts and strips up to 600 MCM and jacketed cables up to 1.38" in diameter
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- Indexing cutterhead with up to 4 blade sets
- Programmable rotary cutting unit for precise shield cutting
- Automatic locking guide system
- Optional S.WOP software available to manage your entire wire processing operation



#### **NEWS PLUGS** continued



Continued from page 34

trophoresis, nanofluidics to genomics, the new Capillary Configurator offers easy online selection of Polymicro standard and custom capillary products with strict adherence to specifications for unmatched reproducibility in a broad range of applications."

Polymicro capillary tubing is manufactured across a range of internal diameters, from less than 1 µm to over 2,000 µm. A staple in laboratories for scientific, medical and pharmaceutical analysis, Polymicro capillary tubing products range from standard polyimide-coated flexible fused silica, uncoated thick-walled fused silica

or natural quartz, as well as custom designs to meet specific application requirements.

The Capillary Configurator provides a step-by-step guide through intuitive data entry screens, where the user specifies desired capillary type, product series, diameter, overall length, quantities from a few millimeters to bulk coils, windows and end face options, including precision cutting and cleaving processes. Configurator users have the option to download a drawing or sketch with their request for a quote.

"Customers may use the Capillary Configurator for simple tasks such as requesting pricing of off-the-shelf standard products. However, it was also designed to allow a user to efficiently submit a request for quotation for rapid prototyping, project planning or longterm budgeting. The Configurator is designed to accommodate

virtually any Polymicro capillary product ranging from standard capillary to complex, multi-capillary assemblies, and everything in between" adds Macomber.

Visit

http://www.molex.com/molex/family/polymicro-capillary.jsp to get started on the Capillary Configurator. For instant access to the wide range of Polymicro TechnologiesTM capillary tubing and optical fiber solutions, please visit us at www.molex.com/polymicro.

Providing more than connectors, Molex delivers complete interconnect solutions for a number of markets including: data communications, telecommunications, scientific, consumer electronics, industrial, automotive, commercial vehicle, aerospace and defense, medical and lighting. Established in 1938, the company operates 45 manufacturing locations in 17 countries.

#### NEMA Assistant Vice President John Caskey Honored with IEEE Senior Membership

The National Electrical Manufacturers Association (NEMA) proudly announces that its Assistant Vice President of Operations John Caskey has been named an IEEE Senior member. This honor is bestowed only to those who have made significant contributions to the electrical engineering profession. IEEE is the Institute of Electrical and Electronics Engineers.

"It is an honor to be associated with the IEEE and the Power and Energy Society, and to be recognized for my professional accomplishments," said Caskey. "I'm proud to be a part of an organization that is not only advancing electrical engineering around the world, but also strongly promoting diversity in the engineering field."

IEEE is the world's largest professional association dedicated to advancing

technological innovation and excellence for the ben-

efit of humanity. IEEE and its

members inspire a global

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headquartered in Rosslyn,

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a diverse set of products including power transmission and distribution equipment, lighting systems,

automation and

for electro-

and

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systems,

Total

medical diagnostic imaging

industry products exceed \$100 billion annually.

NEMA is the association

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#### Ultrasonic Metal Welding Technology





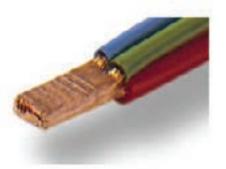
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#### New Utilities LED Panel Light

factory control

systems.

shipments

LEDtronics, Inc., adds a new Utilities LED Panel light to its PNL-1145 Series. These short thread body LED panel mount lamps only consume a half watt of power and replace incandescent high voltage panel indicators, such as GE ET5, ET6. They are designed to go in panels found in Transmission Station Control Panels, Control Rooms, Sub-Station control rooms of power plants and utilities.

These energy-efficient and long-lived LED illuminators feature a fixed LED and removable transparent lens, a threaded metal shaft, and adjustable nuts and washers that enable the lamp to be front-mounted or rearmounted in panels up to

\_\_Continued on page 40



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#### **NEWS PLUGS** continued



Continued from page 38

1.10 inches thick with an Mtg Dia of 16mm (0.63"). Additionally, 13-inch, 22-gage wire leads are provided for screw or soldered connections.

The PNL-1145 series LED Panel Lights are designed with integrated series resistor to prevent short-circuiting; special fuses are unnecessary. They are also designed with a Bipolar Polarity circuitry to expedite integration into the electrical system. PNL-1145 LED lamps are available in 110~125 VAC or 120~140 VDC voltage ranges. LED light colors offered are 520nm Aqua Green (PNL-1145-013) and 637nm Super Red (PNL-1145-011). Utility monitors, industrial designers and maintenance departments will find these lights to be excellent solutions for maintenance-intensive and critical-process applications.

With an average life span of 100,000-plus hours (11 years), LEDs operate reliably year after year. Solid-state design renders LEDs impervious to electrical and mechanical shock, vibration, frequent on-and-off switching and environmental fluctuation. Integrated current-limited resistors

prevent short-circuiting. LED lamps use only 10% - 20% of the energy consumed by equivalent incandescent lamps that, when combined with their maintenance-free operation, results in substantial cost savings.

Prices for PNL-1145 Series LED Lamps are \$28.45 each, depending on quantity. Availability is stock to 4-6 weeks for special requirements.

For additional information, contact LEDtronics toll free at 1-800-579-4875, telephone 310-534-1505, fax at 310-534-1424, email us at info@ledtronics.com or postal mail at LEDtronics, Inc., 23105 Kashiwa Court, Torrance, CA 90505; or visit our website at LEDtronics.com.



PNL-1145 series LED Panel Lights

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#### A NEW DIMENSION IN ULTRASONIC SPLICING



TELSOSPLICE – New possibilities in welding splices at a station or on the harness board

 Copper and aluminum cables can be welded reliably with QC monitoring.  TelsoSplice TS3 is capable of welding cables in the range of 0.35 mm<sup>2</sup>-45 mm<sup>2</sup>.  TelsoSplice TS6 can weld large cables with total cross sections up to 100 mm<sup>3</sup>.









For further information please visit www.telsonic.com



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HE POWERHOUSE OF ULTRASONIC

#### **HEAT SHRINK APPLICATION TOOLING**

#### Belt Heater for Heat-Shrinkable Tubing Products

#### **Product Facts:**

- Closed-loop speed and temperature control
- Continuous controlled process
- Adaptable for different applications
- CE approved for worldwide use
- Heater operation and overtemperature alarm lights



#### RAYCHEM MODEL 16B TABLETOP BELT HEATER

#### Applications

The Model 16B is our smallest (tabletop) conveyor type processor which provides a controlled process for a wide variety of heat-shrinkable tubing products.

Double-sided timing belts on the top and bottom of the processing chamber draw the assemblies through a thermally controlled infrared heat zone and then through a fan-cooled cooling zone before depositing them into the unloading bin.

#### Controlled Heating Zone

The Model 16B processor has two stamped foil heating elements that are manufactured to a strict wattage specification. Consistent temperatures (ambient to 650° C) are controlled by a thermocouple embedded into the upper heating element connected to a closedloop temperature controller. An alarm light illuminates whenever the actual heating element temperature varies from the set point temperature.

#### Speed Control

The belt speed is selected using a 3-digit thumbwheel via a closed-loop motor controller and DC gear motor.

#### Minimal Skill Requirements

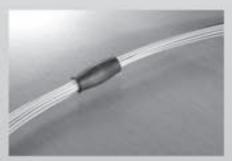
There are clearly marked guides for aligning the assembly as well as the tubing or device. The operator only has to center the assembly then the tubing and slide it into the belts. The belts carry the assembly through the heating and cooling zone, depositing them into the bin.

Labor costs are reduced significantly because once an operator loads an assembly, that operator can begin preparing another assembly. The throughput rate is usually limited by the rate at which the operator can load assemblies into the process.

#### Versatility

The processor is designed to process a broad range of heat-shrinkable products up to 19 mm [0.75"] in diameter and 90 mm [3.5"] in length. Heat output can be controlled to accommodate a wide variety of products and substrates.

















In every issue of Wiring Harness News Anixter will bring you informative articles about wire and cable technology.

#### WIRE & CABLE AMPACITY RATINGS

#### WHAT IS AMPACITY?

Ampacity is the maximum current (measured in amperes or more simply, amps) an insulated conductor can safely carry without exceeding its insulation and jacket temperature limitations. As the amount of current passing through a conductor is increased, the amount of heat produced in the conductor increases. The heat created in the conductor must be dissipated to the environment. If the heat cannot escape, the temperature of the conductor would continue to increase until the cable exceeds its temperature rating and deteriorates.

To prevent premature cable failure, the NEC® (National Electrical Code)[1] as well as other industry groups such as IEEE (Institute of Electrical and Electronics Engineers) and ICEA (Insulated Cable Engineers Association) have published tables of ampacities that

cover many of the installation conditions frequently encountered in real life. For example, IEEE has published a book called IEEE Std 835-1994 *Standard Power Ampacity Tables* that contains thousands of ampacity tables. General ampacity ratings for conductors can be found in the NEC 2014 Article 310 *Conductors for General Wiring*.

#### **TEMPERATURE RATINGS**

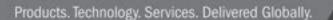
The ampacity of a cable should equal or exceed the maximum current the cable will be expected to carry during its service life, without exceeding its temperature rating. Temperature ratings depend on the heat resistance of the materials used for the insulation and jacket of the cable. The higher a material's heat resistance, the less likely it will deteriorate in higher temperatures. The most common conductor temperature rating is 90°C, but conductors can be rated as low as 60°C or as high as 1,200°C for some special purpose wire and cables. Although conductor temperatures play a large part in determining ampacity

ratings, it is common to see the 75°C column in *NEC 2014* Article 310 ampacity tables used because many connectors are rated at 75°C.

For example, a 10 AWG 3C 600 V cable with XHHW singles would have an ampacity of 35 amps if using the 75°C column in NEC 2014 Table 310.15(B)(16) Allowable Ampacities of Insulated Conductors Rated Up to and Including 2000 Volts, 60°C through 90°C, Not More Than Three Current-Carrying Conductors in Raceway, Cable. Or Earth (Directly Buried), Based on Ambient Temperature of 30°C.

#### **DERATING FACTORS**

Depending on the installation environment of the cable, ampacity ratings may need to be adjusted or derated to control heat flow. The rate at which heat is dissipated to the environment depends on many factors, but the two main requirements in the *NEC* for derating ampacity are ambient temperatures and number of current-carrying conductors.



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# THE ONE SOURCE For all Your Wire, Cable and Supply Chain Needs.

#### With Anixter, You Keep Your Attention Where It Needs to Be.

With over 250 locations in more than 50 countries and \$1 billion of inventory, Anixter is a global leader in the distribution of electrical and electronic wire and cable, industrial communication and control products, network cabling solutions and supporting products. Anixter's unparalleled industry expertise and highly trained sales specialists can help you find the best solutions for all of your product and service requirements.

Teaming with Anixter allows you to shift the responsibility of your current supply chain processes, so you can better focus on your core competencies. Through its READY!<sup>SM</sup> Material Management Services, Anixter will work with you to design a program that makes sure you receive the right materials when, where and how you need them.



If you have the responsibility of designing, specifying or ordering wire and cable, visit anixter.com/literature/wchandbook to download a copy of the Electrical and Electronic Wire & Cable Technical Handbook.

Visit us at the 2014 Wire Expo booth #1805.

ANIX(ER



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TABLE 1	
Number of Conductors <sup>1</sup>	Percent of Values in Table 310.15(B)(16) through 310.15(B)(19) as Adjusted for Ambient Temperature if Necessary
4-6	80
7-9	70
10-20	50
21-30	45
31-40	40
41 and above  Number of conductors is	35 the total number of conductors in the raceway or cable, including

<sup>1</sup> Number of conductors is the total number of conductors in the raceway or cable, including spare conductors. The count shall be adjusted in accordance with 310.15(B)(5) and (6). The count shall not include conductors that are connected to electrical components but that cannot be simultaneously energized.

Ampacity ratings need to be derated if more than three current-carrying conductors are in a raceway or cable according to the requirements in *NEC* 2014 Article 310. More current-carrying conductors in an enclosed space may result in a greater ambient temperature. The ampacity of those conductors must be derated to account for this increase in ambient heat. Please note that not all conductors carry current and the derat-

ing should only be applied based on the number of current-carrying conductors. Under normal conditions, grounding and bonding conductors do not carry current and do not need to be counted towards the derating. For example, a 10 AWG 4C 600 V cable's ampacity would need to be derated by 80 percent according to NEC 2014 Table 310.15(B)(3)(a) *Adjustment* Factors for More Than Three Current-Carrying Conductors in a Raceway or Cable (See Table 1) assuming all four conductors are currentcarrying. The adjusted ampacity would be 28 amps (35 amps\*0.80).

\* TABLE 310.15(B)(3)(a) Adjustment Factors for More Than Three Current-Carrying Conductors

If multiple single conductors or multiconductors (rated 0-2,000 V) are installed without proper spacing, derating may be required. For more information, please refer to *NEC* 2014 Section 310.15 *Ampacities for Conductors Rated 0-2000 Volts*.

The ambient temperature is vital when determining ampacity ratings because at higher temperatures heat transfers out of the cable at a slower rate. If the ambient temperature differs from the ampacity tables' stated ambient temperatures (typically 30°C or 40°C) in *NEC* 2014 Article 310, a correction factor may need to be applied. NEC 2014 Table 310.15(B) (2)(A) Ambient Temperature Correction Factors Based on  $30^{\circ}C$  (86°F) is one of the tables where adjustment factors can be found. For example, a 10 AWG 3C 600 V cable is installed in an ambient temperature of 50°C. According to *NEC* 2014 310.15(B)(2)(A), the cable's ampacity would need to be multiplied by a correction factor of 0.75, assuming the 75°C column was used in the ampacity table. The adjusted ampacity would be 26 amps.

#### **INDUSTRY EXAMPLE**

Temperature ratings and ambient temperatures play a big role in solar farms' ampacity ratings. Photovoltaic wire (PV wire) is used as interconnection wiring on solar panels in grounded or ungrounded systems. PV systems, including PV modules, PV source circuits and PV output circuits, can produce output currents that are higher than the rated short-circuit currents for over three hours. Due to the large amount of current and warm temperatures, PV wire's ampacity is calculated as 125 percent of the sum parallel module rated short-circuit currents.

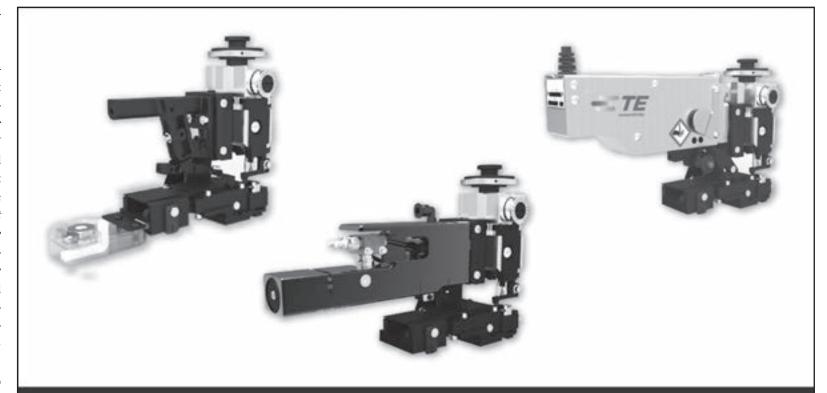
There are many factors that affect the appropriate conductor and cable selection, and incorrect product selection can be costly.

#### FAQ

1. Why do flexible cords or portable power cables have higher ampacity ratings compared to *NEC* 2014 Section 310 *Conductors for General Wiring?* 

Flexible cords and portable power cables are not permitted by NEC 2014 Section 400.8 to be installed in raceways, concealed by walls or floors, or installed in dropped ceilings. These cable types are assumed to be installed in applications where there is adequate space and free air. Because of these anticipated installation conditions, overheating from being enclosed in a small space is not a large concern. Therefore, these cables are permitted to carry more current per gauge size compared to cable and wire types mentioned in NEC 2014 Section 310 Conductors for General Wiring, which typically are installed in applications with limited air space or air movement. Ampacity tables for flexible cords and cables can be found in NEC 2014 Section 400.5 Ampacities for Flexible Cords and Cables.

\_\_\_Continued on page 44



### **TE Connectivity Ocean Applicator Series**

#### New Applicator Developed to Provide Improved Precision and Reduced Setup Times

Crimping standards continue to rise to higher levels of quality and repeatability. Taking customer input and market demands into consideration, TE Connectivity (TE) has created the new Ocean Applicator series to meet those higher demands and to take terminal crimping to a new level.

By consolidating its past applicator offering, TE was able to provide design consistency and tooling standardization to the market. One of the resulting benefits to customers of this consolidation is flexibility in the choice of feeding options: new and improved mechanical and pneumatic feeds along with the innovative and precise servo feed option. The new Ocean Applicator series design also allows customers to perform field upgrades to system III and Smart Applicator technology. It provides an upgrade path for terminal intelligence that allows the machine to obtain setup features as the applicator is upgraded.

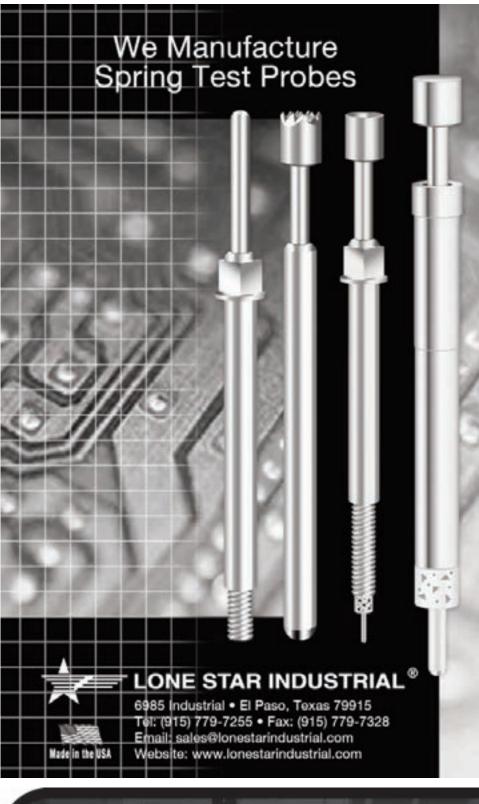
- · One applicator platform modular family design
- · Two ram interface styles
- Three interchangeable feed options (mechanical, pneumatic or servo)
- Smart Applicator Integration

For your application tooling needs, contact Heilind Electronics or visit <u>www.heilind.com/rpages/te\_oceanapp\_whn</u>











Continued from page 43

2. What are the ampacity requirements for conductors used in continuous duty applications for single motors?

According to *NEC* 2014 Section 430.22 *Single Motor*, conductors shall not be rated less than 125 percent of the motor full-load current. For example, if the FLC of a motor is 120 amps, the ampacity rating would be 150 amps (120\*1.25) at the minimum.

3. I need higher ampacity and want to save money and weight by using a welding cable because they have higher ampacity ratings. Which welding cable do I select?



Welding cable ampacity ratings depend on many factors including the length of the welding circuit, rated output of the welding power source, and the duty cycle of the welding source. Unless the variables are known and can be accounted for, it is not recommended to use welding cables in nonwelding applications.

For more information about the technical requirements to make the proper cable selection, please contact an Anixter sales representative at 1.800.ANIXTER for more assistance.

Visit Anixter Wire & Cable at the Electrical Wire Processing Technology Expo in Booth #1805.



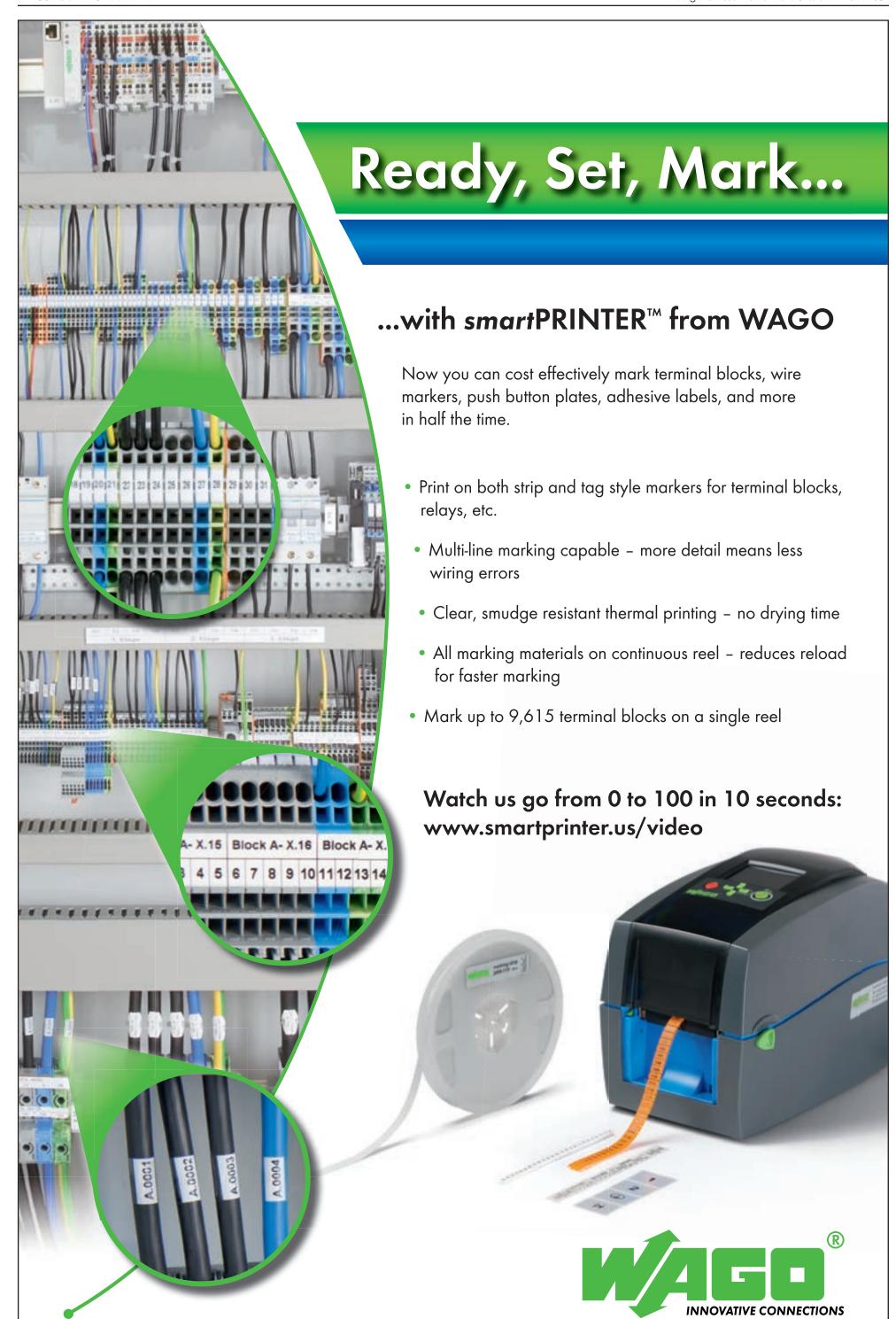
**VISIT WAGO INNOVATIVE CONNECTIONS IN BOOTH #1411** 

Stop by the Wiring Harness News Business Center and Lounge.

Register for a free subscription, have a massage, stay for a drink, use our internet kiosk, fax and copy service.

Take time to visit with the girls of WHN and don't forget to stay for the VIP party Wednesday evening featuring free food, cocktails and entertainment co-sponsored by Wiring Harness News.







#### **NEWS PLUGS** continued



#### NEMA Publishes Standards for Panelboards and Switchboards

The National Electrical Manufacturers Association (NEMA) published ANSI/NEMA PB 1.1-2013 General Instructions for Proper Handling, Installation, Operation, and Maintenance of Panelboards Rated 600 Volts or Less and ANSI/NEMA PB 2.1-2013 General Instructions for Proper Handling, Installation, Operation, and Maintenance Deadfront Distribution Switchboards Rated 600 Volts or Less.

ANSI/NEMA PB 1.1-2013 covers single panelboards or groups of panel units suitable for assembly in the form of single panelboards (including buses), with or without switches or automatic overload protective devices (fuses or circuit breakers), or both. These units are used in the distribution of electricity at 600 volts and less with:

- \* 1600 ampere mains or less
- \* 1200 ampere branch circuits or less ANSI/NEMA PB 1.1 may be down-

loaded at no cost or purchased in hardcopy format on the NEMA website for \$40

ANSI/NEMA PB 2.1 covers floor-mounted deadfront switchboards which consist of an enclosure, molded case, and low-voltage power circuit breakers; fusible or non-fusible switches; instruments; and metering, monitoring, or control equipment with associated interconnections and supporting structures. These units are used in the distribution of electricity at:

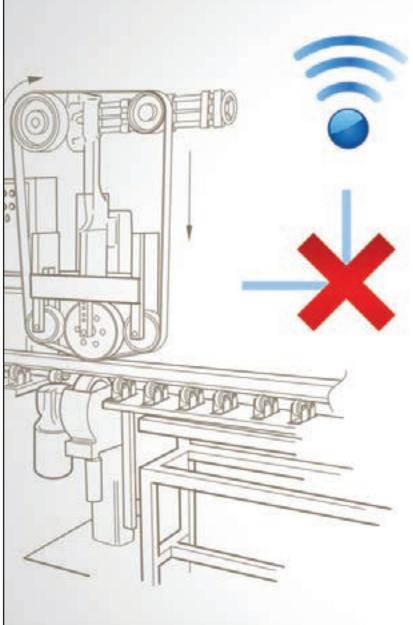
- 600 volts and less
- 6000 amperes or less

ANSI/NEMA PB 2.1 may be downloaded at no cost or purchased in hard-copy format on the NEMA website for \$40

NEMA is the association of electrical equipment and medical imaging manufacturers, founded in 1926 and headquartered in Rosslyn, Virginia. Its 400-plus member companies manufacture a diverse set of products including power transmission and distribution equipment, lighting systems, factory automation and control systems, and medical diagnostic imaging systems. Total U.S. shipments for electroindustry products exceed \$100 billion annually.



VISIT CURTI WIRE PROCESSING - BOOTH #1759 & 1847
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### Problem #5:

# Trouble connecting your machines to your software?



Getting information off of old machines...

Because you can't improve what you don't measure.





#### JOKARI Exhibiting Cable and Wire Strippers in Milwaukee

JOKARI-Krampe GmbH is a leading producer of cable stripping and de-insulating technology. JOKARI produces spe-

cialized tools for a wide range of applications that allow simple, fast, and precise cable stripping.

The overriding majority of JOKARI cable knives and cable and wire stripper tools are TÜV and GS-certified. With over 40 years of history in the business, JOKARI offers innovative solutions.

JOKARI cable and wire strippers, allow customers to save precious man-hours by getting jobs done quickly and more efficiently. With a wide field of precision strippers, JOKARI covers a multitude of cables and applications. No matter what job you have, JOKARI specialty wire strippers will find a solution for you.

Visit JOKARI at the Electrical Wire Processing Expo in Booth #1352. Visit www.jokari.de for further information.

#### Mentor Graphics acquires Mecel Picea AUTOSAR Development Suite

Mentor Graphics Corporation announced it has strengthened its automotive software solution by purchasing the AUTOSAR assets, including the Mecel Picea AUTOSAR Development Suite, from Mecel AB. The acquired assets complement the existing automotive software solution from Mentor including the Volcano™ AUTOSAR products, Mentor® Embedded Hypervisor, and Mentor Automotive Technology Platform (ATP), which enables Linux®-based automotive solutions, including GENIVI-compliant infotainment (IVI) solutions. The Mentor automotive software solutions enable a wide range of subsystems, including secure, homogenous and heterogeneous multicore and single-core ECUs.

The Mentor Graphics® Embedded Software Division enables embedded development for a variety of applications including automotive, industrial, smart energy, medical devices, and consumer electronics. Embedded developers can create systems with the latest processors and micro-controllers with commercially supported and customizable Linux-based solutions including the industry-leading Sourcery™ CodeBench and Mentor Embedded Linux products. For real-time control, systems developers can take advantage of the small-footprint and lowpower-capable Nucleus® RTOS. For more information, visit www.mentor.com/ embedded.

#### WAGO smartPRINTER for Wire Marking

With the ability to print more than 100 wire markers in 10 seconds, WAGO Cor-



Wago smartPRINTER

poration's Thermal Transfer smartPRINTER expedites marking. An all-in-one solution, smartPRINTER can print on a wide variety of materials, including wire/cable markers, WMB markers, exclusive Continuous Mark-

ing Strips, push-button plates and adhesive labels.

WAGO-Exclusive Multi-Line Marking creates multiple lines of text for easier wire identification. Pre-flattened polyolefin heat shrink tubing is specially manufactured for wire marking use on WAGO's smartPRINTER. With a 3:1 shrink ratio and wide operating temperature of -55°C to 135°C, WAGO's heat shrink tubing is equipped with several certificates (e.g., UL, CUL, F-mark and Sony Green Partner Standard). Additional wire marking capabilities include self-laminating labels and wire markers for thread-on mounting.

The Ethernet-ready smartPRINTER is tightly integrated with WAGO's free ProServe® Design and Engineering software. This provides markings for virtually all of WAGO's 25,000+ I/O components, terminal blocks and connector systems. Mark-

\_\_Continued on page 50



### Innovative Convenience

### Quality Control Driven by Technology

The BURNDY Small HYDENT terminal line continues to deliver solutions to the field.

First, our full-cycle ratchet HYTOOL combines inspectability with ergonomics in its easy, one-hand crimping operation. Plus, the engineered design of the Small HYDENT jars makes them easy to see, store and use. Together, these innovations connect the Small HYDENT terminal line with 21st-century needs.



Connecting Power to Your World™

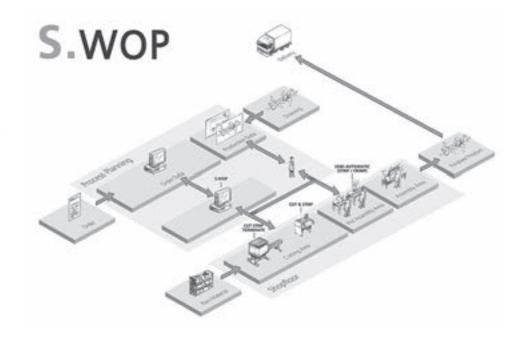


#### Schleuniger to Introduce S.WOP S. oftware for Wire Optimized Production

chleuniger, Inc., a leading international manufacturer of high-precision wire processing machines, will be among the over 160 world-class suppliers and service companies to exhibit at the 2014 Electrical Wire Processing Technology Expo. This exclusive showcase for the wire and cable processing industry will be held May 14 - 15, 2014 at The Wisconsin Cen-

ter in Milwaukee, WI. Schleuniger will be at booth #1731 providing hands-on demonstrations of innovative solutions for stripping, cutting, sealing, crimping and marking of all types of wire and cable.

As part of their exhibition, Schleuniger will debut the S.WOP Software for Wire Optimized Production. S.WOP software manages the planning and moni-





toring of all wire processing machines in your factory. S.WOP extracts data from your order management system, optimizes orders according to the most efficient production workflow and assigns them to individual machines. By controlling and monitoring your entire wire processing operation over your local network with S.WOP, productivity and quality are greatly increased. Administrative work, WIP, inventory, lead times and overall costs are also reduced.

Additional products Schleuniger will demonstrate include several machines from their line of benchtop stripping equipment, along with the CrimpCenter 36 S, CrimpCenter 64, PowerStrip 9550, EcoStrip 9300, EcoCut 3300 and the new MegaStrip 9650 among others.

In addition to exhibiting at the trade show, Schleuniger's North American Key Account and Crimping Product Manager, Gustavo Garcia-Cota will also present an educational seminar on the benefits of networking your wire processing equipment through the use of software. The presentation, "Optimizing your Wire Processing Operation," will be held on Thursday, May 15, 2014 and is open to all conference attendees. Designed to educate attendees on the various factors that influence production output, efficiency and quality in wire processing operations, the presentation will cover production scheduling, tracking, optimization, crimp tooling management, quality control and Overall-Equipment-Effectiveness (OEE) calculation.

More information can be found at www.schleuniger-na.com/wpte. Should you have any questions, e-mail sales@schleuniger.com or call (603) 668-8117.

The Schleuniger Group in Thun is a globally active technology company and a leading supplier in the Wire Processing industry.



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#### **NEWS PLUGS** continued



Continued from page 47

ings are highly legible, have no drying time and are both wipe- and scratch-proof (per DIN EN 60068). A value-driven device, smartPRINTER does not require costly support plates for different marking materials — print directly from tag- or label-style reels. Whether used for wire marking or terminal block marking, the versatile printer will simplify your marking

needs, saving time and money.

WAGO is a leader in spring pressure connection technology that eliminates loose wires resulting from vibration and temperature cycling, while providing highly reliable, corrosion-resistant and maintenance-free connections. For additional information, visit www.wago.us. Contact WAGO at 1-800-DIN-RAIL or info.us@wago.com.

#### Introducing Nordson ASYMTEK'S New Quantum System

Nordson ASYMTEK, a Nordson company, a leader in dispensing, jetting, and



Quantum™ Q-6800 Dispensing System

coating equipment and technologies, introduces the Quantum™ Q-6800 high-performance, large-format dispensing system for SMT, PCB packaging, and micro-

electronics assembly applications. Quantum's dispense area of 423 x 458 mm handles a wide range of substrate sizes and is large enough so the dispense area isn't compromised even with dual valve configurations, enabling flexibility in the dispensing process. The patent-pending Continuous Path software feature optimizes dispense-head motion to save time and increase units per hour (UPH) for jetted line applications, while Nordson ASYMTEK's advanced, patented process controls ensure accurate and reliable dispensing results that meet the technology and manufacturing needs of demanding SMT and electronics assembly operations. The optional dual-action or dual-simultaneous valve configurations maximize highthroughput applications and can reduce dispensing time by up to 50%. Manufacturers can dramatically increase yield and

throughput.

"Nordson ASYMTEK has taken its large-format dispensing platform and added to it the features, options, and closed-loop process controls that are found on its smaller, precision-dispensing system platforms," explained Brian Chung, Nordson ASYMTEK product manager. "The Quantum system gives manufacturers a stable, robust, time-tested platform to use for large substrates or parts and a versatile and flexible system that can be configured in numerous ways to increase speed and throughput for microelectronics assembly operations."

Features and benefits of the Quantum Series system include:

- Dispenses precise volumes of fluid in dots, lines and patterns
- Continuous Path Motion jetted line dispensing for improved UPH
- Laser Height Sensor for real-time, fast, noncontact dispense height measurement
- Digital Vision System that incorporates highbrightness, three-color RGB LEDs for superior image contrast and detection
- Patented Calibrated Process Jetting (CPJ™) software that automatically compensates for changes in fluid viscosity, ensuring precise volumetric repeatability and optimized line speed for closed-loop fluid dispensing reliability, and
- Patented Mass Flow Calibration (MFC) that uses weight-controlled dispensing and automatic calibration to continuously deliver consistent fluid amounts, especially for valve and pump dispensing.



### **Wardwell Harness Braiding Machine**



The Wardwell Harness Braider is the ideal machine for over braiding on harnesses. It works equally well with wire materials or with textile and synthetic threads. The improvements to this type of standard machine include: a motor driven capstan take-up for accurate coverage of the harness, a new tubular frame, a self lubricating horn gear, a new operator station and sound reduction, among many others.

#### Technical Features

- · Carriers for both textile and wire
- Infinitely variable motorized take-off system (18" capstan)
- Variable speed drive with foot potentiometer
- Self lubrication horn gears

#### Remote Operator Station equipped with

- Siemens OP3 Display with alphanumeric fault annunciation for pitch set and fault messaging.
- ◆ Start, stop, jog and Emergency Stop
- ◆ Optional Speed potentiometer
- ◆ Articulated Arm
- ◆ Empty bobbin and material break detection

Original!!!

Stolberger Inc. DBA Wardwell Braiding Co.

1211 High Street, Central Falls, RI 02863

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The Quantum platform supports most Nordson ASYMTEK jets, pumps, and valves, including the DispenseJet® DJ-9500 and NexJet® NJ-7 jet valves. From initial process development through full-scale production you are supported by Nordson ASYMTEK's experienced world-wide engineering, applications development, and technical service network.

Demonstrations of the Quantum Q-6800 series can be seen at IPC APEX 2014, Las Vegas, NV from March 25-27 at booth #1937. For more information or to see a demonstration contact Brian Chung at info@nordsonasymtek.com or watch the video of the Quantum in action on our website at www.nordsonasymtek.com/ quantum.

#### Cicoil Introduces New High Temperature FireWire Cable and Assemblies

Cicoil, a leading manufacturer of High Performance Flexx-Sil™ Flat Cables and Assemblies, is pleased to announce the introduction of its ultra-flexible FireWire Cable. Unlike typical FireWire cables, the Cicoil cable has been designed for high flexibility, mechanical stress, temperature extremes (-65 °C to +165 °C) and harsh environments. And the flat cable construction guarantees clear, high speed data transmission, even in the toughest of environments.

Cicoil's patented extrusion process allows 2 individually shielded 28 AWG 100 Ohm pairs and 2 shielded 22 AWG power wires to be placed in a flat profile, precisely controlling the spacing of each component, insulation thickness and the overall cable shape. The compact, Flexx-Sil™ encased cable solution is engineered to provide weight & space savings, consistent electrical characteristics, premium current carrying capacity, reduced skewing effects and EMI/RFI suppression.

Cicoil's tear resistant Flexx-Sil™ jacket is selfhealing from small punctures and will not wear, crack or deform due to long term exposure to vibration, water, ice, weld spark, steam, humidity, ozone, UV light, autoclave and many chemicals. The halogen-free & flame retardant flat design is an excellent alternative to bulky round cables in tight routing, continuous motion and mission critical applications.

Standard "off the shelf" FireWire cables are available for immediate delivery and cable assemblies, complete with connectors are offered in 3 foot, 6 foot and 12 foot lengths. Custom designs are also available with minimum lead times. In addition, Cicoil offers anti-friction coatings, impact resistant Super Tuff™ jacketing and custom shape designs by request.

Cicoil's Flexx-Sil™ Jacketed Cables are UL & CSA Recognized, CE Conforming, RoHS & REACH Compliant, Class 1 Clean Room Rated and are manufactured in an automated, climate controlled environment.

Cicoil has been a leader in designing and manufacturing high performance cable assemblies for over fifty years. The company's Patented Flexx-Sil™ Flat Cable Technology provides high flexibility, extremely long life, and they can withstand temperature extremes from -65 degrees to +260 degrees Celsius. Cicoil's flat cables are used in thousands of demanding applications; including aircraft

fuel control cells, semiconductor automation, and the Space Shuttle. Cicoil designs and manufactures its Flexx-Sil™ jacketed cables and cable assemblies in an automated facility in Valencia, California. Cicoil's quality assurance system is certified to the ISO 9001 (AS9100) standard. Visit www.cicoil.com for more information, or call 661-295-1295 to speak to an application engineer.

#### Molded Nylon Special Standard Round Spacers

Micro Plastics' announces a new product line of "Special Standard Round Spacers". The new line of molded nylon round spacers include over 250 sizes, with diameters of 1/8" through 1 ½" and lengths from 1/8" to 2 ¾". These tough resilient spacers can be used in a variety of assemblies. Useful in electronic and electrical applications, they may also be used as



**Special Standard Round Spacers** 

bushings, bearings, rollers, gliders and bumpers.

Micro Plastics' nylon round spacers are resistant to vibration, abrasion and corrosion. They are electrically insulating and have a high strength-to-weight ratio.

Priced relatively low, these spacers can be shipped from an inventory of over

Continued on page 52



The all-new WT3-200 wire terminal tester is an integrated solution for measuring wire and tube termination pull force. An ergonomic lever easily produces up to 200 lbF (1,000 N) of force for wire diameters up to 0.25 in (6.3 mm). The WT3-200 includes a long list of features and functions, such as data outputs via USB, RS-232, and Mitutoyo, on-board data storage for 1,000 readings with statistical calculations, password protection, and more. It can be operated on a rechargeable battery power, or AC. All at a competitive price of just \$2,195.

Find out more at www.mark-10.com or call us at 888-MARK-TEN.





#### **NEWS PLUGS** continued



Continued from page 47 \_

1,500 standard sizes stocked in depth. Custom sizes can be tooled on request.

Micro Plastics' manufactures millions upon millions of fasteners daily. They offer over 20,000 items and maintain an inventory of over 250 million parts.

See their full line catalog #39 for a complete list of nylon fasteners that are available. FREE samples are available upon request. Contents include: standard and

metric machine screws, cap screws, nuts, washers, spacers, insulators, grommets, bushings, rivets, hole plugs, clamps, printed circuit board accessories, suspended ceiling hooks, wire routing kits and many other hardware items.

For a copy of their new full line catalog #39 contact Micro Plastics', PO Box 149, Flippin, Arkansas 72634. Visit www.microplastics.com.

#### New additions to Push-In Terminal Block Line

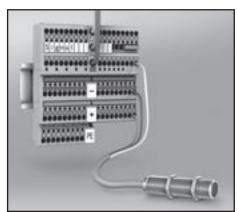
Phoenix Contact has expanded its line of push-in technology (PT) terminal blocks to include a smaller version of the popular

STIO 2.5 series. The PTIO 1.5/S series is only 3.5 mm wide with a new top-level location for the power wiring. The blocks offer the market's highest density power distribution for field sensors and actuators.

The compact double-level terminals are available in three-wire and four-wire versions. The upper level is for signal feed-through and is available with or without an LED. Continuous bridge shafts allow a quick and simple potential distribution of power using push-in bridges.

The PT terminal blocks allow easy and fast termination of ferruled wire by simply pushing the wire for a complete termination. Stranded wire is terminated by pushing the orange actuator, opening the spring for the insertion of the wire. All new versions are compatible with the Clipline Complete system of bridging, marking and test accessories.

The PT 1.5/S series features up to 50



PTIO 1.5/S Terminal Bocks

percent reduction push-in force compared to other push-in type terminal blocks and allows for up to 35 percent faster termination than standard spring cage due to the short push button activation stroke. It is five times the IEC requirement for retention force and is the most compact solution available.

Phoenix Contact develops and manu-

factures industrial electrical and electronic technology products that power, protect, connect and automate systems and equipment for a wide range of industries. Phoenix Contact GmbH & Co. KG, Blomberg, Germany, operates 50 international subsidiaries, including Phoenix Contact USA in Middletown, Pa.

For more information about Phoenix Contact or its products, visit http://www.phoenixcontact.com.

#### New Littelfuse Terra Power Systems Battery Disconnect Switches

Waytek introduces new Master Disconnect Switches from Littelfuse Terra Power Systems to help increase the life of your batteries in trucks, emergency vehicles, off-road and industrial mobile equipment.

Waytek carries a new line of Littelfuse Terra Power Systems Battery Disconnect Switches to cut-off electrical power, protect against electrical fires and theft when equipment is not in use, provide reliable shutdown of power during maintenance and protect batteries from excessive drain. New master disconnect switches isolate high current DC circuits from battery sources and are capable of carrying 300 amp continuous current. Ignition protected to SAE J1171 and ISO 8846 for operation in hazardous atmospheric environments in battery box or on vehicles carrying hazardous loads.

Waytek offers three case design options in surface mount, panel mount or floor padding trim mount. Many features on the master disconnect switches were designed for harsh environments, including tin-plated



VISIT HEILIND IN BOOTH #1746 VISIT APPLITEK BOOTH #1835



COMPREHENSIVE RANGE OF 2 MM IDC CABLE-TO-BOARD INTERCONNECT SOLUTIONS

**て**┊∖╵

The 3M™ Ribbon Cable Socket, 158 Series and the Shrouded Header, 159 Series provide customers with a reinvigorated interconnect offering

The 3M Ribbon Cable Socket, 158 Series and its mate, the 3M Shrouded Header, 159 Series, deliver a comprehensive set of features that provide manufacturers and cable harness builders numerous options in designing a variety of electronic systems. The 158 series socket and the 159 series header products are the first in a series of solutions to reinvigorate IDC technology, and provide the industry with a solid, comprehensive line of robust, sub .100" pitch cable-to-board solutions not offered in the market today.

The Ribbon Cable Socket, 158 Series provides a reliable cable-to-board interface in multiple product configurations to make it applicable to many general-purpose electronics applications:

- · Available adhesive cover for discrete wire capability and secure termination
- Available friction latch system for increased retention force when used with the Shrouded Board Mount Headers, 159 Series
- Available in 3M's unique "sword package," which helps to streamline the termination process, can reduce unnecessary process steps and can also improve termination cycle time
- 30µ" and 15µ" gold contact interface versions

The Shrouded Board Mount Header, 159 Series provides a reliable cable-to-board interface in multiple configurations for design flexibility and offers several different product options:

- · Very small PCB footprint helps conserve valuable board real estate
- Friction latching system for increased socket holding force when used with the 3M Ribbon Cable Socket 158 Series
- Available in straight and right angle thru-hole, and straight surface-mount configurations
- 30µ" and 15µ" gold contact interface versions





866-887-2189





### **Crimping Applicators**

Applitek and all of it's employees are proud of the fact that we are one of the oldest independent applicator manufacturers in the United States. Our Company was founded on designing and manufacturing quality products using our in-house capabilities. To this day the tradition continues and we are prouder than ever to say "Still made in the USA"

Mini style applicators with mechanical feed mechanisms are supplied in a variety of feed configurations. Adaptable to most crimping presses.

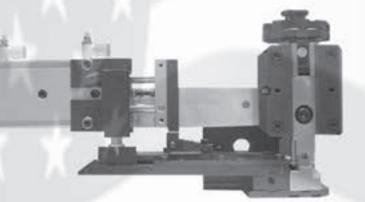




Model 1700

Model 2000

Pneumatic feed mini-style applicators can accommodate terminals with center to center distances up to 2 inches.

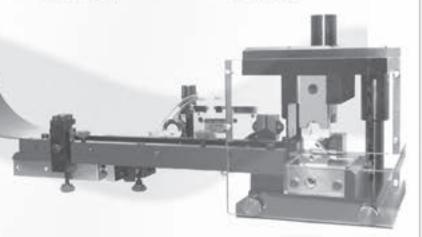




Model 1500

Model 2100

DSA applicators are designed for large terminals manufactured from heavy gage material with center to center distances up to 3 inches and widths to 3.5 inches. Available in left to right, right to left and rear feed configurations.

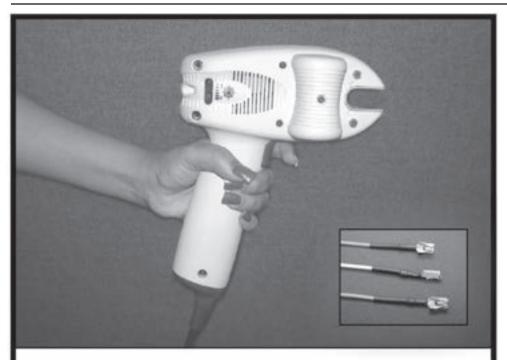


DSA Series

Applitek has a solution for all your termination requirements. That's why many major wire harnessing companies and Original Equipment Manufacturers use and specify Applitek applicators. Our base applicator frame designs have proven themselves over the years with their reliability and have been able to accommodate over 3000 different types of terminals.

Give us a call at (401) 467-0007. Our business is applicators, not terminals, not wire, not connectors, etc., etc. It's our only business.

Visit our web site: www.applitek-usa.com



### Our Gun out-shrinks the competition 5 seconds vs. 12 seconds\*

Annhadata C' Isaach

The Focus-Lite™ FLG3™ by Judco Manufacturing, Inc., is the solution to all your heat-shrink operations. You can say goodbye to the high labor cost, excessive heat, and inefficiencies of other methods. The Focus-Lite™ reduces the time necessary to shrink most types of heat shrink tubing. It also improves the process control and overall quality of your shrink operation. The FLG3™ can be used for high volume benchtop applications and is completely portable and mobile for board mounted harnesses and tight space assemblies.

Focus-Lite™ technology uses radiant energy to shrink heat-shrink tubing in a fraction of the time of traditional methods.

Here's why it works: Dual Quartz Halogen bulbs are focused to direct all of the usable radiant energy to the cable/wire diameter covered by shrink tube. This allows for 10 times the

average energy expended by the bulbs to be delivered to the target zone. What you will see is an amazing difference in shrink time!

The Focus-Lite is equipped with an adjustable timer for repeatable shrinking, time after time. It also has a dimmer switch that controls the power for sensitive components. Visit our website at www.judco.net and see our full line of Focus-Lite products.







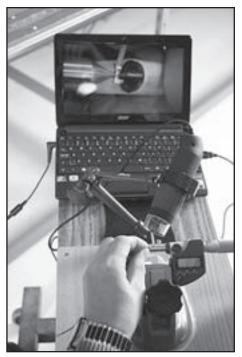
### **Data Cable Company**

Continued from page 1 \_

Besides the United States, products are shipped to such countries as Luxemburg, Switzerland, Romania and China.

Why such a strong emphasis on trust at Data Cable? The answer lies partly in how the company had to respond to a crisis in 2005 when a customer announced it would take its business overseas in a few months. That customer represented 70 percent of Data Cable's annual revenue for the previous eight years.

"We were not well-prepared when



Data Cable ensures the product you receive performs with accuracy.

the business disappeared," said Paul Nelson, 61, president. "We were a company typical of the 1990s and 2000s with a chasm between management and the production floor, an us-versus-them mentality. There was not a trust factor between the employees and management

"To deal with the crisis, we had to bring in new business and find a new manufacturing process involving the Toyota Production System," Nelson said. "At the same time we realized the need for a drastic change in our culture. Change is always a rocky-road dynamic if it is not handled properly. We were in crisis, so we were trying to move as fast as possible, but there was lots of pushback from employees mostly because we did not take time to explain things better."

Toyota Production System expert Greg Lane came to Data Cable to advise the staff. He is on the faculty of Lean Enterprise Institute in Cambridge, Mass., and the author of Made-to-Order Lean, a book about high-mix, low-volume manufacturing. He used to work for Toyota and is a certified system trainer.

"The outcome of our work with Greg was to look at the front end of our business," Nelson said. "We can build a product in 10 minutes, but it may take weeks to get the materials. So we did valuestream mapping, and it opened up opportunities with our suppliers to give us the best possible service and parts and reduce our lead times."













For complete information, visit — HakkoUSA.com/wire



Data Cable makes sure they always have correct quantities of the correct assemblies on-hand.

Adopting the Toyota lean methodology gave Nelson, Gillies and other managers insight into what had to happen to assure continued adherence to the Fearons' principles. As a result, a much heavier reliance was placed on company management listening to leaders and members of the four new teams or work cells, each of which had 4-10 people depending on customer and product

"Through lean, we saw that we should be blaming the process, not the

people," said Nelson, who has led the company since March 2001. "People on the floor knew what the process, flow and other problems were. Now, suggestions for new technology, plant layout and production come from the plant floor during weekly team leader meetings with management."

Empowerment of the production workers resulted in them becoming advisors to managers. "Team leaders tell us what they need, so we're now facilitators and enablers." Gillies said. "Staff is much more amenable to change, and some of them look forward to it."

Nelson stated he and other managers relied on the wisdom of Tom Peters in his best-selling business books about management, leadership, innovation, excellence and success. "What he found is that happy, productive, involved employees led to loyal and happy customers," Nelson said. "That is the basis for sustainable success.

"Our crisis was an excellent opportunity to change our culture because we did not have successful, happy relationships with our employees," Nelson said. "Our success over the last eight years is due to changing that. It has been an adrenaline rush to see the floor leaders be given a new responsibility and run and grow with it.

Continued on page 56



### Save up to 80% of your labor cost on heat shrink operations

The Focus-Lite™ by Judco Manufacturing, Inc., is the solution to all your heat-shrink operations. You can say goodbye to the high labor cost, excessive heat, and inefficiencies of other methods. The Focus-Lite™ reduces the time necessary to shrink most types of heat shrink tubing. It also improves the process control and overall quality of your shrink operation. The The Focus-Lite to can be used for high volume bench top applications as well as low volume prototypes and laboratory applications.

Focus-Lite™ technology uses radiant energy to shrink heat-shrink tubing in a fraction of the time of traditional methods.

Here's why it works: Dual Quartz Halogen bulbs are focused to direct all of the usable radiant energy to the cable/wire diameter covered by shrink tube. This allows for 10 times the average energy expended by the bulbs to be delivered to the target zone. What you will see is an amazing difference in shrink time!

The Focus-Lite™ is equipped with an adjustable timer for repeatable shrinking, time after time. It also has a dimmer switch that controls the power for sensitive components. Visit our website at www.judco.net and see our full line of

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#### TR201 Series

High Precision Crimping for Small and smart Wire Gauges 36-18 AWG Both twisting / tinning and crimping can be changeable with quick change (TR201SS). Lead-free and regular tinning can be handled with the tinning unit.



#### TR202 Series

High Precision Crimping For Medium and Large Wire Gauges 28-16 AWG

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### **Data Cable Company**

Continued from page 55

"It all comes back to trust," Nelson said. "Management has to trust employees to do what is right, and employees must trust management to provide what they need to do their jobs. Trust runs through the whole organization, and then customers can trust us for such things as product reliability and on-time delivery."

In addition to Nelson and Gillies, management is provided by Michelle Ballum, production; Tim Cathcart, quality and continuous improvement; Allison Wilson, accounting; Rosalee Auburger, purchasing and quotations; and Sharon Reid, customer service.

Total staff numbers 47, all on one shift. In the last six years the number has

been as high as 55 and as low as 40. Turnover is less than five percent annually. Temp workers average 3-4, with a high of 8-10 when needed for special projects. Some temp employees transition to regular full-time status after 500 hours of training and being evaluated on character, aptitude and attitude.

Thirty-seven employees are involved with production, testing, inspection and warehousing. More workers may be hired beginning in the second quarter should two prospective customers, which Nelson termed "game-changers," commit to providing substantial orders.

All staff members receive medical, life, dental and disability insurance, and those in production and related functions participate in a Sharing Success Plan. Every month 10 percent of the

company profit is put in a fund, from which annual bonuses are distributed in early December after the end of the fiscal year on Sept. 30. Each person receives up to \$1,400.

Workers also gain by submitting ideas that add value to the company and its customers. Up to 30 ideas are suggested monthly. A ticket for each idea is put in a box, and a drawing is held. The winning ticket-holder receives \$100.

"We are very compassionate and understanding with our employees," Nelson said. "We show fairness and empathy. Eighty-five percent of them are mothers with small children, so we have a high degree of flexibility. We have an inclement-weather policy, and we have summer hours so everyone can leave early on Friday afternoons."

To increase awareness of how products are used, production manager Ballum visits customers' facilities or customers' product posters are obtained. "We want our staff to know that they are not just building a product but saving lives, changing the world and contributing to the next great technological leap in the world," Nelson said. "That has had an effect on their pride, morale and ownership and relates directly to quality."

Quality is determined on internal and external bases. Among delivered items in 2013, the rate of returns, comments or complaints was .02 percent. The internal reject rate after inspecting and testing was three percent, with 75 percent of that rate due to putting the wrong wires in the wrong places.

"The cost of field failure can be so great because somebody's life or health is at stake or if the product is in Moscow, Rome or Africa," Nelson said. "It's incumbent on us to have the right processes and employee training."

Nelson and Gillies are projecting Data

Cable to be near \$10 million in annual sales by the end of 2014. They are planning for 70 percent to come from current customers and 30 percent from new customers. Profitability will be sustained, and all financing will be handled internally.

"We're going in the direction of greater value and service," Nelson said. "Everything we build plugs into something, so we want to extend our services beyond the cable or harness and into panels, boxes and electromechanical assemblies. We have the tools and technology to do so."

company has switched to a focus on inbound marketing, according to Nelson. It has been achieved largely through a Web site redesign handled by noBul Media of Orangeville. "It's been very successful through linkages that drive people to our site," he said. "We've also had a pressrelease campaign that has generated a lot of interest and contacts."

According to Gillies, one of the challenges facing Data Cable is convincing prospective customers to analyze the total value of doing business instead of looking at product price alone. Another challenge is the amount of paperwork and overhead required by governmental regulations for Reach, RoHS and Conflict Minerals.

For more information, call 519-941-7020, e-mail info@datacable.ca, fax 519-941-7130, visit www.datacable.ca or write 31 Robb Blvd., Orangeville, ON, Canada L9W 3L1.

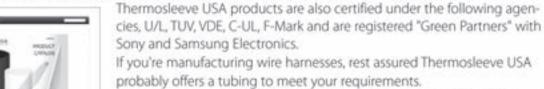


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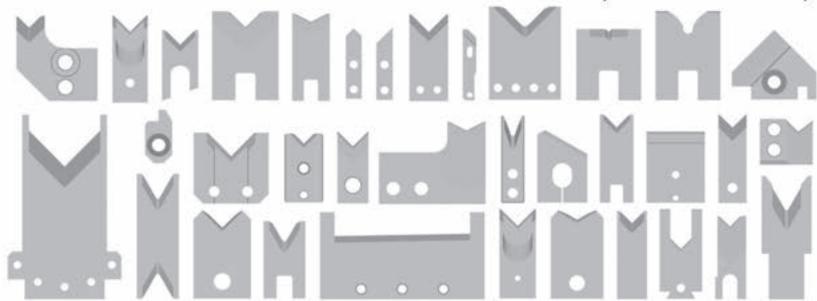
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#### **NEWS PLUGS** continued



Continued from page 52

copper studs to provide maximum conductivity, stainless steel hardware for corrosion resistance and IP67 rated housing for moisture and dust protection.

Founded in 1970, the company has seen continued expansion in the electrical supplies industry. Waytek carries large quantities of stock items and is able to ship most stock items the same day, allowing customers to carry smaller inventory, yet still have products when they need them. Browse our electrical solutions at www.waytekwire.com, or call 800-328-2724.

#### New Junction Box Meets Stringent Requirements of the Solar Industry from Amphenol

Amphenol Industrial Global Operations, a global leader in interconnect systems, now offers a new junction box in

**UL/TUV Approved Hercules II** 

the Hercules series designed to meet the stringent technical requirements of the solar industry. The UL/TUV approved Hercules II provides a smaller overall footprint of 84.9 mm x 80.9 mm x 19.5 mm with a current rating of 10 A and a rated voltage of 1,000 VDC (TUV) and 1,000 VDC (UL).

Hercules II offers design flexibility and value. Ideal for use on rigid silicon panels throughout PV applications, this enhanced junction box features a standardized exterior box geometry for automated assembly.

To ensure the long life and quality of the solar module, Hercules II features rear alignment with tape and tabs to maintain a

low breakage rate during robotic assembly.

The junction box's diodes can be paired with any PV panel's specifications for optimal electrical protection.

Hercules II sealed design offers improved heat dissipation for better temperature cycling. The new box offers either a spring clamp termination with leads that clamp to the inside of the junction box or the ability to terminate leads with solder. Hercules II allows for the use of potting compound to seal the inside of the junction box, keeping moisture out.

With an EP rating to IP67, Hercules II can be used in conjunction with Amphenol's H4 PV connectors and Amphenol's PowerLink certified PV cable. The connectors meet NEC2008/2011 standards.

For more information, please visit http://www.amphenol-industrial.com

#### TOPJOB®S Current Transformer Disconnect Terminal Blocks

WAGO Corporation's new TOPJOB®S current transformer disconnect terminal blocks simplify current transformer testing, as well as increase safety, within power monitoring applications.

Designated the 2007 Series, these CT disconnect terminal blocks feature an intuitive orange three-position (Operating, Shorting and Measuring) disconnect lever. Engaging the lever fully automatically short-circuits the transformer when using the required adjacent push-in jumper.

"This is vital, as transformers must be short-circuited on the secondary side prior to testing," said Michelle Goeman, Product Manager for WAGO Corporation. "If a low-resistance load is absent, a significant increase in voltage could occur, posing a threat to people and equipment, when troubleshooting or calibrating relays, meters, instruments, and control systems."

At just 99mm long and 8mm wide,

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Phone:(586)-468-6696 Fax:(586)-468-8422 the 2007 Series CT Disconnect Terminal Blocks reduce panel space by up to 55% and associated costs by up to 25% when compared to traditional test switch products. Its touch proof design does not require a separate cover to be installed which eases access to test plugs and meter connections. Four marking locations help ensure wiring accuracy: on the disconnect link, on top of the terminal block and on the sides. Marking is provided via WMB marker tags or a continuous marking

Available in through or ground connection versions, the 2007 Series employ CAGE CLAMP®S Spring Pressure Technology for conductor sizes 20-8 AWG. This eliminates lugs, crimps and torqueing to make all connections maintenance-free. A full complement of accessories is available; including test plugs, a lock-out plug and an optional mechanical link to gang disconnect levers together.

WAGO is the leader in spring pressure connection technology that eliminates loose wires resulting from vibration and temperature cycling, while providing highly reliable, corrosionresistant and maintenancefree connections. Products: DIN-rail, PCB and chassis mount terminal blocks; signal conditioners; the WAGO-I/O-SYSTEM and more. For additional information, visit www.wago.us . Contact WAGO at 1-800-DIN-RAIL or info.us@wago.com.

#### **NEPTUNE Series of Con**nectors from Amphenol Now listed to UL 1682

Amphenol Industrial Global Operations, a global leader in interconnect systems, announces that its NEP-TUNE connectors are now listed to UL1682. These connectors, with ratings from 30 A to 400 A at 600 V, are offered in plugs, mount receptacles and inline receptacles.

Featuring Amphenol's Starline series contact system, which allows for more amperage and voltage through a smaller connector, the enhanced NEPTUNE line of connectors are half the size and weight of other connectors in its class and feature a reduced footprint option allowing for more flexibility during system design.

NEPTUNE is designed to perform in demanding environments including land and offshore oil exploration equipment, modular power generation equipment, portable diesel and turbine generator equipment, pumps, welders, compressors, cell base stations, shipping docks, ports power distribution and petrochemical applications.

NEPTUNE's contact inserts



**Amphenol NEPTUNE Series Connectors** 

are reversible and interchangeable to accommodate each application's specific needs. Standard models are made from copper with silver plating, but are also available with optional gold plating. NEP-TUNE's aluminum hardware, which is precision machined from high-tensile strength bar stock and finished with a hard coating to 40 points on the Rockwell C scale, is both lightweight and rugged.

Amphenol's NEPTUNE series of connectors provide safe interconnections to modular power equipment in all environments. These enhanced connectors are

rated IP-68-8 and have a dielectric strength of 1,800 V.

For more information, please visit http://www.amphenol-industrial.com



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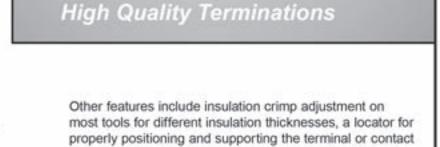
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- NEB 48-Carrier #2 Harness Braiders, 2BX Wire Carriers w/Cop Holders, 24" Capstan Wheels, Center Braid Tubes, Motors, Long Legs, Steel Base Plates
- NEB 32-Carrier #2 Harness Braider, Capstan Wheel, Spring Carriers, Center Braid Tube, Head Guard, Motor, Long Legs, Steel Base Plate
- NEB 32-Carrier #2 Harness Braider, 24" Capstan Wheel, 2BX Wire Carriers, Double Thick Track Plate, Center Braid Tube, Carrier Guard, Motor, Speed Control, Foot Pedal, Long Legs, Steel Base Plate
- SCHLEUNIGER CC12 Crimp Center, Dual Crimp Station plus Crimp Force Monitor, Manuals, spare parts, full range of Adapters, new 2000
- SCHLEUNIGER CS9100 Cut/Strip Machine with a PF2000 Prefeed
- SCHLEUNIGER CS9100 Cut/Strip Machine with a CA9170 Rotary
- Stripping attachment, 1995
- SCHLEUNIGER CS9050 Cut/Strip Machine
- SCHLEUNIGER ES9300 EcoStrip Cut/Strip, 2007
- SCHLEUNIGER EC3200 EcoCut, #34-2007
- **SCHLEUNIGER** UC3750 Cutter, for wire, tubing, round and flat cables
- 1 **SCHLEUNIGER** US2100 Stripper
- SCHLEUNIGER US2015 Stripper, for wire sizes 32-14ga; strip length .04" .78"
- 1 SCHLEUNIGER FO7045 Fiber Optic Cable Stripping Machine
- SCHLEUNIGER PF2200 Prefeed
- SCHLEUNIGER PF2000 Prefeeder
- SCHLEUNIGER PF1100 PreFeeder
- SCHLEUNIGER PF1000 PreFeeder (repairs required)
- 2 SCHLEUNIGER CP1500 Heavy Duty Coilers
- 2 **SCHLEUNIGER** Uni-A Applicators
- 2 **SCHLEUNIGER** CT32, CT42 Crimp Presses
- SCHLEUNIGER HS4500 Hot Stamper
- **SCHLEUNIGER** PT25 Pull Force Tester
- 1 KOMAX Kappa 235 Cut & Strip Machine w/MECHTRIX MPF-33-LCS Prefeed, '08
  2 KOMAX Kappa 235 Cut & Strip Machines w/Prefeeds and Conveyors, Mexico
  1 KOMAX Kappa 320 Cut & Strip Machine, 2009/10, absolutely Like New

- 1 **KOMAX/WEIDENBACH** Model IMS 291 InkJet Printer
- 1 EUBANKS 8000-01 Cut and Strip Machine w/Prefeed, Model 6880-05
- 1 EUBANKS 4000-04 Tandem Cut and Strip Machine, #890-151
- 1 EUBANKS Wire Processor, Model 9800-01
  1 EUBANKS Wire Processor, Model 4900-01
  2 EUBANKS Model 2600 Cut & Strip Machines
- 1 EUBANKS Model 02700 Cut & Strip Machine w/6215 Prefeed 1 - **EUBANKS** Model 67200-02 Wire & Tube Marking Machine
- 1 **ARTOS** CS326 Cut/Strip Machine (2010) with a PF-6 Prefeed (2011)
- 1 ARTOS Model AM.STRIP.50 Pneumatic Cable Stripper, 2008

PLUS: IDEAL Model STP Stripper, Part #45-930; RENNSTEIG Model CM-25-1 Pneumatic Crimper, 2006; CARPENTER Model 70B Strippers (3); MEGOMAT Model ASM3001-U Cut, Strip, Crimp Machine w/Crimp Force Monitor, 1996; **METRONIC** Alpha Jet C Inkjet Printer, 2006/07; MULTITECH 55T Injection Molding Machines, used 1 year; ARBURG 35T Injection Molding Machine, new



Contact: Martin Kenner

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### **Electrical Wire Processing Expo Announces Seminar Schedule**

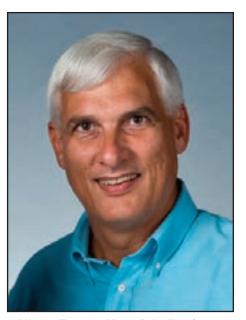
Continued from page 1 \_\_\_\_



**Rick Bromm, VP Business Development of Altex Inc** 



Dave Fleak, North American **Product Manager, TE Connectivity** 



Albert Emery, Materials Engineer, **Lockheed Martin Corp** 

12:30 pm "Use of Aluminum Wire in the Automotive Industry" -Dave Fleak, North America Product Manager,TE Connectivity



Waldamar Stabroth, Marketing **Director Technology/Innovation Terminals/Connectors for TE Connectivity** 

Waldamar Stabroth, Marketing Dir. Technology/Innovation - Terminals/ Connectors for TE Connectivity

\_Continued on page 62

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#### **NEWS PLUGS** continued



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BURNDY a leading manufacturer and provider of connector solutions to the industrial, energy, construction, telecommunication, petrochemical, data center, and transportation industries. BURNDY is pleased to introduce the GROUNDTAB. The GROUNDTAB offers a convenient attachment point for terminations of ground wires to steel structures or steel supports. They are easily welded to steel with two options available, one with 1/2" stud holes, NEMA spaced and the other with 3/8" stud holes with 1" spacing. The tabs are made of 1/4" thick A36 steel and can be used to attach 1 or 2 hole terminals.

Common applications include large generators, mobile construction site modules, housing structures or any metal structure that requires a permanent or temporary ground.

Headquartered in Manchester, New Hampshire BURNDY has over 85 years of dedicated customer support in both service and product.

Contact BURNDY at 47 E. Industrial Park Drive, Manchester, New Hampshire, 03109, Phone 1-800-346-4175 Visit website www.BURNDY.com

#### TOPJOB°S Current Transformer Disconnect Terminal Blocks

WAGO Corporation's new TOPJOB®S current transformer disconnect terminal blocks simplify current transformer testing, as well as increase safety, within power monitoring applications.

Designated the 2007 Series, these CT disconnect terminal blocks feature an intuitive orange three-position (Operating, Shorting and Measuring) disconnect lever. Engaging the lever fully automatically short-circuits the transformer when using the required adjacent push-in jumper.

"This is vital, as transformers must be short-circuited on the secondary side prior to testing," said Michelle Goeman, Product Manager for WAGO Corporation. "If a low-resistance load is absent, a significant increase in voltage could occur, posing a threat to people and equipment, when troubleshooting or calibrating relays, meters, instruments, and control systems."

At just 99mm long and 8mm wide, the 2007 Series CT Disconnect Terminal Blocks reduce panel space by up to 55% and associated costs by up to 25% when compared to traditional test switch products. Its touch proof design does not require a separate cover to be installed which eases

access to test plugs and meter connections. Four marking locations help ensure wiring accuracy: on the disconnect link, on top of the terminal block and on the sides. Marking is provided via WMB marker tags or a continuous marking strip.

Available in through or ground connection versions, the 2007 Series employ CAGE CLAMP®S Spring Pressure Technology for conductor sizes 20–8 AWG. This eliminates lugs, crimps and torqueing to make all connections maintenance-free. A full complement of accessories is available; including test plugs, a lock-out plug

and an optional mechanical link to gang disconnect levers together.

WAGO is the leader in spring pressure connection technology that eliminates loose wires resulting from vibration and temperature cycling, while providing highly reliable, corrosion-resistant and maintenance-free connections. Products: DIN-rail, PCB and chassis mount terminal blocks; signal conditioners; the WAGO-I/O-SYSTEM and more. For additional information, visit www.wago.us . Contact WAGO at 1-800-DIN-RAIL or info.us@wago.com .



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- Hand tools combine ease of use with reliability and precision.
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### **Electrical Wire Processing Expo Announces Seminar Schedule**

Continued from page 60

#### THURSDAY MAY 15

8:30 am "*Printing and Marking Innovations: Roundtable*" - Todd Fries, Marketing Manager Identification Systems, HellermannTyton

Barbara Susmilch, General Manager Partex Marking Systems USA

10:30 am "Optimizing Your Wire Processing Operation" - Gustavo Garcia-Cota, NA Key Account & Crimping Manager, Schleuniger Inc



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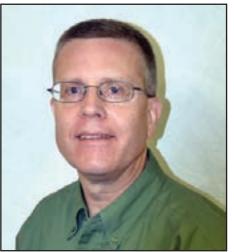
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Todd Fries, Marketing Manager HellermannTyton



Gustavo Garcia-Cota, NA Key Account and Crimping Manager, Schleuniger



Erich Moeri, Engineer Application Director, Komax USA



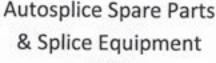
Barb Susmilch, General Manager, Partex Marking Systems USA

12:30 pm "Crimping Quality and Maximizing Productivity" - Erich Moeri, Engineer Application Director, Komax USA

Attendees of the Expo will have the opportunity to meet more than 165 world-class suppliers and service companies in the wire and cable processing industry as well as network with their peers and discover best practice applications to solve wire-processing problems.

Registration for the 14th annual Electrical Wire Processing Technology Expowill be \$15.00 at the door and good for both days of the show. Admission is free if you register before April 23, 2014 on the website www. Electrical Wire Show. com.

Your show badge allows you to attend three trade shows in addition to the Electrical Wire Processing Technology Expo. Once again, the Electrical Manufacturing & Coil Winding Expo 2014 will co-locate with our Expo. And new this year, see the Internet of Things North America trade show and Motion Control 2014 conference and expo.



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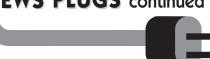
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SERIES

#### **NEWS PLUGS** continued



### WAGO Corporation Announces Addition of Mark Joseph as Regional Sales Manager for New England

Joseph joins WAGO after an established career in industrial distribution/sales, industrial maintenance, reliability engineering and plant operations.

Joseph studied nuclear engineering at the Naval Nuclear Power School in Orlando, Fla. as well as East Asian studies through the University of Maryland where he studied abroad in Japan. Prior to joining WAGO, Joseph was an automation specialist on drives and motor controls at Horizon Solutions and Rexel Incorporated. He began his career working on submarines in the U.S. Navy and transitioned to industrial maintenance 13 years later.

"Mark brings more than ten years of



Mark Joseph, WAGO Corporation Regional Sales Manager

experience in industrial distribution and sales," said Toby Thomann, VP Sales. "This combined with a strong commitment in developing long-term relationships will make Mark an excellent addition to the WAGO team."

WAGO is a leader in spring pressure connection technology that eliminates loose wires resulting from vibration and temperature cycling, while providing highly reliable, corrosion-resistant and maintenance-free connections. Products: DIN-rail, PCB and chassis mount terminal blocks; signal conditioners; the WAGO-I/O-SYSTEM and more.

For additional information, visit www.wago.us . Contact WAGO at 1-800-DIN-RAIL or info.us@wago.com.

#### Nelco Products, Inc. Expands Offering Of Heat Shrinkable Tubing

Nelco Products, Inc. (http://www.nel-coproducts.com), a manufacturer and distributor of cable ties, wire ties, heat shrink tubing, wire connectors, cable tie mounts, HVAC supply products and related wiring accessories worldwide, has announced that the company has expanded its selection of heat shrinkable tubing with the launch of food grade heat shrinkable tubing.

Specifically engineered to be used in applications involving contact with food, water, beverages and non-toxic materials, this unique form of shrinkable tubing is specifically for those building beer-brewing or sous-vide projects using Nelco Products' waterproof DS18B20+ digital temperature sensors.

This heat shrinkable tubing is FDA compliant for contact with food and is flexible, non-toxic and resistant to ultraviolet light, moisture, fungus and a wide variety of chemicals and oils.

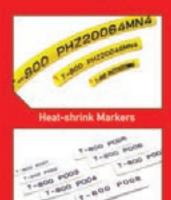
Food grade heat shrinkable tubing is extremely environmentally friendly, as it breaks down to carbon dioxide and water when properly incinerated. Additionally, this tubing meets USP Class IV requirements.

For more information and to view Nelco Products' food grade heat shrinkable tubing, visit http://bit.ly/ 12GkX7P, or call toll-free at (800) 505-6352.

Additionally, to view Nelco Products new product video, visit http://www.youtube.com/watch?v=TOV\_luveU7Q.

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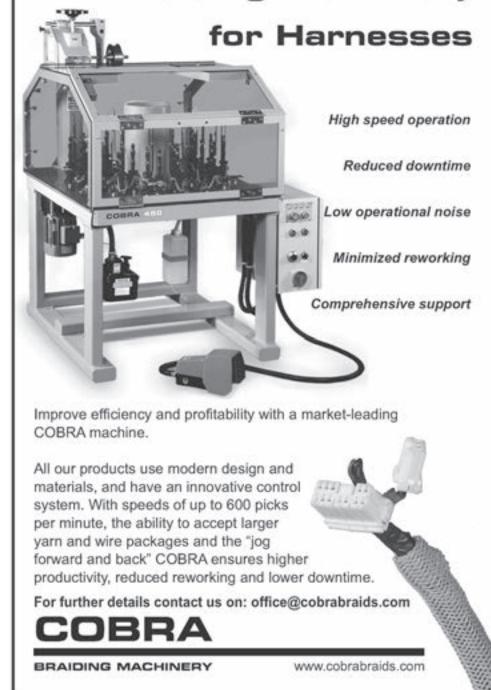
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- Get an update on the line-up of copper vs. aluminium to assess alternative chemical solutions for capable and safe cables
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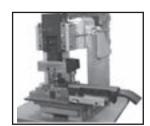


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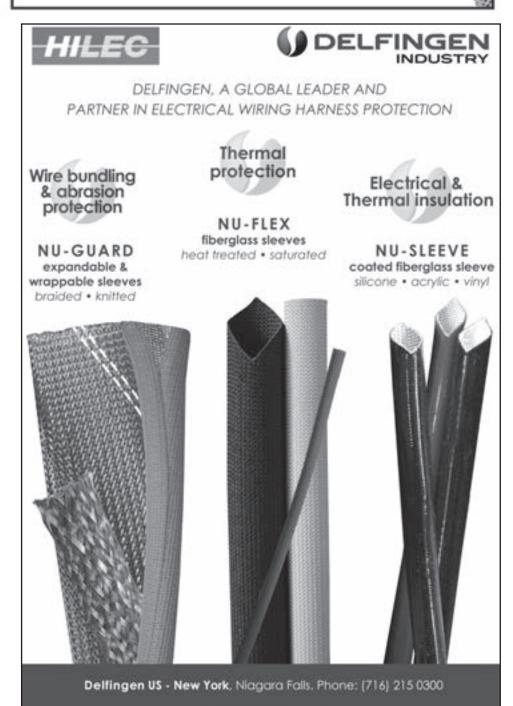




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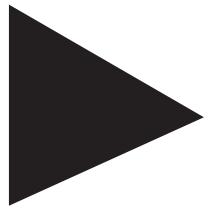
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- Understand how to tackle the challenges of harness topology, design and materials for HV cables of future car models
- Discover new ways of calculating your power supply system to ensure CO<sub>2</sub> reduction in the face of increased technological features
- Get an update on the line-up of copper vs. aluminium to assess alternative chemical solutions for capable and safe cables
- Gain insight into the next steps toward first generation of Ethernet to plan your security and infotainment applications

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American Hakko54	E Recycling Systems LLC22	Multi/Cable Corp	58
Anixter	Etco11	National Wire & Cable	8
Applitek Technologies Corp53	<i>Eubanks</i> 29	Nu-Tech, US	8
Artos Engineering Company2	FreePoint Technologies Inc25, 46	Odyssey Tool	58
Atlas Wire Corporation62	FTZ Industries3	Partex Marking Systems	64
Branson Ultrasonics Corp34	Fuses Unlimited24	Phoenix Contact	
Burndy47	<i>Grayline</i> 5	Pro-Line	14
Cablescan63	Hamilton Products, Inc32	Rennsteig	60
CAMI Research, Inc12, 34	Heilind Electronics31, 41, 43, 52, 59, 61	Schaefer Megomat USA Inc	27
Carpenter Mfg. Co., Inc19	HellermannTyton21	Schaefer Technologies LLC	4
Cirris Systems Corp33	Industrial Wire and Cable Corp32	Schiffer Corp	62
Chief Supply Inc16	INSCO6	Schleuniger Inc	36-37
Cobra Braiding65	Intro10	Sentry Air Systems, Inc	25
Cobra Products16	Judco Manufacturing Inc54-55	ShinMaywa	55
Commission Brokers Inc60	JWB Manufacturing, LLC28	Sonobond Ultrasonics	13
Compaero30	Kawa Machine Tools SDN BHD22	Spring Mills Manufacturing	18, 60
Composite & Wire Machinery, Inc3, 15	Kingsley Machines24	Stapla	38
CrimpTronix24	Komax Wire9	Strunk Connect	14
Curti Wire Processing46	Lakes Precision Inc5	Summit Aerospace Supply Inc	7
Daniels Manufacturing Corp49	Lapp Tannebill28	TechLace	48
Delfingen Industry65	Lavanture Products Company39	TE Connectivity	7, 71
Diamond Die & Mold Co65	Lone Star Industrial44	Telsonic Solutions	40
DSG Canusa19, 48	LTL Tooling & Assembly42	Thermosleeve USA	56
Dynalab Test Systems	Mark-1051	TLC Electronics	40
East Penn Manufacturing Co, Inc62	Master Appliance Corp48	Wago	45
ECC30	Mecalbi22	Wardwell Braiding Co	50
<i>EIC Wipers31</i>	Mecal by Starn44	Waytek, Inc	10
Electrical Products Sales Corp20	Mechtrix Corporation57	White Products Division	13
Electrical Wire Processing Tech Expo68-69	Mello Company Inc., The3	Wire Systems	20
Electronic Connector Corp20, 32	Micro Plastics26		

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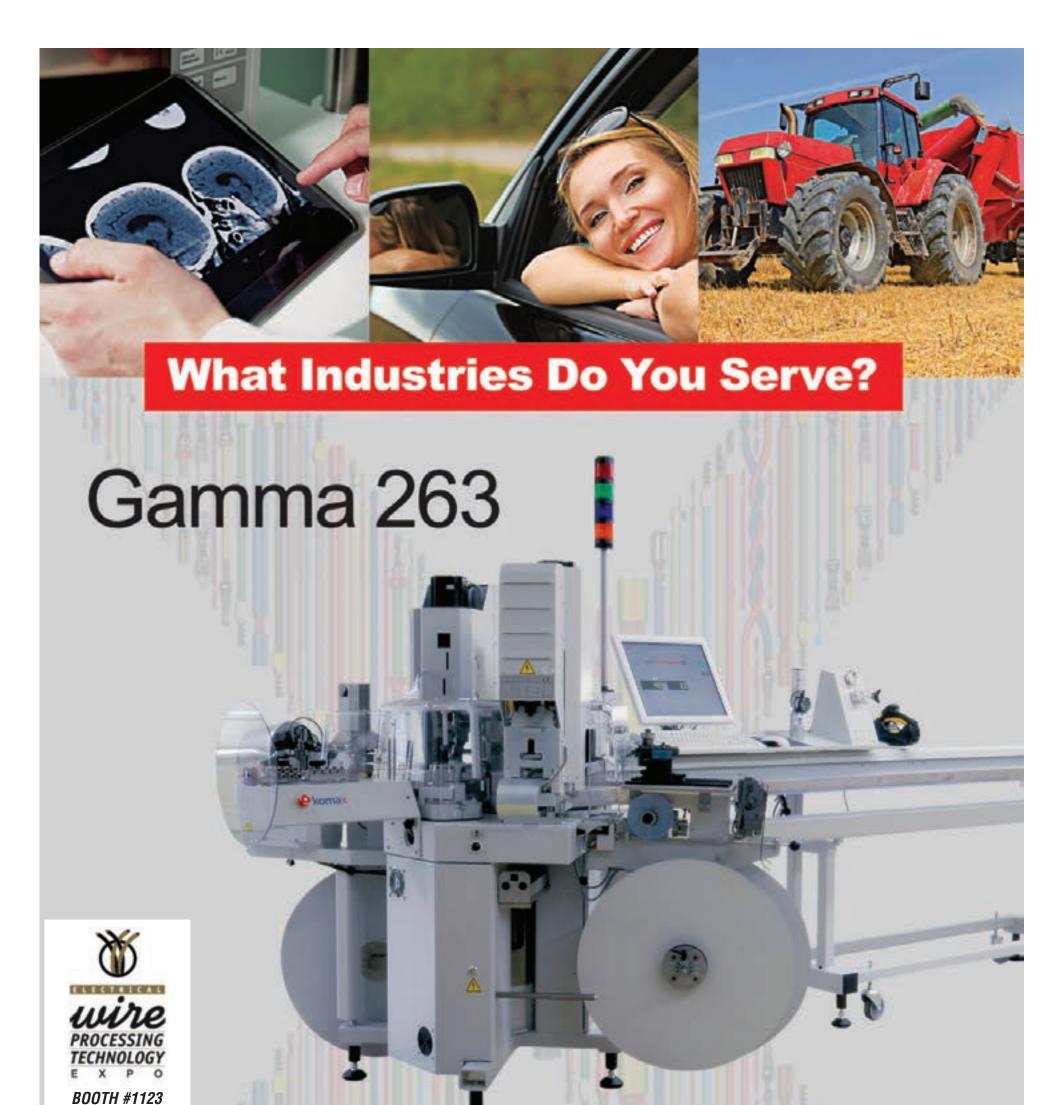


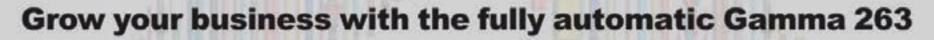
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