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- TUE Wire Wisdom - Flexibility in Hazardous Locations
 - Exit Scenarios for Owners of Wire Harness Manufacturers
- Impact of On-Shoring in North America Electronics Industry



J&C Company

Customer Care and Support Is Key to What They Do

By Fred Noer Wiring Harness News

s a concept, customer service is simply making sure all of a customer's expectations and needs are met. Putting it into practice often may be difficult, particularly in the wiring harness industry, due to the possibilities of obstacles arising frequently and unexpectedly.

At J&C Company in Lincoln, Neb., providing excellent customer service is accentuated so emphatically that president Jim Becker regards it as a major element distinguishing his company. "Customer care and support is very key to what we do," he said."It makes us unique and has become one of our market strengths."Keeping in constant contact with our customers is important to us," Becker said. "Then when we run into snags, when parts are not coming in, for example, nobody is surprised."

Though small as a business, keeping J&C Company large in the minds of its

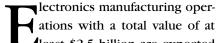
customers and what it provides for them has been emphasized by Becker, 64, and his wife Cathy, 55, since they started it in October 1993. Harnesses are 95 percent of the firm's business, but it also includes assembling and testing printed circuit boards and cutting wire, loom, PVC and heat-shrink tubing.

J&C is poised to have sales of approximately \$1.45 million this year, outdoing the firm's best of \$1.21 million last year. Annual growth in 2010 and 2011 was 25 percent, the same goal this year.

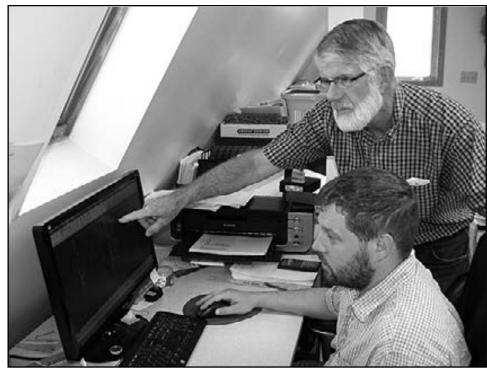
"We're managing our business smarter," Becker said about rebounding from what he called "bad years" when sales dropped into the \$800,000 range. Many of the improved management techniques have been learned the last several years by working with business coaches, most recently one from Action Coach, a company that has 1,000-plus offices in more than 43 countries and coaches more than 15,000 businesses weekly.

"Having a business coach has been a great benefit to us," Becker said. "I'm an

IPC Study Predicts Impact of On-Shoring in NA Electronics Industry



companies with global revenues totaling more than \$935.3 billion, the study indicates that on-shoring — actions by North American manufacturers to return overseas operations to North America or to build new operations in the region has been occurring and will continue. Survey results showed that original equipment manufacturers (OEMs) were



Jim Becker President/Director of Engineering and Andy Harris reviewing documentation drawings done by Andy.

engineer, not a businessperson, and Cathy's strengths are in accounting, purchasing and production and operations management. We recognized that we lacked the proficiency of running a profitable business and that we were stagnant. You've got to grow or die.

"If we had not been coached before things got tough five years ago, we would not have survived," Becker said.

"We are doing a lot of different things to make us more viable as a business.We're more efficient, we make sure the quality is there, we improve our turn time, and we keep our customers happy."

Although everyone at the company is indirectly involved with customer service, much of the direct interaction with

Continued on page 24

Waste Stream Management

By Joe Tito Wiring Harness News

-n the July/August issue, I highlighted various environmental standards as a framework for developing sound recycling policies for manufacturers. This article is intended to provide some tactical information for managing and monitoring waste streams, and solve some common manufacturing waste headaches. In doing so, I will be introducing readers to a somewhat new business model for waste stream management. My initial query into this subject led me to a dialog with Sam Yankelevitch of Electric Corporation, in Prettl Greenville, South Carolina. Sam mentioned that a key driver to their ISO 14001 environmental efforts was through the use of an outside firm who managed their entire waste streams, and wrote Prettl Electric a check at the end of the month. He put me in touch with Joel Powell, VP of Sales and Marketing for InStream Environmental, who provides this service for Prettl.

recycling and disposal processes, to provide them with a streamlined regiment, and a maximized revenue stream. "We try to avoid using the term trash or scrap and get clients focused on the increasing opportunity for investment recovery," Joel outlined.

The audit is fairly straight forward, he described."We start by going in and seeing everything that's going out the back door [to a landfill], what's being recycled, or could potentially be recycled," said Joel. He described how all hazardous and non-hazardous manufacturing by-products are tracked to ensure not only top dollar recovery, but also compliance with all federal, state, and local laws. They also confirm strict adherence to all safety protocols in the handling of these materials. Upon completion to this free analysis, Joel added, "We provide what we call a MaxRA, or Maximized Recovery Analysis.And that could be up to a 15-20 page detailed listing of our observations, recommendations, and proposals." Upon acceptance of the proposal, Joel stated, InStream "becomes an extension of the staff in showing them ways to improve their efficiency by the processes, the segregation, the equipment, safe handling, and even educating folks on the marketability of the by-products."

least \$2.5 billion are expected to be brought to North America in the next three years, according to a muchanticipated new study, On-Shoring in the Electronics Industry: Trends and Outlook for North America, published by IPC - Association Connecting Electronics Industries[®].

Based on a May 2012 survey of 229

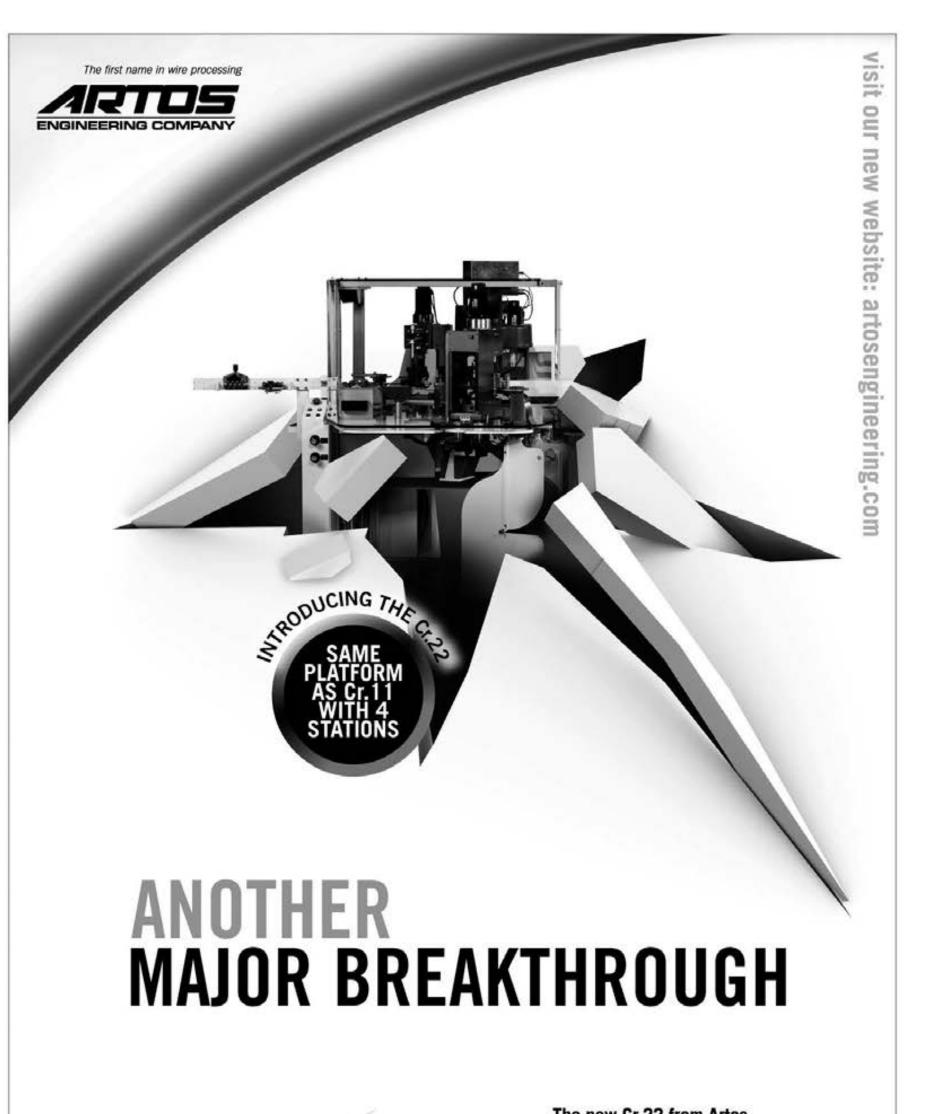
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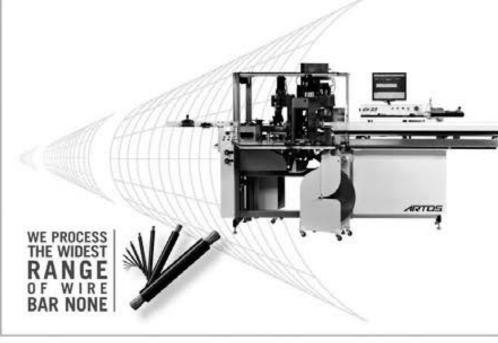
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Continued on page 53

InStream operates throughout North America, and takes a comprehensive approach to managing their clients' waste or manufacturing by-products. They audit a potential client's current

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Are you ready?

or years, the manufacturing member companies of the WHMA have watched as customers outsourced work to lower-cost countries such as China. This migration is evidenced by Bishop and Associates who showed China almost passing North America in sales of cable assemblies and wiring harnesses in 2011: \$25.4 billion to \$26.0 billion. Looking at it another way, North America reported sales of \$26.8 billion in 2008 and came back to almost 2008 levels in 2011. China, however, grew from \$17.3 billion in 2008 to \$25.8 billion in 2011.

While this may seem like North America is about to be overtaken by China, recently we've seen some very encouraging news about a trend I mentioned in the last issue - on-shoring. On-shoring is exactly that; companies moving production back to North America that they had previously shipped overseas.

There are myriad reasons for this trend. Many are financial and have to do with rising costs in China and the weaker U.S. dollar but for some, it has more to do with a desire to get their manufacturing closer to their end customer. Whatever the reasons, lately we have seen announcements from industry titans such as NCR Corp and G.E. Appliances deciding to move manufacturing of at least some of their products back to North America.

So back to my original question," Are you ready?"

As these and other customers make the decision to move manufacturing, they do so understanding that their labor costs are likely to increase and so they look for other ways to reduce total costs. Lean manufacturing and its drive to reduce waste is a great example of this and so my question again is: "Are you ready?" Is your company continuing to hold Kaizen events on a regular basis in order to identify waste and streamline operations or did this necessary activity get pushed aside during the downturn?

Is your supply-chain ready? Are you constantly reevaluating how and where you source products or has it been



Mark Wood WHMA Chairman of the Board

at it? Are there new suppliers offering products and supply-chain services that you aren't aware of? Are there new products and services available from your existing supply base that weren't available even a year ago?

How about human resources? I had the pleasure of working for many years for Roy Vallee who recently stepped down as CEO of Avnet, Inc. As we acquired companies around the world, Roy would often ask, "Do we have 'A' players in 'A' positions?" So, I ask you the same question, "Do you have 'A' players in all of your key positions?" If you don't, are there people in your organization that are currently 'B' players but could become 'A' players? If so, are you investing in the training and education necessary to help get them there or was training cut during the downturn?

How about your administration? Is it lean?

Finally and perhaps most importantly, what's new with your current or former customer base? When some of them moved production off-shore, did you delete them from your Rolodex or do you still communicate with them? If not, maybe it's time to reengage to learn about their future plans.

At the WHMA, we are busily preparing for our Annual Conference, which will be held at the Renaissance Hotel in Las Vegas, February 20-22, 2013. While the final agenda is not yet ready, I can tell you that the committee putting together the meeting is extremely focused on providing our members with information and resources that will allow them to answer the question of, 'Are you ready?", with a resounding, "YES!"

Block the dates and make sure that



J&C Company

J&C is poised to have sales of approximately \$1.45 million this year, outdoing the firm's best of \$1.21 million last year.



Joe Tito provides us with some tactical information for managing and monitoring waste streams, and solving some common manufacturing waste headaches.

Impact of **On-Shoring in NA Electronics Industry**

A new study by IPC - Association Connecting Electronics Industries "On-Shoring in the Electronics Industry: Trends and Outlook for North America"

In Search of Inspiration

A vacation is often a time best spent as a quest for inspiration.



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Loren Smith of Blue Valley Capital IIc, will be writing a regular column for WHN. Loren will share his observations based on his industry experience, providing readers with pratical and useful information.

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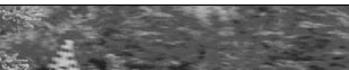
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In Search of Inspiration



Paul and his wife exploring Canada's east coast.

by Paul Hogendoorn

the summer holidays are over and things are kicking back into gear. Hopefully you had some time to take a bit of a break and recharge your batteries. Vacation and recreation are very important ingredients to your success - they are the times you reflect on your past efforts, and engage your imagination for future success; they are the times you spend reviewing, and hopefully renewing your motivation for doing what you are doing. A vacation is often a time best spent as a quest for inspiration.

This past summer, I rode my motorcycle out to Canada's east coast, exploring three of the Atlantic Provinces. I picked up my wife up in Moncton, (opting to fly her there to save her the drudgery of 4 days of boring super highway travel), and from there we toured the beautiful coast line, lapping up the scenery, and absorbing the honest, gentle and

<u>Continued on page 6</u>



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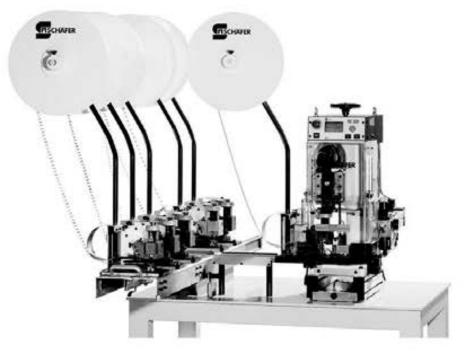












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In Search of Inspiration

Continued on page 4

resolved attitude of the place. The slow pace, the ever changing scenery, the friendly people, and especially the history, all seemed to conspire to inspire me. And it did.

On one foggy day, we went inland a bit and visited the Alexander Graham Bell museum. I had always been familiar with his major inventions and ground breaking work (the phone, hydrofoils and aeronautics), but wasn't at all familiar with his personal story, his motivation, or his inclusion of others in his work and his desire to help them, and others, succeed. In 1907, Bell set up the Aerial Experimentation Association, in his words as a "co-operative scientific association, not for gain but for the love of the art and doing what we can to help one another." After observing the passion with which her husband had engaged in conversation with a couple young engineering graduates, Mabel suggested the formation of the association for that purpose, and then she proceeded to fund it from her own personal wealth.

The museum is filled with displays and quotes, revealing not just accomplishments, but his motivations as well. On the way out, I encountered this quote: "The Inventor... looks upon the world and is not content with things as they are. He wants to improve whatever he sees, he wants to benefit the world; he is haunted by an idea. The spirit of invention possesses him, seeking materialization." At his estate home in Cape Breton, Bell hosted Helen Keller, invited Marconi to visit, and corresponded with inventors, presidents, politicians and explorers alike. In 1888, he was one of the founders of the National Geographic Society. This man was not motivated by "what was", but by "what could be".

A couple days later we visited Charlottetown, Prince Edward Island. It was there, in the first week of September of 1864, that the critical dialogs were happening that would result in the Confederation of Canada a few years later. The story of this critical time is told throughout the city; through statues and monuments, historic buildings, and especially by character actors walking the streets in the costumes of the day, engaging the tourists by telling them 'their' side of the exciting debates going on in that city that day. This wasn't just a simple dialog though, it was a weeklong event, filled with far more than just formal meetings. The men and their wives dined together, feasting on great meals together, often dancing and drinking late into the nights. They were bonding and forming a dream together, gaining understanding and trust in each other, imaging and shaping a future for a country not yet founded.

Earlier this summer, I had the pleasure and privilege of participating in the 50th

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annual "Advanced Technology Think Tank", an event initiated by a visionary man named Steve Krar and a couple of his colleagues. Their idea was to create an informal forum for educators, entrepreneurs, industry leaders and occasionally politicians, to get together and exchange and cultivate new ideas in a comfortable environment, away from the distractions of work and daily life. Ideas are hatched, friendships are formed, and everyone leaves inspired.

When two people come up with the same idea independently, we often say "great minds think alike!" But the truth though, is that great minds aren't the minds that simply come to similar conclusions independently; they are the minds that can think collaboratively, contributing their thoughts and ideas to an even bigger and greater dream, sifting through each contribution, building on it or discarding it, with the sole focus of achieving something which has not yet been achieved.

Inspiration is often the product of collaboration - sometimes the only other ingredient needed is a change of scenery. I hope you had a great vacation!

Paul Hogendoorn is founder of TPI Associates, an organization dedicated to belping entrepreneurs and business leaders define and achieve their vision. He can be reached at bogendoorn.paul @gmail.com

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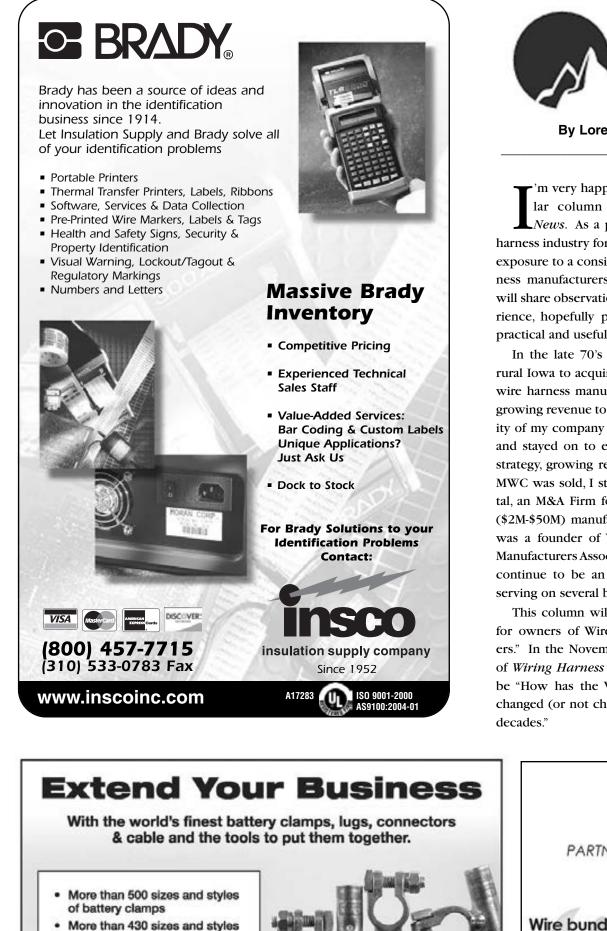
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Blue Valley Capital IIc Merger & Aquisition Services

By Loren M. Smith

'm very happy to be writing a regular column for Wiring Harness News. As a participant in the wire harness industry for over 30 years, I've had exposure to a considerable number of harness manufacturers. In these columns I will share observations based on this experience, hopefully providing readers with practical and useful information.

In the late 70's I moved my family to rural Iowa to acquire a small (under \$1M) wire harness manufacturer (MWC). After growing revenue to \$23M, I sold the majority of my company to an investment firm, and stayed on to execute my acquisition strategy, growing revenue to \$85M. After MWC was sold, I started Blue Valley Capital, an M&A Firm focused on mid market (\$2M-\$50M) manufacturing companies. I was a founder of WHMA (Wire Harness Manufacturers Association) in the 80's, and continue to be an active member while serving on several boards.

This column will cover "Exit scenarios for owners of Wire Harness Manufacturers." In the November/December edition of Wiring Harness News, my column will be "How has the Wire Harness Industry changed (or not changed) over the past 4



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

The highly fragmented wire harness industry is made up of well over 1,500 small manufacturers serving niche markets. Since many of these businesses are owned by founding entrepreneurs, estate planning, succession planning, and ownership changes are subjects that effect a large number of owners of these companies today. Solutions can range from an outright sale and retirement to a partial sale that enables owners to keep running their business or performing another function of their choice while achieving liquidity (getting their money out.)

To begin with, it's a fact that most own-





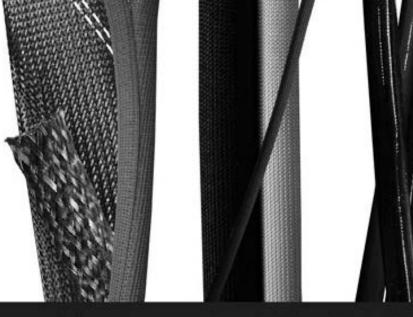


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nfcs@delfingen.com www.delfingen.com ers do not engage proactively in a process that provides them with liquidity or that gets them on a path toward retirement. Factors that keep owners from taking pro active steps to deal with these issues include; 1. confidentiality concerns, 2. fear that net after tax proceeds will not be sufficient to maintain an equivalent life style, and, most commonly, 3. we all tend to delay change until a life event forces us to do so.

The issue of confidentiality is always a paramount concern. Before any buyers learn the name of our seller, we take 3 steps; First, we vet all prospective buyers for motivation and financial capability. Second, all prospective buyers must sign our legally binding Confidiality Agreement. Third, our seller can, for any reason, ask us not to include a particular buyer in our process.

The 2 scenarios that I will cover today are an outright sale, followed by retirement (usually with a 6 to 12 month transition), and a sale that enables an owner to stay in place, with a plan for his eventual retirement.

Outright sale: Many owners believe they are "locked in" to continued ownership, because in the event of a sale they believe their after tax proceeds will be insufficient. This is often the case with companies whose revenue is less than \$10M and who have heavy customer concentration (80% of revenue from 2 or 3 customers). While there is no "magic" solution to this quandary, there is a solution. First, it's necessary to see this as a process, rather than an event. Since some portion of the value of a business is the business's future performance, in these instances a portion of the proceeds from a sale, must come in the future. I'm not referring to a "seller note," which is just a way of deferring payment based on value at closing. There a variety of ways to "un lock" this future value when owners believe they are locked in, but they all require getting over a very substantial hurdle.

Once you sell more that 51% of your business. the new owners can do whatever they want. Why would you ever agree to future performance based payments when you have no control over how the business is run? The answer is you must see evidence that the party you are selling to has a track record that provides you with confidence they will listen to you (you'll have to stay on for a transition) and that they have experience that gives you confidence that they know what they're doing. You must do as much due diligence on them, as they will do on you and your business.

Once you get over this hurdle, there are a variety of ways you can unlock future value. It can be done based on revenue. For example, if you're selling a company with historic revenue of \$6M, a deal can be structured that gives you x% of revenue over \$5.5M for x years. This provides the new owner with confidence that you will maintain the 2 or 3 customers who comprise 80% of your revenue.

<u>Continued on page 10</u>



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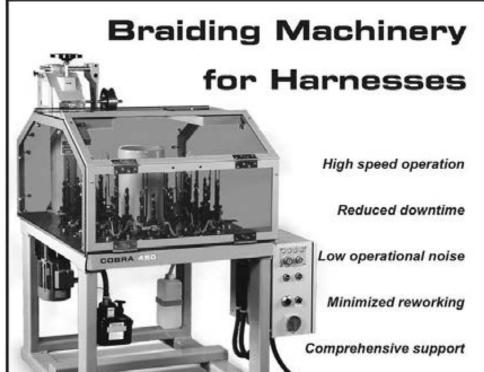
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Continued from page 9

Another approach is to pay you x% of EBITDA for a period of x yrs. Both of these approaches reduce a buyer's risk that your business will go the wrong way post sale because of the loss of one of your major customers. It's scary for a seller to go down this road, but I've seen it work many times.

Another option is a partial sale, one that keeps an owner in place either running the business, or in another capacity that an owner might chose. The reasons an owner might chose this option are liquidity, risk avoidance, capital to grow, expertise to grow, and burn out. Many wire harness companies see opportunities to grow within their niche, but lack the capital to finance growth. In this case, a sale to a buyer who wants to create value by helping you grow can work. Often these situations include expertise in addition to capital. Usually owners have their entire net worth tied up in his or her business, and a sale transaction like this can provide an owner with liquidity; i.e. they can convert the value of their business to cash. While most owners love what they do, most if not all of the risk and much of the responsibility rests squarely on their shoulders, resulting in stress. The right buyer, the right transaction, will relieve an owners sleepless nights the day of closing.

Post sale, owners can opt stay on in a variety of roles. Owners find a sale that allows them to continue in the job they like, while shedding the stress and potential liability of ownership, very attractive. He or she can keep running the business, be a sales manager, engineering manager, manufacturing manager, salesman, or rep; I've seen all variations of these scenarios work well. The driver in this decision is for an owner to pick a role under new ownership that fits how he or she choses to spend their time.

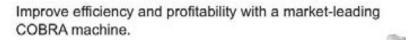
Prospective buyers include other wire harness companies, contract assemblers, connector manufacturers, printed circuit board manufacturers, electrical/ electronic distributors, private equity firms, and angel investors. The cliche "timing in everything" is absolutely true when it comes to the M&A (merger and acquisition) business. The best deal is always driven by a buyer's appetite for a particular transaction at a precise point in time. Because this is true, the only way to sell a company, is to initially give it the widest initial exposure possible, and of course to do this without revealing the name or location of the selling company.

Finally, as someone who has been the shoes of an owner, I understand how emotional this process can be. During the sale process, most of my time is spent with a seller, explaining and ranking his or her options, and contemplating the repercussions of the decision to sell. For me, It's a great honor to be given this responsibility.

The sale process can result in the next chapter in an owners life.The comment I most frequently hear post sale, is "Why didn't I do this sooner?"

Loren Smith can be reached at lms@blvcapital.com or by visiting www.bluevalleycapital.com





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Aluminum power cable technology for wind turbines took a giant leap forward today with the introduction of HELUKABEL®'s HELUWIND® WK POWERLINE ALU. This diesel locomotive (DLO)-like power cable is made of finelystranded aluminum and is highly flexible, offering customers the performance capabilities of a standard copper cable, but at a fraction of the cost.

"Since the POWERLINE ALU is made of aluminum its weight is reduced by nearly 50 percent, it is quicker and easier to install, as well as being less expensive than comparable copper power cables," says Uwe Schenk, Global Segment Manager - Wind at HELUKABEL®. "Given the uncertainty of the PTCs and the need for reducing turbine costs (manufacturing, installation and maintenance), the POWERLINE ALU is our attempt to further the development of the industry in the United States and Canada by making wind turbines more affordable."

Aluminum power cables produced today are stiff and unable to bend, which prevents the installation of a single cable length. Wind turbine installers are forced to interrupt the cable by splicing it up to 80 times in four tower sections to connect the stiff aluminum cable across the length of the down tower. Once the base is reached, an additional interruption in the cable is needed to make the flex connection to the inverter. This installation process takes two to three days.

The installation advantage of the flexible POWERLINE ALU is that one length of cable can run from behind the drip loop in the down tower area directly to the inverter in the tower base. It requires only one splice, between the copper loop cable and the power line, and a crimp cable lug to connect the power line to the inverter. This enhanced installation procedure takes only four to six hours. extremely durable with resistance to UV-light, oil and fire. Additional characteristics include:

• Broad operating temperature range – -20°C (flexing) and -40°C (fixed) to +105°C (both)

• Tight bending radius – 10x cable diameter (flexing), 4x cable diameter (fixed)

- Recyclable (ROHS)
- Halogen-free (LSZH)

The POWERLINE ALU comes in two standard types, 0.6/1 KV and 1.8/3 KV, and can be ordered in bulk or pre-assembled (includes



Powerline ALU Cable from Helukabel®

tube connector and crimped cable lug). Both cable types are available as robust versions, which feature an abrasion-resistant and cut-resistant outer jacket.

Currently, the POWERLINE ALU is CE compliant with UL/CSA approval upon request.

If interested in speaking to a HELUKABEL® USA representative about the HELUWIND® WK POW-ERLINE ALU or to request a product sample, please contact sales@helukabel.com or 847-930-5118.

Established in 2007, HELUKA-BEL® USA is the North American headquarters for Germany-based parent company, HELUKABEL®. HELUKABEL® employs approximately 800 people worldwide and markets its portfolio of cables and wires to companies around the globe.



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Additionally, reducing the splice count to one improves the safety and protection of the turbine's power cable since most technical failures are caused by bad splices.

Constructed using a finelystranded aluminum core and wrapped with specially-formulated, heat-resistant insulation and outer jacket, the POWERLINE ALU is not only highly flexible, but Quick Change Tool Pack

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Waste Stream Management

Continued from page 1 _

I asked loel to describe some of the common mistakes he sees during InStream's analysis. He was quick to note that too many companies lack a comprehensive understanding of their waste streams, and lack systems to quantify everything going out."You can't manage what you can't measure; so that's step one," he asserted.

Joel also warned that too many companies take an 'out of sight, out of mind' approach to waste. He advised that, as an example,"your scrap metal is yours from cradle to grave." Manufacturers, he asserted, have a responsibility to ensure any vendor they enlist disposes of materials in accordance with EPA, and other state and local guidelines. "Everyone in that chain, from the originator, to the processor, to the receiver, could be on the hook; so mitigating risk is key," he stressed. "The material going out the back door can add to your bottom line, but it can also expose you to a lot of liability." One of the best ways to find a bonafide and reputable scrap metal processor is through an organization called ISRI (Institute of Scrap Recycling Industries), and Joel recommends checking their website for member companies.

Curious about which commodities are most often overlooked by companies. He quickly lamented that too much valuable OCC (old corrugated cardboard) and some plastics are being sent to the landfills. "These mills are buying bales of cardboard every day, and we see a lot of it being thrown away," he said,

adding, "We see shrink-wrap and a lot of different plastics as well, and there are typically viable markets for those."

The subject then turned to e-waste and Joel quickly reported that it's "the fastest growing commodity in the waste arena; and it can be pretty lucrative because of the metals, even precious metals, involved." The problem, he indicated, is that extraction can be laborintensive and requires special training and processes. He again advised seeking qualified and certified processors by checking ISRI.

As for sensitive data that might be on hard drives, Joel had some valuable advice."Certainly when it comes to valuable information, you need to seek [a recycler] who can provide proof of scrubbing, destruction, or both." He furthered that this proof can be in the form of a company representative "physically being present during destruction; or they can provide video proof." He clearly stressed the need to at least obtain paperwork detailing serial numbers and dates of destruction. Joel added, "I've heard of nightmares, so cover yourself with a reputable company that can provide those detailed services."

Another common mistake Joel outlined is recycling strategies that don't fit into lean and safety initiates. He outlined the important balance between placing collection points in convenient areas, while not cluttering the production area."You don't want folks taking a box to the other side of the plant to throw it away; but you also don't want bins in places where folks can trip, or where forklifts can back into them."

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The single most effective thing Joel sees in a sound and lucrative waste stream plan is the creation of a corporate culture to that end."It's amazing, we've seen some companies try the carrot approach, and others try the stick approach," but he stressed that creating an environment where employees think holistically proves most effective in maximizing asset recovery goals.

There are few companies doing the same thing as InStream Environmental, Joel noted, but competitors are emerging. "It's an interesting and unique business model," he said. "We're not consultants, we're not brokers, or even processors or haulers," he said. Joel proudly concluded,"We can be the single point contact; everything of from

accounting functions to environmental compliance, managing all the vendors and headaches."

In my original conversation with Sam Yankelevitch of Prettl Electric, he summarized his experience switch InStream and this new waste stream management concept noting:

"We found that if we let these guys take care of our waste stream, the incoming dollars can be used to justify new investments and continuous improvement activities. It is not easy to staff with someone to keep up with the market value of copper, paper, waste oil, etc. [InStream] is able to negotiate bulk rates, which we alone cannot, due to the volumes. And while they do get a small percentage from the mills, we get a higher market value, a monthly check with little effort".

Article Takeaways:

• Think less in terms of trash, and more in terms of waste stream commodities, and asset recovery.

• You can't manage what you can't measure.

• Keep collection procedures in line with other lean initiatives.

• The most effective asset recovery strategy is built around creating a culture where employees understand the value of waste stream commodities.

Resources:

• To learn more about asset recover, visit The Asset Recovery Association at invrecovery.org.

• For some great information on recycling and to help choose responsible vendors, visit the Institute of Scrap Recycling Industries at isri.org; and learn more about ewaste disposal from e-stewards.org.

· Check for specific state and local recycling laws at www.campaignforrecycling.org.

• To find out more about InStream, check out their website at instreamenvironmental.com

Many thanks to Joel Powell of InStream Environmental for these resources. Thanks also to Sam Yankelevitch of Prettl Electric, who provided the idea for this article.



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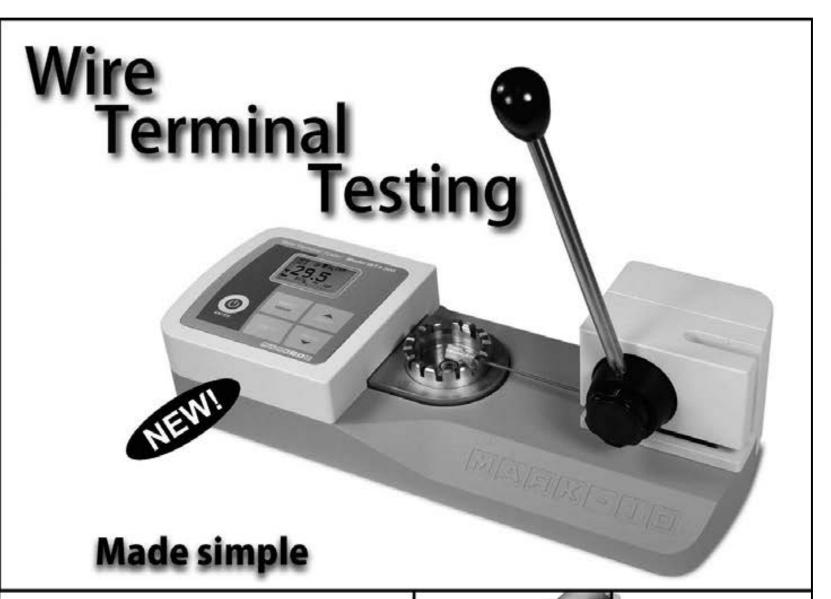
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The all-new WT3-200 wire terminal tester is an integrated solution for measuring wire and tube termination pull force. An ergonomic lever easily produces up to 200 lbF (1,000 N) of force forwire diameters up to 0.25 in (6.3 mm). The WT3-200 includes 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.





Getting a handle on exactly what is going out the back door is key to effective waste stream strategy.

• Your scrap metal is yours from cradle to grave. Make sure anyone hauling things away from your facility is playing by the rules.

• OCC and some plastics are the most often overlooked commodities.

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

Flexibility in Hazardous Locations

The National Electrical Code (NEC) has strict requirements for cabling in hazardous locations, which are loosely defined as "Classified Locations" where fire or explosion hazards exist due to flammable gases, vapors, dusts or fibers. Approved wiring methods range from a rigid, highly impenetrable type of cable, such as Type MI (mineral insulated cable), to a raceway system, such as rigid metallic conduit or intermediate metal conduit. These wiring methods are safe and reliable, but not when flexibility is needed. Hope is not lost though because the NEC accommodates flexible connections in hazardous locations.

Relevant Articles of the NEC

The NEC, officially NFPA 70, provides a practical safeguard from hazards arising from the use of electricity. Article 501 of the NEC (specifically, 501.10(A) and (B)) addresses the wiring methods that are approved for Class I, Division 1, and Class I, Division 2, locations and references 501.140, which provides additional details on allowed usage. There are two divisions of Class I hazardous locations to consider: Class I, Division 1, and Class I, Division 2. The provisions vary slightly between the two locations.

The NEC considers Class I, Division 1, applications the most hazardous and states, "Where necessary to employ flexible connections, as at motor terminals, flexible fittings listed for the location, or flexible cord in accordance with the provisions of 501.140 terminated with cord connectors listed for the location, shall be permitted."

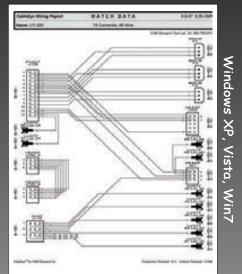
Class I, Division 2, locations are considered less hazardous, so all wiring methods approved for Division 1 and a few additional methods are allowed. NEC Article 501.10(B)(2) permits flexible cord to be used "where provision be made for limited must flexibility...the following shall be permitted: ...(5) Flexible cord listed for extra-hard usage and terminated with listed fittings. A conductor for use as an equipment grounding conductor shall be included in the flexible cord."

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As stated above, flexible cord products can be used in Class I, Division 1, hazardous locations as long as the guidelines of 501.140 are followed. 501.140 is titled Flexible Cords, Class I, Divisions 1 and 2, and has two subsections: (A) Permitted Uses and (B) Installation. Users of flexible cords in Classified Hazardous Locations should carefully read this section of the code. 501.145 Receptacles and Attachment Plugs, Class I, Divisions 1 and 2, may also be of interest to users who need modular connections on equipment.

Using a Flexible Cord

The NEC requires a flexible cord to be protected from damage by its location or by a suitable guard and that it only be used in industrial establishments where conditions of maintenance and engineering supervision ensure that only qualified persons install and service the installation. The conditions of maintenance and supervision shouldn't be an issue for most equipment users where Class I, Division 1, locations exist, but it may be an issue for some agricultural users. Both Division 1 and 2 locations require the use of cords listed for extra-hard usage. Examples of those cord types would be the SO, ST, SE and W cord types found in Table 400.4 of the NEC.

Another difficulty in connecting cords in hazardous locations is identifying connectors that are listed for use in those locations. Several of the connector and gland manufacturers have tables published on their websites indicating which of their product lines meet specific hazardous location requirements. You can also contact your local Anixter sales representative to get assistance in your search for the right flexible products for your hazardous locations.

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NEWS PLUGS continued



Waytek, Inc. Launches its **Updated 2012 Website with Enhanced User-Friendly Features**

Waytek, Inc., a leading supplier of quality electrical supplies for the mobile equipment industries, has launched their new website. The new site adds additional elements of functionality and convenience, to meet the needs of customer requests.

The new www.waytekwire.com combines many of the best functions of the previous site with updated search capabilities, enhanced shopping cart functionality, order tracking, customized supply lists and order

history, to help users shop more efficiently.

"The site is designed for our customers who want online ordering convenience at their finger-tips," said Bob Lamoreaux, President, Waytek, Inc. "By providing the online functionality of this new site, our customers have access to their account's supply lists with the most common products they order, tracking and reorder information, making their job easier."

Waytek, Inc. has redesigned their



website to be more user friendly with enhanced ability to search its more than 10,000 products, provide detailed descriptions on more products, product photos, data sheets and accurate stock quantities/information. "Our customers have told us that this information is important and will help them make important buying decisions," Lamoreaux said.

Plans for the website have been ongoing for several months, and initially began with surveying customers to determine what features they want to see, and what is helpful to them.

"Customers want convenience. We take great pride in making our website functional and easy-to-use for our customers," Lamoreaux said. "We know that they want to order fast, and get their parts fast. If we receive an order for inventoried

items before 3:30 (CT), we can ship it out the same day," Lamoreaux said. "That's a fast turnaround for customers who might be trying to keep a project running, and need parts ASAP."

Along with technical updates, Waytek, Inc. has also dedicated the home page to the latest new electrical supplies. A rotating graphic at the top of the page shows some of the most popular, featured and new products of the week. "Products are added to provide solutions to customer supply needs," Lamoreaux said. "We pride ourselves on having parts in stock, or being able to source products, for any electrical need."

Waytek, Inc. carries more than 10,000 electrical supplies for OEM and MRO mobile equipment markets. 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. The new website can be accessed www.waytekwire.com. Waytek, Inc. can be reached at 800-328-2724.





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Amphenol's New Web **Tool Simplifies Online** Part Configuration of Its Most Popular Connectors

Industrial Amphenol Global Operations, a global leader in interconnect systems, now offers a webbased tool that simplifies online part selection and configuration of its most popular connectors. This new tool allows users to download 3D CAD models



or PDFs of the connectors that they have created using this new system.

Found under the 'Design Online' section of the Amphenol Industrial website, this new interface provides on-demand plug and play models to customers during any phase of the design process.

Amphenol's Design Online system is an intuitive interface that features industrial

parametric search capabilities.

Chris Van Soest, Director of Marketing for Amphenol Industrial Global Operations, said, "Industrial product selection and procurement has changed with the Internet. Existing and potential customers often research and select products online before speaking with a supplier. It is important to our customers that the right product for their application is easy to find online as well as be easy to incorporate into their CAD design."

Design Online is available for use with six of Amphenol's core product series, including 97 Series, AC Threaded, ACA-B Series, Amphe-Lite Series, GT Series and PT Series/26482 Series I, with additional expansions planned. Design Online can currently generate over 16,000 models to meet a wide variety of customer specifications. Users simply choose a product line and select connector attributes to automatically configure a part number, then pick all applicable part modifications. Any documents for the configured part number, including a

3D CAD model (offering 18 different 3D CAD software options), a 3D PDF, a 2D drawing, catalog and technical data sheet, can easily be downloaded.

Design Online can be accessed by simply clicking on the 'Design Online' icon on the Amphenol Industrial home page. Users can also type design.amphenol-industrial. com in their browser.

For more information, please visit www.amphenol-industrial.com or email mhartman@amphenol-aio.com.

Amphenol Industrial Global Operations, headquartered in a 675,000 square foot facility in Sidney, N.Y., provides a full range of high reliability connectors and interconnection systems specifically for the industrial markets including base stations, rail/mass transit, process control, automotive manufacturing, heavy equipment, and petrochemical/power generation.

Products include ruggedized-forindustry cylindrical, fiber optic, rectangular, and industrialized versions of Amphenol's MIL-DTL-5015 cylindrical, MIL-DTL-26482 miniature cylindrical and GT reverse bayonet cylindrical connectors. It employs more than 1,400 people and is both ISO9001 and MIL-STD-790 certified.

Classified Ads Page 55-56





BT 3500 Battery-Hydraulic Hand Tool More Than a Ton of Portable Power in a 1.4 Pound Hand Tool



The BT 3500 Battery-Hydraulic Hand Tool is designed to provide the ultimate in flexibility, modularity, and powered efficiency in a lightweight, ergonomic, powerful crimp unit. It's compatible with SDE dies, CERTI-CRIMP II, Double Action, Large Die C and Heavy Heads, using the appropriate adapters.

Finally, a lightweight tool that delivers the power required for crimping! The small head offers incredible flexibility and the ability to reach into tight spaces. As an added convenience, the crimping head can be rotated to nearly any angle, allowing the operator to identify the most comfortable position for the job.

Despite the lightweight of the power unit, the tool can produce approximately 250 crimps between charges. This is made possible through a ten ounce, 10.8 Volt Lithium-Ion battery that can re-charge in only 25 minutes, thereby giving plenty of time for production.

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Pin-Sight is a revolutionary tool for building quality into cable and harness assemblies. Pin-Sight guides the assembler in real-time on the monitor, to insert the correct wires into the correct cavity. Field tests show throughput increases of 10-15% for skilled operators and up to 50% for new operators. Pin-Sight helps you deliver better quality cables and harnesses in less time by eliminating the need to troubleshoot and re-work cables that fail final electrical test and the best thing of all is Pin-Sight requires no mating connectors or fixtures.

NEWS PLUGS continued

Programmable Force Tester With PC Control

Mark-10's updated ESM301 test stand Version 2 is a 300 lbF (1.5 kN) capacity universal force tester, ideal for numerous applications in the medical device, packaging, automotive, and other industries. The ESM301 can be used for such applications as break testing, cycling, limit testing to a load, distance, or limit switch, load holding, elongation testing, tensile and compression testing, and more.

PC control enables the user to control



Updated Model ESM301 Programmable Force Tester With PC Control

the stand through a custom program or legacy NexygenTM TCD software. Integrated overload protection protects Mark-10 and other force gauges from overloading during testing.

Modular mechanical design allows the frame to be separated from the controller for custom mounting applications.

A unique feature configuration platform allows for the selection of individual functions through "build-your-own" flexibility, thus permitting the user to customize a system that meets their needs.

The ESM301, and its extended length sibling ESM301L, are compatible with Mark-10 digital force gauges, gripping fixtures, and data collection software.

For further information contact Mark-10 Corporation, 11 Dixon Avenue, Copiague, NY 11726 Phone (631) 842-9200 or Fax (631) 842-9201. Visit www.mark-10.com or email info@mark-10.com

Ty-Rap[®] Deltec[®] Cable Tie/Support System Offers Long Life, Easier Installation

The Ty-Rap® Deltec® Cable Tie and Support System from Thomas & Betts provides a safer and easier method for bundling and supporting cable in outdoor applications. The Ty-Rap® Deltec® Cable Tie and Support System is designed to tolerate harsh applications that include temperatures as low as minus 85 degrees Fahrenheit.

"Bundling cable with conventional metallic lashing and strapping can be difficult and hazardous to install," said Rachelle Weiss, product manager for Thomas & Betts. "These traditional metallic lashing and strapping solutions can nick or cut through cable insulation, which can cause dangerous and costly damage. These solutions also pose a safety hazard to installers and maintenance personnel. The need for a safer and easier installation method is what created the demand for the Ty-Rap® Deltec® Cable Tie and Support System, which has no sharp edges."

Comprised of three main parts, the Ty-Rap® Deltec® Cable Tie and Support System withstands harsh outdoor conditions, combining the strength and rigidity of an injection-molded head and marine-grade copper barbs with a soft, pliable and stress-resistant extruded acetal cable strap. In addition to its weather-resistant capabilities, the system's separate head and strapping also allows installers to select the appropriate strap length for the application. The Ty-Rap® Deltec® Cable Tie and Support System also is safe and easy to install. The Ty-Rap® Deltec® Cable Tie and Support System offers high tensile strength, corrosion resistance and protection from exposure to ultraviolet radiation, moisture and salt.

For aerial applications, the Ty-Rap® Deltec® Cable Tie and Support System is available with base hanger accessories where mounting is required.

Preassembled systems are available with cable straps in standard lengths of 10, 13.5 and 27 inches. 50-foot and 3,500foot reels are also available for applications in which the installer must establish specific lengths in the field.

For more information about the Ty-Rap® Deltec® Cable Tie and Support System from Thomas & Betts, please visit www.tnb.com and look for Ty-Rap® on the "Brands" tab. or call (800) 238-5000.





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NEWS PLUGS continued



TE Connectivity Nanominiature Connecs Offer Critical Size and Weight Savings for Rugged Environments

Nanominiature connectors from TE Connectivity (TE) combine appealing size and weight with desired performance attributes such as high reliability, low contact resistance and wide operation temperature range, making them among the smallest and toughest connectors available to designers. The connectors offer dramatic space and weight savings in applications where size, weight and reliability are crucial design factors.

Nanominiature connectors are 10 times smaller in volume and about 10% the weight of a standard Micro-D connector with the same number of positions, delivering significant size and weight reduction. TE's nano connectors also provide significant electrical and mechanical advantages over other nanominiature connectors such as voltage ratings of 500 V at sea level versus 250 V for others and 500 mating cycles versus 200.

Typical applications include space, smart munitions, missile defense, aircraft communications and UAVs. The common thread is the high reliability and space and weight-sensitive requirements of such applications.

"Despite their small size, nanominiature connectors are designed for rugged

applications, with the capability of withstanding significant levels of shock and vibration, salt spray, outgassing, and other environmental and mechanical hazards," said Scott Cairns, Manager, Product Management, TE Aerospace, Defense & Marine. "The bottom line is that nanominiature connectors are very robust. With the range of options, they are available for a wide variety of applications where weight and space savings are achieved without compromising performance."

The nanominiature connectors are available with temperature ranges as wide as -200° C to +200 C°. They are available in single-row configurations with 5 to 51 contacts and double-row configurations with 9 to 65 contacts. They come with machined aluminum shells (with a variety of plating), stainless steel shells for extra sturdiness or plastic shells for added weight savings. They are also available in environmentally sealed circular configurations.

The connectors can be supplied with flying leads, as jumper assemblies, or as custom harnesses with multiple connectors. Due to the small size of the contacts, wire sizes are 30 AWG and smaller. PC board styles include through-hole, surface-mount, and edge-board mount.

For further information on TE's nanominiature connectors, contact the Product Information Center at (800) 522-6752 or visit www.te.com/catalog/menu/en/ 13953?BML=10576.

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Contact: Martin Kenner

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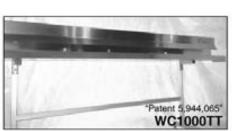
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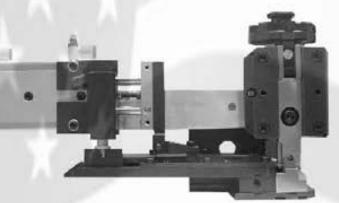




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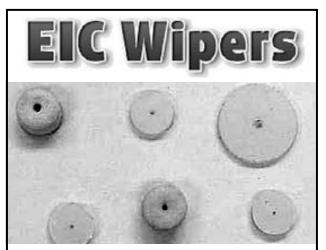
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NEWS PLUGS continued



Phillips Pan Machine Screws Available from Micro Plastics

Micro Plastics' introduces a new line of Phillips Pan Machine Screws. Thread sizes included in this new line of screws are; 4-40, 6-32, 8-32 10-32, 1/4-20 and 1/4-28. Available in 25 standard lengths ranging from 3/32" up to 3".

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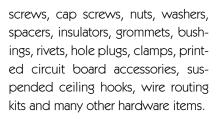
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"The bottom line is that nanominiature connectors are very robust. With the range of options, they are available for a wide variety of applications where weight and space savings

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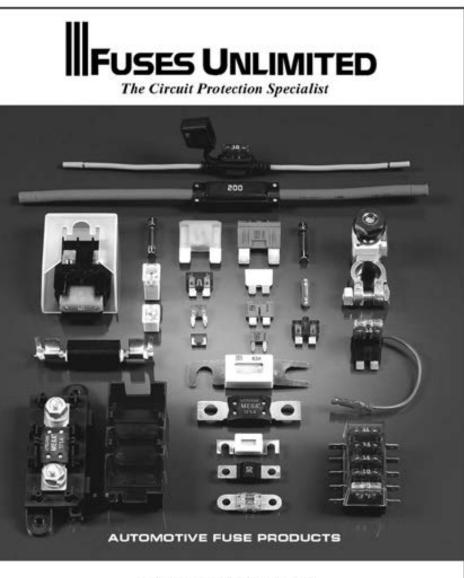
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J&C Company

Continued from page 1 _

customers is handled by Andy Harris, the Beckers' 32-year-old son. He has worked on and off at J&C since he was in high school, starting in production. He also oversees all the documentation and prepares technical drawings.

Harris does quoting and selling, too, complemented by Jim Becker, who has abundant expertise and experience in addition to a degree in electrical engineering from the University of Nebraska. Approximately 25 people complete the J&C staff, whose number fluctuates because of seasonal production.

Besides her aforementioned duties

and responsibilities, Cathy Becker oversees the enterprise resource planning (ERP) system and controls the inventory. Sharon Cunning is the production scheduler, Mary Ham and Laura Taylor are working supervisors, and Sharon Steinbach does the shipping and receiving and helps with the ERP. Brenda Olenada does ERP data entry and accounting.

Production has two main components. The first manufactures harnesses for the Kawasaki plant in Missouri that produces engines, most of which are used on John Deere lawnmowers. The

Continued on page 26



Brenda Oleana does ERP entry, payroll, and accounting functions.

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For 12 years, Cheryl has witnessed the evolution of the Small HYDENT[™] connector line from simple copper solderless terminals to the customizable options available today.



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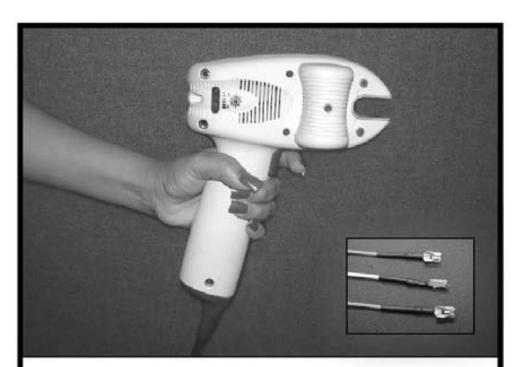
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Robert Cashatt performs 100% QC test on a wire harness using an assembly test fixture and Cable Eye Cami M3 circuit tester.

J&C Company

Continued from page 24 _

account means J&C's busy period is October through May. One-third of the staff is laid off in summer.

The second component is manufacturing low-volume pieces. One longterm customer is J.A. Woollam Co. in Lincoln that makes spectroscopic ellipsometers, which optically determine indices and thicknesses of small items.

Instrumentation accounts for 50 percent of J&C's regular customers, which total 30 and primarily are in Nebraska, Iowa and Missouri. The Kawasaki account and vehicle-industry clients make up 40 percent, and the remaining 10 percent is agribusiness and miscellaneous. Customers include Toro and Exmark as well as Lincoln companies that make grain bin and silo level indicators and devices that measure plant growth. Other companies make industrial vehicles, water distillers and valves for farm field sprayers. "We want to develop new customers and get more load from our current customers," Becker said. "We know it's there. We also go back to companies we have quoted in the past because their vendors may have run into problems."

With his engineering background, Becker can provide solutions. His experience includes 15 years doing industrial service calls and installations. "I recognize all problems that you can run into with equipment," he said. "That made me

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a better engineer, and I can recognize when a part can be speced better or if the proper parts are being used that are durable, the correct size, et cetera."

The most basic harness is a Kawasaki item with an eight-pin connector with wires, terminals, sleeves and insulators that plugs into a housing. While one harness is more than 30 feet long, the most complex product has wires with 10 connectors that are spliced and soldered in a five-inch hub. Almost any kind of product or process is accommodated. Most harnesses are 6-36 inches long with 4-5 breakouts. Cost ranges from \$10 to \$100, with \$30-40 most common. Orders may be as few as five pieces or up to 80,000 a year, with weekly or monthly releases.

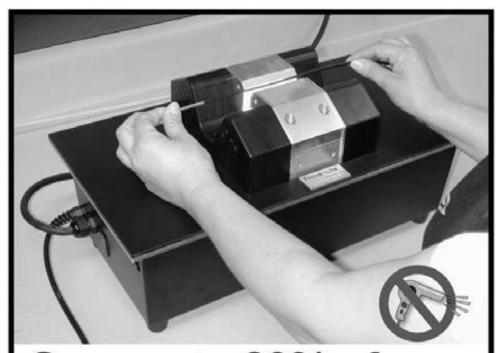
The manufacturing and quality-control processes at J&C are highlighted by what Becker termed "complete traceability." It involves having each process recorded on a job log, noting who did what and when.

Lead times are quoted at 3-4 weeks, a time frame affected by availability of tooling, pieces and components. Depending on suppliers' inventories, deliveries of finished products can be made in a few days or 1-2 weeks. Although J&C has 20-30 suppliers, only a few are used most of the time for favorable pricing and reduced freight cost. "Delivery is a function of customer need. We'll bend as far as necessary to meet those needs," he said. "If a customer is in a big hurt for parts, Andy and Sharon Cunning won't jeopardize any other customers but will work with our production people to get the job done."

_Continued on page 28



Cathy Becker Production and ERP Manager minds the details and keeps things flowing.



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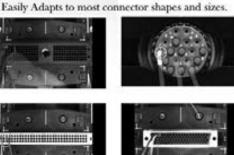
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J&C Company

A focus on marketing will help J&C prosper, Becker acknowledged. "If our marketing program were better, we'd grow," he said. "It is our weak point and our biggest challenge by far. We can get around the seasonality that we have, but our overhead keeps going on. We have to develop our own products to take up the slack or get more customers to fill that void."

In September 2004 Becker learned about the importance of customer diversity. Kawasaki officials notified him that they were sending production of robotics systems, which were used by Ford Motor Co., from Lincoln to China. J&C had the Kawasaki job since January 1999, and the account grew to 68 percent of the company's business. "That was our mainstay, so it really knocked us when we lost that assembly work virtually overnight," Becker said. "We were delivering harnesses on a daily basis, and we had just come out with a brand-new series of products that we had spent a year on engineering. It took several years to

Continued from page 27

develop the relationship, and it kept growing.

"We always knew that it was a hazard to do so much business with one company," Becker said, who noted the lost business has been regained.

After his university graduation in 1971 Becker founded Electrometrics in Lincoln. The firm repaired and calibrated electronic equipment. The company was bought by Geist Plastics, also of Lincoln, and Becker remained with Geist five years. Cathy Becker worked there,



Ken Cohen, lead custom area assembler, inserts wires into housing.

too. The firm was involved in other products besides plastics, so Becker continued to work on electronic equipment, including microprocessor control systems for the weighing industry as well as avionics. He also designed surge protectors for consumer office products. Geist executives decided to leave the markets in which the Beckers worked and allowed them to take over the accounts. Hence, the start of J&C, where at first Cathy



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Becker also subcontracted to Hornady Manufacturing in Grand Island, Neb. The firm produces ammunition for sport shooting and law enforcement. He developed a device for measuring the speed of a bullet, but the device never was marketed. Eventually Becker joined Cathy full time at J&C.

The Beckers plan to retire in 3-5 years, depending on company growth. They may sell the firm, but they would want to find a buyer interested in taking care of current employees. "We are sensitive to the people who work for us because we have helped a lot of people get work that would not have gotten work otherwise," Becker said about hiring people through Nebraska Vocational Rehabilitation, a state government organization. He noted

they had physical ailments or injuries or are recovering from alcohol and other drug abuse problems. "They have picked themselves up and are doing great jobs for us.

"One lesson we've learned over time is that people who work for you are the most important thing you've got going," Becker said. "Here people are always looking out for each other, and we work together to develop systems and reduce errors at different phases of the production process. We welcome suggestions to encourage innovation and creativity."

Becker has learned to be creative with pricing jobs. "Different types of customers require different pricing structures," he said. "If you want a broad range of customers, you're not going to get the same margins from all of them. Certain industries are suited to get higher margins. If you have higher volumes, the margins are on smaller wire and connectors, a growing instrumentation market and more fiber optic.

Despite such trends, Becker still advocates the basics. One is inventory management. "It is the name of the game," he said. "Too much inventory will take you down. Good buying is critical to your operation. It got us through tough times and kept us viable."

For more information, call 402-467-4837, e-mail info@jccompany. net, fax 402-467-5137, visit www. jccompany.net or write 5000 N. 72nd St., Lincoln, NE 68507.



Tashia Taylor uses one of six crimping presses to apply terminals to wires.





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a different scale.

Strategy is important when bidding for and obtaining new work, Becker pointed out. He has found with large volumes of simple assemblies that J&C can compete when labor is not a large portion of the final price.

One trend Becker has seen is more business coming back from offshore due to poor quality, the long lead times and rising overseas labor costs. Other trends are increased automation to handle larger volumes,

- Aerospace
- Appliance
- Automotive
- Electronics/Computer Peripherals
- Energy Power Utilities
- Food and Chemical
- Industrial/Commercial

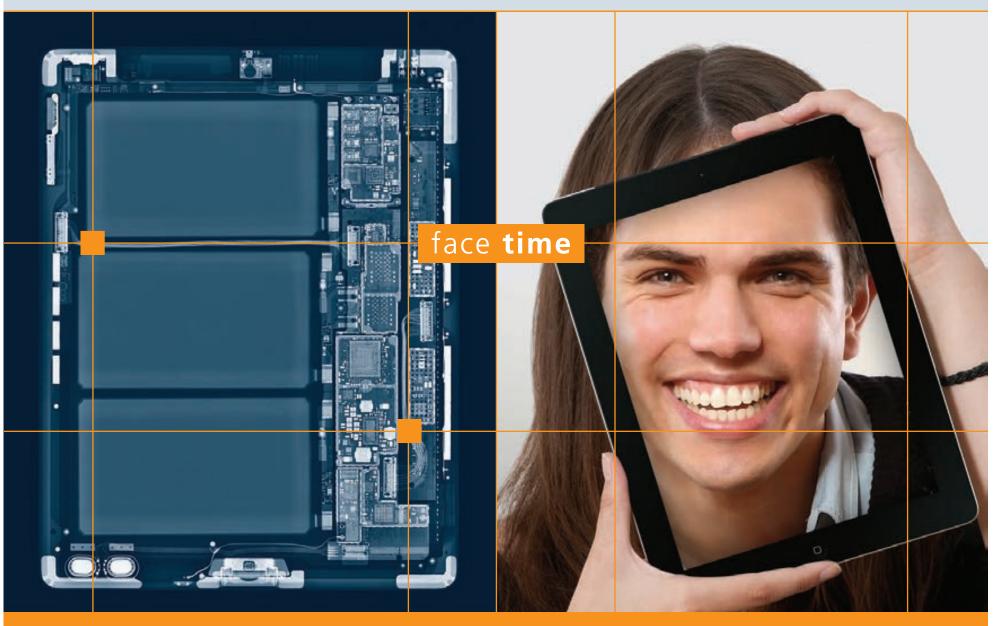
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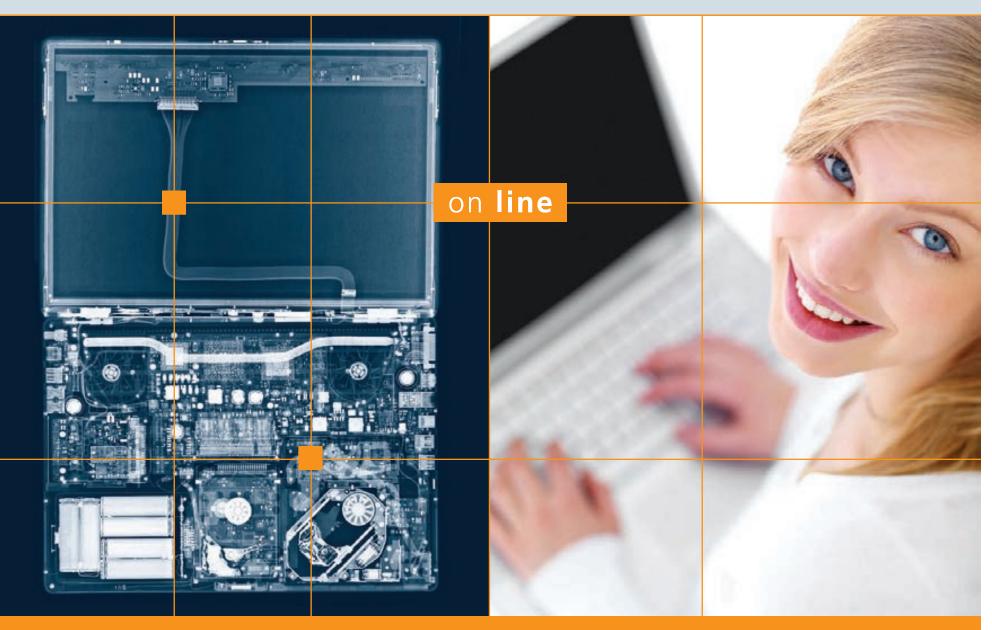


The new **RotaryStrip 2400** is a fully programmable single step rotary wire stripping machine, featuring a color touchscreen, and provides the highest precision and quality available on the market. Wire sizes from 36 - 10 AWG and jacketed cables up to 0.275" (7mm) in diameter can be processed without requiring blade changes or any other mechanical adjustments. It can easily strip Teflon, Kapton and Fiberglass insulated wires with optional twisting of the inner strands. High reliability, flexibility, productivity and userfriendliness, make the **RotaryStrip 2400** a wise investment for the future.

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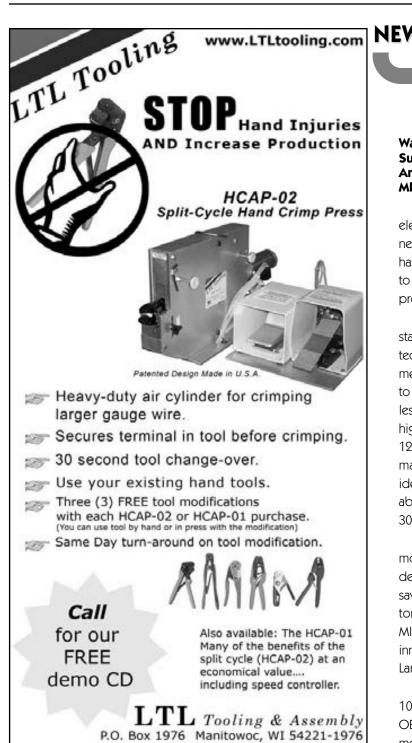
Connect with the intuitive UniStrip 2550!



The fully programmable **UniStrip 2550** is an intuitive wire stripping machine, uniquely designed to process an expanded range of applications. The machine comes standard with V-blades, the optimum solution for stripping most wires without having to change blades, yet, is also able to use radius blades, die blades or flat blades for added versatility. Best of all, the menu guided, touchscreen interface makes the **UniStrip 2550** the most user-friendly machine of its type!

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NEWS PLUGS continued



Waytek, Inc., Electrical Supplies Distributor, **Announces New MICRO2™** Fuses

Waytek, Inc., a distributor of electrical wire, automotive connectors, and electrical supplies, has added the MICRO2™ Fuses to their extensive line of circuit protection devices.

The MICRO2 Fuse is the new standard for vehicle circuit protection. Its sub-miniature design meets the need for more circuits to be protected while utilizing less space. Its ability to cope with high temperatures, from -40°C to 125°C, in adverse environments, makes the MICRO2™ Fuse an ideal choice for protection. Available in 5, 7.5, 10, 15, 20, 25 and 30 amp, 32 volt ratings.

"Today's Vehicle, truck and mobile equipment markets are designed for weight and space savings. It's important to offer customers products like these MICRO2™ Fuses, which meet the innovative market trends" -Bob Lamoreaux, President.

Waytek, Inc. carries more than 10,000 electrical supplies for OEM and MRO mobile equipment markets. 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.



MICRO2[™] Fuses

The new website can be accessed at: www.waytekwire. com. Waytek, Inc. can be reached at 800-328-2724.

Business Acquisition & Merger Associates advises on **Acquisition of Electrical** Specialty Products, Inc.

Business Acquisition and Merger Associates ("BAMA") is pleased to announce Electrical Specialty Products, Inc. ("ESP"), a manufacturer of custom cable assemblies and components for ruggedized industrial applications, has been acquired by Winchester Electronics Corporation ("Winchester"), a portfolio company of Audax Group.

Jay Robinson, President of ESP, noted "With their reputation for high quality and a strong global

presence, Winchester is the perfect acquirer of ESP. Additionally, both ESP and Winchester's customers will benefit from the additional capabilities borne of this partnership. We are thrilled to join the Winchester family and

grow together." BAMA acted as an advisor to ESP. Terms for the transaction will not be disclosed.

Business Acquisition & Merger Associates, a Charlotte, NC intermediary firm, assists business owners in transitioning their companies to either the management team, strategic buyers or financial buyers. BAMA also helps companies grow by providing buy-side sourcing services that identify potential add-on acquisitions. Such services allow companies to expand their geographic footprint or add strategic products or capabilities.

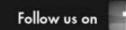
Electrical Specialty Products, of Spartanburg, SC, is recognized as a quality manufacturer of cable assemblies and components for ruggedized industrial applications. The Company serves a variety of markets including power management, industrial products, transportation, food/beverage and heavy equipment.

Audax Group, founded in 1999, is a leading investor in lower-middle market companies. With offices in Boston and New York, Audax has over \$4 billion in



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assets under managmenet in its Private Equity, Mezzanine and Senior Debt funds.

Winchester Electronics, a 70-year old Connecticut-based company, is a leader in the design and manufacture of interconnect solutions for diversified end markets including medical, energy, broadcast and industrial, among others. In additional to its headquarters in Connecticut, Winchester maintains a global manufacturing and engineering network with facilities in Massachusetts, South Carolina, Illinois, Mexico, China and Malaysia.

NASA'S Curiosity Rover Mission Supported By TE Connectivity's Kilovac Relays

NASA's Curiosity rover landed in the Gale Crater on Mars on August 5, having flown over 127 million miles since its November 26, 2011 launch from the Cape Canaveral Air Force Station in Florida. As part of NASA's Mars Exploration Program,

the Curiosity rover and its Mars Science Laboratory will carry out their mission to look for evidence of past or present habitable environments.

TE Connectivity's KILO-VAC K40P high-voltage relay was chosen to assist in the mission in the chromatograph unit. TE's relay is being used in the Curiosity rover's gas chromatography tool, which along with mass spectrometry and tunablelaser spectrometry, will study the chemistry relevant to life. As part of such a crucial mission, TE's relay needed to meet the high demands for products that could provide as much space and weight savings as possible, while also performing in the extremes of a space environment and providing absolute reliability and long service life.

Rated for voltages to 5 kV, the KILOVAC K40P single-pole, single-throw relay switches low-current loads up to 35 amps. To reduce size and weight, the relay uses a vacuum dielectric to achieve a compact size of 1.85-inch height and 0.65inch diameter and a weight of 1 ounce. Performance includes minimum a mechanical life of 10 million cycles and a fast operating speed of 1 millisecond. "TE's KILOVAC relay is ideal for applications like the Curiosity rover primarily because of its light-weight and small, compact design. As NASA set out to build a complex science lab in this rover, size was a critical factor," said Peter Kohlmeier, Program Manager in TE's Aerospace, Defense & Marine business. "TE's relays have been used extensively and for years in space. TE's

KILOVAC products are suitable for extreme temperatures as well as other severe environmental factors, and undergo TE's extensive reliability, quality control and testing."

KILOVAC relays have been used in space applications for more than 30 years, since its first mission in lunar landing equipment in the 1970s to today where they are used extensively in space satellites and are currently used throughout the International Space Station.

"The KILOVAC relays have a long history of proven reliability in space missions and applications," said Karl Kitts, Director of Development Engineering for High Performance Relays in TE's Aerospace, Defense & Marine business. "The extensive testing process built a high degree of confidence in the relay's suitability for the application. To many engineers who have specified relays over the years, KILOVAC is synonymous with rugged reliability in the most demanding environments."

The on-ground quality control and testing process of the relays included environmental, mechanical and electrical tests. The testing is extensive and the full process can take months—at times it may take as long as the actual manufacturing process of the relay.

The 2,000-pound rover is expected to operate for around 98 weeks—one Martian year—in an inhospitable environment akin to a cold, rocky desert.

The average surface temperature is -54°C, but can reach a relatively sweltering 27°C along the equator at noon. The Curiosity rover's landing site is 4.6 degrees south of the Martian equator.

For more information on TE's KILOVAC products, contact the Product Information Center at (800) 522-6752 or visit

www.te.com/en/industries/defense/solutions/space.html. To learn more about NASA's Curiosity rover visit www.nasa.gov/mars.

TE Connectivity and the TE connectivity (logo) are trademarks of the TE Connectivity Ltd. family of companies.

The Mars Reconnaissance Orbiter and Mars Exploration Rover projects are managed by JPL for NASA's Science Mission Directorate, Washington. The rover was designed, developed and assembled at JPL. JPL is a division of the California Institute of Technology in Pasadena. Lockheed Martin Space Systems in Denver built the orbiter.

TE Connectivity is a global, \$14 billion company that designs and manufactures approximately 500,000 products.

More information on TE Connectivity can be found at www.te.com.

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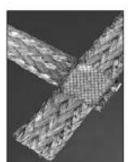
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NEWS PLUGS continued



New Thomas & Betts Product Compresses CCA Cable with Hex-Flex Die System

Blackburn® Copper-Clad Aluminum Lugs and Splices from Thomas & Betts, which are designed exclusively for termination on copper-clad aluminum (CCA) cable, are the first to be UL® Listed for this application. Made of aluminum, the lugs and splices are compatible with Thomas & Betts' HEX-FLEX® Die System, an indentstyle crimping system that enables die identification on the crimp for traceability, and feature the Color-Keyed® Compression System, which ensures proper connections.

CCA cable is lighter and more flexible than copper, and only slightly heavier than bare aluminum, making termination with conventional terminals and crimping methods challenging. Blackburn® Copper-Clad Aluminum Lugs and Splices, however, properly compress CCA cable for maximum pull-out force and longevity. They also are designed with an oxide inhibitor pre-applied in their barrels.

"Once again, the Blackburn® brand demonstrates its leadership position with the introduction of these CCA lugs and splices," said Brian Burke, product manager at Thomas & Betts. "We're providing not only a cost-saving solution in terminating CCA cable effectively, but also a product that is UL® Listed. Because they're compatible with our HEX-FLEX® Die System, they also offer 20 percent more pull-out force than competitor die sets, as well as fewer crimps per barrel, which reduces installation time and labor costs."

Blackburn[®] Copper-Clad Aluminum Lugs and Splices are currently available for 750 and 800 kcmil wire ranges, with additional sizes to be released in response to demand. Additional features include slotted holes to ease installation and narrow tongues for side-by-side mounting on standard NEMA spades.

For more information about Blackburn® Copper-Clad Aluminum Lugs and Splices from Thomas & Betts, please visit www.tnb.com and look for Blackburn® on the "Brands" tab, or call (800) 238-5000.



Blackburn[®] Copper-Clad Aluminum Lug

Thomas & Betts Corporation is a global leader in the design, manufacture and marketing of essential components used to manage the connection, distribution, transmission and reliability of electrical power in utility, industrial, commercial, and residential applications. With a portfolio of more than 200,000 products marketed under more than 45 premium brand names, Thomas & Betts products are found wherever electricity is used. Thomas & Betts' headquarters are in Memphis, Tenn. For more information, please visit www.tnb.com.

New Videojet[®] 8510 Ink Jet Printer Designed to Meet Industrial Coding Application Requirements

Videojet Technologies Inc., a worldleading manufacturer of coding, printing and laser marking products, fluids and accessories for the product identification industry, today announced the launch of the Videojet 8510 ink jet printer. Offering unmatched ease of operation and maintenance, the 8510 ink jet printer provides maximum uptime through simple and quick ink cartridge changes. The 8510 is ideal for a range of primary and secondary coding and marking applications, and its touchscreen interface allows operators to access all common operations in five or fewer touches.



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INDUSTRIAL INFO-TAINMENT

"The 8510 ink jet printer represents a step-change improvement in operator ease-of-use for industrial ink jet solutions," said Casey Robertson, Videojet thermal ink jet product manager. "By incorporating a menu-driven touchscreen interface with the inherent advantages of high resolution HP® printing technology, our industrial customers now have a coding device that is very simple to operate and maintain. This greatly simplifies operator training and helps aid packaging line productivity."

With an intuitive 8.4 inch color touchscreen interface, the 8510 allows operators to quickly and easily ascertain the status of the printer, verify the print job currently loaded and check cartridge ink levels and other production line data - all from the home screen. Features of the 8510 touchscreen mimic consumer computing devices so operators benefit from the graphical user interface, which includes easy-to-learn icon-based controls. In addition, maintenance of the 8510 is as easy as wiping the printhead when it becomes dirty and replacing the empty ink cartridge when it runs out. Cartridge changes take less than one minute so packaging operations avoid costly downtime, remaining operational and more productive.

The 8510 incorporates key elements of Videojet's CLARISUITE code assurance software, a scalable software solution that enables packaging supervisors to increase productivity and reduce human error in message set-up. Inherent in the printer is the ability to move the critical task of message template creation away from the production floor. Packaging supervisors can embed rules-based guidelines into specific message fields, thus helping operators choose the correct data when setting up a packaging run and editing the code to be printed.

The 8510's compact size controller and multiple low profile printhead options

allows for quick integration on packaging production lines – even in the most space-constrained locations. In addition, by having the ability to drive up to four printheads, operators can easily print tall messages or add printing content in a cost effective manner.

Adds Robertson: "Videojet understands the demands placed on the packaging professional including specific coding topics like code quality and code accuracy, and broader packaging line concerns such as throughput and uptime. The 8510 was designed to address these demands by maximizing the inherent advantages of the HP printing technology while truly streamlining the entire operator-printer interaction."

Check out the 8510 thermal ink jet printer on display at Pack Expo (Oct. 28-31) in booth #1534, or to get additional information call 800-843-3610 or visit www.videojet.com.

Updated Internet Presence Now Online! HARTING Re-launches Website

HARTING, Inc. of North America is pleased to announce the re-launch of its website. Responding to the needs and expectations of visitors to the site, the family owned company headquartered in Espelkamp, Germany has redesigned its website with new features and an enhanced bold design..

A global survey of users, mainly HART-ING customers, applicants and visitors set the wheels in motion for this extensive project. The overall design has been completely overhauled with sharpened clarity of structure, streamlined ergonomics, and enhanced user friendliness. In particular, the eBusiness section and the concisely laid out Product Center allow users to easily locate information with just a few clicks.

The new website is ready for use at www.HARTING-usa.com.

Wiring Harness News SEPTEMBER/OCTOBER 2012 35



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IPC Advocacy Helps Shape Final SEC Conflict Minerals Regulation Treatment of Scrap and Recycled Materials and Phase-In Period Secured

Following years of advocacy, IPC and its members are relieved that the conflict minerals rule approved by the U.S. Securities and Exchange Commission (SEC) today includes all of the key provisions for which the organization has been lobbying. Specifically, the regulation includes a two year phase-in period during which conflict minerals may be identified as of "conflict undeterminable," and permits companies to designate recycled or scrap minerals as "DRC conflict free" after conducting a reasonable inquiry.

The final regulation includes a phase-in period, as sought by IPC and other industries. The phase-in of two years for companies and four years for small companies will enable compliance infrastructures to continue to mature and provide companies with the flexibility to develop appropriate, supply chain-based due diligence processes. Critically important, the phase-in period contains a "DRC conflict undeterminable" category that allows companies to declare an unknown origin instead of disclosing that the minerals contained in their products are DRC conflict associated.

During the final months before the regulation was issued, IPC vigorously advocated for more reasonable provisions for recycled and scrap materials regulation. As IPC explained

in a letter to SEC officials last month, "The details required in a CMR [conflict minerals report] are not available for recycled materials due to the various forms of recycling and thousands of consolidators, reclaimers, and scrap dealers both foreign and domestic." The final regulation requires issuers to conduct a reasonable inquiry in verifying recycled or reclaimed conflict minerals.

"The situation in the DRC is of deep concern to all of our members and the broader electronics industries," said Fern Abrams, IPC director of government relations and environmental policy. "We have worked with the SEC to encourage the implementation of regulations that meet the intent of Dodd-Frank without being unnecessarily burdensome."

IPC's successful advocacy included submitting three sets of written

> comments to the SEC, actively engaging with lawmakers and SEC Commissioners and staff, providing testimony before Congress, preparing a legal brief on SEC options, and conducting a comprehensive burden analysis.

> IPC and its members have been actively involved in several initiatives to improve control and transparency in the mining and refinement of conflict minerals and to help the electronics industry prepare for compliance with the provisions of the Dodd-Frank Act.

In addition, IPC has been an active participant in the Organisation for Economic Co-operation and Development (OECD) conflict minerals due diligence implementation program.

For more information on IPC's initiatives in the area of conflict minerals, visit www.ipc.org/conflict-minerals or contact Abrams at FernAbrams@ipc.org.

IPC (www.IPC.org) is a global industry association based in Bannockburn, III., dedicated to the competitive excellence and financial success of its 3,100 member companies which represent all facets of the electronics industry, including design, printed board manufacturing, electronics assembly and test. As a member-driven organization and leading source for industry standards, training, market research and public policy advocacy, IPC supports programs to meet the needs of an estimated \$2.02 trillion global electronics industry. IPC maintains additional offices in Taos, N.M.; Arlington, Va.; Stockholm, Sweden; Moscow, Russia; Bangalo.





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NEWS PLUGS continued

TE Connectivity Announces New Color to Color to Identify High Voltage Circuits in Heat Shrinkable Molded Parts

TE Connectivity (TE) introduces an extension to its line of standard colors of molded parts for the commercial aerospace and military markets.

As vehicle market trends are pushing for an orange color safety marking of higher voltage circuits in electric propulsion vehicles, TE has responded by offering colored tubing as well as color molded shapes to satisfy this identification need.

The orange colored molded parts join the existing line of basic colors, as well as common military shades of tan and olive drab. A number of new commercial and military ground vehicles are being designed with electric propulsion options for primary or secondary power.

With the electrical systems running at voltages up to 610 volts, it creates safety needs that were not before required. Precautionary actions have been taken in the



Heat Shrinkable Molded Parts to Identify High Voltage Circuits

industry to implement safety markings for high voltage circuits to aid identification to installers and mechanics. "TE is addressing new challenges in the ground vehicle market and providing modifications to existing products that add safety, reliability and convenience to our customers," said John Kuster, Senior Product Manager, TE Global Aerospace, Defense & Marine. "TE boots and tubing make the requested high voltage identification a simple process."

Special colors can be requested based upon a minimum demand.

For more information on TE's color molded parts, contact the Product Information Center at (800) 522-6752 or visit www.te.com/catalog/menu/en/23181?BM L=10576,26437,23182.

TE Connectivity and the TE connectivity (logo) are trademarks of the TE Connectivity Ltd. family of companies.

New IPC-1758 Data Exchange Standard on Pack and Packing Materials

PC — Association Connecting Electronics Industries® has released IPC-1758, Declaration Requirements for Shipping, Pack and Packing Materials. This standard establishes the requirements for the exchange of information on the materials used to protect products during shipment between supply chain partners. IPC-1758 is one of several in a series of IPC-175x data exchange standards that permit segmentation of declaration details based on the subject and scope of the declaration.

In addition to describing essential information exchange content with respect to packing, IPC-1758 is supplemented with references to regulations impacting materials, marking, recycling information and recycled content that may be desired to complete the data package.

While IPC-1758 contains generic information regarding packing declaration, when it is used in combination with the latest version of the IPC-1751 sectional standard, the resulting document set defines the declaration information.

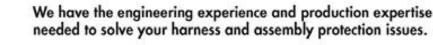
> IPC-1758 pertains to both hard copy and electronic data descriptions. Because this standard allows for the creation of a record between suppliers and their customers, the data that is communicated may be used to help support and demonstrate due diligence.

> A free single-user download of IPC-1758 is available at www.ipc.org/1758. IPC members may purchase a hard-copy of the guideline for \$26; the industry price is \$52. For more information, visit www.ipc.org/1758.

Pasternack Introduces New Line of Low PIM Connectors

Low PIM Connectors for 1/2" Corrugated Cable are Now Available from Pasternack Enterprises. Pasternack Enterprises, Inc., a leading ISO 9001:2008 manufacturer and International supplier of custom and standard RF, microwave and fiber optic products, introduces their new line of high performance, low PIM connectors for 1/2" flexible and superflexible cables. This new line of connectors is perfect for applications requiring reliable low PIM levels and outstanding RF performance that are easy to install in the field.Pasternack Enterprises' high performance low PIM connectors are designed to fit on most commercially available 1/2" corrugated copper and aluminum cables.





For 30 years, Thermax's Santa Fe Textiles operation has been satisfying customers with quick turn around of braided solutions to anywhere in the United States. We specialize in harness and assembly overbraiding. You can rely on our braiding expertise and experience with a wide range of materials to provide you with the right balance of mechanical integrity, temperature and abrasion resistance, flexibility and cost for your harness or assembly projects.

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_Continued in page 40

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Fast Wire Harness Testing

- Audio/Visual Work Instructions
- Store Test Results

More customers choose Cablescan Series 90 Continuity Analyzers with our unique TestRite software than any other continuity test system of its kind. Series 90 circuit analyzers provide exceptional speed, versatility, and accuracy in the testing of wire harnesses, backplanes, and other interconnects. Results are 200 times faster than hand buzzing and shorts are tested in the process. The testers provide resistance and capacitance measurements, diode testing, and guided harness assembly. You can locate wires by touch and verify terminations.

Cablescan's Series 90 TestRite programs run under the most popular Windows operating systems, and can import wire lists, net lists, and CAD data. TestRite's browser window allows you to provide setup and work instructions using HTML, image, and audio files. With a simple click, everything is displayed, stored, and can be printed in seconds. High voltage and high current models are also available. Put simply, you reduce test and assembly cost dramatically. Visit our website or call us at (909) 483-2436 for more details. Cablescan, Inc., 3022 Inland Empire Blvd., Ontario, CA 91764





Cablesca A EUBANKS COMPANY

www.cablescan.com

Munich from November 13 – 16, 2012.

The PCB Marketplace features an extremely diverse lecture program at the forum and networking opportunities, and it invites visitors to participate in an intense exchange of information on the topic of PCBs, other circuit carriers and EMS. The Marketplace will be located in Hall C1. The exhibition sector will be located in Halls B1 and C1 and features companies such as FELA Leiterplattentechnik, Flextronics International Germany, Multek Europe, Italia, SANMINA - SCI Holding, Würth Elektronik and Zollner Elektronik.

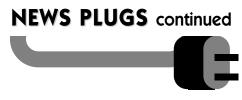
Christoph Stoppok, Managing Director of the Electronic Components and Systems and PCB and Electronic Systems trade associations in the ZVEI: "The concept of the PCB Marketplace as a central communications gathering proved to be extremely effective, so we decided to introduce this successful model at electronica, as well."

> The main themes of the lecture program include connectors, PCB & EMS (electronic manufacturing services), MCD (material content data) and IMDS (international material data systems). The first items on the agenda have already been announced: On November 14, the ZVEI will hold a panel discussion on "The World of Testing -Achieving the Desired Quality Safely".

> After that, representatives from companies such as Robert Bosch, Lackwerke Peters and Varioprint will discuss "PCB Reliability". A list of all lectures at the PCB Marketplace is available in the electronica event database. Additional information about the PCB Marketplace:www.electronica.de/ supporting-program.

American Cable Company Announces New Website

American Cable Company is pleased to announce the launch of American Cable Company's new web site, www.americancableco.com. American Cable is committed to manufacturing the highest quality prod-



Continued from page 38_

Low PIM connectors are available in 7/16 DIN and Type N series with both male and female interfaces. Pasternack's custom length assemblies using these new low PIM connectors are made to order and ship the same day.

Each high performance low PIM connector body is plated with a tri-metal Abaloy coating that produces a very durable surface with good corrosion protection while providing superior electrical conductivity and exceptional PIM performance.

When properly installed, these connectors provide reliable PIM performance of < -160 dBc and VSWR levels of < 1.10 up to 3GHz."Our new line of high performance low PIM connectors is a great addition to the breadth and depth of our wireless infrastructure product base," says Gerry Camacho, VP of Technical Services at Pasternack Enterprises, Inc. "These new low PIM connectors are a great value and offer our customers the ability to order custom length low PIM assemblies with the added convenience of same day shipping."

The new high performance low PIM connectors from Pasternack are available now. View the new low PIM connectors with accompanying detailed specifications on Pasternack's website or by visiting http://www.pasternack.com/t-Low-pim-connectors.aspx directly.

Pasternack Enterprises, Inc. can be contacted at +1-949-261-1920.

A leader in RF cables, adapters, connectors and components since 1972, Pasternack Enterprises is an ISO 9001:2008 certified manufacturer and international supplier of RF, microwave and fiber Optic products. Pasternack offers off-the-shelf availability and same-day shipping of the industry's broadest selection of quality RF and microwave components.Press Contact:Ken VittoPasternack Enterprises, Inc.17802 FitchIrvine, CA 92614(949) 261-1920.

electronica Continues Success Model of PCB Marketplace

In close cooperation with the ZVEI (Electrical and Electronics Manufacturers' Association), the PCB Marketplace communications platform is being initiated at electronica for the first time. Following its successful launch at productronica 2011, now the forum as well as a networking area will be a central gathering for the PCB industry at electronica. The International Trade Fair for Electronic Components, Systems and Applications takes place in

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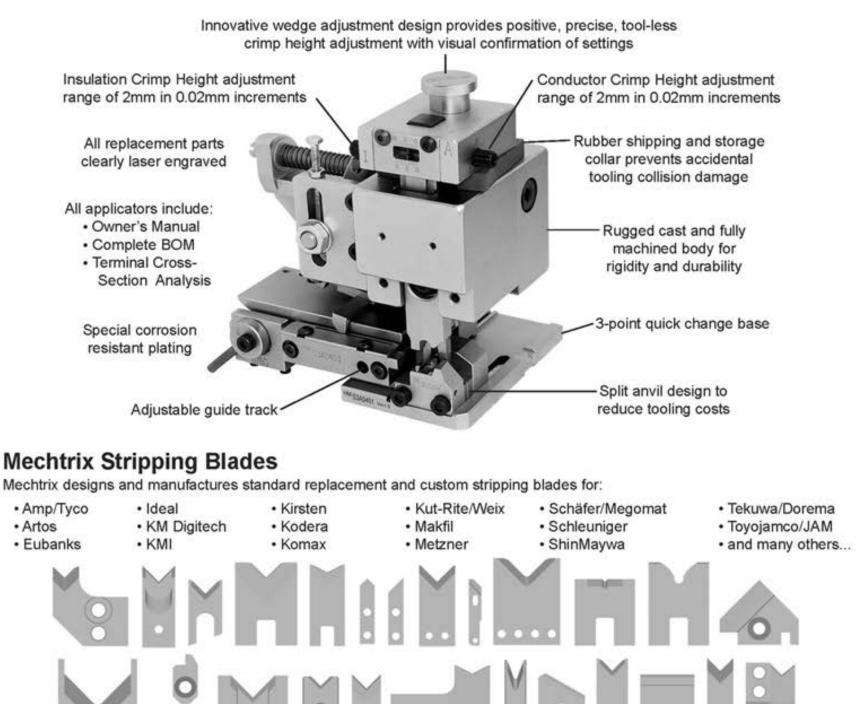
WIRE & CABLE SOLUTIONS www.lapptannehill.com | 800.633.6339 A Lapp Group Company ucts, delivered on-time at fair prices and excellent support.

American Cable is focused on the Original Equipment Market and has expertise in all areas of Manufacturing, Engineering, Quality and Customer Service. The product line includes a complete range of Battery Cables, Boots/ Covers, Copper Lugs, Custom Injection Molding, Ground Straps, Jump Starts, Lead Casted Assemblies, Panel Assemblies, and Wiring Harnesses. Please contact us for your battery cable and wire harnesses needs www.americancableco.com.



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Mechtrix is proud to offer the full line of THB Mechanical and Air-feed Applicators. With more than 20 years of tooling experience utilizing our Mechtrix CrimpCADD® design and analysis software, Mechtrix can design and supply you with the perfect solution to even your most difficult wire terminating projects. Ask us about our special reduced pricing on spare tooling with your initial order.



Mechtrix Equipment

Mechtrix has designed a number of unique machines to solve specific wire processing problems. These machines range in complexity from our patented center stripping machines to terminal paper winding machines. These machines include:

- Wire Prefeeding Equipment
- Heavy Duty Benchtop Wire Stripping Machine
- Automatic & Manual Center Stripping Machines



- Terminal Carrier Strip Cut-off Devices
- Terminal Paper Winding Machines
- Terminal Applicators & Crimping Presses



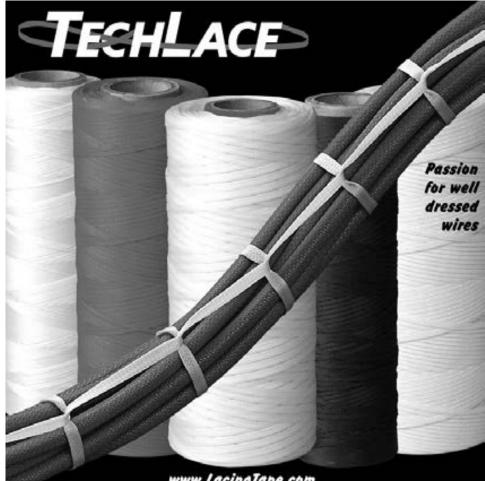


WAGO Higher-Voltage 2060 Series with Spacer

Pacing the burgeoning LED market, WAGO Corporation's 2060 Series pushbutton SMD-Terminal Block gains a 600V/9A 2-pole unit. To date, developers of high-output LED devices have accom-

modated design variations by installing two, 600V 2060 Series 1-pole units with the requisite spacing between them on the PCBs. WAGO's high-voltage 2-pole unit simplifies design and expedites manufacturing — specify and automatically place only one component for high-output LED devices such as roadway lights.

Borrowing the housing from its 3-pole sibling (rated 250V), the high-voltage 2pole unit replaces the center port with a spacer. This enables it to match the industry-leading 600V rating of its 1-pole sib-



www.LacingTape.com

ling. 2060 Series is UL/cUL Recognized. The units are available in tape-and-reel packaging for automated assembly.

2060 Series' labor-saving push-buttons eliminate hand-soldering of PCB leads. Accommodating solid/stranded conductors (AWG 24–18) within one unit — even tinned, top-coated or pre-bonded ones - terminations are simple. Solid conductors are pushed-in; removal is push-button actuated. Flexible or stranded conductors utilize push-buttons for termination/ removal. Push-buttons also permit conductor removal for error correction, eliminating scrap and rewiring. OEMs can also meet Energy Star requirements for end-oflife components — swap-out/drop-in units via push-button. CAGE CLAMP® S Spring Press ure provides maintenancefree, thermal cycling-resistant terminations.

Lever-Actuated LED Splices:

2060 Series joins the 222 Series LEVER-NUTS™ lever-actuated Splices in WAGO's growing portfolio of LED interconnect solutions. Offered in 2-, 3- and 5-pole variants, LEVER-NUTS™ accommodates solid and fine-stranded conductors AWG 28–12 for LED-based applications. Terminations are simple: Raise lever, insert stripped conductors and lower lever. More at: http://www.wago.us/products/2631.htm.

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.

Dr. Michio Kaku Chosen to Keynote **IPC APEX EXPO 2013**

Theoretical physicist, best-selling author and futurist Dr. Michio Kaku has been selected through a vote of IPC members to be the IPC APEX EXPO® 2013 opening keynote speaker on February 19, 2013, at the San Diego Convention Center in San Diego, Calif.

Referred to as a "rock star" by many in the scientific community, Kaku is an internationally recognized authority on Einstein's unified field theory, and is known for using science to predict trends affecting business, commerce and finance.

Kaku's keynote will present a vision of life in the year 2100 culled from ideas of 300 of the country's most influential scientists. He will explore revolutionary advancements in medicine, energy production, artificial intelligence and aeronautics that will forever change our way of life — including innovations like Internetenabled contact lenses, cars that will drive (or even fly) themselves and brain sensors that will let us move objects using only the power of our minds.

Kaku is one of the world's most widely recognized figures in science. His television documentaries for the BBC, and Science and Discovery channels, as well as his radio shows, such as Science Fantastic, and his New York Times best-selling books like Physics of the Future have popularized

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science and roused the interest of millions of followers around the globe. A prolific writer, Kaku has also authored articles for scores of publications ranging from major-market newspapers to popular business, computer and science magazines.

Members of the electronics manufacturing industry chose Kaku to be the opening keynote speaker through an online voting process in June 2012. In a statement to IPC members, Kaku said, "Electronics has completely revolutionized our world in the last 50 years. Your industry is a critical building-block for future advancement. It is my great pleasure to share my research and predictions with you."

Kaku's opening keynote address on Tuesday, February 19, at 8:30 am, is free to all registered IPC APEX EXPO attendees. Following his keynote, Kaku will sign copies of his

latest book, Physics of the Future, which will be available for purchase on-site.

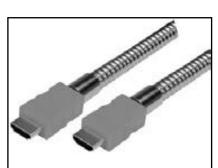
The IPC APEX EXPO conference and exhibition will run February 19–21, 2013. Standards development meetings, professional development courses and other show activities will take place February 17–21. For more information on IPC APEX EXPO, visit www.IPCAPEXEXPO.org.

L-com Introduces Armored HDMI Audio/Video Cable Assemblies

L-com, Inc., a designer and manufacturer of wired and wireless connectivity products, has introduced a line of HDMI audio/video cables with Ethernet that have a crush-resistant armor over the cable length. The new cables are available in either plastic armor, with a crush resistance of 1000 PSI (Pounds per Square Inch), or metal armor, with a crush resistance of 1500 PSI.

These cables have many applications where they would potentially be exposed to excessive force, may be crushed or impacted, and often those environments are the type where downtime is not an option. We designed these cables to serve that market and we're happy to provide them off-the-shelf."

The new cables will be stocked in L-com's Massachusetts, USA, distribution center for same-day shipment. Specifications, a 2D engineering



Armored HDMI Audio/Video Cable Assemblies

drawing, and 3D CAD models are all available on L-com's website for free download.

L-com, a global designer and manufacturer of wired and wireless connectivity products, offers a wide range of solutions and unmatched customer service for the electronics and data communications industries. The company's product portfolio includes cable assemblies, connectors, adapters, computer networking components, and custom products, as well as the Hyperlink line of wireless products. Trusted for more than 30 years, L-com, Inc. is headquartered in North Andover, Mass., and is ISO 9001: 2008-certified. For more information, please visit: http://www. L-com.com/



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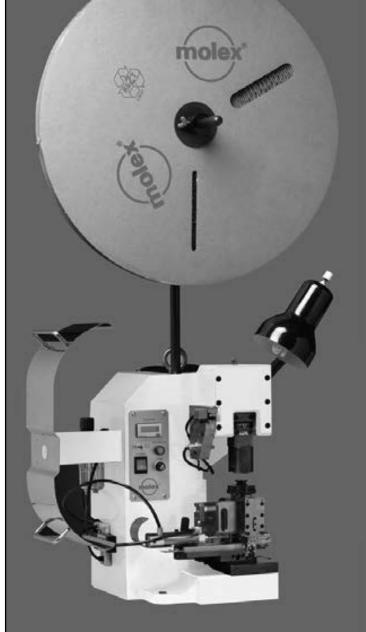
Features and Benefits of the TM-4000™ Universal Crimp Press Include:

- · Provides 3.5 tons (31 kN) of crimp force
- Accepts any Molex applicator and most industrystandard applicators
- Can be used with Molex Tape Module (64016-2000)
- Meets OSHA safety and noise requirements and is CE approved
- Two safety interlock switches attached to the guard prevent press from cycling if guard is open during operation

The Tape-Terminal Crimp Module efficiently crimps terminals to wires from 4 to 30 AWG with minimal setup adjustments and achieves optimal cycle rates for mid-to-high volume, semi-automatic operations.

Features and Benefits of the Tape Terminal Crimp Module Include:

- Quick-change modular tooling accepts all existing ATP-201 and ATP-301 die sets
- Used in Molex TM-3000[™] and TM-4000[™] presses, which accept Molex applicators and most industry standard applicators



such as military, security, and industrial environment applications. The cables feature 30 microinch gold plated contacts and double shielding to protect the sensitive audio and video signals from interference. The cables are stocked in six different lengths and will be available off-the-shelf for same day shipment.

"HDMI technology is used in many more applications than just home theater and digital signage," said Steve Smith, Product Manager. "We saw a need for HDMI connectivity in environments where the cables The TM-4000[™] Universal Crimp Press is an industry-standard, bench-top press that terminates large lug products on Mylar tape up to 4 AWG insulated and some 2 AWG uninsulated, resulting in lower overall applied costs. The TM-4000[™] has electrical requirements of 240 AC 50/60Hz.

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NEWS PLUGS continued



Waytek, Inc. Carries a New Cable Tie Gun For Faster Installation in Vehicles and Mobile Equipment

Waytek, Inc. now stocks the EV07 Cable Tie Gun manufactured by HellermannTyton, to save labor time and costs in cable tie installation in trucks, trailers, vehicles and off-road equipment.

The EV07 delivers a flush cut for safer installation of 18-80 pound cable ties, with no protrusions or damage to neighboring components. The advanced operating system provides reliability and durability resulting in fewer repairs and extended lifespan. It eases wear and tear on tool components.



EV07 Cable Tie Gun

Waytek, Inc. is a privately held company which offers quality electrical supplies. With over 10,000 products in stock, Waytek's extensive line includes circuit protection, wire, cable, connectors, relays, switches, cable ties, wire coverings, heat shrink, tools, cable clamps, battery management devices and more wiring accessories.

For further information contact Waytek, Inc., 2440 Galpin Ct., Chanhassen, MN 55317. Phone (952) 465-0436 or Fax (95) 949-0965. Visit www.waytekwire.com

NJ Micro Electronic Testing Announces ANSI/ESD S20.20 Laboratory Certification

Joseph Federico VP/Director of Operations of NJ Micro Electronic Testing, Inc., a worldwide leader in the science and technology of electronic component testing, has announced its ANSI/ESD S20.20 Laboratory Certification.

"For nearly thirty five years our laboratory has practiced the robust MIL-STD-1686 standard handling of electronics components to adhere to the stringent requirements of the military and aerospace industries. This certification recognizes that our technology program adheres to OEMs standards, providing assurance to a diverse range of industries. We are continually working to improve the science of our counterfeit component risk mitigation program, Mission Imposter®, which is used by our engineers and engineering project managers to prevent counterfeit product distribution," said Joseph Federico at NJ Micro Electronic Testing engineering headquarters located in Clifton, NJ.

Earlier this year, NJ Micro Electronic Testing Quality Engineer Manager Edgar Usman spearheaded our efforts to earn the certification upgrade. He worked diligently with National Quality Assurance USA, located in Acton, MA, to implement the administrative and technical approaches for the upgrade of NJ Micro Electronic Testing's pre-existing quality system registration.

ANSI/ESD S20.20 is the multi-industry standard for the development of ESD control programs that protect today's increasingly sensitive electronic components, assemblies, and equipment from costly ESD damage and reduce down-time. Using the standard's control methods and guidance, an organization can develop an ESD control program that protects devices down to 100v (class 1a) or less.

Used by numerous international OEMs and serving as the replacement for MIL-STD-1686, the S20.20 standard has quickly become highly regarded in the commercial electronic, telecommunication, aerospace, automotive, and medical device industries. In fact, the telecommunications industry standard TL 9000 references the S20.20 standard as best practice for meeting ESD control needs.

For additional information on NJ Micro Electronic Testing's ANSI/ESD S20.20 certi-

Continued on page 46





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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



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NEWS PLUGS continued

Continued from page 44 _

fication, electrical testing services, its Mission Imposter Counterfeit Component Detection Program or any of its other services, please contact Joseph Federico at (973) 546-5393 or visit our website at http://www.njmetmtl.comAbout NJ Micro **Electronic Testing**

NJ Micro Electronic Testing provides professional electronics component testing to the Commercial, Aerospace, Industrial, Automotive and Military fields worldwide. Its state of the art Mission Imposter[®] Counterfeit Components Detection Process identifies counterfeit or cloned products. Detection Process identifies counterfeit or cloned products.

New Deutsch DTSK Series Power Connectors

LADD Industries is pleased to announce the addition of the DTSK Series electrical connectors to the Deutsch product line. Deutsch industrial electrical connectors provide a variety of innovative connector solutions for the off-highway, trucking, construction, agricultural, and engine industries. The new DTSK Series are easy-to-use single cavity connectors, ideal for high-power applications.

The DTSK Series connectors are made of heavy-duty thermoplastic and accept



DSTK Series Power Connectors

size Ø8mm contacts that are rated up to 150 amps. The new connector series features latch style mating and an integrated secondary lock, simplifying connector assembly. Wire seal grommets are available to prevent dirt, dust and moisture from contaminating connections, making the DTSK Series an effective option for applications that require a high-power environmentally sealed connector.

Designed with ease of use and simplicity in mind, the new DTSK Series connectors are a valuable addition to the highperformance Deutsch product line. LADD Industries, the exclusive authorized US distributor of Deutsch industrial electrical connectors, is pleased to offer the DTSK Series connectors to meet your highpower electrical connector needs. Please contact LADD at 1-800-223-1236 or visit www.laddinc.com for more information on the new DTSK Series connectors and all your Deutsch connector needs.



Amanda Stone The Eraser Company

Eraser Company Appoints Marketing Assistant

The Eraser Company, Inc., manufacturer of wire, cable and tube processing equipment, announces the appointment of Amanda Stone as Marketing Assistant. Stone will be responsible

> for providing support related to the implementation of various marketing campaigns and activities. Stone received her undergraduate degree from Binghamton University. Stone brings with

> her several years of experience in the marketing field.

> in business, manufactures a

The Eraser Company, Inc., celebrating 101 years



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TE Connectivity has been recognized as a leader in providing the tools for wire harness and printed circuit manufacturing. Our products are designed to meet and anticipate our customers' ever-changing requirements and built to the highest quality standards, for longest, most productive performance lifetimes.

Whatever your production volume and job mix, we can offer the tools to get it done. With a full range of tooling from hand tools to high volume, fully automated systems, TE is able to meet manufacturing demands worldwide. Our experince has given us a unique view of the trends and challenges in wire harness and PCB manufacturing. It all derives from our commitment to your manufacturing challenges, giving you the advantage in your marketplace.

Hand tools combine ease of use with reliability and precision.

wide range of industrial products including wire/ cable/tubing cutters, wire/ cable strippers, wire twisters, wire brush wheels, dereelers, infrared heating equipment, measuring tools, and fybRglass® erasers. The company is ISO 9001:2008.

> For more information on Eraser please visit our newly redesigned website:http:// www.eraser.com or phone (315) 454-3237.

David Styers Jr. Receives ASTM International Copper Club Award

David Styers Jr., vice president of technical product and processes at Wolverine Tube Inc. in Decatur, Ala., has received the Copper Club Award from ASTM International Committee B05 on Copper and Copper Alloys. Established in 1979, the award is presented to individuals who have done the most to advance the standardization of copper and copper alloys. Styers has been a member of ASTM International and Committee B05 since 1992. He currently serves as first vice chairman of the main committee and chairs Subcommittee B05.94 on Strategic Planning. He received the B05 Award of Appreciation in 2007. A graduate of the Univer-

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sity of Alabama - Huntsville, where he earned a bachelor's degree in mechanical engineering and his master's in management, Styers joined the staff at Wolverine Tube in 1976. During his 36-year tenure, he has held a variety of technical and marketing roles, including corporate quality manager, associate manufacturing engineer and marketing director. He received his current title in 2009.

In addition to ASTM International, Styers is a member of the American Society of Heating, Refrigeration and Air Conditioning Engineers and the American Society of Mechanical Engineers.

ASTM International is one of the largest international standards development and delivery systems in the world. ASTM International meets the World Trade Organization (WTO) principles for the development of international standards: coherence, consensus, development dimension, effectiveness, impartiality, openness, relevance and transparency. ASTM standards are accepted and used in research and development, product testing, quality systems and commercial transactions.

For further information visit www.astmnewsroom. org

High Reliability MIL Grade Ceramic **SMPS** Capacitors for High Frequency Switching Power Supplies/Energy Storage

API Technologies Corp. a trusted provider of RF/microwave, microelectronics, and security solutions for critical and high-reliability applications, announced today the addition of high reliability MIL grade SMPS ceramic capacitors to its

Spectrum Control product line.

These high-speed switch mode power supply (SMPS) capacitors feature extremely low equivalent series resistance (ESR) and equivalent series inductance (ESL), as well as predictable performance characteristics with changes in temperature, voltage and frequency. They are ideal for high reliability and high frequency applications. A commercial industrial grade alternative in a non-military package configuration is also available.

"Our hi rel ceramic SMPS capacitors have much less equivalent series resistance than comparable electrolytic and tantalum capacitors," said Larry Howanitz, Vice President, EIS & Sensors divisions of API Technologies. "This allows design engineers to accomplish the same results, but with less capacitance and in a smaller and lighter package."

Ceramic SMPS capacitors are designed for continuous operation at full-rated voltage across their entire temperature range. They are maintenance free and non-toxic. Applications include higher frequency switching power supplies such as resonant DC-DC power supplies and pulse modulated DC-DC converters, or for applications requiring bulk capacitance or energy storage. API Technologies' Electromagnetic Integrated Solutions (EIS) line of products offers filters and interconnects, advanced ceramics, specialty connectors & harnessing, power filters, and film modules. For additional information, including electrical and mechanical specifications, please visit www.apitech.com/spectrumcontrol, or contact API's sales team at sales@apitech.com.

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Industrial Wire and Cable Corp. has been manufacturing wire and cable products for over 40 years. We only produce the highest quality products at competitive prices. Our manufacturing process begins with 5/16 copper rod so we can control all tolerances to the highest standards in our state-ofthe-art facility, located in Lake Zurich, IL.

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2	2	66	++ 0.3 Ω		< 1 µA	1200 V	>1GΩ	0.067 mA	818 V	12 MΩ

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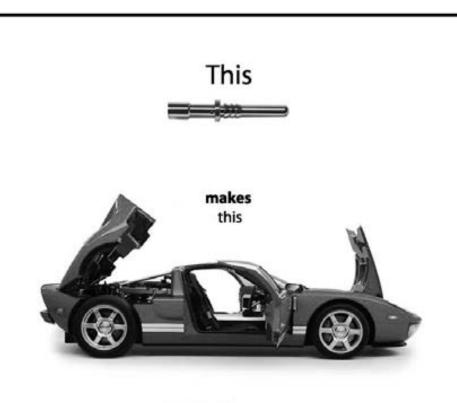
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NEWS PLUGS continued



NA PCB Industry Forecasts Production Growth to Resume

North American printed circuit board (PCB) production declined considerably in 2011, but growth has resumed in 2012 and is forecast to continue through 2014. The North American PCB market also declined slightly in 2011.

These are just two of the trends found in 2011–2012 Industry Analysis and Forecast for the PCB Industry in North America, recently released by IPC - Association Connecting Electronics Industries®.

The survey-based report presents data and analysis on market trends in the North American PCB industry, including sales history, trends in materials, sales by product type, production mix (high-volume vs. quick-turn vs. prototype), revenue trends from value-added services, financial metrics, industry end-markets by product type, and U.S. imports and exports. The report includes forecasts for PCB production in North America and worldwide through 2014, and historical data showing the long-range trends.

This comprehensive report covers both the rigid PCB and flexible circuit industries. A representative sample of 38 North American PCB manufacturers participated in the survey, with \$2 billion in total sales, accounting for approximately 48 percent of the North American market.

The 2011-2012 Industry Analysis and Forecast for the PCB Industry in North America is available to IPC members for \$675. The standard industry price is \$1,350. This report is also available in two separate volumes, covering the rigid PCB and flexible circuit segments separately. IPC members may purchase each of the segment reports for \$475; the industry price for each segment report is \$950. Companies that participated in the surveys receive these reports free.

For more information or to purchase the report, visit www.ipc.org/2011-2012-PCB-Market-Report. To participate in future studies, contact IPC's market research manager, Sree Bhagwat, at +1 330-677-5563 or SreeBhagwat@ipc.org. To view other IPC market research reports available, visit the IPC online store at www.ipc.org/onlinestore.

For information on IPC market research programs, contact Sharon Starr, IPC director of market research, at +1 847-597-2817 or SharonStarr@ipc.org, or visit www.ipc. org/industrydata.

Allied Wire & Cable Announces 2012 Scholarship Recipient

Allied Wire & Cable awards \$10,000 scholarship to George Gantert, future student at Montgomery County Community College, and son of Allied Account Representative, Holly Gantert.

We are proud to announce George Gantert as this year's recipient of the \$10,000 Allied Wire & Cable Scholarship.

George is the son of Allied Account Representative, Holly Gantert, who has been with the company for eight years.



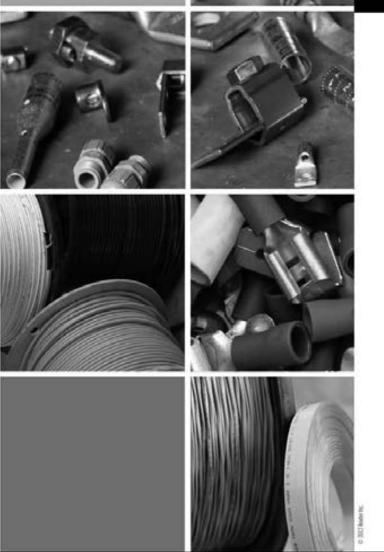
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George is attending Montgomery County Community College, and intends to transfer to Temple University once he has completed his core classes.

Of winning the scholarship George said, "It means a lot to me as it relieves the heavy burden of tuition and gets me ahead of the game at Montco...My mom told me (I won) and we both had the biggest smiles on our faces. It was a great moment."

A graduate of Pottsgrove High School, George is an accomplished athlete, lettering in golf, basketball, and baseball. He was also a member of DECA, which is sure to serve as great experience as he studies either Marketing or Actuary Science. Once at Temple, he hopes to do an internship as a way to jump-start his career.

George is the second winner of the Allied Wire & Cable Scholarship. Last year's winner, Matthew Rayner, son of Warehouse Associate, Ron Rayner, is entering his sophomore year at Penn State.

As a family-owned and operated company, Allied is dedicated to giving back to its community, and that includes taking care of the "Allied family." Children of Allied employees who have been with the company for a minimum of three years are eligible to apply for the scholarship during their senior year of high school. Students must have at least a 3.0 GPA, and must submit an essay on why they should be considered for the award as part of their application.

The scholarship is awarded based on both merit and financial need, and is paid over the course of the student's college career: \$2,500/year for four year programs or \$2,000/year for five year programs, so long as the student maintains a 3.0 GPA or higher.

Although he accomplished a lot during his high school career, everyone at Allied is sure he will do even greater things with his time in college. His mother, Holly, said it best: "I'm so proud of him and the man he's become. He's worked hard for everything he's ever achieved, whether it came to sports or academics and it's so nice to see him being recognized and awarded for all of his hard work and ambition." She goes on to say, "Although I would be proud of him receiving any scholarship, a scholarship from Allied means more because I've seen this company grow from when I started eight years ago, and I'm proud that they can offer this help to our kids. Allied has helped me out over the years and I'm so grateful that they're now helping out my son."

Allied Wire & Cable is proud to celebrate its family values through programs like the Allied Wire & Cable Scholarship, and looks forward to building this tradition with the heart of the company: the employees and their families.

Allied Wire & Cable is a family owned and operated wire and cable distributor and value-added manufacturer. Allied services many of the largest markets in the country, including the government, military, and the aerospace, automotive, and telecommunication industries.

Headquartered in Collegeville, PA, Allied has offices in New Hampshire, South Carolina, Tennessee, Texas, Wisconsin, Nevada, and Florida, along with several warehouses across the country. For more information on Allied Wire & Cable, please visit www.awcwire.com.



Pictured (from left to right) are Tim Flynn, Holly Gantert, George Gantert, and Dan Flynn.

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NEWS PLUGS continued

Delta Group Electronics Completes Company AS9100 REV C Certification

Delta Group Electronics, Inc. announced today that its Texas facility has received the highly-regarded AS9100C quality designation by Underwriters Laboratories, Inc. (UL). With this certification, Delta Group has earned AS9100C certification at all of the company's five operations. All facilities are also ISO9001:2008 certified along with ISO13485 in the California facility and NADCAP in the New Mexico facility.

AS9100 was originally released in October of 1999 by the Society of Automotive Engineers (SAE) and in conjunction with European Association of Aerospace Industries (EAAI) to promote quality standards across all aspects of air transportation. The AS9100 standard has since developed into the preferred quality standard of the aerospace and military industries. The AS9100 standard is directly aligned with the ISO 9001 standard while also including several additional requirements that directly support the critical nature of the aerospace and military industries.

Delta Group Electronics initiated its quality certification process in 2000 and completed this first stage in 2001 by receiving ISO 9001:2000 designations at each of its then three facilities in New Mexico, California and Florida. In order to meet the needs of its customers and to enhance its overall quality system, Delta Group pursued the AS9100 upgrade such that all the company's operations in California, New Mexico, Arkansas, Florida and Texas are now operating under this registration.

After receiving notice of the Texas designation, Tod Cummins, Delta Group's Director of Corporate Quality, commented: "The Texas facility upgrade is a great accomplishment. It demonstrates Delta Group Electronics mature business culture, which is based on providing its customers the highest quality level possible. Coupled with the 2012 corporate wide transition to AS9100 Rev C, this emphasizes the continuity of this culture throughout the company as well as an extraordinary level of executive management commitment. This is a very exiting accomplishment that aids in observing Delta Group Electronics' 25 years of operation."

Founded in 1987, Delta Group Electronics, Inc. is a full-service Electronic Manufacturing Services (EMS) company offering turnkey services for its customers in the aerospace, defense, transportation, medical, mining and commercial indus-



IPC Releases PCB Industry Results for July 2012

IPC — Association Connecting Electronics Industries® announced the July findings from its monthly North American Printed Circuit Board (PCB) Statistical Program.

PCB Industry Growth Rates and Book-to-Bill Ratios Announced

Rigid PCB shipments were down 4.2 percent in July 2012 from July 2011, and bookings decreased 5.7 percent year over year. Year to date, rigid PCB ship-

ments decreased 5.3 perbookings cent and increased 1.1 percent. Compared to the previous month, rigid PCB shipments were down 16.6 percent rigid bookings and declined 18.7 percent. The book-to-bill ratio for the North American rigid PCB industry in July 2012 continued to slip and registered 1.00, exactly at parity.

Flexible circuit shipments in July 2012 were up 15.4 percent, and bookings were down 35.0 percent compared to July 2011. Year to date, flexible circuit shipments decreased 4.2 percent and bookings decreased 7.7 percent. Compared to the previous month, flexible circuit shipments decreased 9.1 percent and flex bookings were down 46.7 percent. The North American flexible circuit book-to-bill ratio dipped to 1.03, due to both strong sales and weak orders for the month.

For rigid PCBs and flexible circuits combined, industry shipments in July 2012 decreased 2.6 percent from July 2011 and orders booked decreased 8.4 per cent from July 2011. Year to date, combined industry shipments were down 5.2 percent and bookings were up 0.3 percent. Compared to the previous month, combined industry shipments for July 2012 decreased 16.0 percent and bookings decreased 21.4 percent. The combined (rigid and flex) industry book-to-bill ratio in July 2012 decreased slightly but continued in positive territory at 1.01. "The sharp declines in North American PCB sales and orders in July over the previous month reflect nor-



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866-887-2189 heilind.com/rpages/te_oceanapp mal seasonal patterns," said Sharon Starr, IPC director of market research. "Strong flexible circuit sales in July cushioned the fall. This strong sales performance was not surprising given the high book-to-bill ratios for flex seen in the first half of the year," she added.

The book-to-bill ratios are calculated by dividing the value of orders booked over the past three months by the value of sales billed during the same period from companies in IPC's survey sample. A ratio of more than 1.00 suggests that current demand is ahead of supply, which is a positive indicator for sales growth over the next two to three months.

Book-to-bill ratios and growth rates for rigid PCBs and flexible circuits combined are heavily affected by the rigid PCB segment. Rigid PCBs represent an estimated 90 percent of the current PCB industry in North America, according to IPC's World PCB Production Report.

The Role of Domestic Production

IPC's monthly survey of the North American PCB industry tracks bookings and shipments from U.S. and Canadian facilities, which provide indicators of regional demand. These numbers do not measure U.S. and Canadian PCB production. To track regional production trends, IPC asks survey participants for the percent of their reported shipments that were produced domestically (i.e., in the USA or Canada). In July 2012, 83 percent of total PCB shipments reported by survey participants were domestically produced. Domestic production accounted for 83 percent of rigid PCB and 82 percent of flexible circuit

shipments in July by IPC's survey participants. These numbers are significantly affected by the mix of companies in IPC's survey sample, which change slightly in January, but are kept constant through the remainder of the year.

Bare Circuits versus Assembly

Flexible circuit sales typically include value-added services such as assembly, in addition to the bare flexible circuits. In July, the flexible circuit manufacturers in IPC's survey sample indicated that bare circuits accounted for about 44 percent of their shipment value reported for the month. Assembly and other services make up a large and growing segment of flexible circuit producers' businesses. This figure is also sensitive to changes in the survey sample, which may occur at the beginning of each calendar year.

Interpreting the Data

Year-on-year and year-to-date growth rates provide the most meaningful view of industry growth. Month-to-month comparisons should be made with caution as they may reflect cyclical effects and shortterm volatility. Because bookings tend to be more volatile than shipments, changes in the book-to-bill ratios from month to month may not be significant unless a trend of more than three consecutive months is apparent. It is also important to consider changes in bookings and shipments to understand what is driving changes in the book-to-bill ratio.

The information in IPC's monthly PCB industry statistics is based on data provided by a representative sample of both rigid and flexible PCB manufacturers in the USA and Canada. IPC publishes the PCB Book-to-Bill Ratio and the PCB Statistical Program Report each month. Statistics for the previous month are not available until the last week of the following month.

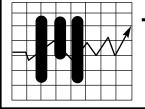
IPC (www.IPC.org) is a global industry association based in Bannockburn, III., dedicated to the competitive excellence and financial success of its 3,100 member companies which represent all facets of the electronics industry, including design, printed board manufacturing, electronics assembly and test. As a member-driven organization and leading source for industry standards, training, market research and public policy advocacy, IPC supports programs to meet the needs of an estimated \$2.02 trillion global electronics industry. IPC maintains additional offices in Taos, N.M.; Arlington, Va.; Stockholm, Sweden; Moscow, Russia; Bangalore, India; and Shanghai, Shenzhen and Beijing, China.



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IPC Study Predicts Impact of On-Shoring in NA Electronics Industry

Continued from page 1

largely responsible for operations returned to North America from overseas since 2009, accounting for more than 90 percent of the value and number of jobs brought back. The electronics manufacturing services (EMS) industry was also a big contributor. One-quarter of operations that returned to North American since 2009 came from China, with other countries making up the other 75 percent.

The EMS industry accounts for the largest share of overseas operations that participating companies plan to bring back to North America in the next three years. New operations, however, represent a much larger share of future North American production and these planned new operations were reported primarily by OEMs.

Companies cited quality control as the primary reason for bringing operations back to North America from overseas. However, being closer to customers is the driving force for companies establishing new operations in North America.

The study reports detailed findings on industry segments and types of products manufactured by operations that have been returned to or established in North America since 2009. It also covers operations targeted for location in North America in the next three years, as well as the number of jobs these operations represent. Trends in the dynamics between outsourcing and domestic sourcing by North American electronics manufacturers are also covered. In addition, the study includes an analysis of the rationale (and deterrents) behind onshoring and the future outlook for North American manufacturers.

On-Shoring in the Electronics Industry:Trends and Outlook for North America is 54 pages long, and is available to IPC members for \$150. The industry price is \$300. For further information or to purchase the report, visit www.ipc. org/on-shoring-2012.

See the "Calendar of Events" Page 57



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Contract Manufacturing Expo November 14-15, 2012

Palais des congres de Montreal Montreal, Quebec, Canada

The Contract Manufacturing Expo features leading providers of contract R&D serv- MD&M Minneapolis 2013 ice, custom molding, custom CNC metals processing, specialty electronic contract October 30-31, 2013 manufacturing and full service, turnkey contract manufacturing. Alongside Design For 21 years, MD&M Minneapolis has been the trusted resource for what's next in and Manufacturing Montreal that features leading suppliers of CAD/CAM systems and software, enterprise software, rapid prototyping, design services, custom molding, machining and components and fastening and joining systems.

See www.canontradeshows.com for further information.

Electronics West

February 12-14, 2013

Anaheim Convention Center Anaheim, CA

Meet face-to-face with electronics professionals offering the best solutions. Explore entire value chain for electronics manufacturing- from software to process control, first-hand the latest developments, technologies, products and services affecting from technology to applications, and from products to system solutions - under a your industry including: components, subassemblies, software, contract service, assembly, test and inspection products and much more. 350 exhibitors will display the latest electronics-related products and services. Visit www.canontradeshows. com/expo/atxw13 for exhibitor or attendee information.

Wiring Harness Manufacturer's Conference Renaissance Las Vegas Hotel February 20-22, 2013 Las Vegas, NV

Once a year WHMA sponsors a conference that offers members the opportunity to participate in committee sessions, attend educational programs and check out the industry's latest at the supplier's technology exhibits. For further information visit www.wbma.org or call (952) 253-6085.

San Diego Convention Center **IPC APEX Expo** February 19-21, 2013 San Diego, CA IPC APEX Expo is the largest event in North America featuring advanced and emerg ing technologies in printed board design, electronics and test Show highlights include:

Atlanta, GA Manufacturing industry professionals from all over the world attend IMTS to see Introduced in 1981, Interwire is the largest and longest-running wire and cable maraerospace, transportation and communications among others. For more information see www.wirenet.org/events.

Ft Worth, TX Del Mar Electronics Show

Del Mar Fairgrounds

Del Mar, California

Georgia World Congress Center

See Every year, the manufacturers of electronic components, instruments and accessories, as well as distributors and manufacturer's representatives, come together to meet, make contacts and build their businesses. Suppliers of industry goods and services also are on hand to market their products. The emphasis at EDS is on forging and maintaining business relationships through scheduled, one-on-one meetings, but the event is also filled with important product exhibits educational, educational programs and networking opportunities. For further information or a listing of the seminars available visit www.edsconnects.com

National Electrical Wire Processing **Technology Expo** May 8-9, 2013

Milwaukee, Wisconsin For 20 years, MD&M Minneapolis has been the trusted resource for what's next in Since 2001, the National Electrical Wire Processing Technology Expo continues to be the exclusive showcase for the latest technology for the electrical wire harness, wire & cable processing and related industries. Meet over 100 world class suppliers of equipment, instruments, tools, materials and supplies used in wire & cable harness assembly, inspection and repair. For further information visit www.expoproductionsinc.com.

Minneapolis Convention Center Minneapolis, MN

medical design and manufacturing. Regardless of your particular design and development objectives, MD&M offers everything you need to drive your project to the finish line. For further information visit http://MDMminn.com

Productronica 2013 November 12-15, 2013

New Munich Trade Fair Centre Munich, Germany

productronica is THE leading trade fair for electronics production. It showcases the single roof. It also focuses on the latest innovative and future-oriented highlight themes. Take advantage of this added value and profit from the effects of synergy. In short: productronica is an outstanding gathering for leading German and international manufacturers and newcomers who give other participants a look at both the present and the future. For further information email info@productronica.com

The Cosmopolitan Las Vegas, California

Frontier Airlines Center

- · More than 400 exhibitors showing equipment, materials and services for printed boards and electronics manufacturing
- The industry's most technically proficient programs in electronics manufacturing and assembly.
- The largest technical conference for our industry in the world
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- And much, much more!

See www.ipcapexexpo.com for more information.

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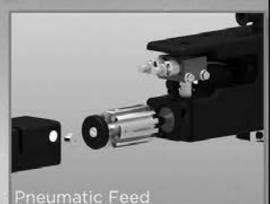
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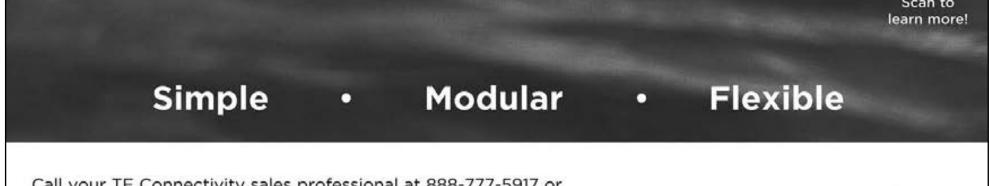




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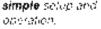
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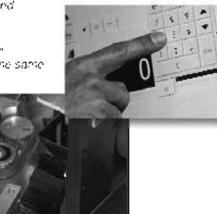
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